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## EDITORIAL

When it was firstly issued in 2015, the supplement of *Astra Salvensis* it was plainfield as a number that bring together studies, articles and reviews of theology. Afterwards, together with Mihai-Octavian Groza, we have realized that they are some articles of theology which have also a rich content of history of pedagogy and we have decided to post again the researches from this category in the big series.

Now, thanks to our guest editor, PhD. Mehdi Mahmoodi from the Faculty of Mechanical Engineering, Iran University of Science and Technology, Tehran, we have again a supplement, and we are planning another one to be published shortly. As we have promised in the 10<sup>th</sup> number<sup>1</sup> it contains a selection of the works of the Istanbul conference, but also some other researches, reviewed by the organizers of the event. The reader can find there texts signed by researchers from different centres like: Kazan State Federal University, Kazan (Kazakhstan), Institute of Literature and Art "M. Auezov," Almaty, "Turan" University, Almaty; Central Asian University, Almaty, Institute of Services Industry and Businesses of the Don State Technical University, Shakhty of the Rostov Region; Institute of Ethnology and Anthropology (IEA) of Chinese Academy of Social Sciences, Beijing (China), Marmara University, Istanbul (Turkey), Sathyabama University, Chennai, Tamil Nadu (India), or Institute of World Literature of Russian Academy of Sciences, Moscow (Russian Federation), and texts of psychology, management, linguistics, economic, ecology and engineering signed by professors or researchers from the aforementioned universities.

Papers dedicated to different local questions of investigation, to some important topics of contemporary research, but also to interesting aspects topics from different domains can be found there. Thanks to the indexation in International databases like: Scopus, Ceeol, Ebsco, Erih Plus, Index Copernicus, Ulrichsweb and others and to the distribution in some libraries from all around the world, the journal will be available in libraries of some prestigious universities like Harvard, Hamburg, Halle Cambridge or Oxford and in national libraries like the one of Romania, Moldavian Republic, Royal Library of Denmark, Serbian National Library, National Library of Austria, National Library of Iran and s. o. Therefore, the reader who want to find interesting information about his topic of research and also texts that can help him to find more information about different aspects of culture and to improve his knowledge. All these thanks to *Astra Salvensis* review, to Transylvanian Association for Romanian Literature and Culture of Romanian People – ASTRA, Năsăud Department (Salva Circle) and "Vasile Moga" Department from Sebeş, and to dr. Mehdi Mahmoodi, the guest editor of this supplement.

Soon, the 64<sup>th</sup> articles from this supplement will be followed by a second supplement, coordinated also by dr. Mahmoodi, which will offer to our readers other interesting topics and researches. We wish to our journal to be read inasmuch

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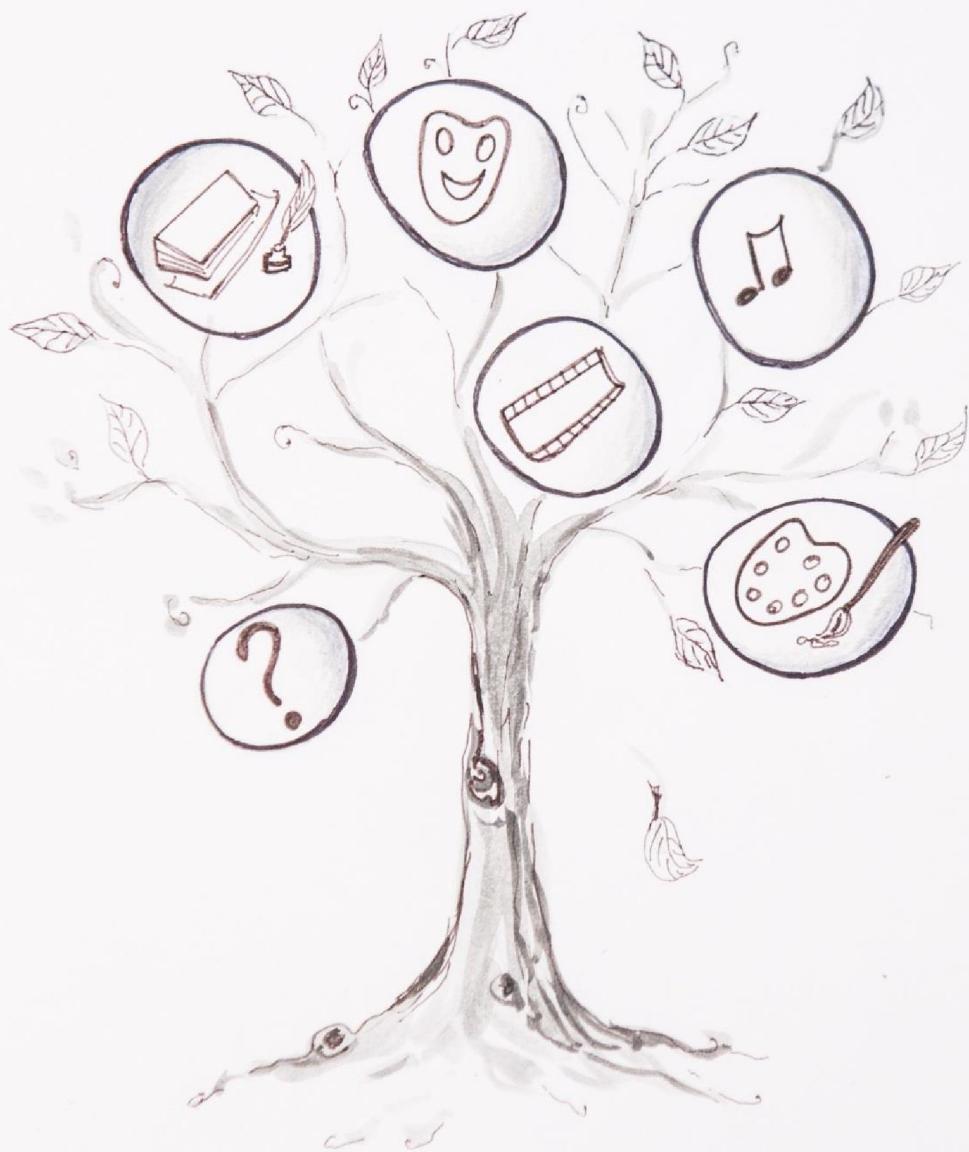
<sup>1</sup> Iuliu-Marius Morariu, Mehdi Mahmoodi, "Editorial," in *Astra Salvensis*, V (2017), no. 10, p. 7-8.

"Editorial," *Astra Salvensis*, V (2017), Supplement no. 1, p.9-10

as possible, quoted and debated into the scientific and cultural spaces and to our guest editor to have more collaboration with us. *Vivat, crescat, floreat, ASTRA!*

***Iuliu-Marius MORARIU***

# *Psychology*





Pakizat AUYESBAYEVA, Karachach ALPYSBAYEVA, Tokhtar ALBEKOV

## Image Of Patron Spirits In The Epics Of Turkic Peoples

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**Abstract.** In Kazakh folklore science there very valuable works in terms of genre definition and description of historical poetics of the rich heritage of Kazakh people. However, there are no special works on the types of motifs that make up plots about the functions of patron spirits in epic poems, and devoted to the research on their specific features. Until now, this issue is mentioned only in the works on plot typologies of big genres as part of episodes, telling about the biography of the main character.

Opinions on the causes of the emergence and development of this motif in Kazakh folklore are often found in the works of researchers of epic genres. But due to the fact that the purpose of these research works are other issues, these opinions are limited only to the statement that the image of patron spirits - is an artistic tool to emphasize and enhance any features of the character of the work.

The exploration of the plot forms of this motif, which since ancient times is the basis of ancient myths about human nature, needs to start with the most ancient history. Only in this case we can fully reveal the development of the motifs on images of patron spirits and their acquisition of specific features in plots of epic genres that have emerged more recently - in the era of feudalism.

It is necessary to identify and explore the transformation of the motif on patron spirits in different periods of the history of humanity, their distinctive characteristics within each of the folklore genres and functions which they performed in accordance with the idea of the work, as well as their changes in accordance with the worldviews of storytellers of different eras, acquiring some additional elements.

The ancient forms of the motif on brave warriors who were born thanks to patron spirits- were not only the episodes of mythological genre, on the contrary, they were spread as independent anthropogonical myth. This is proved by the fact that introduction of the cults of worship of spirits of saints and ancestors to the theme – is the influence of very ancient religious beliefs in the worldview of our nation.

**Keywords:** myth, image, epic, folklore, poem, legend.

### Introduction

The presence of such motifs as support for the newborn child by the representatives of the unknown world, further increases the value of the birth of the character in mysterious circumstances. Sh.Ibrayev wrote in his scientific work about this: "not every human can perform this task and it can only be done by batyrs who are under the patronage of the totemic ancestors, spirits, guru" <sup>1</sup>. That is, for justifying the birth of the character in mysterious circumstances it is very important to link the motif with the unknown world.

Now let's look at some patrons, who provide special support for the characters of these epics, including the batyr, from his birth to future life.

For example, the image of Gayip eren kyryk shilten (forty good spirits, who live invisibly among the people and have a supernatural power), which is often found in folklore works.

In general, the appearance of kyryk shilten in folklore of Muslim peoples as a positive character has become a tradition. This motif is especially common in religious myths and legends. Kyryk shilten always helps honest people, bestow them with various advantages and go away.

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<sup>1</sup> S. I. Ibraev, *The world epic*, Moscow, Science, 1993.

The image of magic spirits-helper in the folklore of the peoples of Central Asia, Kazakhstan and East Turkistan emerged under the influence of Muslim mythology. The word "Shilten" in Persian means "forty persons". In the Kazakh language, like in other Turkic-speaking peoples, it is called "Kyryk shilten". That means that the word, although it means "forty persons", is pronounced with the number 40 ahead. All Turkic peoples believed in the existence of this mysterious community, consisting of a special caste of people who have supernatural abilities. Although forty spirits are existing invisible to people, they don't do any harm to them anyway. In contrast they patronize and help the people. For example, in Kazakh epic work – the epic "Kobylandy Batyr", forty spirits who appear in the form of a group of swans tell the joyful news about pregnancy of Kydyrbay's wife.

According to the narrators in the city Yarkent in East Turkestan there is a grave of forty spirits. People consider this burial as one of the holy places. Some peoples perceive forty spirits not as holy spirits, but on the contrary, they consider them to be invisible robbers. According to the observations of M.S. Andreyev: "On the territory of Eastern Bukhara shiltens were called "spirits - robbers" or "spirits-thieves". There was a belief that they steal only livestock and eat them".

The image of the spirits in the folklore originates from the Persians- Tajiks. Spirits can also be visible for people. Sometimes, they may appear as poorly dressed people. There is a notion that if one of the spirits dies, then they appoint one worthy human instead of their member who passed away to the other world". Sometimes they are called "kyryk shilten gaiyp eren", this phrase means "invisible good spirits". Kazakh and Uzbek mythology tells about spirits: "They live on the uninhabited islands in the sea" or in other versions: "For discussion of their problems, they gather in places where people don't live".<sup>2</sup>

At the same time, we see that there are different reasons for the spread of the image of forty spirits in folklore works. Firstly, if the image of forty spirits in the Persians- Tajiks occurred as a result of Zoroastrianism, its spread in Central Asia is related to persecution of Iranian Sufis because of their positions against dogmas of the official religion, and their mass migration to these areas as dervishes. That is why the group was called forty spirits.

The description of the beliefs of the people in invisible beings who are similar to forty spirits or angels is most frequent in folklore works. Demonstration of forty spirits as a patron of the birth and growth of Korugly in the epic is also based on this belief.

## Main Part

### Common images in Turkic epic

The heroic epics, the plots about birth in mysterious circumstances, where exist such ancient motifs, in general demonstrate a very ancient origin of the work. Over time, these works were complemented by a variety of motifs, plots and reached the level of large-scale epic. The motif of the birth in mysterious circumstances in the epic is developed by new auxiliary episodes. For example, the

<sup>2</sup> S. Kondybay, *Arqazaq mythology*, Almaty The first book, 2004.

birth in the grave in the epic Korugly is an archaic form of the motif, and forty spirits - an additional motif, added later, when Muslim religion was introduced. For example:

"... After Altynshash passed away to the other world, a child was born in the grave. Forty spirits in the dream help to feed the baby by mother's breast and all kinds of fruits in the grave. The child was fed with the heart of a tiger to make him brave as beasts. He sat on a lion, and was holding a dragon in his hands like a whip. Korugly, received the blessing of forty spirits and became known as batyr ".<sup>3</sup>

The Uzbek and Tajik versions of the epic Korugly the motif of the birth of the hero is supplemented by magical and fantastic elements, the plot of the birth of the future batyr in mysterious circumstances is more dense. In any version of the epic forty spirits help to the main character to grow up and help him to be noticed by people. In all collisions of Korugly they become patron of the protagonist. Before Korugly's mother died, she dreamed forty spirits who foretell: "You, Akanay, will give birth to a lion like Korugly".

Thus, using the support of forty spirits Korugly becomes a batyr, who will take revenge the enemy for all the people.

In order to catch the playing child who came from the grave, all sorts of tricks and tweaks were needed. In the versions of the epic performed by R. Mazkozhayev, forty spirits gave advice to Babaly and Kulayim and disappeared: "Buy different fruits on market and put them in front of the grave. This will be the bait for a child. When he starts eating, then you will catch him." Relationships between Korugly and forty spirits and a show of strength in the children's battle which was organized to capture the hero, in the version performed by Zhambyl, defines its identity. It is described as follows: "He scatters the children who resisted like alchiks, trampling all those involved in the battle. He feels a power of forty people". It can be seen that future batyr gains supernatural forces under the influence of forty spirits.

In viewing the plot versions of the birth in the epic Edyge, we can express the same opinion.

However, if we see the epic "Munlyk-Zarlyk", in this epic the mission of forty spirits is strongly felt - the mysterious force that comes to help the suppressed and poor people, and innocent people in difficult times. Here forty spirits act as a linking element, a driving force in development of the event. "Forty spirits have caught Munlyk and Zarlyk whom the witch has thrown into the sea, took them to the Mount Shogirli and gave shelter, gave one saiga as a "mother." It has been scientifically proven that according to the understanding of ancient people, forty-spirits are the form of "the owner of power" which was transformed later during Islam.<sup>4</sup> We would like to note the complex process of emergence of the belief in the existence of "protecting and patronizing" force.

Image of Gayiperen kyryk shilten in Kyrgyz epic «Muňdik, Zarlik» is very similar to the image of Gayiperen kyryk shilten, who is found in Kazakh epic

<sup>3</sup> \*\*\*, *Ancestors words: One hundred volumes*, vol. 44 - "Heroes of the hole" Astana, Folio, 2008.

<sup>4</sup> V. M. Jirmwnskiy, *Tyurkşkij gerojčeskij epic*, Almaty, L .Science, 1974.

works. The patronizing mission of the guru who guides the born batyr during his growth and maturation - is a unique mission.<sup>5</sup>

In all versions of the epic "Alpamys", which is common heritage of the peoples of Central Asia, image of ancient shamans is presented in the form of Moslem saints: the dervishes. Sometimes they change places with the patron saint, who in a dream foretells the future mother of the hero about forthcoming birth of the batyr. For example, in one of the Uzbek versions, saint Ali appears as a dervish at the festival in honor of the birth of the hero. Besides, if we take Karakalpak and Kazakh version of the epic "Alpamys Batyr", in the episode involving the saints, we can see that the place of earlier patrons is occupied by new patrons. Versions of these epics are very similar to each other in terms of the content. Here we are not talking about the ancestors of the batyr. Baybori and Baisari live in the same place, i.e. in Zhideli-Baisyn. In the works of both nations, their children were born in mysterious circumstances, with the help of forty spirits.

The names of Muslim saints are found in many versions of the epic "Alpamys", also it clearly shows the role of this motif in the development of the epic events. The inclusion of Muslim elements is a typical feature of the later versions of the epic. Performance of the epic "Alpamys batyr" entirely in Muslim manner is observed in all Central Asian versions of the epic. The fact that in all versions of the epic, the future batyr is born as a result of the appeal-prayer of parents to Muslim saints is proving this. Among the Uzbeks it is Ali Shahmardan, among the Kazakhs - Baba Tukty Shashty Aziz, and among the Karakalpaks and in some Uzbek versions often it is Kyzyr. In the version of the famous Uzbek performer of epic works Pulkan, almost all characters of Muslim mythology act as patrons of childless rich man: the names of Ali Shahimardan, Baba Kambar and Kyzyr were mentioned. At the request of these saints, Baybori built madrassas for the future batyr as a gratitude.<sup>6</sup>

The guru of Kazakh baksy and batyrs - Baba Tukty Shashty Aziz also passed alive to the other world.

The image of Korkyt in the folklore in more recent times, plays the role of Muslim saints. Two epics, included into the "Book of Korkyt ata", start with episodes of the son's birth as a result of the mass appeal-prayer of childless parents. As a result Bamsy-Beirek was born after the prayers of all beks to the God and their blessing. Performers of the epic include one of the local saints into this episode.

For example, this episode in Uzbek version of the epic "Bamsy-Beyrek" is described as follows: a wandering saint dervish predicts the execution of the wish of childless relatives. Later he participates in the festival, gives name to the newborn babies, arranges engagement of the hero with the newborn daughter of

<sup>5</sup> Кыргыз Дестанлари (ed.), A.Akmataliyer, M.Mukasov, Gülbara Orozova, Ankara, TürkDilKurumu, 2007.

<sup>6</sup> A. N. Veselovsky, *Historical poetics*, Moscow, Vişşaya School, 1989; V. Jirmwnskiy, *Skazaniye rev Alpamys and bogatirskaya fairy tale*, Mosow, Schwartzman VO Publishing house participation vost. lit., 1960; VY. Propp, *Folklore and deystvitelnost*, Moscow, Science, 1976; S. Kaskabasov, *Epic story typology - typology of Kazakh folklore and fairy tales*, Moscow: Science, 1981.

his brother. In these works Muslim saints who helped to the birth of the hero, in most cases are replaced by Korkyt. The activity of Korkyt particularly in this episode of the epic proves that the motif of children' birth with the help of blessings is associated with the image of Korkyt.

Character of the tale of Anatolian Turkish people "Beirek", who became the basis for the plot of the epic Bamsy-Beirek, sometimes is born under the influence of a dervish, sometimes with the help of the holy relics of Korkyt. In the epic Korkyt fully fulfills his sacred mission. He turns into a patronizing spirit of the character.

Korkyt's support in the birth of the epic heroes demonstrates his relation with the image of the ancestor in the archaic myth. Korkyt also performs a mission of giving name and blessing at the birth of the famous heroes. Of course, at a time when the myths and legends about Korkyt were recorded, the words "ata", "dede" had lost their ancient mythological meaning and gained the meaning of the modern word "father", "grandfather". In this case, the phrase "Korkyt ata" and "dede Korkyt" may be the remnant of the concepts of ancient mythical ancestors.<sup>7</sup>

Birth of Korkyt is completely identical to the characteristics of ideological syncretism. The mysterious birth of the future hero in the tales, epics is close to the classification stages of the late art syncretism in terms of the motif of the mysterious birth: his parents saw a dream, spent a night at the tomb of the holy spirits, prayer-appeal to the saints. Here, the father and mother of the hero are ordinary people, and Gayip Eren kyryk shilten, Jeti kamil pir, Babagumar, Baba Tukti Shashty Aziz, Ali Shahimardan and others have directly supported their birth. Later these concepts have also mixed with Islamic concepts. The presence among them of such Muslim saints as Arystanbap, Aziret Sultan (Ahmed Yassau) is the proof of this fact. The role of the early saint spirits, ghosts has been gradually replaced by the Muslim saints.

Korkyt rose his status to the status of special spirits due to the fact that he became a guru of not only ordinary people, but also of all baksy. Korkyt ranked the highest patron and people worshiped his holy relics due to the fact that he was identified as otherworld guru of all baksy including Koilbay baksy whose name became a legend and made the river to flow back and put his kobyz at the race.

Many shamans after death asked to be allowed to the world of the Gods. Once first shaman of kets during the trance ascended to heaven and stayed there forever.<sup>8</sup> Baksy believe that Korkyt also has gone alive to another world.<sup>9</sup>

Name of Korkyt and his activities seems to turn into a joint image of all holy spirits. And after the death of the famous seer-baksy who possessed supernatural forces of transformation into the patron spirit, who was supporting due to his strength and has become a benchmark for alive baksy in another world, in general, is a typical sign which is inherent to Tengrianism. Ethnographic

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<sup>7</sup> S. I. Ibraev, *Start. Studies on the folklore of the Kazakh people*, Almaty, houses, 2009.

<sup>8</sup> V.N. Basilov, *Ízbrannikí oven*, Moscow, 1984.

<sup>9</sup> B. Qoñıratbaev, *The history of Kazakh folklore*, Almaty: Language, 1991.

materials of Siberian peoples, including Turkic peoples<sup>10</sup> can comprehensively demonstrate this fact. In few motives about baksy may remain only as a leader of all evil forces, and their host.

### **Image of Kyzyr in epics of the Turkic peoples**

In general, Kyzyr is one of the most popular saint spirits who help in the birth of the heroes in the motifs of the mysterious birth in the epics in Central Asia.

Kyzyr (Kydyr) – is the name of a fairy, even, half-mythological personality who often occurs in the oral literature of many peoples of the East, especially Muslim nations. In the literature his name is mentioned along with the envoy Ilyas. Name Iliyas (Ilias, Ilia) in ancient Jewish and Christian legends is mentioned as a saint. Some people believe that his name comes from one of ancient Jewish Gods. Some attribute him to Indian myths. However, it is appropriate to draw attention to the fact that Kyzyr is more popular and closer to Turkic peoples.

Kyzyr plays a huge role in the fertility cult of the peoples of Central Asia. Especially his name is associated with the world of plants. According to Muslim legends, holy Kyzyr wore green clothes (Kyzyr - in Arabic means "green"). Every nation interprets the image of this saint and his origin in relation to national history. Some sources say that his burial place is in Egypt, and other - in Central Asia. For example, it is known that in Samarkand there is a mosque named after Khazret Kyzyr.

Most legends related to Kyzyr tell about the "eternal water." As V.V.Bartold writes, Kyzyr meet travelers as elder man, makes all sorts of challenges to them and guides them to the right path.<sup>11</sup>

E.E.Bertels notes that Kyzyr - is "eternally alive prophet, and he is omniscient and mysterious assistant"<sup>12</sup>

According to mythology Kyzyr - (Khadir, al-Hazir, al-Khidr) is a joint image of various mythological characters, common in pre-Islamic East. Preachers of the Koran called Kyzyr as "slave of Allah". This story is given in the legend about wanderings of Moses. Image of Kyzyr occupies a firm place in the Muslim literary monuments and beliefs of the people. In Muslim tradition, the most important feature of Kyzyr is eternal existence. Despite this feature, in many Muslim countries there are several graves of Kyzyr. Usually they are considered the most revered holy place for local people.

Kyzyr is characterized as adviser to many of the prophets and Mohammed, and patron of sea travelers. Hindus worship the spirit of rivers and wells called hodja Kydyr (Khodja). And in Central Asia and Kazakhstan people is widely believe that "Who saw Kyzyr (Kazirety, Kyzyr) in the form of a kind elder man can

<sup>10</sup> \*\*\*, *Ethnography of peoples of Altai and Western Siberia*, Novosibirsk, 1978, p. 70, p. 97, p. 136; Michael T. Buryat, *Shamanism*, Novosibirsk, 1987, p. 136 p. 94-134, and others \*\*\*, *Tradiciionnoe worldview tyurkor Western Siberia. Watermark and Ritual*, Novosibirsk, 1990, p. 89, p. 94. V. N. Basilov, *İzbrannik ören*, Moscow, 1984, p. 29-51.

<sup>11</sup> V.V. Bartold, *Soçineniya*, vol. 1, Moscow, İzd.vost.lit., 1966.

<sup>12</sup> E. E. Bertels, *Favorites Proceedings*, Moscow, 1960.

get infinite happiness". However, he is also popular as protector from fire, thieves and robbers.<sup>13</sup>

Although the legends about Kyzyr are mainly distributed only among the Muslims, in regard to new characteristic of different beliefs it is very difficult to say that this image is formed specifically under the influence of this religion. The thing is that Kyzyr's name is not mentioned in the Koran.<sup>14</sup>

The legends of many peoples of different periods are concentrated around Kyzyr's image. In this image one can also see the image of the Babylonian Gilgamesh, Enok and Iliya. Sometimes Iliya (Arabic Iliyas) and Kyzyr are described as one person. In many legends Kyzyr and Ilias are present together. Iliyas is the ruler of the desert, and Kyzyr is the master of water.

In Kazakh folklore Kyzyr also appears to the people in the image of elder man, saint and protector from any evil. Sometimes he is a prophet, sometimes - guru, sometimes - a saint. "Holy spirits" are usually near Kyzyr and Ilias. In most cases, batyr's parents meet him on their way. In many heroic epics (Alpamys, Kobylandy, Bozmunay, etc) before the birth of the future hero, people who are asking the God to give them children, visit the graves of saints and holy places, meet an old man in a white turban with a stick in the hand or with a book in the form of a ball, and with a light gray donkey who is called diuana, sometimes he is has a specific name Kyzyr. He accepts the parents' prayer and informs about the birth of a brave batyr. In some cases, parents see him in their dreams on their way and he predicts a good news.

In most poems the name of Kyzyr is not mentioned. However, in the understanding of the people the image of a mysterious white-bearded old man is identified with the appearance of Kyzyr. Also the diuana has similar characteristics. In general, in religious myths, although the names of saints or patronizing forces that appear from somewhere, are pronounced differently, they appear only as one image.

Introduction of different cults of worshiping of different saints and spirits of ancestors into the folklore – is the result of religious beliefs of our people, which originate from ancient times. Holy Mission of Kyzyr in Kazakh epics and epics of other peoples of Central Asia, i.e. the image of a mysterious patron, proves the existence of such concept.

In the epic poems, in most cases parents meet Kyzyr on their way, when they with tears in their eyes are asking the God to give them children, visiting the holy places. The fact is that according to tradition, the travelers meet him and see him as an old man, he gives them different tests and shows the correct direction on the road. In the epics the saint is described exactly in this way.

His appearance is similar to Muslim saints and is described as common name of all of them. It can be noted as argument that Kyzyr is a joint image of the holy spirits in the epic. Secondly, the image of Kyzyr may have been included in later versions due to the emergence of Muslim elements in Oguz epics.

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<sup>13</sup> \*\*\*, *Miji peoples of the World*, vol. 1-2, Moscow, Soviet Encyclopedia, 1988.

<sup>14</sup> V.V. Bartold, *Islam*, vol. 2. Moscow, 1918.

For example, in the epic "Munlyk-Zarlyk" the image of Kyzyr is complicated by the introduction of episodes that demonstrate the characteristics of seers or other abilities of Muslim saints. In the epic the childless khan visits holy places for the purpose of appeal- prayers to Allah to give him the heir, which is the concrete influence of the Muslim religion. Zh. Shaihyslamov adds the plot of the similar tale with motifs which preach the greatness and mightiness of Allah and kindness of Moslem angels and Hazrets.<sup>15</sup>

Often in the epic works Iliyas is presented as the unknown patron of the batyr. This image mainly presents in religious epics. For example, in the religious epic "Seyitbattal" the image of Kyzyr appears occasionally in several places, for example, when Seyitbattal gazi started his trip to find India and came to the great sea. He was unable to cross the sea, and appealed to the God for the help. The Almighty accepts his prayer and immediately appears Kyzyr. He greeted Seyit and forwarded him through the sea (the river).<sup>16</sup>

Similarly, those who shared the grief of parents whose newborn children don't live long and help them, they see the sacred Kyzyr.

The holy relics of Kyzyr are fully described in folklore. Kyzyr in heroic epics – is a mysterious patron, contributing to the birth of the future hero.

Holy Mission of Kyzyr in Kazakh epic and epics of the peoples of Central Asia, ie his image as a mysterious patron is the evidence that such concept has existed.

Among the peoples of Central Asia and Kazakhstan, popularization of various legends associated with the image of Kyzyr (Kadir, Kydyr) and faith in his holy relics - is one of the customs that still are actual. Since ancient times exist different ceremonies that tell about Kyzyr's wanderings. Especially, the Kazakhs show special welcome to the guest who came to their house and hope that he is "One of the forty - Hızır prophet". During Nauryz holiday or during celebration of the various religious holidays there is a widespread tradition of settling a time "Kydyr tun". In general, according to ancient legends there is a concept that Kyzyr - is a white-bearded old man, riding a light gray donkey, i.e. a person who saw him will find immense happiness and Kyzyr becomes a mysterious force that will protect this person. Among people there is an opinion that Kyzyr invisibly exists among people in the crowd, and one of the signs of his holiness is the fact that the thumb of the elder man has no bones.

### **Character of Baba Tukty Shashty Aziz in the epics of Turkic peoples**

Muslim nations had a tradition of treating the childless parents at the grave of the holy people. However, folklore motif of the birth as a result of such concept has appeared due to the belief in the mysterious power of the saints. Therefore, the birth of the hero in Central Asian and Kazakh epics happened thanks to such saints as Tukty Shashty Aziz, Ali Shahmardan, Omar Baba. The childless elderly

<sup>15</sup> S. A. Kaskabasov, *Kazakh vol'şebnaya fairy tale*, Moscow, Science, 1972.

<sup>16</sup> \*\*\*, *Ancestors words: One hundred volumes*, col. "Folio," vol. 13 - Astana: "Folio", Religious poem: Čazawat Sultan, Astana, 2005.

people saw them in their dreams and they gave them a son - a brave hero, and so fulfil their cherished dream. Then, they become their patron spirits.

The saint who is often mentioned in Kazakh epics and who is helping in the birth of the future hero is a saint named Baba Tukty Shashty Aziz. He is the father of Parparia and appears in the eyes as a saint, helping in the birth of Nogay batyrs and princes.

For example, in the poem "Kubygul" on the banks of the Blue Volga lived a Khan whose named was Uali. The Khan was quite rich and brave, but in the age of seventy years he had no children, and people called him "childless". No one has paid any attention to him, and his subjects have not obeyed him. "Rather than to be so miserable, it is better to ask my guru" he thought, and began to visit the graves of the saints, to seek the saint Baba Tukty Shashty Aziz and he found him.

He came to the grave, he tells about his trouble and asked to give him the heir. So, he saw the ancestor of the warriors saint Baba Tukty and prophesied to him that he would have a son Kubygul.<sup>17</sup> So, the poem "Kubygul" describes the story about how he suffered from being childless and suffered from humiliation, praying to the saints, asking about the birth of the heir, and how, finally, he has received the grace of the holy Baba Tukty and he told him in a dream, that soon he would have a son.

The image of Baba Tukty Shashty Aziz which is common to the folk literature of all Turkic peoples, is comprehensively and positively described in such genres of folklore as fairy tale, heroic epic, epic poem, legend, especially in the epic works, which tell about how he perfectly fulfills his mission of spiritual patron, helping the heroes of the epic in a difficult moment. For example, the holy Baba Tukty Shashty Aziz in Kazakh folklore is known as a spiritual patron of the characters of heroic epics. In Karatau on the territory of the Kumkent steppe there are sacred places where people worship this saint.

Baba Tukty Shashty Aziz is a guru of the batyrs in heroic epics. There is some information about him. According to some sources, his real name is Baba Tuklas. His father is Keremet Aziz. Baba Tuklas was a king in Mecca. And according to other sources Tukty Shashty Baba Aziz is the ancestor of Ahmet Yassau, contemporary of Korkyt (VIII-IX centuries). Also there are reports that the son of Baba Tuklas has reached the banks of the Volga river, and his son Kutlu- Kiya gave birth to a son Edige.

As the legends and myths tell, Baba Tukty Shashty Aziz is the son of the saint Baba Umar, and he began to create various wonders when he was twenty-five years old.

In ancient times Baba Tuklas, i.e. Baba Tukty Shashty Aziz was considered to be a saint. Pilgrims to Mecca first visited the tomb of Mohammed, and then the grave of Al-Motaz Seyit, and only after that they went to the tomb of Baba Tuklas to commemorate him and worship. However, the Kazakhs were sure that his grave is not in Mecca, and its dome is located in Kazakhstan. More precisely, its dome is located in the northeast of Karatau mountains, on the shores of Kyzylkol lake, at a

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<sup>17</sup> \*\*\*, *Tatar folklore mäsäläläre*, vol. 23, Kazan, Fiker, 2004.

distance of a kilometer to the south of the former city Kumkent. Burials of later periods and a big burial of Qarakhanid era make a big city of the dead. Initially, there was a spring, a dense forest, but at the end of the XIX century, the forest was cut down completely. Until now, the roots of felled trees have preserved. Small source, that is the remainder of the spring, still flows into the lake Kyzylkol. Mausoleum of Baba Tukty Shashty Aziz, which was built during the epoch of Karakhanids, is destroyed. On its place a new dome was built. However, it is not as great as it used to be before. It is modest, small, it has the quadrangular bottom, there is a round spherical dome on the top, and the entrance door is on the southern side.

However, although Baba Tukty Shashty Aziz is considered a Muslim saint, the horse, lamb, camel skulls, stone sharpener, magic stone, which preserved inside the dome, show that he was close to shamanic moral values, who worshiped the pre-Islamic Gods.<sup>18</sup>

At the time, and V.M.Zhirmunsky said that the image of Baba Tukty Shashty Aziz in folklore is related to the image of the pre-Islamic shamans: "There is no doubt that Baba Tuklas, - he wrote - is an ancient shaman of the pre-Islamic period like Korkyt."<sup>19</sup> S.A.Kaskabassov has reasonably proved the reliability of this statement in his work devoted to the fairy tales.<sup>20</sup>

So, there is such a conclusion: the image of Baba Tukty Shashty Aziz has transferred to the heroic epic from the ancient story or fairy tale, but there this image is described as magical helper, and when it transferred to the heroic epic, it has greatly expanded his function and from a helper he turned into a Muslim saint, who is able to have an impact on the birth of a wonderful human and his further fate. Thus, the former shaman- helper is now a Muslim saint, a guru of batyrs Baba Tukty Shashty Aziz, and similarly he appears in the heroic tale and became one of the permanent images of this genre.

In addition, the image of Baba Tukty Shashty Aziz takes a special place in the epic works of Kazakh folklore. Based on the personality of Baba Tukty Shashty Aziz in the poem and the image in the legends, one can come to this conclusion. In the poems we see him as spiritual patron supporting and protecting batyrs in difficult times, and in the legends his personal life is described, in which he is in close relationship with people. Since ancient times he is a genius personality in the minds of people, who has become a legend, whose consciousness has reached the consciousness of the wise priest.

For example, "In the poem the father of Zhanibek is Alibi. When he was seventy-five years old, he asked Allah to give him children and visited the holy places. In his dream he saw Shashty Aziz, who asks the God to give him a son and a daughter, and prophesies in a dream, and told to give the names Zhanibek to the son and Makpal to the daughter. Thus children born according to the motif of

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<sup>18</sup> Qubiğul, *Heroes of the hole*, vol. 1-3, Almaty: Writer, 1964.

<sup>19</sup> A. Margulan, S. Kaskabasov, *Baba Terry hair Ażżż - Kazakh Soviet Encyclopedia*, vol. 1, Almaty, 1973.

<sup>20</sup> V. M. Jirmwnski, *Skażanie rev Alpamise and bogatyrskaya fairy tale*, Moscow, İzd.vost.lit., 1960.

mysterious birth, acquire miraculous abilities such as "they are protected from bullet and saber".

... "Janibek was searching for Makpal and came to a tied yurt. They met there. With the help of a spiritual guide Shashty Aziz he started searching for Akkobek and Karakobek (who were cursed by Aziret Sultan and were turned into dogs) and migrated, and his little sister Nogayl also set with him on the horse.

And in the epic "Orak-Mamay" the guru who help Orak are presented in different images: two travelers who had a Muslim appearance (version of Nurtugan), playing clouds in the sky, lion, tiger (version of Vasiliev), rising whirlwind of dust, dragon, snake (version of Muryn zhyrau \*), imperial eagle (version of Baysholpanuly).<sup>21</sup>

And in the epic "Kobylandy Batyr" most important patron of Kobylandy is guru Zhety Kamil. He always protects the batyr. If the batyr forgets him for a moment, he would fail. For example, when Kobylandy took victory over Kazan and together with Karaman starts cheering, he forgets about his guru, believing in his own force, then Kobilti makes a raid on carelessly lying horses. Kobikti put a net on sleeping Kobylandy and pressing him and Karaman to his chest, passes to the daughter Karlyga. She took them both under her arm and threw them into the dungeon. Only then Kobylandy prays to Allah and remembers his guru.<sup>22</sup>

The transformation of such totem animals as tiger, gray wolf, red fox, dragon, snake in the heroic epics into the patronizing spirits- hosts - is a frequent fact. This is an echo of the mythological world view. In one legend, yellow spotted snake is crawling over the body of sleeping Olzhabay. When the batyr opens his mouth to bite a snake, it slid from his neck to the ground, and suddenly turns into the guru in a white turban, i.e. it transformed into his happiness and fortune.<sup>23</sup> Thus, the legends and epics glorify the heroic actions of the batyrs, who defended the country with the help of supernatural forces, and the fact that batyrs possess special force and mysterious abilities, is described with exaggerations according to the traditional artistic model.<sup>24</sup>

## Conclusion

So, summarizing the above mentioned, we can say that in the epic works the batyrs have respective spouses, horses and other assistants. No matter how strong and brave is the batyr, he needs their help. At the moment when he is facing challenge, or made any mistake, these helpers necessarily come to the rescue.

The characters of the epic works have a series of supernatural abilities: it's impossible to shoot them with bullet, destroy with fire, sword, and they do not sink

<sup>21</sup> L. H. Ibragimov, *Törkii population iñçatında "Chura announced then the hero of"* Legend, Kazan, Fiker, 2002.

<sup>22</sup> A. Turganbaev, *Kazakh heroic poem "The harvest is Mama"* (historical basis, options, synjetikasi, artistic features). PhD thesis for the degree, Almaty, 1997.

<sup>23</sup> \*\*\*, *Ancestors words: One hundred volumes*, col.Folio, vol. 36 - "Heroes Song: Kobylandy", Astana:, 2007.

<sup>24</sup> M.Z. Kopeyev, *Works*, vol. 9, Pavlodar, 2006.

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in water, do not burn in the fire, and they are presented as humans who have such patron spirits as Baba Tukty Shashty Aziz, Gayip eren kyryk shilte, etc.

\* Zhyrau - the most ancient type of the poet in Kazakh poetry. The word "zhyrau" is originated from the word "zhyr" - a poem, a song; and therefore zhyrau is, first of all - the creator.

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## **About The Implementation Of International Standards And Limits Of Reception Of Foreign Experience To The Sphere Of Execution Of The Punishment In The Republic Of Kazakhstan**

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**Abstract.** *An article considers an implementation and reception of law norms which act as traditional and effective mechanisms of improvement of the national legislation, including governing the relations in the sphere of criminal justice, as main beginning of which there has to admit a voluntary nature. At the same time, borrowing of the international and foreign experience in the sphere of criminal justice is represented productive only within the relevant standards of the Constitution, and equally has to answer both national legal traditions, and earlier concluded interstate and international obligations.*

**Key words:** restrictions of pretrial freedom, suspended sentence, deferred sentences, parole, probation supervision, probation services, probational control.

### **Introduction**

Modern penal system of democratic society and the constitutional state, by which our state was approved in article 1 of the Constitution of RK,<sup>1</sup> has to solve problems of a humanization of the punishment execution, providing of priority of the purpose of correction and re-socialization in relation to the preventive purposes of punishment, creation of effective system of post-penitentiary adaptation of the persons released from correctional facilities, publicity and openness of penal system, active use of the international experience.

In the light of implementation of the Address of the President of the Republic of Kazakhstan the Leader Nation N.A. Nazarbayev to the people of Kazakhstan “Strategy “Kazakhstan – 2050”: New political course of established state”<sup>2</sup> as a result of active work of scientists, practitioners and deputies in 2014 there were adopted Criminal procedure, Criminal, Criminal and executive codes of the Republic of Kazakhstan which were entered into force on January 1, 2015.

The task of the state consists in that, on the one hand to provide inevitability of punishment for the committed crime, and on the other hand to make this punishment the most fair and effective, maximum having reduced the social consequences both for the convict, and for the state, in general.

The available foreign experience and practice of the organization of law-enforcement activity naturally raise a question of a possibility of their application in the conditions of the legal construction which is carried out by the Republic of Kazakhstan in the sphere of reforming of a penal correction system. In this context

<sup>1</sup> \*\*\*, *Constitution of the Republic of Kazakhstan. Practical guide*. Almaty, “Norma-K” Publishing House LLP, 2016.

<sup>2</sup> \*\*\*, *Strategy “Kazakhstan-2050”: New political course of established state. Address of the President of the Republic of Kazakhstan - Leader of the Nation N. A. Nazarbayev to people of Kazakhstan*, Almaty, Lawyer, 2013, p. 35-36.

"About The Implementation Of International Standards And Limits Of Reception Of Foreign Experience To The Sphere Of Execution Of The Punishment In The Republic Of Kazakhstan," *Astra Salvensis*, V (2017), Supplement no. 1, p. 25-35 the main line of our reasonings will be developed anyway within such category as right reception.

Reception (from Latin "Receptio" – acceptance, reception)<sup>3</sup> is, as it is known, perception by interstate legal system of the principles, institutes, the main lines of other interstate legal systems. And borrowing is not fragmentary, in the form of separate norms that was observed between various legal systems always, and it is total and comprehensive, such as for example, assimilation of the Roman right by countries of Western Europe in Renaissance.

## **Discussion**

In this regard we will focus on a number of provisions, essential to further development of the legislation in the sphere of criminal justice, taking into account both possibilities of the national legal system of the Republic of Kazakhstan, and the accumulated experience, and also potential of the international cooperation in this direction.

As all sense of international legal regulation consists in achievement of a certain final result, where the participants of the international communication are sought to it, according to the fair remark of the famous Russian lawyer I.I. Lukashuk: "implementation of international legal norms is, as a rule, much more complex and responsible task, than their acceptance".<sup>4</sup>

Permission of this task is possible only in the presence of the optimum mechanism of implementation as certain set of the legal and organizational means, used by subjects of international law at the international and national levels for the purpose of the embodiment of instructions of norms of international law. In the most cases, implementation of norms of international law is a prerogative of the sovereign states, using for this purpose the internal organizational legal mechanism.

It is necessary to notice that relevance considerably increases in the specified choice in connection with the perspectives of change of the legislation according to ratification by Kazakhstan of a number of the international-right contracts.<sup>5</sup> Concerning fight against crime and implementation of justice. Besides, it is necessary to consider that now the Republic of Kazakhstan is being sent the application to the General Secretariat of the Europe Council about intention to be the participant of a number of conventions of the Europe Council in the field of criminal prosecution.

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<sup>3</sup> \*\*\*, *Foreign words dictionary*, Moscow, 1964.

<sup>4</sup> I. I. Lukashuk, *International legal regulation of the international relations (system approach)*, Moscow, International relations, 1975.

<sup>5</sup> About signing by the Republic of Kazakhstan of the International Covenant on Civil and Political Rights and International Covenant on Economic, Social and Cultural Rights: Decree of the President of the Republic of Kazakhstan of November 15, 2003 No. 1227; About ratification of the Convention on transfer of convicts to imprisonment for further serving sentence: Law of the Republic of Kazakhstan of July 16, 1999 N 432-1; About accession of the Republic of Kazakhstan to the Vienna convention on the right of international treaties of 1969: The resolution of the Supreme Council of the Republic of Kazakhstan from 31 marta1993 No. 2059-XII.

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In our opinion, in this context it is especially marked out the Convention on legal aid and legal relations on civil, family and criminal cases signed on October 7, 2002 in the city of Kishinev (Republic of Moldova) by Heads of states of the Commonwealth of Independent States, and also the Interstate program,<sup>6</sup> adopted on its basis.

The purpose of signing of this Convention was need of development of cooperation in rendering legal aid in civil, family and criminal cases on the basis of reciprocity and respect between courts, prosecutor's offices, law-enforcement bodies, security service and other institutions of Contracting Parties, to the competence of which there are referred civil, family and criminal cases.<sup>7</sup>

The convention was signed by the Azerbaijan Republic, the Republic of Armenia, Republic of Belarus, Georgia, the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Moldova, the Russian Federation, the Republic of Tajikistan, Ukraine, and in a sense, it was continuation of that cooperation which was developed on the basis of earlier existing Minsk Convention.<sup>8</sup>

Entry into force of this Convention for the Republic of Kazakhstan is important for expansion of legal relations with the State Parties of the Convention on the directions provided by article 6 of the Convention.

It should be noted that according to article 5 of the present Convention legal aid will be given by both the central institutions, and territorial authorities of justice, courts, prosecutor's offices, law-enforcement bodies, security service and other institutions, to the competence of which there are referred civil, family and criminal cases.

Thus, it is possible to conclude that institutes of implementation and rendering legal aid in modern conditions have high potential on condition of their adequate perception by the legislation of the states, and also owing to whether there are in law enforcement agencies experts who can realize this potential.

However, it should be noted that rendering such help within the CIS countries is characterized by the common problems. The condition of crime in the State Parties of the CIS continues to cause serious concern. Practically in all State Parties of the Commonwealth there is observed the interrelation of an aggravation of a criminal situation with the crisis phenomena in economic, social and other spheres of life of society. The special concern causes rise in crime, connected with activation of steady criminal groups with interregional and transnational communications. On this background there is a further escalation of the organized crime and other types of dangerous crimes.

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<sup>6</sup> Decision of Council of heads of the states of the Commonwealth of Independent States on the Interstate program of joint efforts of fight against crime for 2003-2004 (Chisinau, on October 7, 2002).

<sup>7</sup> About ratification of the Convention on legal aid and legal relations on civil, family and criminal cases: Law of the Republic of Kazakhstan of March 10, 2004 No. 531-II.

<sup>8</sup> About ratification of the Convention of legal aid and legal relations on civil, family and criminal cases: The resolution of the Supreme Council of the Republic of Kazakhstan of March 31, 1993 N 2055-XII.

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Here we naturally approach to comprehension that in practice of cooperation and rendering the interstate help in the sphere of criminal justice paramount value belongs to joint (model) lawmaking, where the model of activity of Inter-parliamentary Assembly is real instrument, and its structures – as an optimal variant of joint legislative activity of the corresponding experts, use of personnel capacity of the State Parties of the CIS acts.

Development of the accumulated experience in the field of inter-parliamentary cooperation in the legislative sphere is represented exclusively productive and from positions of historical realities.

Now two tendencies of development of criminal justice are the most widespread, from which:

- the first - reflects the concept of control of crime (policy of legality and an order) which has an ultimate goal by rigid means to control the crime in case of need, sacrificing the rights and freedoms of participants of criminal procedures in the limits, fixed by the national legislation;

- the second - corresponds to the concept of so-called formal process of law according to which priority value are the rights and personal freedoms which aren't subject to restriction even for fight against crime.

We naturally come to that the institute of guarantees of the rights of the personality as one of elements of legal system of the state, in general, reflects a condition of development of system of criminal justice, causing at the same time displacement of emphases or on interests of justice, or on interests of the personality.

Complexity of the choice is connected with the fact that each of earlier mentioned directions of development has the merits and demerits.

The dignity of the first is increase in overall performance of bodies of criminal justice, respect for the principle of economy of criminal repression. However fight against crime, its reduction and elimination of determinants is the general social task, in which solution the achievements depend on real living conditions of the population, on a condition of public and legal consciousness. Change of these factors isn't connected directly with criminal justice from which society can and must demand, first of all, adequate response to the facts of offenses on the basis of reasonable and fair implementation of the law. Therefore it is natural to assume that high effectiveness of functioning of system of criminal justice can be unstable in the case under consideration.

The second direction loses in respect of fast effectiveness in the sphere of restriction of crime, leads to formalization of the law and, as a result, bulkiness of all process of justice, danger of reorientation to legal, but not the actual innocence when due processes of law turn not into means, and into end in itself of process. At the same time, it can gradually increase the potential due to increase as social control over activity of bodies of criminal justice, and sense of justice of the population.

Choosing priorities of development of criminal justice, it is necessary to proceed from dialectic unity and contrast of tasks of law enforcement agencies of

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control over crime and protection of the rights, freedoms of process participants. At the same time, protecting all possible lawful ways of the right of suspects, accused, defendants and convicts, it must be kept in mind contents of paragraph 5 of article 12 of the Constitution of the Republic of Kazakhstan according to which implementation of the rights and freedoms of the person and citizen shouldn't violate the rights and freedoms of other persons, first of all – the victims from illegal activity.

Not less important question is definition of the system of legal relationship which should adhere at further development of the legislation in the sphere of criminal justice.

It should be noted that an essential gap at the level of conceptual (both legal, and ordinary) perceptions is the settled stereotype of consideration of questions of law-enforcement activity in the sphere of criminal justice without specifics of the legal relationship, arising in an occasion and in the course of execution of criminal penalties.

Meanwhile, if to analyze the existing criminal and executive legislation, its the most priority purposes are “restoration of social justice, correction of convicts, the prevention of commission of new crimes as condemned, and other persons”, and “regulation of an order and conditions of serving of punishments, determination of means of correction of convicts, protection of their rights, freedoms and legitimate interests, rendering the help in social adaptation” act as the major tasks (Art. 4, The Criminal Executive Code of RK (CEC RK)).

Concerning the most debatable functions at execution of punishments, for example, such as the forms and limits of judicial control and public prosecutor's supervision, it is necessary to emphasize that they also find the direct reflection and a regulation in the criminal and executive legislation (Art. 27 Judicial control, Art. 30 Public prosecutor's supervision of CEC RK)<sup>9</sup>, and, apparently, they shouldn't leave doubts in a part of perception of a penal correction system as subject of penal justice and criminal justice.

Also, in this regard, it would be desirable to pay attention on in essence two paradoxical, but interconnected elements, in our opinion, interfering to the given perception. The first - is that law-enforcement activities for execution of criminal penalties owing to historical inertia come down only to activity of penal institutions of the closed type. The second - consists in traditional and unreasonable ignoring of execution bodies of criminal penalties (regardless of their departmental accessory) as full-fledged subjects of law-enforcement activity in the sphere of criminal justice, proceeding besides, from narrowness of perception of justice as legal category.

These circumstances first of all demonstrate obviously insufficient development of problems of criminal and executive science in the Kazakhstan law.

Many problems of legal regulation of the measures, connected with execution of criminal penalties, and practice of their application in new conditions

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<sup>9</sup> \*\*\*, *Criminal and executive code of the Republic of Kazakhstan: Practical guide*, Almaty, “Norma-K” Publishing House LLP, 2014.

"About The Implementation Of International Standards And Limits Of Reception Of Foreign Experience To The Sphere Of Execution Of The Punishment In The Republic Of Kazakhstan," *Astra Salvensis*, V (2017), Supplement no. 1, p. 25-35 of activity of correctional facilities aren't studied. First of all, primarily they include: the reasons of lack of united approach to determination of prescription and structure of elements of progressive system of execution of imprisonment,<sup>10</sup> its scientific concept, the place and a role among other legal phenomena; need of identification of the legal nature of the norms, changing serving sentence conditions; development and justification of the principles and limits of the public control in activity of a penal correction system and many others.

It is deserved attention, formulated by A.B. Skakov, determination of the progressive system of execution of the punishment as complex of institutions of the criminal and criminal and executive law where at application of which the legal status of the convict changes, depending on degree of its correction or towards expansion of its rights, or towards their restriction.<sup>11</sup>

At the same time, it is obviously necessary to note that in modern Kazakhstan there were main prerequisites for formation and development of own criminal and executive policy. In this part it is close to us the position of A.E. Natashev where according to his definition, as factors of development of criminal and executive policy act those interacting phenomena, which as driving forces define a social orientation, the main contents and the prospects of further development of a penal correction system.<sup>12</sup>

Attempting to somewhat fill the gap of the Kazakhstan jurisprudence, which was noted above, consisting in acute shortage of in-depth and complex scientific research of legal bases of activity of system of execution of criminal penalties it should be noted that the conceptual, ideological foundation for its reforming had been laid in approved Decree by the President of the Republic of Kazakhstan of August 24, 2009 No. 858 "Concepts of legal policy of the Republic of Kazakhstan for the period from 2010 to 2020" in subsection 2.10 of the section 2 "Main Directions of Development of the National Right".<sup>13</sup>

Program aims at reforming of execution system of criminal penalties had been realized in the Criminal and executive legislation of the Republic of Kazakhstan, adopted on July 5, 2014 and entered into force since January 1, 2015 .

It should be noted that the recommendatory legislative model for the Commonwealth of Independent States, accepted at the eighth plenary session of Inter-parliamentary Assembly of the states - participants of the CIS (on November 2, 1996) was the cornerstone of this codified regulatory legal act [19].

Without exaggeration, a considerable event in the Kazakhstan law there was issue of the first national itemized comment to the CEC RK in development of which along with domestic scientists (Valiyev H. H., Skakov A. B., Chukmaitov D.

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<sup>10</sup> A. K. Shaymurunova, *Progressive system of execution of imprisonment (theoretical and applied research)*. Dissertation abstract of Candidate of juridical sciences, Karaganda, 2004.

<sup>11</sup> MPA Newsletter. 1996, №12.

<sup>12</sup> G.A.Tumanov, A. I. Zobovka, *Management of the bodies, executing punishment*, Moscow, 1993.

<sup>13</sup> "The concept of legal policy of the Republic of Kazakhstan for the period from 2010 to 2020," *Kazakhstan truth newspaper*, 27<sup>th</sup> of August, 2009.

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S.) took part the leading Russian experts of the criminal and executive right – A.S. Mikhlin, P.G. Ponomarev, I.V. Shmarov, V.I. Seliverstov.<sup>14</sup>

Not incidentally, all complex of the planned measures in the criminal and executive sphere is penetrated by the general idea of strengthening of the preventive direction in the questions of organization of punishment execution in subsection 2.10 of the section 2 “General directions of development of the national law” of the “The concepts of legal policy of the Republic of Kazakhstan for the period from 2010 to 2020”, approved in the Decree of August 24, 2009 No. 858 by the President of the Republic of Kazakhstan.<sup>15</sup>

At the same time, reforming of a penal correction system – it is a process rather long and multi-stage. Its efficiency depends on a number of factors and conditions of economic, social, legal and other character including from the criminal and executive policy pursued by the state. Ensuring realization of the rights of the persons who are kept in places of imprisonment, according to the legislation of the Republic of Kazakhstan and the international standards, demands full state support, considerable financial expenses and staffing.

If to argue in relation to further reforming of the criminal and executive legislation of our country, then realization of various models of development is essentially possible. We consider three priority directions.

The first, it is further improvement within the concept of the criminal and executive policy, mainly oriented on the Russian doctrinal basis of the criminal and executive right which is earlier chosen by the legislator.

The second is the direction of widespread introduction and distribution of the liberal principles of justice based on institutes of public control, the concept of social justice, reconstructive justice and progressive system of execution of punishments, more focused on the “western” standards of criminal and executive policy.

The third, it is the reasonable combination of the most acceptable elements from the listed above models which is carried out in the conditions of implementation of concrete provisions of the Concept of legal policy of the Republic of Kazakhstan.

In our opinion, excessive ardour for Anglo-American system of the right is explained by more and more accruing crisis of the western theory and tradition of the right, according to which Western Europe was considered as the center of the world, and from 90<sup>th</sup> years of the XX century this role was to claim America. But the matter is that in spite of the existing ambitions, the world space doesn't become monopolar, and the West turns into one of its components. According to opinion of the representatives of the western law, the right, seeming to earlier natural, was

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<sup>14</sup> \*\*\*, *The comment to Criminal and executive code of the Republic of Kazakhstan*, Almaty, 1999.

<sup>15</sup> G. J. Berman, *The western tradition of law: an era of the formation*, translated from English, second edition, Moscow, Infra Publishing Group, Norma, 1998.

"About The Implementation Of International Standards And Limits Of Reception Of Foreign Experience To The Sphere Of Execution Of The Punishment In The Republic Of Kazakhstan," *Astra Salvensis*, V (2017), Supplement no. 1, p. 25-35 only western, and it is more and more observed even in it the gap with individualism of the traditional right and turn to a collectivism in the right.<sup>16</sup>

Therefore the aspiration to extend Anglo-American system of the right for territories of the former USSR - is nothing else as desperate attempt in any ways to keep the western system of the right by means of its distribution for the young developing states, not having owing to the historical development of natural prerequisites for independent doctrinal state and legal construction.

In this sense, we share the position that any norms which are subject to borrowing from the foreign legislation, as well as again offered, and also the principles of justice and criminal legal proceedings which are been the basis for activity of system of criminal justice it is necessary to consider only through a prism of the General Law,<sup>17</sup> and also from a position of reconsideration of a role of the constitutional norms and institutes in formation of new political system.

In this perspective, the existing Concept of legal policy has to be essential help and a reference point regarding reception of legal institutes in relation to Kazakhstan. Not incidentally, it is accurately designated in the section concerning priorities of criminal and executive policy to the forthcoming prospect, that: "In general the system of execution of criminal penalties should be brought closer further to the conventional international standards".<sup>18</sup>

At the same time, process of approach to the international standards shouldn't have spontaneous and rash character. For example, as one of characteristic examples it is possible to consider the situation developing around a problem of introduction of institute of probation in practice of work of a penal correction system of Kazakhstan.

It is known that the probation represents the independent form of social and legal control uniting methods of educational impact on the persons who are committed crimes, and are released and have period of probation.

In the Republic of Kazakhstan probation as independent legal institute was absent earlier. However its elements were shown in a legislative structure of punishment such as:

- restrictions of pretrial freedom;
- suspended sentence;
- deferred sentences to the pregnant women and women having juvenile children;
- parole.

The first three alternative measures are executed by criminal and executive inspections. It is deserve attention that circumstance that in Kazakhstan there are

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<sup>16</sup> G. J. Berman, *The western tradition of law: an era of the formation*, translated from English, 2<sup>nd</sup> edition, Moscova, MSU publishing house, INFRA publishing group, 1998.

<sup>17</sup> C. F. Bychkova, "Through a prism of the General Law there should to be considered loans from the foreign legislation," in *Law newspaper*, 2002, June 26.

<sup>18</sup> A. B. Skakov, *Progressive system of execution of imprisonment and its reflection in the new legislation of the Republic of Kazakhstan*, Almaty, Monograph, 2004, p. 22.

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taken place the following signs of a probation identical existing in Great Britain, the USA, Japan and other developed countries:

- 1) probation supervision for convicted;
- 2) vesting on convicts with the main and additional obligations;
- 3) legal duties (in the course of application of punishment in the form of restriction of pretrial freedom);
- 4) presence of the specialized subject of control - criminal and executive inspections (CEI).

Besides, there were also certain divergences of probation with the international tradition. So, in particular, there was entrusted on the CEI execution of the majority of the punishments which aren't connected with imprisonment while their foreign colleagues have "luxury" of communication only with a certain contingent of the criminals who have avoided the direction in penal institutions.

Also carrying out a social and legal research of the identity of convicts didn't practice in Kazakhstan which results essentially influence legal destiny of condemned, duration and intensity of supervision.

Thanks to foreign experience, the specified gaps were filled in by the Criminal and executive code RK, adopted on July 5, 2014 and which was entered into force on January 1, 2015.

Let's stop on the entered innovations in the criminal and executive legislation of the Republic of Kazakhstan in more detail.

So, CEC RK have been fixed conceptions of probation in sub-item 7, 8, 9 of article 3 (complex of measures of social and legal character, developed and realized individually concerning the person who is under probational control, for correction of his behavior for the purpose of the prevention of commission of new criminal offenses), probation services (the body of a penal correction system which is carrying out executive and administrative functions on ensuring execution of criminal penalties without isolation from society and rendering assistance to the convicts who are on its control in receiving social legal aid) and probational control (activities of the authorized bodies for control of execution assigned by court to convicts of duties and their behavior, and also to rendering to them assistance in receiving social legal aid). [13, page 12]

Moreover chapter 5 of CEC RK "Implementation of probational control" [13, page 21-22] was devoted completely to implementation of the organization of the probational control.

So, in article 19 of CEC RK there was determined a group of people, in the relation to whom there is implemented probational control:

- 1) convicts to punishment in the form of restriction of pretrial freedom;
- 2) convicts conditionally;
- 3) released on parole from serving a sentence of imprisonment.

The criminal and executive legislation provides a number of features of implementation of probational control in the relation to minors.

Features of implementation of probational control concerning minors are enshrined in article 20 of CEC RK. So the service of a probation during detention of the minor, who is wanted, immediately calls to parents or other lawful

"About The Implementation Of International Standards And Limits Of Reception Of Foreign Experience To The Sphere Of Execution Of The Punishment In The Republic Of Kazakhstan," *Astra Salvensis*, V (2017), Supplement no. 1, p. 25-35 representatives for poll and determination of the reasons and conditions, promoting evasion from serving of punishments, and also together with representatives of body of guardianship and trusteeship quarterly conducts examination of living conditions of minors with drawing up the act.

Categories of minors, concerning whom it is made the probational control, are:

- 1) convicts to punishment in the form of restriction of pretrial freedom;
- 2) convicts conditionally;
- 3) released on parole from serving a sentence of imprisonment.

The service of probation at registration of the minor realizes a complex of measures according to articles 69, 169 and 174 of CEC RK at the presence of parents or other lawful representatives, and if it is necessary – the teacher or the psychologist.

Besides, according to article 22 of CEC RK service of probation:

- 1) realize the registration of the persons, to whom it is determined the probational control;
- 2) explains an order of execution of the duties assigned by court and accountability for their non-execution;
- 3) explains an order and conditions of implementation and the termination of probational control and accountability for violation of an order of probational control;
- 4) explains an order of granting and refusal of receiving social and legal and other help;
- 5) determines the residence of the person, state of his health, education level and labor employment, and also other data necessary for scoping of providing social legal and other aid;
- 6) carries out other functions provided by the legislation of the Republic of Kazakhstan.

Article 21 of CEC RK establishes duties for the persons who are under probational control:

1. The person, concerning to whom there is determined the probational control, has the right to refuse receiving social and legal and other help. In that case the refusal is made out by the act.
2. The person, concerning to whom there is determined the probational control, is obliged:
  - 1) to be within ten days from the date of sentence or court order of entry into force in service of probation for registration;
  - 2) to meet the conditions established by the present Code and an order of serving sentence and other measures of criminal and legal influence;
  - 3) to be in service of probation for participation in a preventive conversation;
  - 4) to inform service of a probation in writing form on change of the place of work and (or) a residence.

### **Conclusion**

In case of non-compliance with probational control by the person of conditions the service of probation has the right according to article 23 of CEC RK after the written prevention to direct submission to court.

According to data of the Committee of penal correction system of the Ministry of Internal Affairs of RK, the number of the persons, who were registered by the service of probation, was made in 2015 – 47 862 citizens (in 2014 – 39 530; in 2013 – 34 309).

The analysis of number of convicts was shown that there is a decrease in number of the convicts who are in places of detention, at the same time the number of the convicts who were registered by the service of probation increases.

At the same time the number of the persons, released from places of detention, increases annually. It is released from institutions in 2015 – 16 218 convicts (2014 – 11 255; 2013 – 9 020), from them on the end of the sentence of 2015 – 4 675 convicts (2014 – 4 414; 2013 – 3 711).

All persons need the social help, released from places of detention who in the first two-three months after release need means for accommodation and job search.

In Kazakhstan it is created the legal basis of realization of the mechanism of re-socialization. The criminal and executive legislation defines meaning of the term “probation” as complex of measures of social and legal character, developed and realized individually concerning the person, who is under probational control for correction of his behavior for the purpose of the prevention of commission of new criminal offenses by him.

Thus, consideration of the questions, connected with borrowing and perception by the Kazakhstan criminal and executive legislation of both institutes and norms of international law, and foreign experience, allows to come to the following conclusions.

Implementation and reception of law norms act as traditional and effective mechanisms of improvement of the national legislation, including governing the relations in the sphere of criminal justice, as main beginning of which there has to admit a voluntary nature.

At the same time, borrowing of the international and foreign experience in the sphere of criminal justice is represented productive only within the relevant standards of the Constitution, and equally has to answer both national legal traditions, and earlier concluded interstate and international obligations.

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## Aspects Of Comprehension Of Punishment And Its Objectives In The Criminal Legislation Of The Republic Of Kazakhstan

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**Abstract.** Article considers development of the questions of criminal penalty which is important as its achievement, the purposes, and also assessment of a condition of law-enforcement system of the state depends on the correct assignment of punishment. Taking into account the maintenance of criminal policy of our state there is offered a new edition of the article 39 of the Criminal Code of Kazakhstan of 2014 “Conception and the purposes of punishments” where polemic would be excluded as much as possible and the bigger accent would be put on the true content of punishment.

**Keywords:** penalty for deeds, efficiency of the criminal penalties, the measure of the state coercion, A concept and the purposes of punishment, reinstatement of social justice, non-causing physical sufferings or humiliation of human dignities, prevention of commission of new criminal offenses.

### Introduction

It is known that criminal sentencing is a closing stage of law-enforcement activity as on the basis of materials, which are received by law enforcement agencies during pre-judicial criminal case production,<sup>1</sup> the decision is made on behalf of the state by court on guilt or innocence of the person who has made a criminal offense on the basis of paragraph 1 of article 75 of the Constitution of the Republic of Kazakhstan.<sup>2</sup>

Therefore development of the questions of criminal penalty, especially its efficiency, is very urgent and has important theoretical and practical value as achievement depends on the correct assignment of punishment, enshrined in the criminal legislation punishments, and also assessment by society of a condition of law-enforcement system of the state are more whole.

Punishment is intended to protect all objects listed in article 2 “The tasks of the Criminal code” from different criminal encroachments namely:

- 1) rights, freedoms, legitimate interests of the person and citizen;
- 2) property;
- 3) rights and legitimate interests of the organizations;
- 4) public order and safety;
- 5) environment;
- 6) constitutional system and territorial integrity of the Republic of Kazakhstan;
- 7) the interests of society and state protected by the law from socially dangerous encroachments;
- 8) peace and safety of mankind.<sup>3</sup>

<sup>1</sup> \*\*\*, *Criminal Procedure Code of the Republic of Kazakhstan*, Almaty, LAWYER, 2014, p. 107-173.

<sup>2</sup> \*\*\*, *Constitution of the Republic of Kazakhstan. Practical guide*, Almaty, “Norma-K Publishing House” LLP, 2016, p. 19.

<sup>3</sup> \*\*\*, *Criminal Code of Kazakhstan: Practical guide*, Almaty, “Norma-K Publishing House” LLP, 2016, p. 32.

Besides, realization of the purposes of punishment depends on the correct assignment of punishment, fixed in part 2 of article 39 of the Criminal Code of Kazakhstan. So, for example, the correct determination of punishment promotes restoration of social justice, correction of the convict, the prevention of commission of new criminal offenses by both convicts, and other persons.

Punishment can solve these problems if it is humane, reasonable, lawful and fair.

For definition of efficiency of the criminal penalties imposed in the Republic of Kazakhstan it is necessary to take into account the following aspects. First, whether sentence is correctly imposed. Secondly, whether it is chosen exactly right type of punishment to the guilty person provided by article or articles of the Criminal Code of Kazakhstan. Thirdly, whether punishment has been achieved the objectives which are fixed in part 2 of the article 39 of the Criminal Code of Kazakhstan (restoration of social justice; correction of the convict, the prevention of commission of new criminal offenses by condemned, as well as other persons).

Fourthly, whether the punishment "cost" is proportional to committed criminal offense (criminal offense or a crime).

## **Discussion**

In the theory of criminal law special attention was always paid to social norms which are implemented by the compulsory force of the state. It is difficult to overestimate a role of the punishment applied by the state to the person who has made a criminal offense along with other coercive measures for safety of activity of the person, society and the state, for their protection against criminal encroachments. Really, depending on contents in the law of a concept of punishment, its purposes, conditions of determination, achievement of the objectives of criminal penalty it is possible to judge about degree of security of the identity of the person, his rights, freedoms and legitimate interests, stability of law and order in society and efficiency of law-enforcement activity of the state.

In other words, on the criminal penalties, formulated in the General part of the criminal legislation of the Republic of Kazakhstan, and also according to the sanctions of articles of the Special part it is possible to speak about the maintenance of criminal and legal policy of the concrete country, it is possible to judge whether this state is legal, and the policy pursued by it humane and fair.

Cesare Beccaria noted in work "About Crimes and Punishments": "Not in cruelty, but in inevitability of punishment it is consisted the one of the most effective ways to prevent the crimes... Inevitability of punishment, even moderate, always makes stronger impression, than fear to be to the most severe punished if at the same time there is a hope for impunity.... Cruelty of punishment leads to the fact that desire to avoid it is amplified depending on how is big the suffering menacing to us".<sup>4</sup>

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<sup>4</sup> C. Beccaria, *About crimes and punishments*, Moscow, "Steals", 1995, p. 165.

At the same time concerning to the persons, guilty of commission of the grave and the gravest crimes, concealing from criminal prosecution and also at a repetition of crimes, the state has to determine a responsibility measure rigidly, but fair. At the choice of the range of all types of punishments established by the criminal law it is necessary to consider a condition of criminal neglect of the identity of the criminal, public danger of the act made by him.

It is known that criminal penalty has to have strictly individual character and be applied in each case taking into account all objective and subjective circumstances of a committed criminal offense. Even with joint participation of two and more persons in commission of the intended crime, according to part 1 of article 29 of the Criminal Code of Kazakhstan, criminal liability of accomplices is determined by character and degree of participation of each of them in commission of a criminal offense.<sup>5</sup>

Each accomplice (the principal, aider, abettor, and organizer) bears criminal liability only for illegal, criminally - punishable acts (action or inaction) depending on concrete character and degree of participation in a committed criminal offense.

Important condition of efficiency of application of criminal penalties is accurate information of its purposes and conditions of determination.

In our opinion, it hasn't been absolutely justified, at determining of the purposes of punishment, an exception of such purpose of punishment - as penalty in the criminal legislation of the Republic of Kazakhstan at first - 1997, and then and 2014.

Especially as to existence of penalty as the purposes in punishment in due time there were pointed by the famous Soviet scientists as M.I. Kovalyov, I.I. Karpets, V.G. Smirnov, M.I. Yakubovich, considering a penalty as the punishment purpose.

So, M.I. Kovalyov wrote that the only method of regulation of criminal legal relations are the threat of application of the punishment which is contained in criminal and legal sanctions and its application in case of commission of penal act.<sup>6</sup>

Other scientist N.A. Belyaev considered that "we understand a penalty as the purpose of punishment, causing to the offender of sufferings and deprivations as punishment for the committed crime".<sup>7</sup>

The similar scientific position was also stated in the works by I.I. Karpets who, in particular, noted that such characteristic sign as a criminal record which involves negative legal and moral consequences is inherent in punishment as a special measure of the state coercion.<sup>8</sup>

This position was standard among scientists of that period and remained practically to the middle of the 70<sup>th</sup> years of the 20<sup>th</sup> century. And only by the beginning of the 80<sup>th</sup> years there are begun to appear the works of such leading

<sup>5</sup> \*\*\*, *Criminal Code of Kazakhstan: Practical guide*, Almaty, "Norma-K Publishing House" LLP, 2016, p. 34.

<sup>6</sup> M. I. Kovalyov, *Soviet criminal law. Course of lectures*, Sverdlovsk, 1971, p. 82.

<sup>7</sup> N. A. Belyaev, *Purposes of punishment and means of their achievement in ITU. Lecture*, 1963, p. 25.

<sup>8</sup> I. I. Karpets, *Punishment. Social, legal and criminological problems*, Moscow, 1973.

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scientists as V.M. Galkin, N.A. Struchkov, N.I. Zagorodnikov, A.B. Sakharov and others, disputing and calling into question the leading role of the punitive method in criminal law.<sup>9</sup>

The specified position was found reflection and in the criminal legislation of the USSR and federal republics existing for that period.

We aren't supporters of the leading role of the punitive method in criminal law too, however, the full refusal of such purpose of punishment as a penalty is not absolutely justified as the criminal penalty, fixed as a method of the state coercion, and means existence of the penalty.

For comparison we will give definition of punishment and its purposes in the Criminal Code of the Kazakh SSR of 1959 and the Criminal Code of Kazakhstan of 1997 and 2014.

So, in the article 20 "Punishment Purposes" of the Criminal code of the Kazakh SSR of 1959 it has been specified that "punishment is not only a penalty for the committed crime, but also aims at correction and re-education of convicts in the spirit of the honest relation to work, precise execution of laws, respect for rules of the socialist hostel, and also the prevention of commission of new crimes as condemned, and other persons.

Punishment doesn't aim at causing physical sufferings or humiliation of human dignity.<sup>10</sup>

In the Criminal Codes of Kazakhstan of 1997 (article 38) and 2014 (article 39) definition, in comparison with the Criminal Code of Kazakhstan of 1961 of punishment, has undergone considerable changes and has been defined as "the measure of the state coercion, pronounced a judgement sentence. Punishment is applied to the person, found guilty of commission of a criminal offense, and is consisted, in provided by the present Code, deprivation or restriction of the rights and freedoms of this person.

Punishment is applied for restoration of social justice, and also correction of the convict and the prevention of commission of new criminal offenses, both the convict, and other persons.

Punishment isn't aimed at causing physical sufferings or humiliation of human dignity.<sup>11</sup>

As we see from the content of the specified punishment definition, the legislator has completely refused the word of a penalty, but at the same time, has given preference to interpretation of punishment as "measures of the state coercion", as without coercion the criminal law as branch of the law could be lost the purpose.

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<sup>9</sup> N.A. Struchkov, *Criminal liability and its realization in fight against crime*, Saratov, 1978, p. 70.

<sup>10</sup> \*\*\*, *Criminal code of the Kazakh SSR (The official text as amended on September 1, 1986)*, Alma-Ata, Kazakhstan, 1987, p. 15.

<sup>11</sup> \*\*\*, *Criminal Code of Kazakhstan (1997)*, Almaty, LAWYER, 2013, p. 13; \*\*\*, *Criminal Code of Kazakhstan (2014)*, Almaty, LAWYER, 2014, p. 20.

Unjustified refusal from such purpose of punishment as penalties from definition of punishment can be explained with the following circumstances. First, the penalty as the purpose of punishment follows from contents and a concept of punishment (Art. 39 of the Criminal Code of Kazakhstan) as punishment is the special measure of the state coercion, consisting in reaction of the state to commission by the person of a criminal offense (a crime or criminal offense). Secondly, special character of this measure is shown that sentence is imposed only by court and on behalf of the state. Thirdly, sentence can be imposed only for those acts which are provided by the criminal law as a crime or criminal offense (Art. 10 of the Concept of a crime and criminal offense of the Criminal Code of Kazakhstan). Fourthly, proceeding from the content of definition of a crime, under which, according to the article 10 of the Criminal Code of Kazakhstan, admits committed socially dangerous act (action or inaction), prohibited by the present Code under the threat of punishment in the form of a fine, corrective works, restriction of freedom, imprisonment or the death penalty.<sup>12</sup>

Fifthly, despite a penalty exception, as the punishment purposes in the criminal law it is shown through its presence. So, various volume of a penalty in each concrete type of punishment is stimulus for inculcation of the convict of right obedient behavior.

Choosing this or that punishment, court not only determines a certain complex of deprivations and restrictions, but also sets according to standards of the criminal legislation limits of their sufficiency for restoration of social justice and correction of the convict.

It is necessary to notice that at determination of punishment the criminal legislation, to be exact sanctions of articles of the Special part of the Criminal Code of Kazakhstan, are constructed in such way that the volume of the deprivations and restrictions, caused by punishment, depends on committed illegal act (actions, inaction): the public danger of a criminal offense is higher, the punishment has to be more strict as well. At the same time the penalty as intimidation expresses severity of punishment. In turn, gravity of the imposed sentence has to depend on character and severity of the committed crime, the identity of the criminal and other obligations.

Let's give an example from practice. July 18, 2016 in the city of Almaty, the previously convicted native of the Kyzylorda region Ruslan Kulekbayev, for the committed a number of the crimes, and where eight employees of law enforcement and special bodies, two civilians who have entailed death, and also for attempted murder of three more citizens, Almaly court of Almaty city sentenced the last to an exceptional measure of punishment - the death penalty on November 2, 2016, provided by Art. 255 of the p. 4 — “The act of terrorism”, Art. 99 of the p. 2 — “Murder of two and more persons”, Art. 24 of the p. 3 — “Preparation for a crime and attempted crime”, Art. 99 of the p. 2 — “Attempted murder”, Art. 192 of the p. 4 — “Holdup by a group of persons”, Art. 287 of the p. 4 — “Arms

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<sup>12</sup> \*\*\*, *Criminal Code of Kazakhstan: Practical guide*, Almaty, “Norma-K Publishing House” LLP, 2016, p. 28.

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trafficking", Art. 288 of the p. 2 "Illicit manufacturing of weapon", Art. 291 of the p. 4 — "Stealing of weapon", Art. 200 of the p. 4 — "Carjacking", Art. 126 of the p. 2 — "Illegal imprisonment" of the Criminal Code of Kazakhstan.

Thus, it is possible to draw such conclusion that even though the penalty isn't allocated in the existing Criminal legislation of the Republic of Kazakhstan in the independent purpose of criminal penalty, at the same time, it is present in it, as reflects contents and legal essence of the punishment.

Criminal penalty without penalty elements as a result of determination of which, to the person who has committed a criminal offense when certain deprivations and sufferings aren't caused to the guilty person can't be recognized as criminal penalty.

Other aspect of punishment, which also needs in specification and reconsideration for increase in efficiency of its application, is the purpose of punishment and a condition of its application, fixed in part 2 of the article 39 of the Criminal Code of Kazakhstan "A concept and the purposes of punishment" as reinstatement of social justice and not causing physical sufferings or humiliation of human dignities.

It is necessary to notice that establishment by the criminal legislation of RK and the CIS countries before punishment of a main objective as reinstatement of social justice was caused a polemic in the scientific environment.

Ambiguity of a position of scientists-lawyers in the matter is caused, from our point of view, that at determination of punishment it is difficult and somewhere it is impossible to provide them.

Let's consider in more detail. Really, at determination of punishment it is made an attempt by the state to restore pre-criminal state of the victim by various means, established in the law. For example, compensation of material and moral damages, confiscation of property, penalty and another.

According to ones scientists, punishment doesn't possess restoration function that the proclaimed purpose – is restoration of social justice, and it doesn't correspond to the content of punishment. The possibility of restoration of the violated rights exists only within civil, but not at realization of criminal and legal relationships. Criminal penalty can't compensate the physical and moral damage, caused by committed criminal offense. It is capable to satisfy only feeling of social justice (which, in this case, is similar to "out of revenge").<sup>13</sup>

Other scientists claim that criminal penalty has potential to restore social justice as it is allocated reconstructive<sup>14</sup> or compensatory<sup>15</sup> properties.

That is it is about possible restoration of the rights broken by a criminal offense or to compensate the caused damage, as a result of application of criminal penalty.

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<sup>13</sup> A. L. Tsvetinovich, *New Criminal code of the Russian Federation: achievements and miscalculations*, Moscow, Crime and law, 1996, p. 8; Ya. I. *Criminology: course of lectures*, Sankt Petersburg, 2002, p. 315.

<sup>14</sup> A. V. Naumov, *Criminal law. General part: course of lectures*, Moscow, 1996, p. 364.

<sup>15</sup> A. I. Korobev, *Russian criminal law: course of lectures*, tome 2, Vladivostok, 1999, p. 42.

At the same time, according to scientists it is difficult to establish how there are achieved such objectives of punishment as restoration of social justice, as, so far there is no developed complex of retaliatory measures and indicators of efficiency of their application because of their scientific non-readiness.<sup>16</sup>

According to the Russian scientists, restoration of social justice as process is a reduction in a former condition of legitimate rights violated by means of criminal encroachment, duties and interests of natural and legal entities, societies, the state and the world community.<sup>17</sup>

We adhere to this position that punishment can restore social justice only in some cases.

For example, how it is possible to restore social justice if it is about murder or rape. Or as it is possible in sentencing process which is a measure of the state coercion, not to inflict physical suffering (application of the handcuffs, support under escort, movement in the special vehicle, etc.) or humiliation of human dignity (place the person in a cage at the trial, showing on television, the publication in mass media, etc.).

Therefore obviously impracticable provisions, concerning restoration of social justice or non-inflicting of the physical sufferings at the determination of punishments, in the Criminal legislation of the Republic of Kazakhstan which were put in CC of the Kazakh SSR of 1959 and were passed step by step at first into the Criminal Code of Kazakhstan 1997, and then from it into the Criminal Code of Kazakhstan of 2014, in our opinion, need reconsideration and specification.

Especially, separate provisions of the existing the Criminal Code of Kazakhstan, by results of two years' law-enforcement practice, are exposed to fair criticism from the management of the Prosecutor General's Office, representatives of the judiciary and other law enforcement agencies of the Republic of Kazakhstan now.

This situation doesn't reflect the true content of criminal penalty, but also significantly complicates work of law enforcement agencies and their activity, which recently becomes more and more transparent and available to mass media and for all society, proceeding from directions of the Head of our state, Leader of our Nation, President N. A. Nazarbayev.

In the given matter the position of the Russian scientist V. N. Orlov is interesting, who notes that any criminal penalty, it always deprives or limits the certain legal behavior condemned in the choice, where besides the subjective rights there are also entered the legal opportunities which are legitimate interests of the personality.<sup>18</sup>

In our opinion, the focus should be only on the punishment for deeds, and the maintenance of a penalty, that is punishment has to be corresponded to

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<sup>16</sup> S. I. Kurganov, *Punishment: criminal and legal, criminal and executive and criminological aspects*, Moscow, TK Velbi, "Prospect" publishing house, 2008, p. 14.

<sup>17</sup> A. V. Naumov (ed.), *Modern criminal law. General and Special parts: manual*, Moscow, Ileksa, 2007, p. 222.

<sup>18</sup> V.N. Orlov, "Criminal penalties which aren't connected with isolation of the convict from society," in *Criminal law*, VI (2006), p. 53.

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gravity of the committed crime. Then social justice and a preventive role of the criminal legislation will be provided.

B.K. Shnarbayev is absolutely right that punishment always causes to the criminal certain deprivations, sufferings. They can be physical, moral, material and other character. At condemnation to imprisonment, the convict is limited in a number of the personal rights and what is the most important - freedom. At application to the convict of a penalty, confiscation of property he has worsen financial position.<sup>19</sup>

The criminal legislation has to be rigid, even cruel concerning the ardent criminals who are repeatedly judged, committing crimes intentionally and their stay in society represents the increased danger to the people around. They should be isolated from society, certainly.

At the same time the criminal legislation has to show humanity concerning persons for the first time committed crimes, especially if it is about the crimes committed on imprudence.

According to U.S. Dzhekebayev, the correct explanation of the purposes of criminal penalty has great theoretical and practical value. It is well-known that in society nothing becomes without conscious intention, without the desirable purpose. From there it is clear an importance of a clear idea of the purposes of criminal penalty. The purposes, determined by the legislation, influence, on the one hand, the choice of means, and with another, the chosen means influence a way of implementation of this purpose. Knowledge of these difficult dependences it is necessary both for improvement of the legislation, and for its practical application.<sup>20</sup>

Thus, for ensuring high efficiency of punishment determination, it is necessary to be defined conceptually before in the true content of criminal penalties and its purposes.

## Conclusion

In our opinion for reduction in compliance of form and content of the article 39 Criminal Code of Kazakhstan of 2014 "A concept and the purposes of punishments", it is possible to offer a new edition of the above-stated article, taking into account the maintenance of criminal policy of our state, it would exclude polemic in this matter as much as possible and would more reflect the true content of punishment.

1. Punishment is the measure of the state coercion, appointed according to the court verdict concerning the person, found guilty of commission of the criminal offense, provided by a special part of the Criminal Code of Kazakhstan.

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<sup>19</sup> B. K. Shnarbayev, *Punishment according to the criminal legislation of the Republic of Kazakhstan. Manual*, Almaty, Daneker, 2002, p. 9.

<sup>20</sup> U. S. Dzhekebayev, *The basic principles of criminal law of the Republic of Kazakhstan (the comparative comment to J. Fletcher and A.V. Naumov's book "The main concepts of modern criminal law")*, Almaty, Zhety zhargy, 2001, p. 2.

2. Punishment is not only a penalty for deeds, and also is directed to correction of the convict and the prevention of commission of new criminal offenses, both the convict, and other persons.

3. It isn't allowed an independent change (decrease, excess) of limits of the punishment, established by court at its execution.

Especially, as in the right also the purpose is defined as the expected and desired result of realization of these or those opportunities of reality which have been previously estimated and chosen.<sup>21</sup>

It is necessary to take into account words of famous Cesare Beccaria who fairly noted that the punishment purpose, therefore, consists in the prevention of the new acts of the criminal, doing damage to citizens of the society and in keeping out of others from similar actions. Therefore it is necessary to accept such punishments and such ways of their use which being adequate to the committed crime, would make the strongest and longest impression on souls of people and wouldn't inflict on the criminal considerable physical suffering.<sup>22</sup>

It is necessary to remember that the main mission of the existing Criminal Code of Kazakhstan has to be directed to the solution of the main objectives of the criminal legislation such as: protection against socially dangerous encroachments of the rights, freedoms and legitimate interests of the person and the citizen, property, the rights and legitimate interests of the organizations, public order and safety, the environment, the constitutional system and territorial integrity of the Republic of Kazakhstan protected by the law of interests of society and state, protection of the peace and safety of mankind, and also the prevention of criminal offenses, decrease in number of the prison population of our country, increase in efficiency of the criminal legislation and law-enforcement system and the most important creation of a favorable situation for further development and prosperity of the Republic of Kazakhstan.

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<sup>21</sup> V.N. Orlov, A.I. Ekimov, "The purpose in the norm of the Soviet law," in *Jurisprudence*, V(1968), p. 22; D. A. Kerimov, "Category of the purpose in the Soviet law," in *Jurisprudence*, III (1964), p. 54; \*\*\*, *Mechanism of criminal behavior*, Moscow, 1981, p. 42; V. V. Luneev, *Motivation of criminal behavior*, Moscow, 1991, p. 67.

<sup>22</sup> C. Beccaria, *About crimes and punishments*, Moscow, "Steals", 1995, p. 106.

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## **The Peculiarities Of Pedagogical Projects Implementation For Identification And Development Of Giftedness In Children\***

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**Abstract.** Today one of the most important aspects in the sphere of education is the work with gifted and talented children, with high intellectual potential and extraordinary abilities. There are educational institutions, social projects and public organizations, funds, whose main goal is to identify, teach and bring up gifted children. However, in the process of organization the work with gifted children, there are many issues, need to be resolved. In these conditions, the issues of studying, analyzing and generalizing the experience of implementing various innovative approaches, aimed at the creation of optimal conditions for identifying and diagnosing gifted children, the development of their individual educational trajectories, and the use of innovative pedagogical technologies, acquire special significance.

The article analyzes the problem of identifying and developing the giftedness of children. The experience of development and implementation of pedagogical projects in Elabuga Institute of Kazan (Volga region) Federal University is summarized in the context of considered problem. The main directions of improving the work in this area and the possibility of applying this experience in practice are outlined in the research.

**Keywords:** education, giftedness, revealing of giftedness, development of gifted children, innovative approach, pedagogical project.

### **Introduction**

In the conditions of rapid intensive development of information world and all spheres of life and human activity, new requirements are imposed on the upbringing, development and formation of the younger generation.

Today, it is important not only to provide students with a certain amount of necessary information, but also to create conditions for the development of their intellectual potential, the formation of the need for continuous self-education, self-development, an independent creative approach to solving complex problems, and the desire to gain knowledge throughout life. And the work in this direction should be conducted from the earliest age systematically, consistently, taking into account the age characteristics of children.

In this regard, the issues, connected with the search of the opportunity to identify the powers and to develop the giftedness of children, as the basis for achieving high results in various fields of activity, become significant.

For a long time, the researches were interested in the problems of considering the phenomenon of giftedness (see, for example.<sup>1</sup>

Despite a rather large number of studies on the subject of development of gifted children,<sup>2</sup> many issues need to be resolved. In particular, the problem of

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<sup>1</sup> A. M. Matyushkin, "Gifted and talented children," in *Questions of Psychology*, II (1980), p. 68-78; J. S. Renzulli, "Guiding the gifted in the pursuit of real problems: The transformed role of the teacher," in *The Journal of Creative Behavior*, XVII (1980), no. 1, p. 49-59.

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development the giftedness of children in the process of implementing various pedagogical projects is topical.

### **Giftedness and gifted children.**

At present, the most urgent problems are connected with the organization of training and education of creative, unconventional people, the development of their giftedness. What is meant by the "giftedness", who is the "gifted child"? Modern researchers, developing the theoretical foundations of the giftedness concept have never come to a unity in determining the phenomenon of "giftedness." Thus, in particular, J.S. Renzulli means by giftedness a certain combination of intellectual abilities, exceeding a certain average level of creativity and perseverance. A number of other scientists also believe that creativity and imagination are the main cores of all kinds of giftedness.<sup>3</sup>

Interesting approaches to the consideration of giftedness are presented in Russian pedagogy, 8-11). For example, A.M. Matyushkin believes that if there is no creativity, it makes no sense to speak about giftedness. Scientist emphasizes, that the basis of giftedness is not intellect, but creativity, considering that the "mental" is the superstructure. The most of the authors consider that giftedness without creativity is impossible<sup>4</sup> At the same time, it is emphasized, that giftedness is a systemic quality of personality, developing throughout the life, which determines the possibility of achieving by the person of great (unusual, uncommon) results in one or several activities, in comparison with other people. In addition, the types of activities can be very diverse, for example, in an outstanding athlete - related to the physical activity of a person, in a priest - related to his spiritual interests, and in a great scientist - related to the intellectual abilities.

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<sup>2</sup> K. A. Heller, & N. J. Schofield, *International Trends and Topics of Research on Giftedness and Talent. International handbook of research and development of giftedness and talent*, Elsevier Science Ltd, 2000, p. 123-141; M. N. O. Samedov, G. S. Aikashev, V. Y. Shurygin, A. V. Deryagin, I. A. Sahabiev, (2015). "A study of socialization of children and student-age youth by the express diagnostics methods," in *Biosciences Biotechnology Research Asia*, 12(3), 2711-2722; \*\*\*, "Growing up creatively gifted: a 22-year longitudinal study," in *Creative Child and Adult Quarterly*, V (2002), p. 148-170.

<sup>3</sup> M. U. Gross, *Social and emotional issues for exceptionally intellectually gifted students. The social and emotional development of gifted children*, Washington, Prufrock Press Inc., 2002, p. 19-29; K. A. Heller, *International trends and issues of research into giftedness. Proceedings of the Second Asian Conference on giftedness and talented*, 1992, p. 93-110; D. J. Treffinger, S. G. Isaksen, "Creative Problem Solving: The history, development and implications for gifted education and talent development," in *Gifted Child Quarterly*, IL (2005), p. 342-353; V. V. Yudin, "Pedagogical approaches to the development of giftedness pedagogical messenger," in *Yaroslavl Pedagogical Herald*, III (2008), p. 48-54.

<sup>4</sup> *Ibidem*, p. 48-54; E. E. Merzon, A. N. Panfilov, V.M. Panfilova & O. M. Shterts, "The Multifactor Pedagogical Model of the Development of Giftedness in Children and Youth," in *Middle-East Journal of Scientific Research*, XVI (2013), no. p. 1694-1699; \*\*\*, "Electronic learning courses as a means to activate students' independent work in studying physics," in *International Journal of Environmental and Science Education*, XI "2016), no. 8, p. 1743-1751; V. L. Vinogradov, L. T. Shakirova, L.T. (2012). "Development of seniorities: state and problems." in *Education and Self-development*, V (2012), no. 33, p. 150-155.

The analysis of various concepts shows, that giftedness is a rather complex concept. And according to statistical data, each person has some extraordinary abilities. That is, giftedness, most likely, is not an exception, but a rule. An exception is a lack of giftedness. Herewith, a person doesn't need to be gifted in all areas at the same time.

A gifted child is a child, who stands out with bright, obvious, sometimes outstanding achievements (or has internal prerequisites for such achievements) in one or another kind of activity. In this regard, today the most urgent issues are the following: the identification of talent, the correct definition of the area, where the child can achieve maximum results, and the creation of conditions for personal fulfillment in this area. The resolution of these issues involves, first of all, the search for new innovative approaches, forms, projects, aimed at creation of developing environment for children and adolescents. At the same time, as a conceptual basis for identifying and supporting young talents, there are a number of normative documents, among which the concept of the national educational initiative "Our New School" is of particular importance. It reveals the specific features of the strategic development of general education for the coming years, and draws attention to a number of important aspects, such as:

- creation of conditions for the identification, development and support of a gifted child, the realization of his potential abilities at different stages of training and development;
- the use of innovative technologies in working with gifted children;
- pedagogical assistance and support of gifted children.

Thus, the possibility of developing the giftedness of children is the main idea of the activities of various educational institutions.

### **Materials And Methods**

The investigations on identifying and developing the giftedness of children were conducted on the basis of a system of interrelated pedagogical projects, implemented by Elabuga Institute of Kazan Federal University (KFU) in 2014-2016. 312 schoolchildren of different age took part in the research. In addition, the children of primary school age were involved in the pedagogical project "Children's University", middle-aged students took part in the project "InteLLeTo", and senior pupils studied annually at the "Summer Physics and Mathematics School". It should be noted, that during three years, a part of children was involved in the work of all three projects.

### **Results And Discussion**

At present, the creation of psychological and pedagogical conditions, which contribute to the identification and development of gifted children, and the realization of their potential opportunities, play an important role in the improvement of modern society. In the context of the problem, discussed above, KFU has developed and successfully implemented interesting pedagogical projects in Elabuga Institute. The main idea of the projects is the creation of favorable conditions for identifying certain aspects of children's giftedness, the raise of

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interest in the studied disciplines, the formation of the need for self-education and self-development, comprehension of science. These projects assume close network interaction with educational institutions of preschool and secondary general education.

Thus, for the children of preschool and primary school age, the "Children's University" works throughout the school year. Within the framework of this project, various types of studies take place, where the children become acquainted with the fascinating world around them, under the guidance of teachers - professors and associate professors of the university. The subjects of lessons are diverse. The children want to know everything: "What is the time and the clock?", "How does the universe work?", "Where does the electric current come from?", "What were the scientists in ancient times?". Each meeting is a discovery, an interesting and unforgettable journey. Participation of children in this project is an opportunity for real-life communication with excellent teachers, obtaining of new knowledge and self-cognition, developing personal qualities and abilities.

In summer, schoolchildren attend the camp "InteLLeTo" with great pleasure. It operates on the basis of Elabuga Institute. Here, children combine rest with educational activities in various entertaining forms. Lessons are carried out both in classrooms, and in laboratories, and computer classes. Children study not only the laws of physics and chemistry, the basics of mathematics and computer science, the peculiarities of foreign languages and history, but, first of all, try to open the huge world of science. They are shown the strength and power of knowledge. The work with demonstration and laboratory equipment generates particular interest among children. Here, everyone feels like a great scientist, making discoveries and being able to find a scientific explanation for the amazing phenomena of the surrounding world. "InteLLeTo" is a kind of creative platform, where children under the strict guidance of teachers and student leaders, live in a kaleidoscope of various events and competitions, and everyone finds an activity to their liking. Having rested in the camp, the children are looking forward to the next season.

In order to arouse students' interest in studying the Tatar language, history and culture of the Tatar people, to assist in the identification of gifted schoolchildren with special abilities in studying the Tatar language, on the basis of Elabuga Institute of KFU in 2013, the project "Summer Intellectual and Health Camp for the Development of Giftedness in Primary School Students of Tatar Schools and Gymnasiums "Khyyal" ("Dream")", was developed and tested. It is oriented on spiritual and moral education, strengthening the spiritual unity of the multinational Russian people, the development of positive interethnic, intercultural and inter-confessional communications.

The aim of the project is to contribute to the formation and development of national self-awareness, ethno-cultural tolerance and the diverse development of students, in the process of intellectual, creative and socially significant activity, in the conditions of the profile camp. The program represents a combination of various innovative and already approved methods of organizing collective,

intellectual and creative affairs, elements of psychological training, interactive games, practical exercises, discussions, sports competitions and relay races.

At the present time, various children's summer schools, focused on increasing the level of students' training in various areas: physical and mathematical, humanitarian, socio-economic, etc., have acquired special significance and popularity. Within the framework of the project "Summer Physics and Mathematics School", Elabuga Institute of KFU organizes the work of the Republican Summer Physics and Mathematics School (SPMS), on the basis of sport and health camp "Burevestnik". In this project students, completed the 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> grades, participate. The aim of the project is to create conditions for deepening students' knowledge and increasing their interest in physics, mathematics and computer science, preparing for participation in subject academic competitions and contests, developing of cognitive abilities and the need for self-education. The educational process of SPMS includes:

- desk studies and practical classes on obtaining knowledge, mastering the skills, and methods of solving problems of various levels of complexity in physics and mathematics;
- popular science lectures, meetings with leading scientists of KFU, Russia and abroad;
- seminars, laboratory classes, creative competitions;
- scientific-research design under the guidance of teachers and research officers of KFU.

The program of SPMS provides for a deeper and more detailed consideration of theoretical questions in physics and mathematics, the analysis of the features of solving problems of different levels of complexity, work with demonstration, laboratory and multimedia equipment. Lessons are carried out in mobile and computer classes. Special attention is paid to the individual and age characteristics of children. Different types of activities suppose an informal environment and are built in such a way, that every student from a passive listener becomes an active participant, interested in knowing, able to formulate a problem, find a solution and defend own point of view. A great deal of attention is paid to the use of innovative methodical techniques in carrying out various activities. For example, physics lessons include the following techniques:

- 1) do as I do (joint work of the teacher with students, aimed at finding a solution to the task);
- 2) immersion (individual work of students in the process of finding a solution to the task);
- 3) exchange of experience (organization of work in small groups (2-4 people), exchange of ideas, discussion);
- 4) brainstorming (finding a solution to the task, as a result of students' discussion of the solution options);
- 5) hint (familiarization with the algorithm for solving the problem, the subsequent independent solution);
- 6) project method (individual or group design of the problem solution);

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7) use of electronic educational courses in physics, developed and located on the site of distance learning of KFU .

In the school, particular importance is given to the organization of various types of independent work. It is the work with physics sets and independent experimental research, development of computer programs and familiarity with robotics, participation in project activities, promotion of ideas and the search for solutions of academic competition tasks of various levels of complexity.

During the teaching and learning process, excursions to the leading scientific laboratories of KFU are conducted in LFMS. Famous Russian and foreign scientists are not rare guests at master classes, discussions, meetings. First of all, there are the moderators of the International Festival of School Teachers, held annually in Elabuga: M. Choshanov - Professor of the Department of Mathematics of the University of Texas at El Paso, G. Chulkova - Professor of the Moscow Institute of Electronics and Mathematics, E. Petrova - Professor of the Department of Physics, Faculty of Natural Sciences of the Moscow State Pedagogical University, J. Yingprayoon - Professor of physics, vice-president of the International Organization for the Promotion of Science Education to UNESCO from Bangkok, A.I. Fishman - Professor of KFU. This opportunity to communicate with scientists increases the educational potential of children, has a great pedagogic value, forms the culture and thirst for knowledge, promotes their intellectual development and formation. The program of the school also provides for the active rest and rich cultural and creative life, sporting events, insightful excursions, journeys. These activities consider not just participation, but, first of all, rallying, formation of leadership qualities, the need to acquire new knowledge.

The Summer Physics and Mathematics School is a kind of creative educational environment for the development of schoolchildren's giftedness. Here everyone has the opportunity not only to show own abilities, but also to go forward.

According to the statistics, the number of pupils in the physical and mathematical school increases annually (see Table 1).

Table 1

Year	2014	2015	2016
Schoolchildren, completed the 8 <sup>th</sup> grade	15	20	30
Schoolchildren, completed the 9 <sup>th</sup> grade	15	20	30
Schoolchildren, completed the 10 <sup>th</sup> grade	20	25	30
Number of schoolchildren in physical and mathematical school	50	65	90

At the same time, the geography of its participants also grows.

In addition to the presented projects, systematic work is carried out with schoolchildren during the year within the framework of the above-mentioned

problem and in several other areas. In particular, during the academic year, the university's teachers give preparatory courses for schoolchildren, in order to better preparation of students for basic state examination and unified state examination in various academic disciplines. The annual contest on robotics is of particular interest among schoolchildren. In winter, the "Scientific Universiade of Schoolchildren" is held for the students in all educational subjects. Universiade is carried out in several rounds, in extra-mural and intramural forms. All kinds of competitions of scientific and design works of schoolchildren also gain momentum. Every year, the audience and the geography of participants increase.

The main results of the implementation of above projects are the following:

- creation conditions, promoting to identifying and developing the giftedness of children;
- implementation of effective forms of organization of children's recreation, health and activities;
- acquisition of knowledge on the history of native land, on the history of development of the Tatar people and its cultural heritage;
- development of new programs and methods for working with schoolchildren;
- integration of science into school practice;
- formation of positive attitude and interest of schoolchildren, participating in the project, to the school subjects through an exciting and entertaining study of the material;
- participation of schoolchildren in psychological and intellectual trainings;
- creation of the research laboratory for working with gifted children, on the basis of the university, with the participation of the academic teaching staff of the university, teachers of educational schools, gifted students, the public;
- preparation of professional development program for teachers of educational schools on methods of working with gifted children.

### **Summary**

In modern conditions, it is necessary not only to train and educate children, to promote creative and personal development, but also to prepare the younger generation for an active life position. In the solution of these problems, a special place is given to the development of the giftedness of children, the creation of appropriate conditions and environment. It should be taken into account, that the work in this direction must be consistent, systematic, ensuring some continuity.

One of directions of this work is the realization of interesting educational projects, developed at Elabuga Institute of KFU. These projects are oriented to the children of different ages, and each of them, performing certain important functions, is a kind of creative, developing environment. The projects not only promote education and are aimed at improving the level of children's education, but, above all, contribute to the development of abilities, personal qualities, the formation of intellectual potential and the ability to solve complex problems, self-development, and a target setting for high results.

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### **Conclusion**

Such work is carried out not once, but systematically, and this is fundamental, in our opinion. It allows to analyze and to adjust this process. All this, undoubtedly, gives the opportunity to receive positive, meaningful results, as evidenced by the feedbacks of projects participants and their achievements.

In this regard, the described experience in the implementation of a number of pedagogical projects at Elabuga Institute of KFU is relevant and is of great practical importance.

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## Development Of The Expert System Prototype "Medexpert" For Differential Disease Diagnostics\*

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**Abstract.** The task of this article is creation a prototype of expert system "MEDEXpert" which will help to doctors in the analysis of collected data about the patient and the diagnosis. The article describes the "MEDEXpert" system, intended for informational support of medical solutions in medicine using modern information technologies, in particular, image recognition methods. The system uses a general decision-making technique using a differential series and the analogy method. The main problems of the field of creating medical expert systems were analyzed, and with their help the practical principle of the program part of the system was obtained. An integrated approach was proposed to analyze the data and obtain the necessary information for detecting the disease. The Visual Studio 2015 development environment and C# programming language, as well as a set of Windows Forms graphical tools and the Microsoft SQL Server 2015 database management system implemented the prototype. Computer technology intended for the classification, diagnosis, assessment of the state, analysis of the interaction of regulatory and therapeutic processes, selection, evaluation and correction of therapeutic measures. "MEDEXpert" can be used for training specialists.

**Keywords:** database management system, expert system, C#, Microsoft SQL, Visual Studio 2015.

### Introduction

"Intellectual expert systems are used in various fields of medicine. The creation of such projects requires the analysis of their theoretical foundations for further development of an application scope. This article identifies the features of medical expert systems as the main way of knowledge representation in which the systems of rules act, and we obtained the schemes that make it possible to expand their use in clinical medicine. Clinical medicine is a system of scientific knowledge and practical activity, the purpose of which is to strengthen and to preserve health, prolong people's lives, to prevent and treat human diseases".<sup>1</sup>

"Expert systems are represented by complex software complexes that accumulate the knowledge of experts in specific subject areas and replicate this empirical experience for the consultations of less qualified users".<sup>2</sup>

"Nowadays the technologies of expert systems are used in various fields of clinical medicine. The software product "Aibolit", which is intended for the diagnosis, the classification and the correction of acute circulatory disorder therapy among children, as well as ES "Doctor's satellite" can be used as an example. It is intended for the information support of medical decisions in medicine with the use of modern information technologies, in particular, the methods of pattern recognition. The system uses the general method of decision-making using a differential series and the method of analogies. In contrast to the expert systems

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\* Acknowledgements: The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> N. Yu. Vasilenko, *Fundamentals of social medicine*, Chapter 1.1.2. Social and Clinical Medicine. Object, subject and tasks of social medicine.

<sup>2</sup> K. Burov, "Discovery of knowledge in data storage units," in *Open systems*, V-VI (1999), p. 67-77.

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used in medicine "Doctor's satellite" helps to make decisions in the conditions of an ambiguous classification with an incomplete set of patient indices. The method of analogies allows a doctor to foresee cases when a disease goes beyond its usual symptoms, manifesting itself through the symptoms of another disease".<sup>3</sup>

"One of the main purposes of expert systems in medicine is that an expert achieves high results, accumulating knowledge and experience, and if intellectual programs are arranged so that they can act in this way, they will be able to achieve high results".<sup>4</sup>

The project is developed by SQL Server 2016 and provides an advanced, a reliable and a robust performance, helps to penetrate deeper into any data collected from many devices, and also makes it possible to use the cloud for hyper-scaling to make new hybrid scenarios possible.<sup>5</sup>

A prototype of an expert system is called "MEDExpert". It is designed to help doctors analyze the collected data about a patient and make a diagnosis. The current level of information system makes it possible to develop not only the programs that solve similar types of applied problems. A developed expert system solves the problem of an excessive amount of information, the complexity and the laboriousness of its connectivity analysis, and the revealing of symptoms and diagnoses pattern influence on each other.

The main idea of the project is to design the architecture of the diagnosis process, correct from the aspect of medicine and clear for a doctor. Besides, this sphere is dynamic, and knowledge must remain relevant.

In this work, we confine ourselves to a relatively small but a significant set of symptoms of various diagnoses. As a basis, we take one of the most common models: the main database, the list of rules and some strategies for actions, which are used to select the rules that should be used.

## Materials and methods

In the course of the study, the main problems in the field of medicine expert system (ES) design were analyzed, through which a practical result was obtained. The following sequence of actions was chosen:

1. The identification of significant symptoms to set a diagnosis for a patient.
2. An approximate ordering of the obtained symptoms.
3. In order to obtain a sample of symptoms for the prototype expert system "MEDExpert" it was decided to confine itself to the main part of the symptoms

<sup>3</sup> \*\*\*, "Proceedings of RAS system programming", 2002. publishing house: Institute for System Programming of RAS, vol. 3, Moscow, 2002; G. I. Nazarenko, G. S. Osipov, A. G. Nazarenko, A. I. Molodchenkov, "Intellectual systems in clinical medicine. Synthesis of the treatment plan based on precedents," in *Information technology and computer systems*, I (2019), p. 25.

<sup>4</sup> G. I. Nazarenko, G. S. Osipov, A. G. Nazarenko, A. I. Molodchenkov, "Intellectual systems in clinical medicine. Synthesis of the treatment plan based on precedents," in *Information technology and computer systems*, I (2010), p. 25.

<sup>5</sup> SQL 2016 // Microsoft is the official site. - 2017. (Electronic resource). URL: [https://msdn.microsoft.com/en-us/library/mt590198\(v=sql.1\).aspx](https://msdn.microsoft.com/en-us/library/mt590198(v=sql.1).aspx) (reference date: May 8, 2017), accessed on 12. 07. 2017.

and diagnoses, since the work with a common list of symptoms and diagnoses is the task requiring more time-consuming and professional research.

In order to determine the underlying symptoms in the formulation of a correct diagnosis, our project used the experience of experts in this field, such as practicing doctors, and thematic literature was also used.

In order to develop an expert system prototype, C# programming language was chosen, since it provides a more powerful, flexible and a simple programming model. Due to an object-oriented design, C# is a good choice for a quick design of various components - from high-level business logic to system applications that use a low-level code. It should also be noted that C# is also Web-oriented - using simple built-in language constructs, the components can be converted to Web services.<sup>6</sup> In order to develop graphics applications, the IDE-environment was chosen - Visual Studio. The tool is the most functionally saturated and the most adapted one for the use at enterprises. The advantages of this environment use include such parameters as:

- a. A quick code interpretation
- b. The creation of a rich user
- c. The application of development through Visual Studio testing.
- d. An integrated version control system<sup>7</sup>

Visual Studio 2015 supports many additional features, the most important of which are listed below:<sup>8</sup>

- visual editors and XML constructors;
- the support of application development for Windows mobile devices;
- the support of application development for Microsoft Office;
- a visual designer support for Windows Workflow Foundation projects;
- a built-in support for code refactoring;
- the tools for a visual design of classes

#### Discussion and results

The process of an expert system development was divided into 2 steps:

##### Step 1

A problem identification. After the analysis of the medical field and the discussion of the project, the following needs were revealed:

- the identification of major and concomitant diseases;
- the elimination of contradictions in patient's symptoms and diagnoses;
- the disclosure of summation result - when a patient has a certain number of "harmless" diagnoses, which can cause a life threat or the development of complications;

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<sup>6</sup> A. S. Lakhatin, *Programming languages. Textbook*, Ekaterinburg, 1998.

<sup>7</sup> Microsoft Visual Studio 2010 (Electronic resource). - Access mode - <https://www.microsoft.com/ru-ru/SoftMicrosoft/VisualStudioExpress.aspx>, accessed 12. 07. 2017.

<sup>8</sup> Andrew Troelsen. 2013. "C# 5.0 programming language and .NET 4.5 platform, 6th ed.": Trans. from English. - M.: LLC "I.D. Williams, 1312 p.: ill. - Paral. Eng. tit. p. 90,

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- the highest speed - the time for the introduction of data on a patient, the formulation of the request to an expert system and the process of logical conclusion are severely curtailed in clinical circumstances.

The main steps of the expert system practical application are shown on Figure 1:



Figure 1. Stages of ES practical application

Using a developed expert system it is possible to successfully resist the causes of diagnostic errors, such as:

Objective prerequisites for diagnostic errors:

1. An insufficient level of science development;
2. Poorly equipped medical institution;
3. A large amount of a doctor's practical work;
4. An atypical course or the uniqueness of a disease;
5. A low level of medical organization employee training;
6. The errors of laboratory-instrumental studies.

Subjective prerequisites of diagnostic errors:

1. Low qualification, poor general methodological experience;
2. An excessive belief in laboratory-instrumental data (their underestimation or overestimation);
3. A poor organization of a doctor's work;
4. The lack of organization for consultations;
5. Regular errors in diagnosis.

Step 2

Mechanization. Let's consider the basic structure of an expert disease diagnostics system presented on fig. 1.



Figure 2. Expert system operation structure

It contains a data entry unit, a knowledge base (and a database), a result output unit for a user, a unit explaining the decision-making process and personalized recommendations on the tactics for further study. The knowledge base provides a set of logical rules and functions for each of the diseases.

The core of an expert system is the knowledge base, formed with the participation of an engineer (an administrator) according to the knowledge based on the identification of expert knowledge. A knowledge base is a set of output facts and rules, which allows a logical conclusion and a meaningful processing of information. The facts are represented by deep (fundamental) knowledge of medicine, such as the hierarchy of diseases and the hierarchy of characteristics for symptom description. The rules of output are considered to be superficial (control, practical) knowledge, such as the rules for a disease diagnosing by symptoms and disease differentiation. The knowledge base is located in the database tables.

The main elements of the database are the symptoms and diagnoses of patients.

The symptoms are the information easily accessible to a doctor during diagnosing, describing a patient's current situation. Symptoms are drawn up by a doctor from a coherent set of characteristics declared in the knowledge base. The examples of symptoms: "dry mouth", "visual impairment", etc.

Diagnoses are the names of all possible human diseases and their groups according to ICD-10 international classification (the hierarchy of more than 10 000 diagnoses). A diagnosis example: "type 2 diabetes", "coronary heart disease".

"The normalization of data is a certain ordering of records in tables, which ensures a minimum repetition of data, their keeping in a consistent state, a simultaneous input, a correction and an expansion of data interaction. The

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normalization is intended to bring the database structure to the kind providing minimal logical redundancy and does not involve the reduction or the increase in productivity, or in the physical volume of the database".<sup>9</sup>

"The concept of data integrity means the consistency of all data, that is the automatic ability to modify all related data. In order to manage the relational databases, a special group of operations and the universal structured query language (SQL) were developed. The main advantages of SQL are the independence from a specific DBMS, the existence of standards and declarativeness".<sup>10</sup>

The standard functions on data management are the search and the retrieval of data in accordance with specified conditions, the adding and deletion of existing data, the change of data values in accordance with the necessary aspects. The traditional means of the relational database available for a user are tables, filters, queries, software tools (modules and macros), forms and reports.

The system of data organization based on a relational model helps to contain all aspects of a real world simulated entity. The relational data model for the analysis and the processing of medical information suits most ideally to the requirement of a reliable and a long-term data storage, provides a rapid access to them and the implementation of certain operations.

One of the most important advantages of an expert system is the availability of a knowledge base that accumulates the practical experience and the intellectual abilities of the best experts in a given subject area. Knowledge replenishment occurs due to the use of an expert system by each user in order to obtain possible options to make a decision.

A distinctive feature of medicine as a subject area is the fact that the structuring and the transfer of knowledge in the form of a production system is most similar to the process of reasoning and decision making by a doctor.

Since one task of an expert system is training, it has implemented the mechanism for a decision explaining. This allows a doctor to study the list of factors on the basis of which a patient is assigned to this group. A screen displays not only the conclusion about the need for a particular type of survey, but also an explanation of the decision-making process. Thus, the explanatory subsystem enables a person to control the process of reasoning.

When the output mechanism returns knowledge derived from the knowledge base, the interface passes them back to a user in a convenient form. In this diagnostic expert system, you can view the result in the form of visual graphs of percentages.

The advantage of this expert system is the provision of additional information based on the analysis of human physiological and laboratory-instrumental data. For example:

"Quetelet index is the body mass index, with which you can determine the degree of obesity and assess the possible risk of disease development associated

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<sup>9</sup> K. G. Date, *Introduction to database systems*, 8<sup>th</sup> edition, Moscow, Williams, 2005.

<sup>10</sup> *Ibidem*.

with an excess body weight." Quetelet index is determined by a certain formula, an obtained result is compared with the tabulated data, which are shown in Table 1:

Table 1. Quetelet index data

Classification of health conditions	BODY WEIGHT INDEX	
	18-30 years	More than 30 years
Deficiency of body weight	Less than 19,5	Less than 20,0
Norm	19,5-22,9	20,0-25,9
Excess body weight	23,0-27,4	26,0-27,9
The obesity of the 1st degree	27,5-29,9	28,0-30,9
The obesity of the 2nd degree	30,0-34,9	31,0-35,9
The obesity of the third degree	35,0-39,9	36,0-40,9
The obesity of the fourth degree	40,0 and more	41,0 and more

Then, an expert system offers recommendations automatically.

### Conclusions

The prototype "MEDExpert" obtained after the study is the following one. The knowledge base implements the abovementioned structure of factors interaction for a selected prototype section.

The interface to this knowledge base implemented with the Windows Forms tool kit is shown on Figures 3-6.

An authentication mechanism is provided for each visitor, according to which an expert system distinguishes users. This window can be seen on Figure 2.

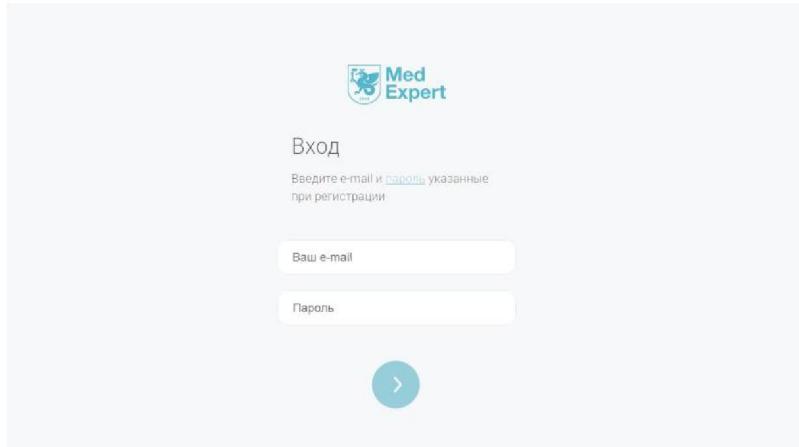


Figure 3. User authentication window

"MEDExpert" expert system can function in 3 modes.

1. The mode of knowledge entry - in this mode, an expert introduces the knowledge of a subject area known to him in the knowledge base of ES or diagnoses patients with severe or rare diseases through the knowledge base editor.
2. Consultation mode - a user conducts a dialogue with an ES, informing it about the current task and receiving the recommendations of ES. For example, based on the information about the physical condition of a patient, a ES makes a diagnosis in the form of a list of diseases most likely with these symptoms.
3. Administration mode - an engineer (an administrator) performs administrative functions, edits information about patients, and updates the authentication processes.

A dialogue between a doctor and an expert system is implemented in the form of a thin client. When an interface was created, the most transparent and convenient structure was chosen. The doctor's menu includes such units as the examination start button, the examination of all patients, and others.

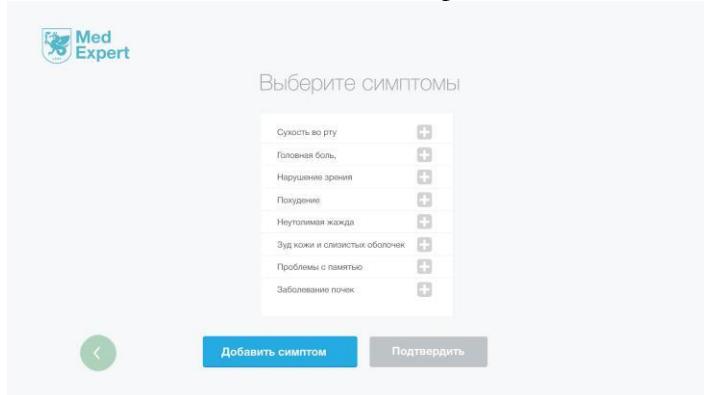


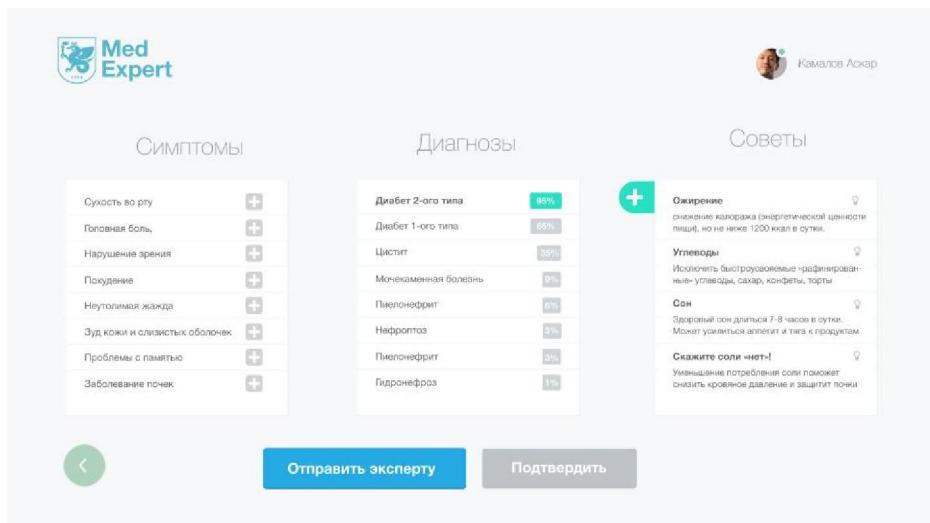
Figure 4. Main user menu

Figure 4 shows the data entry window, through which a physician compiles a list of symptoms and analyzes. The entry of input data is carried out on the basis of

patient observations and his clinical picture. Once all the symptoms and tests have been added, a doctor clicks on the "Confirm" button and automatically proceeds to the consultation results page. The results of the search are shown on Figure 4.

Figure 6. Consultation results

The consultation results are displayed in the form of updated lists of



diagnoses and symptoms, as well as the information on reasoning based on the patient's physical data in the form of a list of rules and the changes made by them.

Further, a therapist can choose a diagnosis (will be highlighted with an alarm color) and confirm his choice. In the case of uncertainty in his reasoning, or suggested to him by an expert data system, a doctor can send this case for the diagnosis to an expert.

### Summary

In the course of the study, a prototype of the expert system was developed, designed to assist physicians in collected data analysis about a patient and a diagnosis determination. For this purpose, an overview analysis of important aspects was performed in the diagnosis of a patient and the practical principle of the prototype operation was chosen. The article describes the developed prototype of the expert system, in which the rules are used as the main way of medical knowledge provision.

The presented expert system underwent some tests on real clinical data and subsequent modification in order to increase the effectiveness of decision making. However, it is necessary to warn users (doctors), as well as medical experts and developers from a possible conclusion that the expert system gives a final and the best solution. Due to its heuristic nature, the expert system is only a decision support system. It is the means of empirical search, high-quality solutions based on the formalized unique knowledge of medical experts in a highly specialized field.

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### **Ways of Character Self-Identification in I. Abuzyarov's Prose\***

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**Abstract.** *The works by I. Abuzyarov, a modern Russian-speaking writer, realizing the phenomenon of cultural borderlands, have a special artistic nature that requires scientifically substantiated and an adequate aesthetic evaluation. One needs to understand its status in relation to the literature of metropolis and mainstream, the place and the role in modern Russian literary process.*

*The methodological system of work study created at the interface of cultures and embodying new forms of "hybrid" identity is based on the doctrine of artistic creativity dialogical nature, as well as on the theory of transculture, developed in foreign and domestic literary criticism. During the analysis of one of the most important aspects of the world model created by the writer - the sphere of characters and the system of their nominations - they used the methods and the techniques of poetic onomastics.*

*Using the material of the stories included in the collections "Kurban-romance" (2009) and "About dislike" (2016), two main ways of character identification were singled out in the writer's small prose: first, the nomination characterizing a hero as the representative of a certain ethnos or culture type, and the designation of characters using the principle of deixis. The first way corresponds to the functional concept of an individual and reveals his social status and role behavior, reveals a person's fate and purpose and his potential capabilities. The second principle is based on the essential characterization of a person: each of the definitions contains an indication of each character individuality mystery and outlines the field of his personality possible interpretations. The conclusion is made that the nomination system used by I. Abuzyarov<sup>1</sup> is conditioned by a special type of subject architectonics of works and their genre nature, which has a hybrid character. The obtained results are significant for the artistic and aesthetic nature of "boundary" phenomenon understanding in the contemporary literary process.*

**Keywords:** Russian-language literature, cultural codes, concept of personality, character, nomination, deixis, genre.

### **Introduction**

I. Abuzyarov is a modern Russian-speaking writer who creates works in the paradigms of Russian, Western European and Eastern cultures. Literature, which realizes the phenomenon of cultural borderland, has a special artistic nature, which requires scientifically substantiated and adequate aesthetic evaluation. Its status in relation to the literature of the metropolis and mainstream, the place and the role in the modern Russian literary process need to be comprehended. It seems necessary to develop a methodological system for work study created at the junction of cultures and embodying new forms of "hybrid" identity.

The interaction of different traditions and elements of different artistic and aesthetic systems determines the specificity of the world image created in the

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\* Acknowledgements: The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University and by RFBR and Government of the Republic of Tatarstan according to the research project № 16-14-16010 a(p).

<sup>1</sup> I. A. Abuzyarov, *Kurban-romance: stories*, Moscow, The book center of the VGBIL named after M.I. Rudomino, 2009.

Russian-language literature, the principles of work subject sphere organization, their genre-compositional and stylistic features. N.L. Leiderman believes that Russian-language literature differs from Russian literature by the following thing: "artistic texts are structurally organized by the dialogue between Russian and foreign models of the world".<sup>2</sup> Zh. V. Burtseva, analyzing the artistic and aesthetic features of the contemporary Russian literature of Yakutia, comes to the conclusion that the works of poets "have traces associated with the construction of a unique artistic picture of the world in the context of not only Russian and Yakut literary traditions but also in the scope of culture as a whole".<sup>3</sup> However, the simultaneous coexistence of different cultural codes and the corresponding languages in a "borderline" artistic text can take a different character depending on the relations established between them. Accordingly, the specific ways of the world picture artistic interpretation offered by Russian-speaking authors will differ.

From this point of view, the works by I. Abuzyarov,<sup>4</sup> characterized by the pluralism of cultural voices, intertextuality, an active use of a game method and the experiments in the field of genres are of particular interest. The transculture of the writer's creativity and the principles of poetics and style that correspond to the transcultural type of artistic consciousness have not been the subject of independent theoretical comprehension so far. Using the material of the writer's stories included in the collections "Kurban-novel" (2009) and "About dislike" (2016), an attempt is made for the first time to analyze one of the most important aspects of the model of the world created by the writer - the character sphere and the system of their nominations.

### **Materials and methods**

Russian language literature is considered in the aspect of the transcultural model for artistic development, which assumes "cultural diversity and universality as the property of one person, the state of one individual virtual belonging to many cultures".<sup>5</sup> The theoretical and methodological basis of the study was represented by the works of domestic<sup>6</sup> and foreign scholars,<sup>7</sup> which substantiate the dialogical nature of artistic creativity.

I.S. Semenenko argues that the existence of "transboundary cultural areas" generates "new forms of hybrid cultural identity".<sup>8</sup> The concept of the proposed

<sup>2</sup> N. L. Leiderman, "Russian literature - a crossroads of cultures," in *Russian literature of the XXth - XXIst centuries: directions and trends*, VIII (2005), p. 48-59.

<sup>3</sup> Zh. V. Burtseva, *Russian-language literature of Yakutia: artistic and aesthetic features of the borderland*, Novosibirsk, Nauka, 2014.

<sup>4</sup> I. Abuzyarov, *About dislike*, Kazan, Idel, 2004.

<sup>5</sup> E. Berry, M. Epstein, *Transcultural Experiments: Russian and American Models of Creative Communication*, New York, St. Martin's Press, 1999.

<sup>6</sup> M. M. Bakhtin, *Aesthetics of verbal creativity*, 2<sup>nd</sup> edition. Moscow, Art, 1986; Yu M. Lotman, *History and typology of Russian culture*, Sankt Petersburg, "Art-SPB", 2002.

<sup>7</sup> J. Kristeva, *Desire in Language: A Semiotic Approach to Literature and Art*, New York, Columbia University Press, 1980.

<sup>8</sup> I. S. Semenenko, "Globalization and social-cultural dynamics: Personality, society, culture," in *Polis*, III (2003), p. 5-23.

study was influenced by the work of domestic<sup>9</sup> and foreign<sup>10</sup> scholars, devoted to the study of this phenomenon. The analysis of character designations in a text that perform identification functions is based on the works of poetic onomastics.<sup>11</sup> Intercultural approaches are also in demand, the effectiveness of which was revealed in a number of modern works.<sup>12</sup>

### Results and discussion

The means of cultural code deconstruction sustainable for the writer and used by him in the stories "Beduinka", "Berber", "Moor", "Adam's Mannequin", etc. is the nomination of characters, referring to a certain cultural and/or national tradition. Thus, in the story "Litter from straws" (2002), the protagonist repeatedly calls himself a fakir, which simultaneously speaks about the type of his activity (the hero is a street musician), and about his distressed financial situation and his world view: the fakir is a Muslim ascetic, who gave the vow of begging. The closeness of people to each other in a crowded trolleybus that reminds of a sacred place for the hero does not irritate him, but, on the contrary, inspires him to commit dhikr<sup>1</sup>. And it is no coincidence that he meets his beloved here.

At first glance, the hero's marginal way of life seems repulsive: he does not have a permanent place of work, stable earnings, he sleeps in attics. But the constant references to Muslim culture make this way of hero's life understandable and reveal the basis of his philosophy of life: he is the supporter of Sufism, and therefore the spiritual and not the material values are the main things in life for him. The hero's beloved girl, comforting him, calls: "Relax, do not think about anything. After all, you know better than me that the troubadours grew out of the Sufis, and troubadours gave birth to Renaissance, and classicism developed from the Renaissance, and jazz and rock'n'roll grew out of classicism. Relax, be like grass, while I'm looking to eat for something" (Abuzyarov I.A. 2009, p. 190). The successive cultural, natural and human series are in one plane, which is an expressive form of their initial syncretism.

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<sup>9</sup> M. V. Tlostanova, *Post-Soviet literature and the aesthetics of transculturation. To live never, to write from nowhere*, Moscow, URRS, 2004.

<sup>10</sup> H. Bhabha, *Nation and Narration*, London, New York, Routledge, 1990; J. Derrida, "The Law of Genre," in *Critical Inquiry*, VII (1980), no. 1, p. 55-81; J. Lacan, *The Language of the Self: The Function of Language in Psychoanalysis*, trans. by Anthony Wilden, Baltimore, Johns Hopkins University Press, 1998.

<sup>11</sup> I. N. Isakova, *Literary character as a system of nominations*, Moscow, Max Press, 2011.

<sup>12</sup> M. I. Ibragimov, R. Kamaliyeva, "Multiplicity of identifications in the cycle by R. Bukharayev «The agony in the garden»," in *Journal of Language and Literature*, VI (2015), no. 4, p. 385-387; A. Motigullina, G. Golikova, L. Zamalieva, "Linguistic and semantic aspects of realization of the concept bird in narrative by V.I. Belov Starling and novella by M.S. Magdeev Where the cranes build their nests," in *Modern Journal of Language Teaching Methods*, Special Issue 2016, p. 48-53; E. A. Smirnova, E. F. Nagumanova, A. Z. Khabibullina, "The role of the reader in interliterary communication," in *Journal of Organizational Culture, Communications and Conflict*. XX (2016), Special Issue, p. 198-201.

This same technique is also used in the story "Beduinka" (2003), in which the narrative unfolds in two planes: everyday plane - the hero has a toothache, and he has to go to the dentist for help, and imaginative plane - the treating doctor seems to him a bedouin<sup>2</sup>, a beauty from the fairy tales "A Thousand and One Nights", performing real miracles. The hero-narrator identifies himself with a warrior, a desert wanderer, whom the Bedouin nurses after a long battle. The hero compares both his dry mouth and the nearest environment, in which no one perceives him as a writer with the Sahara Desert: "Known by no one I was in the ruthless desert of the Sahara among the warring Bedouin clans." The theme of the Sahara also arises in the thinking about his work: "Someone told me that all my stories are coffee. They are all built on solid fried grains. They are built on the seeds thrown in boiling water. That my stories are coffee with sugar. Let it be so – Sahara." Different series of the reality conceptualization turn out to be close and are in the same plane: toothache and sudden love for the bedouin doctor, impromptu written poems and annoyed raisins, creativity and loneliness at night. The multi-line crossing of these rows creates a polyphonic effect. The whole appears as the result of different forces action taken at the time of their transition: from loneliness to love at first sight and to disappointment, from reasoning about one's own creativity to the very act of creativity.

The heart of the compositional organization of the story "Berber" (2004) is based on the same principle of identity-matching, according to which different themes are connected - hairdressers and hangmen, beauty salon and place of execution, haircut and execution, which makes them possible to perceive as similar, even one-order ones. Both semantic plans, going alternately, converge symbolically in the nomination "Berber". So the main character calls the formidable husband of the hairdresser Sarizhat Salavat: "Berber - from the Roman word "barbar", which means "savage, barbarian". But in translation from the Turkish "Berber" is a hairdresser, a barber."

In the hairdressing salon, the hero feels himself as "a martyr, a dervish who voluntarily chose the way to purify the body." Telling Sarizhat his mostly fictional love stories, Abdul as if confessing before execution, makes himself similar to the beautiful Shahherezade, and Sarizhat - to the padishah Rashid al-Harun. However, the theme of death is realized unexpectedly and paradoxically in the story: visiting a hairdresser, he died every time and resurrected as the young Abdul, and in reality Sarizhat dies, killed by Berber husband out of jealousy as the hero guesses. After the collision with him, the hero comprehends the meaning of his name and his destiny in life: "For the first time, Abdul feels himself a humble bearer of his name, the Muslim submissive to the will of the Highest."

The hero of the story "Chingiz-romance" (2004) calls himself Shihi Khutuha (Chingiz Khan's Writ) or Azat Keshe - a free man. He feels like a wolf, a warrior, does not want to wash, and observes Yasu - a set of prohibitions and rules, which can't be changed. The wild, unbridled hero, almost crazy, lives by primitive principles, observes the laws of nomads, but everything changes when he meets Zhenya, who is compared by him with Chingiz Khan's wife Erzen Oelun.

The hero's soul is filled with a painful struggle between "nature" and "civilization", between a spontaneous, cruel and at the same time a heroic way of life, on the one hand, and an awakened sense of personality, an individual beginning, expressed in love for a woman who is perceived as betraying her Khan, on the other. The sequence of questions reflects the disintegration of man's epic integrity and outlines the prospect of a possible mismatch between the hero and his chosen position and role: "Was I really swallowed up by her culture, airy, like a castle, patchwork and cold, like a satin coverlet? Did I give in to it?"

In this struggle the natural strength and martial spirit of the steppe man wins. The hero refuses from love and feminine affection and again feels himself the heir of the khan, the man, led by the star, the great poet Shihhi Khutuha. This process of self-determination and self-identification of the character corresponds to the cyclical concept of time and a circular movement with the return to the starting point. The emotional-psychological state of the hero who voluntarily accepts the revenge of the fifteen teens who beat him is projected onto the laws of the universe and the Cosmos, in the depiction of which the mythopoetic aspect absorbs the personal one: "He will shout." Hurrah! Cut this civilization down with its masters!". He will shout, knowing that a sparkling star likes him - there, in the sky and that he is with the star. And the dizzying feeling of a great spirit will overwhelm his heart ..." The expanding coverage of the world picture, moving along the vertical, opens the Cosmos living according to its laws and realizing its meaning in accordance with the predetermined high goal - the combination of the private and the general, the sky and the earth, top and bottom, statics and dynamics, activity and passivity, the orientation in Outside and the deepening in themselves.

In the story "Moor" (2005), the hero's dream becomes a plot-forming element, creating a probabilistic, indefinite-multiple model of the world, the status of the subject and his fate. At the same time the narrative is organized in accordance with the genre strategy of the parable: an internally united and timeless, teleological picture of the world is created in its universal isolation. The hero, passing through trials and making choices, gradually comprehends himself.

The thirst for personal success and self-assertion push him to play with circumstances, with the laws of the outside world. He accepts the offer to be an attendant, to serve the slot machines, and becomes "Sea cadet": "Being a sea cadet, I felt quite comfortable and cosy in a smoke-filled room with a company of dubious personalities." The hero, a student of the economic department, was able to subordinate the irrational element of the game to rationalistic calculations - he unraveled the "psychology" of machines and soon became rich. Dreaming of becoming a captain and building ambitious plans to open his casino and travel around the world, the hero identifies himself not with a thief, but with a robber.

Social-psychological concreteness and determinism of the events passing in the hero's dreams are inseparably linked with the worldview that allows supernatural intervention in human life. The embodiment of evil fate is represented by the logistics professor, whom the student calls Moor<sup>1</sup>. From the moment of

their meeting, the law of the lack of motives, unexpectedness, randomness starts to act, transforming the chain of events into a sequence of excesses in hero's life: he did not pass the exam, he lost his job, a considerable amount of money was due to "terrible friends", etc. But starting to read "The Book of Your Destiny" - the story of the Phoenician pirate's life during the era of the great caliphs, in order to pass the exam in logistics, the student understands that all the positions to which he falls are fatally determined by his fate.

The situation of playing chess with the Moor is modeled as a conflict between two unequal opponents. The student wishes to win and pass the exam, although he risks losing everything. The Moor acts as a tool of Providence - there are some higher powers behind him. He is the bearer of supernaturalism and appears in the aura of moralistic edification: he explains to the hero what is his fault and what he is punished for, and also gives the religious-philosophical interpretation concerning the problem of the relationship between the nondeterministic freedom of the will of a man and his subordination to the fatal chain of causes and effects. This conversation-duel is characterized by the hero's internal change - his transition from one vital-ideological status to another takes place. From a gambler, a "pirate", he turns into a sovereign, initiative subject of ethical choice, free from the superpersonal motivation: he renounces the teacher's murder predetermined by the book and changes his destiny.

The multiplicity of the character nominations in the story: the student - the attendant - the robber - the patient with clinical pathology - the Phoenician pirate - the man who "lost in the dark forest of his own fears", and the creature creeping towards the waterfall - the tramp, etc. - on one side; the Moor - the doctor - the professor - a terrible man - the magician - the philosopher-theologian - Ali Baba - the examiner - the teacher - on the other is associated with the change in the social status and the emotional and psychological conditions of the narrator. Heteronomativity also reflects the dynamics of the character self-evaluation and the evaluation of his antagonist in various situations.

### Conclusions

So, in I. Abuzyarov's prose, the most important means for a character identification is his nomination, which characterizes him as the representative of a certain ethnus, such as culture: Berber, Bedouin, Fakir, Moor, etc. This method of character nomination performs various functions: it reveals his social status and role behavior, reveals the potential of an individual, the range of his life possibilities, the destiny and the purpose of a person, it reflects the process of his self-knowledge and self-determination.

Another way of character designation is based on the principle of "this-deixis", which establishes existential relations of identity, unity, the interpenetration of human, cultural and natural series. Each of these definitions contains the indication of an individuality mystery of each of the characters and outlines the field of possible interpretations of his personality.

### Summary

The system of nominations in the studied works by I. Abuzyarov is conditioned by a special type of their subject architectonics - the narrative in most of them (except for the story "Berber") is conducted on behalf of the narrator, so his auto nominations and the nominations of other characters play an important role with the identification and / or evaluation character.

Two different principles of character designation correspond to two concepts of personality - the functional one, based on the social status and role behavior of a person, and essential one, built on the characterization of a person as the center of self-consciousness, a subject with free will. The choice of character nomination is influenced by the genre nature of I. Abuzyarov's stories, which has a hybrid character: the texts of the works include the elements of lyrical meditation, fairy tales, myths, parables, anecdotes, fantasies, etc., which introduce various literary and cultural epistemes in a transformed form, creating the rhizomatic model for a text development.



# Features of Deviant Behavior Of Junior Schoolchildren With Developmental Disorders, Depending On The Prediction Level\*

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**Abstract.** *Social problems of modern society, tension of social relations, significant number of social deviation among children and youth determines the need for early prediction and prevention of socialization disorders of the younger generation. A particular risk group includes children with disabilities, which socialization takes place under special conditions, so the task of predicting the threats of their social development seems urgent.*

*The aim of the study was to detect the relationship between the features of deviant behavior and the ability to anticipate future events in the junior schoolchildren with speech, hearing, vision, musculoskeletal system disorders. The study involved 274 schoolchildren aged from 8 to 11 years old (148 schoolchildren without developmental disorders, 126 schoolchildren with developmental disorders). The diagnostic study of schoolchildren was conducted by the method of expert evaluations by Achenbach, the "Guess" method by Peresleni and the "Anticipating the situation outcome with the norm violation" method by Ulyanova V.P.*

*It was found that the ability to predict was determined by the level cognitive development of a child, presence/absence of somatic diseases, experience of social interaction. The anticipation of future events by junior schoolchildren with developmental disorders depends on the health and social experience. Prediction depends on the features of attention, ability to focus, as well as social experience and level of external problems in the schoolchildren without developmental disorders.*

*The materials of this article can be useful for the specialists of educational organizations in the work on preventing behavioral disorders; for the specialists of rehabilitation centers that are engaged in correcting the social and cognitive functions of children with developmental disorders.*

**Keywords:** social norms, prediction, anticipation of future events, junior schoolchildren, children with developmental disorders.

## Introduction

### *Deviant behavior of junior schoolchildren*

In the process of school education, communication with peers and adults, personal development, the pupil, according to Lukasheva (LukashevaE.A. (2009).), comprehends the culture of human experience, gets acquainted with generally accepted norms and rules, as well as develops consciousness and higher mental functions. The inability to understand regulatory requirements reduces the possibility of social adaptation, leads to maladaptation and formation of deviant behavior.<sup>1</sup> The child's assimilation of norms and social roles is considered as a

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<sup>1</sup> T. V. Artemyeva, *Diagnosis and Correction of Development of a Junior Schoolchild*, Monograph, Kazan, Publishing House "Otechestvo", 2013.

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socialization process.<sup>2</sup> The social system in which the pupils' behavior is implemented acts as a socialization space of their personality).<sup>3</sup> The issues of social identification are considered in the works of Platow.<sup>4</sup> The analysis of specialized works<sup>5</sup> shows interest in the problems of understanding the norm by children. The development of intra - and intergroup judgments of children aged 9.5 to 13.5 years old in the context of moral and socially accepted norms is studied by Killen and *et al.*(2013). The article of Burgess<sup>6</sup> explores the impact of teaching junior children (7-12 years old) with social and emotional difficulties in solving problems. Implementation of the moral and social choice of children, depending on their will, has been studied b Chernyak &Kushnir.<sup>7</sup> Nielsen<sup>8</sup> have studied the ritual actions of junior children in the transfer of normative behavior. It has been revealed that children copy actions of others, despite obvious signals of perception in their cause-effect inefficiency. Lindsay<sup>9</sup> have revealed the risks of destructive behavior of people with mental disabilities.

#### *THE ABILITY TO PREDICT IN JUNIOR SCHOOLCHILDREN*

The ability to predict is seen as a resource of successful socialization that is significant for a child with disabilities. Perception of the norm and its understanding allows successfully predicting the future, according to Parsons.<sup>10</sup> The norms and rules allow a person planning, foreseeing, predicting, make it possible to adjust their behavior in the case of "uncertainty" of the situation. The contribution of Soviet/Russian science

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<sup>2</sup> W. Iches, E. S. Knowles, *Personality, roles and social behavior*. N. Y.; Heidelberg, Berlin, Springer-Verlag, 1982, available at: <http://www.springer.com/gp/book/9781461394716>, accessed 12. 06. 2017; M. Killen, A. Rutland, D. Abrams, K. L. Mulvey, A. Hitti, "Development of intra - and intergroup judgments in the context of moral and social-conventional norms," in *Child Development*, LXXXIV (2013), p. 1063–1080.

<sup>3</sup> M. A. Skvortsova, "The Problem of Pedagogical Methods in Creating a Situation of Success in the Educational Environment of a Junior Schoolchild," in *Integration of education*, XIX (2015), no. 4, p. 23-27.

<sup>4</sup> M. J. Platow, D. M. Grace, N. Wilson, D. Burton, A. Wilson, "Psychological group memberships as outcomes of resource distributions," in *European Journal of Social Psychology*, XXXVIII(2008), no. 5, p. 836–851.

<sup>5</sup> N. E. Veraksa, "Modern trends in early childhood education development in the natural cultural paradigm," in *European Early Childhood Education Research Journal*, IV (2014), p. 1–5.

<sup>6</sup> J. Burgess, "The impact of teaching thinking skills as habits of mind to young children with challenging behaviours," in *Emotional and Behavioural Difficulties*, XVII (2012), no. 1, p 47-63.

<sup>7</sup> N. Chernyak, &T. Kushnir, "The self as a moral agent: Preschoolers behave morally but believe in the freedom to do otherwise," in *Journal of Cognition and Development*, XV (2014), no. 3, p. 453–464.

<sup>8</sup> M. Nielsen, R. Kapitany, R. Elkins, "The perpetuation of ritualistic actions as revealed by young children's transmission of normative behavior," in *Evolution and Human Behavior*, XXXVI (2015), no. 3, p. 191–198.

<sup>9</sup> W. R. Lindsay, T. E. Hogue, J. L. Taylor L. Steptoe, P. Mooney, G. O'Brien, S. Johnston & A. H. W. Smith, "Risk assessment in offenders with intellectual disability," in *International Journal of Offender Therapy and Comparative Criminology*, LII (2008), p. 90-111.

<sup>10</sup> T. Parsons, *About Social Systems*, edited by V. F. Chesnokova and S.A. Belanovsky., Moscow, Akademichesky Prospekt, 2002.

to the development of anticipation phenomenon was studied by<sup>11</sup>. According to Regush (2003),<sup>12</sup> the regulation of normative behavior cannot be carried out without constructing a model of the future, or in other words, an acceptor of action results, which makes it possible to compare the action results obtained by the subject with the social norms of a certain group. This regulation aspect is provided by the anticipation (forecasting) processes, acting as a perception component. The plan of constructing a holistic perception of objects determines the knowledge of environment and the identification of social risks to predict the events. The studies of Akhmetzyanova (2014, 2016) have revealed that due to anticipation (forecasting), the junior schoolchild is able to control learning activity, his mental processes acquire qualitative changes associated with the function of consciousness, the communication act is accompanied by predicting his own actions and the actions of other people. Sheeran<sup>13</sup> identified such risk elements as risk assessment, perception, anticipatory and anticipated emotions associated with the change in people's intentions and behavior. Prediction with an incomplete set of factors was studied by Gusev<sup>14</sup>. The effects of early treatment on the cognitive symptoms of social anxiety are reflected in the study of Mills.<sup>15</sup>

## **Materials and methods**

### *Research methods*

To study the features of prediction of junior schoolchildren we used the "Guess" method by others; the "Anticipating the situation outcome with the norm violation" method by.<sup>16</sup>

To study the features of behavior deviating from the accepted social norm we used the method of expert evaluations by Achenbach.<sup>17</sup> We identified the following behavior indicators: restraint; somatics; anxiety; socialization disorders; problems of thinking; problems of attention; delinquency; aggression; internal problems; external problems.

### *Participants*

We examined a total amount of 274 schoolchildren aged from 8 to 11 years old. 148 schoolchildren were without developmental disorders. 126 schoolchildren were with developmental disorders, including 31 schoolchildren with hearing disorders, 29

<sup>11</sup> M. Nadin, "Anticipation: Learning from the Past The Russian/Soviet Contributions to the Science of Anticipation", *Springer International Publishing Series*, XXV (2015), p. 520.

<sup>12</sup> L. A. Regush, *Prediction Psychology: Successes in the Knowledge of the Future*, St. Petersburg, "Rech", 2003.

<sup>13</sup> P. Sheeran, P. R. Harris, T. Epton, "Does heightening risk appraisals change people's intentions and behavior? A meta-analysis of experimental studies," in *Psychological Bulletin*, CXL (2014), p. 511-543.

<sup>14</sup> A. Gusev, A. Okunev, "Forecasting with incomplete set of factors determining the predicted factor," in *International Journal of Applied Mathematics and Statistics*, LVI (2017), no. 5, p. 48-52.

<sup>15</sup> A. C. Mills, D. M. M. Grant, M. R. Judah, W. V. Lechner, "Consequences of anticipatory processing on cognitive symptoms of social anxiety," in *Anxiety, Stress and Coping*, XXVII (2014), p. 394-409.

<sup>16</sup> V. P. Ulyanova, "The Method of Diagnosing the Ability to Anticipate the Situation Outcome with Norm Violation," in *Psychology of Teaching*, XII (2013), p. 154-161.

<sup>17</sup> T. Achenbach, The Method of Behavior Observation. [http://www.miu.by/kaf\\_new/mpp/111.pdf](http://www.miu.by/kaf_new/mpp/111.pdf), accessed 08.08.2017.

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schoolchildren with visual disorders, 41 schoolchildren with visual disorders, 25 schoolchildren with musculoskeletal disorders

*Experimental research base*

The research work was carried out in the educational organizations of the Republic of Tatarstan, Russia:

- secondary general schools No. 10, 51, 75, 132, 169 (for children without developmental disorders);
- "Lastochkina Kazan Boarding School for Children with Disabilities" (hearing disorders);
- "Kazan Boarding School No. 4 for Children with Disabilities" (musculoskeletal system disorders);
- "Kazan Boarding School No. 7 for Children with Disabilities" (severe speech disorders);
- "Kazan Boarding School No. 172 for Children with Disabilities" (visual disorders);

## Results

Table 1. Ability of junior schoolchildren to anticipate future events

	School children without disorders (n=148)	SD	School children with disorders (n=126)	SD	t(274)
scales					
Victim allocation	14.37	2.04	3.20	3.58	<.01 3.22
Offender allocation	14.54	1.91	2.87	2.86	<.01 3.70
Holistic reflection of the external signs of the situation	13.82	2.40	3.34	3.20	<.01 2.98
Norm allocation	13.60	2.30	3.98	2.35	<.01 2.69
Norm acceptance	25.62	5.29	9.54	.06	.915 3.94
Holistic reflection of the internal signs of the situation	24.23	6.33	9.28	.48	.949 3.57
Holistic reflection of both external and internal signs of the	24.24	6.50	9.41	.07	.966 2.50

situation

<i>Exact and complete description of the situation outcome</i>	19.00	6.68		10.24	2.83	<.01
Coincidence of an accurate description of the situation with a holistic reflection of external and internal signs of the situation	19.54	6.96	8.43	10.67	.30	1.074
<i>Total score</i>	168.81	29.0		53.99	2.17	<.01
	7	57.67				

Table 2. Correlation of indicators of deviant behavior and the ability to predict in junior schoolchildren with developmental disorders

Scales	2	3	4	5	7	8	9	10	11	12	13
1	.23**										
2		-.39*		-.21							
3			.34*		.32**	.25**			.21*		

Table 3. Correlation of indicators of deviant behavior and the ability to predict in junior schoolchildren without developmental disorders

Scales	2	3	4	5	6	7	8	9	10	11	12	13
1										.25.		.
2										**		2
3										-.20*	.26	5
										**	.	*
											*	*

*Note:*

1. Overall normativity index
2. Overall anticipation index
3. Prediction errors
4. Restraint
5. Somatic problems
6. Anxiety
7. Socialization disorders.
8. Problems of thinking
9. Problems with attention.

10. Delinquent behavior
11. Aggression
12. Internal problems
13. External problems.

## Discussion

We revealed differences ( $p < .01$ ) with the help of the Student's criterion between schoolchildren with and without developmental disorders according to the "Anticipating the situation outcome with the norm violation" method. The schoolchildren without developmental disorders better allocate the victim and the offender of the norm; analyze the external signs of the situation; allocate a norm, can more accurately and more fully describe the situation outcome. The results of this study are consistent with the studies of Artemyeva,<sup>18</sup> which has found that schoolchildren with developmental disorders cannot adequately represent the results of their own actions or the actions of others, they are poorly oriented in the generally accepted rules and norms of behavior. Life situations are often evaluated biased, a number of elements of the situation are ignored or distorted. As in the studies of Bayanova,<sup>19</sup> we have revealed that the pupil's mastering of norms and rules of school space is determined by the degree to which the pupil has a reflexive ability that determines the possibilities of analyzing the current situation and internalizing the school norms.

The correlation analysis was carried out using the statistical data processing program SPSS 17 and allowed identifying the relationship between the indicators of deviant behavior and the ability to predict in schoolchildren with developmental disorders. The overall normativity index was related to the anticipation index ( $r = .23, p < .01$ ). The ability to anticipate showed feedbacks with prediction errors ( $r = -.39, p < .01$ ); somatic problems ( $r = -.21, p < .05$ ); socialization disorders ( $r = -.20, p < .05$ ). The prediction errors in schoolchildren with developmental disorders are associated with somatic problems ( $r = .34, p < .01$ ); socialization disorders ( $r = .32, p < .01$ ); problems of thinking ( $r = .25, p < .01$ ).

No correlation was found between the normative and anticipatory indicators in schoolchildren without developmental disorders. The prediction errors are associated with the following indicators of deviant behavior: with attention problems ( $r = .26, p < .01$ ); aggression ( $r = .25, p < .01$ ); external problems ( $r = .25, p < .01$ ); delinquency ( $r = .18, p < .05$ ).

The results obtained are consistent with the study of O. A. Denisova (2016), which emphasizes that children with disabilities experience difficulties in predicting the consequences of their actions and the behavior of others; try to avoid pressure of

<sup>18</sup> T. V. Artemyeva, "Normative Behavior of Adolescents with Intellectual Disabilities: a Qualitative Study," in *International Journal of Environmental & Science Education*, XI (2016), no. 7, p. 1551-1558.

<sup>19</sup> L. F. Bayanova, T. Mustafin, "Factors of compliance of a child with rules in a Russian cultural context," in *European Early Childhood Education Research Journal*, 24(2016), no. 3, p. 357-364; A. K. Pashchenko, *Development of Normative Behavior of Junior Schoolchildren: Structural and Dialectical Approach*, Saarbrücken, LAP LAMBERT Academic Publishing, 2012.

rules, norms, requirements. Junior schoolchildren do not understand enough and realize the necessity and expediency of observing social norms, social relations, which can lead to the formation of deviant behavior in schoolchildren.<sup>20</sup>

### **Conclusion**

Junior schoolchildren can anticipate the consequences of their behavior worse than their peers without developmental disorders, experience difficulties with the allocation of two external signs at once (the victim and the offender). Internal signs of the situation (rule and norm) are not important to them. The lack of norm verbalization is inherent in schoolchildren, and they do not analyze possible situation outcome. It is revealed that the ability to predict is determined by the intellectual abilities of junior schoolchildren.

The ability to predict is closely related (inverse relationship) to somatic problems and a violation of their socialization in junior schoolchildren with developmental disorders.

The ability to predict is most often determined by attention problems, aggression and external problems in junior schoolchildren without developmental disorders.

The schoolchildren with developmental disorders often follow the rules of behavior in an educational institution, but the ability to anticipate the behavior consequences by the schoolchildren with developmental disorders is difficult, in contrast to their peers without developmental disorders. The need to study the normative behavior of junior schoolchildren in different spheres of life, the prediction features determines the further development of children, their full inclusion in the life of society.

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<sup>20</sup> O. A. Denisova, O. L. Lekhanova, N. V. Golitsyna, "Problematic Ways of Predicting Threats of the Social Development of Children with Disabilities," in *Bulletin of Cherepovets State University*, IV (2012), no. 3, p. 97 - 101.

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## Communication in the structure of predictive competence of junior schoolchildren with developmental disabilities\*

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**Abstract.** *Introduction: The relevance of the problem of studying communicative features in junior schoolchildren with disabilities is determined by the need to identify components of predictive competence as a predictor of success/failure of the socialization process and the occurrence of various deviations in this category of children. The need to study this problem is due, on the one hand, to the state's course aimed at the successful integration and socialization of persons with a deficit development, on the other, an increase in the signs of deviant behavior in the adolescent environment. This forms the purpose of this study: studying the communicative features of children of primary school age as predictors of the risks of forecasting disruption, the insufficient development of which can lead to the emergence of behavioral deviations.*

*Methods: The basic method of work is an experiment that includes the methods for generalizing the constructive-comparative analysis, collecting anamnestic data of a child, the expert evaluation method, observation of speech activity and behavior of children.*

*Results: The analysis of data obtained during the research made it possible to expand the scientific understanding of the prognostic features of younger schoolchildren with a deficit and normative development at a communicative level.*

*Discussion: The data obtained in the study confirm that the problem of studying the communicative features of junior schoolchildren with a deficit type of mental dysontogenesis in the process of interaction and cooperation, as well as their communication potentials in the structure of prognostic competence, is not sufficiently covered.*

*Conclusions: we proved the influence of the unformed communicative sphere of junior schoolchildren with developmental disability on the development of their prognostic abilities.*

*Summary: The results of the experimental study allowed outlining the directions for further research in the development of diagnostic tools for studying the communicative features of junior schoolchildren with developmental disabilities and developing special individual programs for their development. The data obtained in this study can be used by the specialists involved in the education of children with disabilities.*

**Keywords:** socialization, prognostic competence, communication, communicative features, junior school age, children with disabilities.

## Introduction

The relevance of studying the connection between the communicative features of junior schoolchildren and their prognostic capabilities is due to the general trends in world education and the objectives of the educational policy of the Russian Federation at the present stage aimed at the successful integration and socialization of persons with disabilities.

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The research was carried out with the support of the Russian Foundation for Basic Research and the Government of the Republic of Tatarstan within the framework of the research project № 17-16-16004 "Prognostic competence of younger schoolchildren with disabilities in the prevention of deviations".

To date, a large number of studies devoted to the study of prognostic abilities have been carried out in the psychological, medical, psychological and pedagogical space,<sup>1</sup> revealing the essential characteristics of the concept of prognostic competence (anticipation consistency) as "the ability of an individual to anticipate the course of events, to predict the development of situations with a high probability and to react to them, to act with temporal-spatial anticipation", note that one of the actual and little-studied areas is the problem of studying the predictive abilities of the communicative level today. This issue is especially acute in relation to people with disabilities. This forms the purpose of this work: to study the communication features as predictors of predictive competence, determining the success/failure of socialization of persons with health limitations in the younger school age.

The socialization of children with disabilities is complicated by the following: due to the underdevelopment of speech and the complex defect structure (a combination of verbal and non-verbal violations), the inclusion of a child with deficit development into the system of social relations is complicated. It also manifests itself in the difficulty in the child's mastering the position of the subject of interpersonal interaction at the level of verbal communication and the ability to arbitrarily regulate his behavior and activities. The researches of <sup>2,3</sup> are devoted to the issues of studying the complexities of social communication of pupils with autistic spectrum syndrome (ASD). The works of <sup>4,5</sup> reflect the issues of interrelation of social interaction of children with speech disorders and their communication features. The complex communication needs of children with hearing impairment and cerebral palsy are discussed in the works of <sup>6</sup>. And the

<sup>1</sup> N. P. Nichiporenko, "Phenomenon of Anticipatory Abilities as a Subject of Psychological Research," in *Psychological Journal*, V (2006), p. 50-59. URL: <http://www.studfiles.ru/preview/4225082/page:6/>, accessed 31. 03. 2017; A. A. Tvardovskaya, A. I. Akhmetzyanova, T. V. Artemyeva, I. A. Nigmatullina, "Anticipation Phenomenon in the Structure of Deviance: Analytical Research Review," in *International Journal of Humanities and Cultural Studies (IJHCS)*, III (2016), no. 1, p. 418-425. URL: <http://ijhcs.com/index.php/ijhcs/issue/view/18>, accessed 04. 04. 2017.

<sup>2</sup> Melissa A. Sreckovic, "Examining the Efficacy of Peer Network Interventions on the Social Interactions of High School Students with Autism Spectrum Disorder," in *Journal of autism and developmental disorders*, III, (2017), no. 8, p. 2556-2574

<sup>3</sup> A. Mrachko, (2017). "Examining Paraprofessional Interventions to Increase Social Communication for Young Children WithASD," in *Topics in early childhood special education*, XXXVII (2017), no. 1, p. 4-15.

<sup>4</sup> J. Marshall, "Language development, delay and intervention the views of parents from communities that speech and language therapy managers in England consider to be under-served / J. Marshall, S. Harding, S. Roulstone," in *International journal of language & communication disorders*, LII (2016), no. 4, p. 489-500.

<sup>5</sup> A. Sylvestre, "Social participation of children age 8–12 with SLI," in *Disability and Rehabilitation*, XXXVIII (2016), no. 12, p. 146-156.

<sup>6</sup> K. Bunning, "Investigation of practices to support the complex communication needs of children with hearing impairment and cerebral palsy in a rural district of Kenya: a case series," in *International Journal of Language & Communication Disorders*, III (2013), p. 689–702.

issues of complex communicative disorders in children with intellectual disorder are presented in the works of.<sup>7</sup> The analysis of modern researches has shown insufficient knowledge of the problem of complex comparative analysis of communication features in children of this category and their influence on their prognostic abilities.

Considering socialization from the point of view of assimilation of social norms of a society, it is necessary to note the importance of communication in the process of social interaction and cooperation and it is important to be able to forecast possible results, analyze the structure of interaction and cooperation, and determine the necessary language facilities in this interaction.

A special stage of socialization is the junior school age, since the change of leading activity (from game to training) involves changing the norms of behavior, rules and regulations, the emergence of a need for a qualitatively new communication with peers, that is, communication is a leading mean of cognizing the world. At this stage, the ability to predict the results of communication begins to play a special role, since the junior schoolchild masters and develops adequate forms of interaction and cooperation in communicating with peers and adults.

Since forecasting is aimed at foreknowledge, those communicative features that ensure successful knowledge of the future will be significant and sufficiently fully manifest in establishing the causal relationship, planning, promotion and development of hypotheses, in the reconstruction and transformation of representations in accordance with a given goal for the success of this activity. Speaking about the prognostic competence, it should be noted that forecasting the results of activities is particularly difficult for children with developmental disorders, since forecasting is related to the ability to analyze the situation, find its key sides and track its development. Children with disrupted development find it difficult to keep the program of action, to allocate the main program and to bring the program to its logical conclusion. Particular difficulty is represented by the prediction of communication results, the analysis of the communication situations, the selection of adequate communication means.

Within our study, communication is seen as a process of interaction, cooperation. The state of speech communication is considered separately. An important milestone in the development of communicative abilities in interaction is the overcoming of egocentric position in interpersonal and spatial relations, the formation of understanding the variability of speech actions, different positions and views on the subject, situation; the relativity of evaluations and approaches to choice; the consideration of different opinions, respect for a different point of view; the argumentation of their position.

The core of communication features in cooperation is the coordination of efforts to achieve a common goal, organization and implementation of joint activities, the ability to negotiate, come to a common decision, convince one another, argue their proposals, exercise mutual control and mutual assistance in the

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<sup>7</sup> B. Karen, "Developing the personal narratives of children with complex communication needs associated with intellectual disabilities: What is the potential of Storysharing((R))?", in *Journal of applied research in intellectual disabilities*, XXX (2016), no. 4, p. 743-756.

course of performing activities, and the focus on a partner in the activity, emotional attitude to joint activities is a necessary prerequisite for this.

The state of verbal communication is determined by the ability to listen to the interlocutor and to conduct a dialogue; to ask questions depending on the situation of communication, to state their opinion, to argue their point of view and evaluation of events, to consciously use speech and non-speech (paralinguistic) means in accordance with the communication task, to express their feelings, thoughts and needs, to master oral monological (contextual) speech and written speech, to carry out communicative and speech tasks independently.

## Methods

We applied the method of comparative analysis in the course of research. We used the diagnostic model of E.L. Cherkasova, E. N. Morgacheva "Identifying the Formation of Communicative Skills" in the experiment.<sup>8</sup> The processing of the data obtained was carried out using the method of mathematical statistics "Student's t-test", which made it possible to estimate the differences between two samples. The data were mathematically processed in the IBM SPSS statistical program. The experimental work was carried out in the general educational organizations of Kazan. The study involved 173 students aged from 7 to 10 years old. We formed five samples of the persons tested: schoolchildren with hearing impairment (32 people); with severe speech disorders (40 people), with visual impairment (30 people), with the musculoskeletal system disorders (25 people), with normative development (46 people).

## Results

Based on the results of performing the task of the methodology "Identifying the Formation of Communicative Skills", we revealed the features of communication between younger schoolchildren in the process of interaction, cooperation, and the state of speech communication, as well as determined the levels.

The distribution of schoolchildren, depending on the level of communication formation, is presented in Table 1.

<sup>8</sup> E. L. Cherkasova, *Speech Communication of Children of Primary School Age: Study, Diagnosis and Development*, Moscow, National Book Center, 2011.

Table 1. The levels of communication skills in junior schoolchildren with normative and deficit development

Respondents Levels	Communication forms											
	as interaction (persons/%)			as cooperation (persons/%)			speech communication (persons/%)			Total (persons/%)		
	High	Basic	L o w	High	Basic	L o w	High	B a s i	L o w	H i g h	Basic	L o w

							c				
Schoolchildren with hearing impairment (sensorineural hearing loss of the IV stage)	0/0	1/3	3 1 /9 7	0	14/44	1 8 /5 6	0	3 /9 9 9 1	2 0	4/13	28 /8 7
Schoolchildren with visual impairments (myopia, amblyopia, convergent strabismus, nystagmus)	17/57	12/40	1 /3	18/60	12/40	0 /0	7/23	2 2 /3 7 4	12 /40	17/57	1/ 3
Schoolchildren with speech disorders (general speech underdevelopment)	1/3	22/55	1 7 /4 2	0/0	30/75	1 0 /2 5	0/0	1 8 2 /4 5 5	2 /0 /0	24/60	16 /4 0
Schoolchildren with musculoskeletal system disorders (spastic tetraparesis of different severity)	2/8	13/52	1 0 /4 0	2/8	18/72	5 /2 0	3/12	1 2 0 /4 4 8	2 /8	14/56	9/ 36
Schoolchildren with normative development	24/52	20/43	2 /5	28/61	17/37	1 /2	24/52	1 9 /7 4 1	3 /37	27/58	2/ 5
Total (health limitations/no rm)	20/24 16/52	48/20 38/44	5 9 /2 4 6 /4	20/28 16/61	74/17 58/37	3 3 /1 2 6 /2	10/24 8/52	5 5 /1 1 9 4 3 /4 1	6 2 /17 3 4 9 /7	59/27 46/59	54 /2 43 /4

Comparative analysis, carried out using the Student's t-test, allowed revealing the statistically significant differences between the samples in the communication formation in junior schoolchildren with health limitations and normative development. Thus, the group of schoolchildren with normative development have the indicators of "communication as interaction" ( $t = 6.877$ ,  $p \leq 0.001$ ), "communication as cooperation" ( $t = 6.800$ ;  $p \leq 0.001$ ), "state of speech

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communication" ( $t = 8.054$ ;  $p \leq 0.001$ ), which are significantly higher than in the group with deficit development.

The quantitative and qualitative analysis of the results showed that children with limited health abilities were dominated by low level of speech communication (49%) and communication in the process of interaction (46%). This is manifested in the inability to predict socio-psychological situations and program the upcoming communication, to manage this process in the socio-psychological aspect due to the inability to plan a communicative situation and predict its outcome, to implement a communicative plan in accordance with the social norms by finding appropriate communication methods of communication and forms of interaction between people. The analysis of performance indicators of the tasks aimed at studying communication as a collaboration showed the predominance of average level of communication skills in this category of respondents (58%), which indicated difficulties in implementing the overall plan, mutual control during the performance of activities due to the unformed ability to negotiate, come to a common solution, to convince each other, to argue their proposals, to provide mutual assistance. During cooperation, the students interacted with each other because of necessity, more often they ignored each other, argued, quarreled, which indicated a neutral emotional attitude to the communication process. The junior schoolchildren with normative development showed rather high results: high level of communication in 37% of respondents, average (basic) level - in 59%. The analysis of the results obtained showed that for younger schoolchildren with normative development had also some difficulties in the actualization of such concepts as "question", "reason", "reasoning", when arguing their own point of view, as well as had some difficulties in performing tasks in the groups: difficulties in making general decision, not an adequate choice of speech resources. However, their level of speech communication is much higher than the level of junior high schoolchildren with health limitations. Children analyze the social situations of communication, make attempts to predict the results of their communication, show good interaction in pairs and groups.

## Conclusions

The communicative features of junior schoolchildren, established in the study, served as the basis for distinguishing the communicative characteristics of prognostic competence, and allowed assuming that their insufficient formation might be a predictor of the emergence of behavioral deviations in the socially significant spheres.

We have established that the ability of a junior schoolchild to predict the communicative situation and to orientate in it, to find an adequate communicative structure and to implement a communicative plan, to understand his own psychological potential and partner potential, affected his prognostic competence.

## Summary

The data on the relationship between the difficulties of communication of children with disabilities and socialization existing in the modern studies give grounds to consider the specific communication features of junior schoolchildren with the developmental disorders as predictors of the violations of prognostic abilities. This proves the need for further empirical study of the specific features of prognostic competence of junior schoolchildren, taking into account the peculiarities of their communication in normogenesis and dysontogenesis in such socially important spheres of relations as: relationships in education, relationships with the teacher, with peers, relationships in the family, with adults, relationships in the Internet space, attitudes toward one's own health. Each of the socially important spheres is a necessary part of the socialization space; each of them sets special requirements for communication, the language and paralinguistic means used to anticipate the future, to predict the consequences, is a condition for the development of communicative functions. It should be noted that it is necessary to create a diagnostic tool to assess the formation of prognostic abilities, in particular, communicative ones with the goal of preventing deviations in the system of psychological and pedagogical support for children with developmental disabilities.

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## Specificity Of Cognitive Component Of Prognostic Competence In Schoolchildren With Hearing Impairment\*

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**Abstract.** *Prognostic competence today is treated as the ability to make certain decisions and act with a certain temporal and spatial prediction in relation to future events. In domestic and foreign psychological sciences, the investigations of ontogenetic development of anticipation, its clinical aspects in the context of professional pedagogical activity, are carried out, and also the psycho-physiological principles of prognostic activity are of great interest. But nevertheless, this phenomenon is underexplored in children with hearing impairment; there are no studies for determining the cognitive features of anticipation in children with special need.*

*Any kind of cognitive activity includes, to some extent, a forecast of what can happen, as well as the preparation of the subject for the upcoming events. Activation of the mechanisms of probabilistic forecasting is exerted in the regulation of the range of preliminary adjustment of all psycho-physiological systems, including the subsystems of the organism to the expected probable changes in the environment of the child. At the same time, the process of probabilistic forecasting determines the functional structure of activity regulation in the sphere of mental processes. The manifestation of the ability to predict in thinking activity characterizes the level of formation of the processes of mnemonic and mental operations regulation, in other words, prognostic activity is closely related to cognitive processes. As a result, effective forecasting is an element of regulation of activity, behavior and, as a whole, participates in the processes of personal adaptation to changing environmental conditions.*

**Keywords:** forecasting, anticipation ability, cognitive function, younger schoolchildren with hearing impairment.

### Introduction

P.K. Anokhin and N.A. Bernstein<sup>1</sup> studied forecasting and prognostic activity; <sup>2</sup> and L. I. Peresleni<sup>3</sup> studied these issues in norm and pathology. The state of behavior, <sup>4</sup> the anticipatory skills of children with speech disorders

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<sup>1</sup> N. A. Bernstein, N.A. *Studies on the physiology of movements and the physiology of activity*, Moscow, Publishing house of the Institute of Practical Psychology, 1997, p. 342 - 458.

<sup>2</sup> V. D. Mendelevich, "Anticipatory mechanisms of neurotic genesis," in *Psychological Journal*, XVII (1996), no. 4, p. 107 - 115.

<sup>3</sup> L. I. Peresleni, "A study of prognostic activity for characterization the level of mental development of children," in *Defectology*, VI (1982), p. 11 - 17.

<sup>4</sup> T. V. Artemyeva, "Normative Behavior of Adolescents with Intellectual Disabilities: a Qualitative Study," in *International Journal of Environmental & Science Education*, XI (2016), no. 7, p. 1551-1558.

were studied by A.I. Akhmetzyanova (2014-2016),<sup>5</sup> the problems of forecasting, which affect the social sphere of children with disabilities were explored by Denisova.<sup>6</sup> A large number of authors investigated the prognostic ability in terms of general and special psychology, such as L.A. Regush (1997),<sup>7</sup> Y.P. Zinchenko & E.I. Pervichko (2012).<sup>8</sup>

Individual researches in the field of cognitive psychology were conducted by R. Solso (2006).<sup>9</sup> However, qualitative and quantitative results of studies of schoolchildren with hearing impairment are absent, as well as the correlation of cognitive components in comparison with children with normal psycho-physical development is not defined.

The main question, solved in this article, is a comparative analysis of the problems of prognostic activity and its cognitive specificity in younger schoolchildren with hearing impairment and junior schoolchildren with normal psycho-physical development.

**The purpose of the study** is to reveal the specificity of cognitive component of the prognostic competence in junior schoolchildren with hearing impairment.

### **Materials and methods**

Methodological basis: the technique "Ugaday-ka" (Persleni, 2014). When processing the data and analyzing them, the following indicators were taken into account:

- 1) Indicator I - the number of erroneous predictions - this indicator reflects the rate of formation of an adequate forecast.
- 2) Indicator II - the number of errors of "abstraction" - the formation of regulatory processes, the stability of voluntary attention.
- 3) Indicator III - correct reproduction of the orders of three sets - the feature of long-term memory, the particular abilities for "information readout".

<sup>5</sup> A. I. Akhmetzyanova, "Spatial and temporal elements of anticipation consistency of children with general speech retardation," in *American Journal of Applied Sciences*, XI (2014), no. 7, p. 1031-1035; A. I. Akhmetzyanova, "Anticipation and Prediction Interrelation Neuropsychological Mechanisms at Youthful Age," in *The Social Sciences*, X (2015), p. 399-401; A. I. Akhmetzyanova, T. V. Artemyeva, I. A. Nigmatullina, A. A. Tvardovskaya, 2016, July). "Anticipation Phenomenon in the Structure of Deviance: Analytical Research," in *International journal of humanities and cultural studies*, Special Issue, 2016, p. 418-425.

<sup>6</sup> O. A. Denisova, O. L. Lekhanova, N. V. Golitsina, "Problematic ways of forecasting threats to the social development of children with disabilities," in *Bulletin of the Cherepovets State University*, IV (2012), no. 3, p. 97 - 101.

<sup>7</sup> L. A. Regush, L.A. (1997). *Psychology of prediction: ability, its development and diagnostics*, Kiev, 1997.

<sup>8</sup> Y. P. Zinchenko, E. I. Pervichko, "The methodology of syndrome analysis within the paradigm of "qualitative research in clinical psychology.," in *Psychology in Russia: State of the Art*, 2012, p. 157-184.

<sup>9</sup> R. Solso, *Cognitive Psychology*, Sankt Petersburg, Piter, 2006.

4) Indicator IV - forecasting strategy –the use of strategies for successful forecasting, effectiveness and degree of difficulty in its application.

The success of performance the tasks of methodology was determined according to these criteria, and the types of prognostic activity I, IIa, IIb, IIIa, IIIb, IVa, IVb were assigned for each test person.

## Results

The diagnosis of junior schoolchildren with normal psychophysical development was carried out on the basis of general education schools. The test group consisted of 243 schoolchildren, 8-11-year-old.

According to the results of diagnosis, it was found that the most of respondents - 58.4% (142 pupils), had type I of prognostic activity. 23.5% of the test persons (57 pupils) had the type of prognostic activity IIa. The type IIIa was defined in 15.2% of research subjects (37 pupils). 1.2% of subjects (3 pupils) had the type IIIb. The fewest of research subjects had IIb and IVa types of prognostic activity - 0.8% (2 pupils).

Thus, a comparative analysis of the results is as follows (see Table 1): the most successful in the implementation of the methodology is Sample 2 (9-year-old pupils), the number of subjects with prognostic activity of I type is 43.2% (105 pupils), where 100 % - 243 pupils. But there are also pupils in this sample who have IIb, IIIa and IVa types - 0.8% (by 2 pupils in each), which are unproductive. The smallest number of respondents with type I were found in Sample 1, their number was 8 pupils - 3.3%. 11.9% of respondents (29 pupils) from the Sample 3 have type I of prognostic activity.

Table 1. Aggregated indicators of the study of junior schoolchildren with normal psycho-physiological development, using the technique “Ugaday-ka”

Type	8-year-old		9-year-old		10-11-year-old		Total, %
	% of Sample 1	% of all test persons	% of Sample 2	% of all test persons	% of Sample 3	% of all test persons	
I	9,1%	3,2%	33,2%	6,5%	28,6%	13%	22,7%
IIa	18,2%	6,5%	16,7%	3,2%	14,3%	6,5%	16,2%
IIb	36,3%	13%	0%	0%	21,4%	9,7%	22,7%
IIIa	18,2%	6,5%	16,7%	3,2%	21,4%	9,7%	19,4%
IIb	0%	0%	0%	0%	7,1%	3,2%	3,2%
Va	9,1%	3,2%	6,7%	1,3%	7,1%	3,2%	9,6%
IVb	9,1%	3,2%	16,7%	3,2%	0	0%	6,4%

Type IIa by the number of test persons was practically equal in three samples: 8.2% (20 pupils) - Sample 1, 7.8% (19 pupils) - Sample 2, 7.4% (18 pupils) - Sample 3.

The most of pupils with type IIIa belonged to the Sample 2, their number was 9.9% (24 pupils). Sample 3 – 4.1% (10 pupils) – is in the second place in descending order. The smallest number of respondents with this type of prognostic activity was in the Sample 1, only 1.2% (3 pupils).

The study of junior schoolchildren with hearing impairment was carried out on the basis of the State-Funded Educational Institution "Boarding school named after E.G. Lastochkina for children with disabilities". The test group consisted of 31 schoolchildren, from 8 to 11 years old. The sample was presented by younger schoolchildren with a hearing loss of 1-2, 3-4 degrees. Diagnosis was conducted in the first half of the day, individually with each child in a separate room. The results were recorded in individual protocols.

As a result of the study, it was found, that the most of children of three samples had the types of prognostic activity I and IIb (by 22.7% in each). And the smallest number of junior schoolchildren had the type IIIb (3.2%) (see Table 2).

Despite limitations in the functioning of auditory analyzer, 22.7% of children have I type of prognostic activity. This type is characterized by:

- High-speed of prediction or high level of forecasting process.
- The ability to keep in memory forecasts, compare them with the order of the presented elements.
- This category of children does not have distraction errors.
- Children have a steady voluntary attention.
- Memory is characterized by long-term memorization.
- Rational strategies were used by the test persons, having this type of prognostic activity, to perform the task of the technique. There were the following strategies: comparing of aprioristic forecast with a real sequence, a strategy with priority for input information, a strategy with a priority for aprioristic forecast.

The most successful was Sample 2 (9-year-old junior schoolchildren), where I type was assigned to 33.2% of children.

22.7% of children were given IIb type of prognostic activity, equally with I type. Children with this type have:

- Average prediction speed.
- Difficulties in maintaining a stable level of activity, as evidenced by the presence of errors of distraction.
- Revealed orders were reproduced only partially – the features of long-term memory.
- This group of respondents used as rational strategies, as irrational ones – change of strategies.

Table 2. Aggregated indicators of the study of junior schoolchildren with hearing impairment, using the technique "Ugaday-ka"

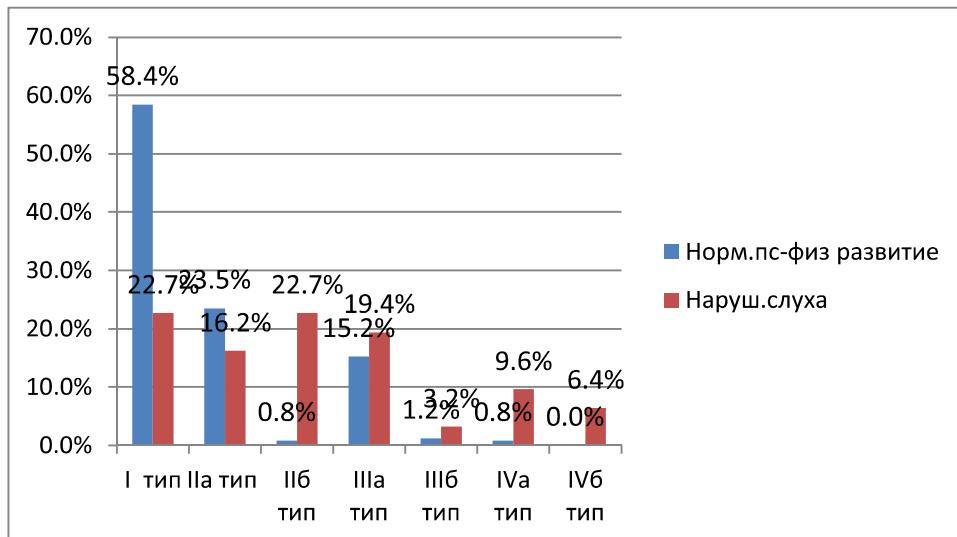
Type	8-year-old		9-year-old		10-11-year-old		Total, %
	% of Sample 1	% of all test persons	% of Sample 2	% of all test persons	% of Sample 3	% of all test persons	
I	25%	3,3%	68,2%	43,2%	50,9%	11,9%	58,4%
IIa	62,5%	8,2%	12,3%	7,8%	31,5%	7,4%	23,5%
IIb	0%	0%	1,3%	0,8%	0%	0%	0,8%
IIIa	9,4%	1,2%	15,6%	9,9%	17,5%	4,1%	15,2%
IIIb	3,1%	0,4%	1,3%	0,8%	0%	0%	1,2%
IVa	0%	0%	1,3%	0,8%	0%	0%	0,8%
IVb	0%	0%	0%	0%	0%	0%	0%

Based on the obtained data, it can be said, that this group of children suffer from a deficit of remembering processes, information readout and the use of productive strategies.

### Discussion

Comparing two categories of junior schoolchildren with normal psycho-physical development and junior schoolchildren with hearing impairment, we came to the following conclusion (Figure 1):

Significantly higher percentage of junior schoolchildren with normal development has the most productive type of prognostic activity (I type). Considering the less productive types IVa, IVb, it is clearly seen, that the priority is given to children with disorders of auditory analyzer in percentage terms.



Нормальноепсихо-физическоеразвитие	Normal psycho-physical development
Нарушениеслуха	Hearing impairment

Figure 1. Comparison of the results of the study of younger schoolchildren with normal psycho-physical development and hearing impairment

Thus, it can be concluded, that the studied younger students with hearing impairment have difficulties in performing the forecasting process. In the process of investigation, several groups of children were identified, which had some defects of short-term and long-term memory, unstable attention, and used irrelevant strategies in the process of solving the tasks of technique. This proves the existence of the fourth types of prognostic activity.

### **Summary and conclusion**

Our research allows us to state, that younger schoolchildren with hearing impairment have difficulties of probabilistic forecasting and connected with it cognitive components of anticipatory abilities. Most of the difficulties lie in the use of ineffective forecasting strategies, the difficulty of memorizing, the small span of long-term memory, the insufficiency of regulatory processes.

Thus, we have experimentally proved, that the prognostic competence of junior schoolchildren with hearing impairment is limited, weak formed, in comparison with younger schoolchildren, of the same age, with normal psycho-physical development.

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**Poetics of the psychological game: the role of the epigraph in the short  
stories by E. A. Poe**

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**Abstract.** *In this paper we consider the originality of the techniques of romantic writings by E. A. Poe and, above all, the peculiarities of creating by the writer the strategies of the psychological game in the "terrible" (psychological) stories. Realizing the principle of the unity of aesthetic effect in the creation of his works, Poe skillfully uses specific artistic techniques. A unique place belongs to the epigraph to the text, the function of which in the short stories of the author is ambiguous. The epigraphs can set the stylistic tone of the work, stripping its meaningful dominant; foreign-language epigraphs; "quasi quotation"; the epigraph, "arguing" with the text are distinguished. Foreign-language epigraphs to the famous short stories "The fall of the house of Usher" and "Morella" create the effect of the psychological games that "support" the game of doubles, increase the author's mystification, become a mirror of the psychology of the characters, their bifurcated consciousness, the struggle of consciousness and sub-consciousness of the individual. The playing field of the text is determined by the situation of the unity of the dualistic psychological well-being that initially already included in the epigraphs to the short stories. In the short story "The fall of the house of Usher" an epigraph-counterpoint is realized and the whole short story can be regarded as a psychological mirror of the soul split not only of Roderick and the hero-narrator, but the author himself, and at the same time as art semantic extension of the epigraph. In the short story "Morella" the epigraph may also be regarded as the key -epigraph to the cipher.*

**Keywords:** romanticism, E. A. Poe, epigraph, double play, the principle of mirror reflection, duality, a hoax, a counterpoint.

## Introduction

E. Poe – an outstanding American romantic poet and writer. "Subtle psychology of the stories of American romance writer, a mixture of terrible and mysterious with a strong logical analysis had a significant impact on the further development of world literature".<sup>1</sup> A significant part of the creative work of E. Poe are his short stories. In the genre of "scary" stories E. Poe does a highly artistic attempt to penetrate into the most secret corners of the psyche of his characters, including the level of the unconscious".<sup>2</sup> E. Poe masterfully *shapes the composition of his short stories*, using, among all, the principle of reflectivity, the motive of duality, the principle of the game with the reader (a kind of mummery), the invasion to the text of the "absurdities" and "inconsistencies" (as, for example, in the short story "The fall of the house of Usher"). A special place here belongs to epigraphs, which can play a variety of artistic functions. Thus, the epigraphs: 1) can set the stylistic tone of the work, stripping its meaningful dominant. This is the epigraph to the story "The Devil in the belfry" ("What's the time? The famous expression"); 2) foreign-language epigraph has polemical and ironic goals, realizes the function of "double game". This is a "foreign-foreign" word. It supports the *game poetics of the*

<sup>1</sup> M. N. Pavlova, *Artistic interpretation of science in the works of Edgar Allan Poe*. kand. filol. Sciences, Ivanovo, 2010.

<sup>2</sup> Y. V. Kovalev, *Edgar Allan Poe. Novelist and poet*, Leningrad. Khudozhestvennaya Literatura. 1984.

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text; 3) it is possible to allocate the epigraph - "quasi quotation". Thus, in "Ligeia" E. Poe gives a false reference to Joseph Glanville (1636-1680), English clergyman and philosopher, the author of the treatise "The vanity of dogma". A "quasi quotation", three times repeated in the text is an indirect expression of the position of the author. Keeping a serious tone, the author plays a joke with the unsuspecting reader; 4) epigraph, "arguing" with the text. This is the epigraph to the short story "The Overthrow of Millstream". This is already an exact quote from the book of John Glenville. The meaning of the story by E. Poe denies the meaning of the epigraph prefaced to it. In general, the epigraphs by E. Poe always "work" to enrich the meaning of the original text.<sup>3</sup>

The authors of this article considered the peculiarities of the poetic technique of writing of a particular author, including the romantic manners of other writers: for example, Sh. Bronte.<sup>4</sup> At the same time a linguistic-semantic aspects of language concepts in literary text were examined.<sup>5</sup> This article aims to examine the role of an epigraph in creating romantic writing technique and psychological games of E. A. Poe in his short stories.

### Materials and methods

So, the role of an epigraph in the most famous and mysterious short story of the writer "The fall of the house of Usher" is important and interesting. A foreign language epigraph (a "foreign"- "foreign" word) is before us. These are the words of the famous French romantic poet Beranger: "*His heart is as the lute - a little touch – and it will respond*". The image of the heart-lute was probably learned by E. Poe from famous ballads of Beranger – "The Magic Lute", the tone of which is quite tragic: there are motives of love, life, death in it. But the image of the lute, was possibly taken from the poem "Denial", where Beranger sings of free poor life, and the Lira (lute) expresses the indignation of the poet ("You'll touch the lyre and at the same time/ But the outrage will not pass!).<sup>6</sup> The epigraph to the short story, as we believe, determines the compositional laws of its construction, sets a special tone of the narration (the controversy and irony). The fact of the use of "alien"- "alien" words indicates semantic duality of the subsequent text. Indeed, everything splits, doubles in the short story, primarily at the level of system of the characters' images. The text is populated by characters-the twins: Roderick Madeleine, Roderick - the author- narrator, the author-narrator-the real author of the text. Following the artistic logic of the writer, using the principle of reflectivity in the construction of the short story, we can see all the characters in the mirror of an epigraph of the

<sup>3</sup> O. V. Kovaleva, L. G. Shakhova, *Foreign Literature of XIX century. Romanticism*, Moscow, Oniks, 2005.

<sup>4</sup> G. Golikova, N. Pomortseva, "The phenomenon of extension/contraction of the text: images of nature in Ch. Brontë's novel Jane Eyre and its screen adaptations," in *Journal of Language and Literature*, V (2014), no. 2.

<sup>5</sup> E.F.Nagumanova, G. R. Gainullina, O. V. Shemshurenko, "Tatar national concepts mon and bakhillek in the original text and the translation," in *Xlinguae*, X (2017), no. 1, p. 98-108.

<sup>6</sup> Beranger Jean-Pierre. The Magic lute// <http://www.world-art.ru/lyric/lyric.php?id=17243>, accessed 12. 07. 2017.

novel: the main character – Roderick Usher, a painful aristocrat, in the end dying from the fear of fear of life and death, painfully responding to any manifestation of life – bright light, loud noise, bright colors; lady Madeleine, who is the twin of Roderick (heroes- twin). In the epigraph we can see a mysterious author-narrator who, under the influence of fear, becomes a mirror of his friend Usher the end of the story (the motive of the of reflectivity in its ironic component is especially brightly revealed in the last episode of the short story – reading of a non-existent book of Lancelote Canning "Crazy sorrow"). In the quote from Beranger, we can also see the author of the short story – E. Poe, who was always very responsive to various manifestations of reality. *A special author's playing doubles* is realized, which relies on a special "mental abnormality, occurring constantly in his stories, - bifurcated consciousness".<sup>7</sup> Playing doubles certainly has a psychological basis." A symbol of duality in the aesthetic system of E. Poe has a very complex nature. It represents not simply the epitome of the Second Self of the character but it also expresses the idea of the confrontation between consciousness and sub-consciousness of the person"<sup>8</sup> And if the text created by E. Poe, starts to have an effect on the reader and his subconscious, then the epigraph also refers us to the prospective reader of this short story, who, involved in the semantic field of the story, can also become a double of the heroes through the realized idea of fear – which is "the fear of death, fear of life, fear of loneliness, fear of people, fear of madness". At the same time the function of doubles in the art world of E. Poe is fairly complex and ambiguous. So, "twin sister performs the function of a mirror reflection of the spiritual state of her brother. The illness of Roderick and Madeline was the disease, according to the author's concept of duplicity has common roots".<sup>9</sup> At the same time, according to the researchers, "in philosophical terms, the phenomenon of duplicity is based on polarity as a fundamental characteristic of existence. Opposites that permeate the universe and the man himself, in a profound sense are inseparable. The dialectic involves not only the struggle, the antagonism of opposites, but also their reconciliation, union, connection, and interpenetration. As the identity of this bifurcated world, a man is a fatally ambivalent creature. Being is disharmonious, and human consciousness is tragically broken. Therefore, the purpose of the mankind, according to mystical teachings and romantic philosophy, is to restore the disintegrated unity (inner, spiritual), to obtain unity, to become free from duality".<sup>10</sup>

Organized under the laws of duality and reflecting, the entire text of the short story "mirrors", in our opinion, the epigraph, which becomes a double of the text, however an ironic double. You can say that the epigraph supports myths, created in the text. Everything the author writes about is, perhaps, an illusion, a delusion of the author-narrator, about which we'll never learn (no name, no status,

<sup>7</sup> Y. V. Kovalev, *History of world literature*, vol. 6, Moscow, 1989, p. 571-577.

<sup>8</sup> Analysis of meta-symbol house in the story of E. Poe "The fall of the house of Usher"// <http://moyuniver.net/analiz-mifosimvola-dom-v-novelle-e-po-padenie-domu-asherov/>, accessed 12.07.2017.

<sup>9</sup> *Ibidem*.

<sup>10</sup> *Ibidem*.

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no past, no future), except that he is a friend of Roderick. The short story can be regarded as a mirror of his sick imagination and consciousness – no wonder that in the beginning of the text in the description of the gloomy autumn endless day, we find the concept of "opium". The story-teller makes a parallel between a hard impression from home and a break of an opium-man ("...an utter depression of soul which I can compare to... after—dream of the reveler upon opium"). E. Poe as if asks the reader: if he believed in the story, told by the hero-narrator. And thus, the hero-narrator, perhaps, is the only subject of the short story, brought to it through different disguises of his sick mind (the First and the Second Self). The author's irony is apparent. It can also be seen at the level of the author's "inconsistencies" in the text - for example, invented by E. Poe himself (and, perhaps, by the hero-narrator), non-existing books by the non-existing writers (the book by L. Tick "The Journey into the blue distance," the book by non-existing author book Lancelote Canning "Crazy sorrow" - an obvious mystification). In the lining of the game- mystification, implemented by the writer, - is *the laughter of the author* (*clearly ironic and even cynical*), managed to create a special atmosphere, a special illusion, the semantic field of horror and fear, into which the reader has plunged.

The semantic duality of the epigraph is obvious. After all, Beranger was not just a romantic poet – he's largely a satirical poet, with sharply defined social position that does not correspond with the meaning of the short story, with its Gothic tone. In fact, rhythms of freedom-loving and loving Freedom and Revolution Beranger are clearly contrary to the gloomy and dark "Gothic" of the short story of E. Poe, creating a polemical site, and realizing the effect of duality. Thus, in the epigraph two or more independent ideas, two voices are combined, a mixed bipolar author's voice is focused, because "the ideology and the type of consciousness of Edgar Allan Poe are characterized by considerable internal inconsistency". The epigraph begins to function as a *counterpoint* to the text, where, through using a special combination of unity, irony and romantic sentimentality are combined, transmitted through the concept of "heart is a lute", which is quite logically then appears in the story. At the same time, the purpose of an epigraph of a famous poet is to create a "powerful magic of verisimilitude", which is one of the cornerstones of the theory of the Poe's story.

## **Results and discussion**

No less interesting is the epigraph to the short story by E. Poe "Morella", which can also be attributed to "terrible" stories of the writer. In our opinion, its epigraph also realizes the function of counterpoint, and the novel is its extended ironic interpretation in the spirit of a "scary" romantic story. As "foreign-foreign" words here are the words of Plato from his philosophical treatise "Pirr" (211):

Auto xat auta met autou monoeises aiei on (by yourselves, only yourselves, in their eternal unity (gr.) Plato. Pirr.

Overall, the story has a few plans. The first plan is a plot, where in the genre of a "scary" story the author tells the story of the hero-narrator, about his love for Morella, her death, her daughter's birth and her burial. The plot is consistent with the aesthetics of E. Poe: the love to a beautiful woman, her

withering and death, the sudden absence of the buried body in the crypt, mating with the motive of arisen from the tomb, characteristic of the author, the doubles (mother and daughter). Another plan of the short story – the symbolic and philosophical, which is determined by the epigraph and the emergence in the text of names of famous philosophers - Pythagoreans, John Locke, Fichte, Schelling, formerly in epigraph – Plato. The short story in terms of genre acquires the features of self-observation, which is often associated by E. Poe with the aspect of the bifurcated consciousness that defines the third level of the short story - psychological.

From the beginning of the story the writer makes with the reader the intellectual and psychological game. One must remember that the basis of the teachings of Plato is the idea of *a single, mind and the world soul*. The epigraph, taken from the dialogue of "Feast" devoted to the category of Eros, which will also appear in E. Poe's short story. E. Poe skillfully uses the ideas of Plato in his typical ironic manner. It is going beyond the strictly artistic and romantic field in the space of classical philosophy, which has an ironic character. No wonder that E. Poe warns the trivial reader: "to the uninitiated our discussions still would not be clear" (irony).

To comprehend the meaning of the author's game, you need to turn to the images of Morella, the hero-narrator, his daughter, born from Morella. Morella is good at reading. But not Eros brought two heroes together at the altar (on the one hand, the romantic symbolism of unity-unity, and on the other – an ironic allusion to Plato's dialogue "Feast"), but something inexplicable. The hero obeyed the command of his wife: "*I am fully submitted to the leadership of my wife and with a steady heart followed her into the complicated maze of her research*".<sup>11</sup> "Wild pantheism of Fichte, modified paligenesis (secondary birth (Greek).) of the Pythagoreans and, most importantly, the doctrine of identity, as it is expounded by Schelling, that's in what impressionable Morella usually found special beauty". Hero is happy, but gradually begins to hate his wife and want her death. Categories "happiness-misfortune", "love-hate", "joy, the horror," "beauty-ugliness"(the aesthetics of duality and the simultaneous identity of the opposite categories) pervade the relations between the characters. Dying, Morella gives birth to a girl who was an exact likeness of her mother (the motive of duplicity). Hero names her "my child", "my love" (possibly, according to Plato, the world soul). Just hearing the name of Morella, the daughter of the hero immediately dies (identification), and in the tomb, not finding there the body of Morella, the hero buries there his daughter: "laid there the second Morella" (motive of substitution). Overall the whole story is permeated with a mood of sadness, depression, hopelessness, doom motive, which is characteristic of the poetics of E. Poe. An ironic extension of the philosophical postulate of Plato is made in the romantic vein of the genre of a "scary" story.

In the epigraph the words "oneself, oneself" are repeated twice and then there is the word "unity". The semantics are obvious: the idea of duality and at the same time a single start – 2 and 1. No wonder E. Poe recalls the Pythagoreans in

<sup>11</sup> E. Poe, *Favorites: Poems, Prose, Essays*, Moscow, Artistic literature, 1984.

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the story, whose doctrine is associated with a numeric harmony and unity of opposites.

### Conclusions

So, E. Poe in the analyzed short stories actually implements a double game at the level of semantic, psychological text field, and at the level of the composition: first of all the game with characters-twins, the game with the hero and the author-narrator, the game with the very epigraph, a foreign word, and, finally, a game with the reader, his imagination, playing with himself in the end. This game is psychological. The epigraph with the ideas of bipolar and duality laid in it, logically provokes in the story the motive of duality of consciousness and the idea of "dual unity of being" (the term by Yu. Kovalev), that is realized in the text at the level of the system of characters' images and composition.

In the short story "Morella", as in the short story "The fall of the house of Usher", the poetry of opposites is realized, namely, of male and female beginning, as well as the idea of broken consciousness and aspirations from duality to unity. Through symbolic motives – marriage, life, duplicity-replacement and death – E. Poe tries to understand the human nature. In fact, the main and the only hero of the novel is a hero-narrator, and, perhaps, the author himself. Before us is a duality of consciousness, trying to understand himself in all his guises, including through the unity of male and female. E. Poe, running the game with the reader and with himself, creates unusual heroes, "doubling" them, condemning to death, because he wants to understand, like his hero-narrator, if the personality disappears after death: "the notion of personality that disappears or does not disappear with death, always interested me burning". The narrator as if conducting a psychological experiment with his nature, splitting it and conducting its second half – the Second Self through the prism of death, with the result that he can shout with the words of Plato, chosen as an epigraph: "oneself, only oneself, in the eternal unity" stays a person in his existence - in life and in death (the category of a single by Plato). The epigraph, thus supporting the game of the author, intellectual and psychological, becomes in this short story a kind of answer, starts to fulfill *the function of the key to the code*. At the same time, as in the previously studied story, the epigraph in "Morella" also determines the subsequent composition of the text – from uniqueness to multiplicity (duality) and then again to unity. The motif of duplicity is used (mother and daughter are the twins), a game in doubles, the confrontation of the conscious and subconscious. On the whole, the short story is determined by the author's hoax, as in the short story "The fall of the house of Usher". This again captures the irony of E. Poe. The author's irony is actualized in the words: "I took her to the tomb and laughed with a long and bitter laughter".

Thus, in the short stories by E. Poe a foreign-language epigraph ("foreign-foreign" word) can perform a special artistic function, supporting the author's "double game". So, in the short story "The fall of the house of Usher" we have an *epigraph-counterpoint*, and the whole story can be regarded as a psychological mirror of the soul split not only of Roderick and of the hero-narrator, but of the author himself, and at the same time as art semantic extension of the epigraph. In the

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short story "Morella" the epigraph may also be regarded as *the epigraph- the key to the cipher*. Both of these epigraph are united with their continued relationship with the author's psychological game, full of irony, it is a game of E. Poe with the reader and at the same time with himself, a psychological experiment, ingeniously embodied in a literary text through the implementation of the author's *idea of duality consciousness* through the synthesis of imagination and rational approach.

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# **Myself When Young or Growing Pains by Daphne du Maurier\***

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**Abstract.** *The article analyses Daphne Du Maurier's autobiographical novel "Myself When Young", written in 1977. The choice of the aspect is determined by the fact that the problem of autobiographical creation myths became actual in our days, which was repeatedly noted in criticism. It is also necessary to emphasize the ambiguity of its solution in virtue of special subjectivity of the material of this genre (memory, diary notes). Therefore, the genre peculiarity of any autobiographical novel is connected, first of all, with the idiosyncrasy of its literary structure. The purpose of this study is to reveal the literary features of the autobiographical novel by Daphne Du Maurier. This novel, published in 1977 known as "Myself When Young", the writer herself entitled it as "Growing Pains. The Shaping of a Writer". This discrepancy became the starting point of the study. The analysis of genre specificity of the text is formed up on semantic distinctions of these titles.*

*Reasoning from the original title, the attention of a mature author is focused on the period of formation as an artist. It's about childhood and adolescence, which ended in marriage. It is this time interval that is actualized in the version of the title given by the publisher of the novel. The variant of Daphne Du Maurier is rather a metaphor of creative formation. In this connection, the plot of the novel and its structure are analyzed. Particular attention is paid to the character of the narrator, fixing and accentuating the main events of her life. As an inference, it can be argued that author's reflection is caused not just by nostalgia for youth, but by a desire to reconstitute the origins of the creative principle in her life.*

**Key words:** English literature, Daphne Du Maurier, autobiographical novel, genre, poetics, structure.

## **Introduction**

The problem of autobiographical myth creation became a notable phenomenon of the modern literary process, which was repeatedly noted in criticism.<sup>1</sup> It is necessary to emphasize the ambiguity of its solution in virtue of special subjectivity of the material of this genre (memory, diary notes). Therefore, the genre originality of any autobiographical novel is connected, first of all, with the peculiarities of its literary structure.

## **Methods**

The purpose of this study is to reveal the artistic features of the autobiographical novel by Daphne Du Maurier. This novel, published in 1977 known as "Myself When Young", the writer entitled it "Growing Pains". In the first case, simply the temporal aspect is dominant in the key concept, whereas in the second one, a certain problem, associated, as a rule,

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<sup>1</sup> V. Zvinyatskovskij, "Creative Work as a Biography. Biography as a Creative Work," in *New Humanitarian Studies*, VI (2011), p. 17.

with this age in a person's life is actualized. This discrepancy became the starting point of the study. It is reasonable to analyze the text from the point of view of the development of the plot of the novel and its structure.

## Results

Based on the original title, the attention of a mature author is focused on the period of her formation as an artist. It's about childhood and adolescence, which ended in marriage. It is interesting that such development of the plot situation is especially characteristic of the English novel of the Enlightenment. This emphasizes once again Du Maurier's being bent for the epic tradition of the classical novel. The author begins her memoirs from the moment when three little sisters and a nanny usually go home after a walk. Attention is drawn to the number of details of the real world. These are a large staircase leading to the white door with a doorbell, which notifies of the necessity to help the nurse to lift up the pushchair; and the figures of the servants who look after children. Besides, there appears a sight of the hallway, in which there is a lot of strange clothes, and one can hear the voices of carefree and idle guests. Emotionally neutral visual images are mixed with muddled and contradictory gamma of feelings. These are also a disappointment at the presence of guests, and a vexation at the need to welcome them with an obligatory handshake; dissatisfaction with the new "nurse", because she is not "nanny". And the warmest feelings are associated with the nursery, located on the second floor, with its unmistakable smells, a cozy doll house, dear toys. This is her world, in which it is safe and comfortable. That is, the situation that opens the autobiographical narrative, fully corresponds to the traditional ideas about the conflict of childhood and the world of adults. It is also characteristic that the character's world at this stage is connected, first of all, with the image of the house. This is confirmed by the titles of first two chapters which are the addresses. As you know, the genre of autobiography is based on self-discovery. "The autobiography in usual sense is a life story, a story about yourself, your life, some self-study of the person ... The word "autobiography" consists of three parts, formed from the Greek autys – "oneself", bios – "life", grapho – "write" ".<sup>2</sup> Daphne Du Maurier begins gradual discovery of her "self" with a feeling of discomfort caused by a protest against the dictates of adults, which was often formulated as "That will do now". And only a word could oppose this "despotism". The little heroine found it: "I do not care". Further the imagination turns this find to advantage and creates a finished image: "Who was Don't care, I wondered? Not a poor child. No, he sounded more like a

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<sup>2</sup> Y. Bronshtein "The Value Aspect of Autobiographies of American Indians. (20th century)," in *The Herald of Moscow University. Series 19. Linguistics and Cross-Cultural Communication*, II (2009).

little old man, rather tubby, who lived alone in a hut, and then some cruel people came and put him in this great black pot and hung it over a fire, which made a sizzling noise. Poor Don't care...Did he scream? Or did some nice person come and rescue him?" . Even if we consider that any child is endowed with imagination, the feature of the author of these memories is revealed in an unusual craving for playing with letters in the alphabet. So, for example, the letter "H" attracts her, because it looks like a gate that you can climb, or "A", because it looks like a seesaw on which you can swing; "B" is associated with a large loaf of bread. A cherished dream becomes an independent reading, and not just watching the pictures. In addition, she wants not to just learn to read, she wants to write. Therefore, at the age of four years, this girl becomes the "author" of the book with the indicative title "John, in the Wood of the World". It is characteristic that the character is a boy again, as in the case with "Do Not Care", and he feels uncomfortable in this world as well as to little Daphne.

In the second "children's" chapter a new address appears, and the outside world goes beyond the home: school appears, and from objective historical events - an announcement about the First World War. Here the bipolar world is still preserved, however, the heroine feels comfortable and cozy in the family, which is opposed to the world of war, suffering and death. "Growing Pains" of a girl becoming adult is to realize the world as a dark forest from her imaginary book, only now it is not a figurative picture, but a real world. In addition, the heroine comes to realization that adults also experience pain, which cannot be dismissed by any "do not care". The "childhood" ends with the reflections of a fully mature person on the essence of the past and the future: «We are all ghosts of yesterday, and the phantom of tomorrow awaits us alike in sunshine or in shadow, dimly perceived at times, never entirely lost» . That is, there occurs combining of two temporal strata, which L.A. Nikolina writes about in connection with autobiographical work: "two temporal plots are traced: the plot of the present narrator, who is writing the text, and the plot of the past, which she is recollecting on".<sup>3</sup>

The youth of the heroine begins with twelve years, which is communicated at the very beginning of the chapter called "Adolescence". Moreover, the narrator even makes a reference to the Oxford Dictionary with the definition of this concept. This period of life is again connected with the complexity of relationships with parents. Turning to the Dictionary, that is again to the word, as once in his childhood, Du Maurier now understands that it does not often disclose the essence of the concept and does not dispel fears and doubts. Imagination helpfully presents the pictures, confirming the scale of the disaster. The fact that menstruation began is associated with the hemophilia of Tsarevich Alexey and his death. Mother's assuring that this is

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<sup>3</sup> N. Nikolina *Поэтика русской автобиографической прозы: учеб. пособие*, С., 2002, p. 10.

not a disease, but only a characteristic of the female body, puts the idea into the heroine's mind that being a boy would be better, because they have bleeding caused by certain reasons, and not by belonging to a sex. In addition, the life of the heroine is enriched by strong emotional experiences associated with representatives of the opposite sex. It is either Basil, who played in a play based on the book of her grandfather, or Eric Avon, shined in sports. Metaphysical and imaginary boys are replaced by very concrete, realistic ones. All these events are already being written in the Diary. It does not stand out structurally in the text, but excerpts are singled out in the form of quotations from it. This allows us to talk about the existence of a "document" in an autobiographical text.

Of particular interest is the image of Eric Avon, which allows to reveal the secret of the eternal fascination of the heroine with problems of gender. According to her, he will become her alter ego in the novels written later (*I'll Never Be Young Again*, *My Cousin Rachel*, *The Scapegoat*, *The Flight of the Falcon*, *The House on the Strand*).<sup>4</sup> In this sense, Du Maurier's approach to the creative process echoes with the reflections expressed by another British writer, who was at the source of European feminism, Virginia Woolf. In the well-known essay "A Room of One's Own" she writes: "Perhaps the androgynous mind is less apt to make these distinctions than the single-sexed mind. He meant, perhaps, that the androgynous mind is resonant and porous; that it transmits emotion without impediment; that it is naturally creative, incandescent and undivided".<sup>5</sup> The heroine's first love also attracts attention. It was a married cousin, 36-year-old Geoffrey, while she was 14. However, the most amazing thing is that he will have not become a prototype of any of the characters of her future novels.

Concerning any predilection for reading, the heroine particularly distinguish none of the writers. The text simply lists the works of almost all the classics of English literature. That is, a name that could be considered a literary teacher is not mentioned by Daphne Du Maurier in this biography.

A truly independent life of the heroine begins in Paris. In memoirs this stretch of time is fixed in the chapter with the same title. It is where Daphne Du Maurier ascertains her writer's belonging as an accomplished fact, which was noted by her in the "children's" chapters: "The child destined

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<sup>4</sup> H. Taylor (2003). Introduction. 'Myself when young. The shaping of a writer'. <https://play.google.com/books/reader?printsec=frontcover&output=reader&id=GCYa2JCDe0MC&pg=GBS.PP1>, accessed 12. 07. 2017.

<sup>5</sup> V. Woolf (1929). 'A room of one's own'. <https://ebooks.adelaide.edu.au/w/woolf/virginia/w91r/chapter6.html>, accessed 12. 07. 2017.

to be a writer is vulnerable to every wind that blows".<sup>6</sup> It is interesting that doubts about the degree of her talent are connected with the name of Katherine Mansfield, not the most eminent writer in England. The heroine expresses a timid hope for a potential opportunity someday in the future to do something similar with the stories by Katherine Mansfield. Quite a strange choice of an idol, given that in the future of creative life, this name will no longer attract the attention of Daphne Du Maurier. One can only assume that then, at the dawn of her work, young Du Maurier could not pass over the fact of the gifted girl (Catherine Mansfield began to be published at the age of nine).

Any autobiographical text implies a certain chronology, one way or another fixing the flow of time. Du Maurier does not break loose from the tradition, making constantly her age precise (from chapter to chapter), and at the same time the most important events related to it. This is, certainly, important. However, what lies between the documentary-factual material attracts much more attention in this biographical book. One can list the books that the heroine reads, the writers she mentions within the period of her apprenticeship, the people she meets within her course of life, but all this is just a rough drawing. The one that one day must turn into a real masterpiece, which the heroine enviously dreamed of, reflecting on the works by Catherine Mansfield.

Mature reasoning about works *per se* is fixed by Daphne Du Maurier at the age of nineteen. Together with the desire to finally get rid of any kind of guardianship, which is quite typical of this age, an important idea is formulated. And it bears relation to our heroine. She wants not just to run away from the familiar surroundings, "I would like to go out and live my life in some new colony, where things are just starting new. Somewhere away from decadence, and modern materialism".<sup>7</sup> In other words, again a rebellion, just like in childhood, but now it is more about an aesthetic protest. In this connection, the next chapter, titled "Between Two Worlds", is very consistent. It describes life events that are related to the next move (this time it is a port city with its specific way of life) and eclipsed by the comprehension of the first novel of the writer. Here the heroine will remember about the meetings with people who told her the history of the family. The title of this chapter differs from all others in its lack of uniqueness. One can advance several versions. "Was it my fancy, or was it true that Jane dominated them all, even after death...". The first, which lies on the surface, presupposes a world that has already been traversed and what is still to be done. The second one concretizes the space of worlds, between

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<sup>6</sup> Du Maurier D. (1977). 'Myself when young. The shaping of a writer'. <https://play.google.com/books/reader?printsec=frontcover&output=reader&id=GCYz2JCDe0MC&pg=GBS.PP1>, accessed 12. 07. 2017.

<sup>7</sup> *Ibidem*.

which the heroine perceives herself. They can be interpreted as a real world and a world created by the artist's imagination. The third version is even more specific. It can be assumed that the heroine was lost somewhere between the past and the future characters of the novel not yet written: "Was it my fancy, or was it true that Jane dominated them all, even after death ..." The idea of combining all three meanings of this title is perfectly acceptable.

The final clarification occurs, from our point of view, in the last final chapter of this autobiographical narrative. Here the most significant events are the marriage of Daphne Du Maurier and the publication of the novel "The Loving Spirit". It tells the story of four generations of a family of sailors and shipbuilders. The leading role in this family chronicle is given to a woman with her extraordinary strength of spirit and exceptional nature. That is, it is a romantic interpretation of one family story in the mainstream of the concept of two worlds.

### **Discussion**

Summing up, it is necessary to note the following. The literary features of the structure of the autobiographical text of Du Maurier are conditioned by two factors. The first is related to the reproduction of the space-time coordinates, which directly fixes the events of the narrator's life and completely corresponds to the title "Myself When Young". The second is an attempt to restore not even the artist's path, but its origins, the author called this process "Growing Pains". From our point of view, the version of Daphne Du Maurier is rather a metaphor for creative formation.

### **Conclusion**

The child-youth rebellion reflected in the text is extrapolated into a kind of aesthetic diversion, the result of which was her first novel. "The Loving Spirit" is created in the era of modernism, metaphorically described as the era of "the death of the gods"<sup>8</sup>, while this is a very traditional classic narrative. The title of the novel is a line from poem by Emily Bronte and speaks of a relation to romantic aesthetics with her cult of individuality and a deep comprehension of the spiritual ideal overcoming the short duration of earthly life.<sup>9</sup>

Thus, it can be argued that the author's reflection is caused not just by nostalgic memories of youth, but by the desire to recreate the origins of the creative principle in her life.

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<sup>8</sup> V. Tolmachev, *Зарубежная литература XX века: Учеб. пособие для студ.вып.и. учеб. заведений*, Moscow, Издательский центр «Академия», 2003, p. 24.

<sup>9</sup> E. Bronte E. (1846). <http://www.poetry-archive.com/b/self-interrogation.html>, accessed 12. 07. 2017.

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## **The Role Of Language In Cultural Transmission Between The Generations Of The Tatars Living In China\***

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**Abstract.** *The question of preservation and transmission of cultural elements from one generation to another is widely discussed within the scope of humanities and natural sciences. This article discusses the phenomenon of cultural transmission between generations of the Tatars residing in the CPR and the role of language in this. The eastern branch of the Tatar emigration is least studied of all in the language aspect, but deserves special attention. Therefore, language features of the Tatar language of the representatives of the Tatar diaspora in China were selected as the object of study of this project. A coverage of approaches to the study of the role of language in the cultural transmission is offered. Each language is a tool for formation, preservation and transmission of national culture. In this connection, the study of language as a cultural code of the nation, and not only as an instrument of communication and cognition is very important. And this is dictated by the process of rethinking the role of language in the cultural creative activity of man. Everything is evidence of the fact that language is not only a means of communication, but also a translator of culture. It is the vocabulary in which culture, realities, social features, and beliefs of the Tatars are mirrored.*

**Keywords:** the Tatars, diaspora, national culture, transmission, language, ethnic identity.

### **Introduction**

“The life of man and society on the whole is impossible outside culture. It plays an extremely important role in the life of people, in the existence and development of society. Every person is born, educated and develops in a certain culture. But it is impossible for culture to arise, to exist, to develop without man.”<sup>1</sup> Language plays an important role in this. Thanks to language, people can have experience, accumulate it, transmit it from generation to generation.

Modern science of language traditionally pays much attention to the interaction of language and culture. The language-culture relationship is a complex and multifaceted problem. Several approaches have currently been taken to solve this problem. One of them is based on interconnection and interaction of language and culture. According to this approach, language is an integral part of the culture inherited from ancestors. Language is

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<sup>1</sup> R.S. Nurmukhametova, "The Vocabulary of Material and Spiritual Culture of the Tatar Language," in *The Herald of TSUHE*, I (2011), no. 23, p. 165-169.

considered as the main tool for mastering culture.<sup>2</sup> S.G. Ter-Minasova describes language as an instrument of cognition, information transfer, language is a culture beam, it reflects the world, stores and transmits knowledge about this world, forms a language speaker.<sup>3</sup> Ethno-linguistic focus area, which deals with the problems of reconstruction of ethnic theory in terms of language · reconstruction of material and spiritual culture of the ethnos in terms of language data is also based on this approach. The main carrier and powerful cultural translator is language. Thus, all components of culture can be expressed in a language.

To study a particular culture, the scholar needs to look at it with the eye of the bearer of this particular culture and to see the meanings of the individual elements of this culture being visible for him, the links between the elements, to learn to speak on culture within those categories and with those accents that are natural for the culture-bearer.

Decisive moves to implement the Law on Languages taken in the Republic of Tatarstan significantly expand the use of the Tatar language in the system of education, publishing industry, media and other areas.<sup>4</sup> In this connection, the problems of foreign compatriots are constantly in the center of attention as well. The development of partnership relations with foreign compatriots is one of the Tatarstan's priorities. This concerns preservation and study of the Tatar language and culture abroad.

The study of the ethnic culture of the Tatar people, as well as the culture of the diasporas, as an essential part of the spiritual culture of modern humanity, questions of the formation of national consciousness, is of exceptional scientific and theoretical importance. The ethnic aspects of modern cultural process received wide coverage in home literature. The works by Gilazetdinova et alii<sup>5</sup> cover the features of ethnic cultures, the works by Yusupova<sup>6</sup> investigate various aspects of the interaction of the universal and the ethnic in culture.

The problem of search for modern ways and stages in the formation of culture of the diasporas of the Tatars is quite new. At the same time,

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<sup>2</sup> S. G. Ter-Minasova, *Language and Cross-Cultural Communication*, Moscow, 2000.

<sup>3</sup> *Ibidem*.

<sup>4</sup> Zoya N. Kirillova, "Tatar Education from 1920-1930," in *IFTE 2016 – 2nd International Forum on Teacher Education. 19-21 May 2016 - The European Proceedings of Social & Behavioral Sciences*, XII (2016), p. p. 307-312.

<sup>5</sup> G. Kh. Gilazetdinova, I Zh. Edikhanov, A. A. Aminova, "Problems of ethnocultural identity and cross-language communication," in *Journal of Language and Literature*, V (2015), no. 3, p. 29-42.

<sup>6</sup> A. Sh. Yusupova, "Tatar language dictionaries of XIX century as a unified historical and cultural phenomenon," in *World Applied Sciences Journal*, XXX (2014), no. 2, p. 186-190; R. R. Zamaletdinov, F. Y. Yusupov I. S. Karabulatova, A. F. Yusupov, D. H. Husnutdinov, "The formation of Tatars ethnic groups in the southern Urals and trans Urals region," in *Life Science Journal*, XI (2014), p. 214-217.

certain aspects of the investigated problem have been considered in a varying degree earlier.<sup>7</sup> The analysis of literary sources, including dissertations of recent years, has shown that attention to the problem of forming cultures of various diasporas is intensifying. However, despite this, the ways of forming their culture have not been determined and the role of language in the transmission of culture between generations of the Tatars who live outside the ethnic homeland has not been determined. This fact dictated the relevance of the topic of our research.

The topicality of the work is determined by the need to study the entire diversity of manifestations of the forms of the Tatar language, including the language of expatriate Tatars. This topic has been raised in science more than once, but there exist still urgent issues that are not touched upon in scientific research. One of such issues is the study of the culture of the Tatar language of resettlers from Russia to China and the role of language in the transmission between descendants, as well as the preservation of culture and this language variant.

### **Materials and methods**

The material for the work was the recording of the sounding speech of the representatives of the Tatar diaspora of the Xinjiang Uyghur Autonomous Region of the People's Republic of China, who are the speakers of the Tatar language of the eastern branch of the Tatar abroad. The study will allow to trace the fate of the culture and language of the Tatar emigrants, as well as help to reveal the main features and degree of preservation of the culture of the Tatar people at the present time.

The reliability of the obtained results was evaluated using observation methods in combination with interviewing when collecting the material under the conditions of field research. When processing the materials, we chose the method of description with general scientific methods of direct observation, systematization, comparison, generalization.

### **Results and discussion**

The Tatar language is the second national language that is most widely used and spoken in the Russian Federation, in addition, the Tatar language is spoken by the representatives of the Tatar diasporas abroad. Thus, one can talk of the Tatar diaspora of the Xinjiang Uyghur Autonomous Region of the People's Republic of China, since this autonomous region of China became the center of the Tatar eastern emigration. Sufficiently wide use of the Tatar language in this region of China was the merit of the Tatar diaspora in Xinjiang: periodicals were published in

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<sup>7</sup> G. A. Nabiullina, A. Sh. Yusupova, "On the Linguistic Situation of the Tatar Diaspora in the USA," in *Mediterranean Journal of Social Sciences*, VI (2015), no 5, p. 298-302.

the Tatar language, Tatar was the language of oral business everyday communication or business correspondence of the Tatar emigrants with each other, Tatar schools held, etc. However, today, there is a decline in the knowledge of the Tatar language by representatives of the Tatar diaspora in the PRC: there are no Tatar schools, periodicals in the Tatar language, knowledge is disseminated from generation to generation orally.

The center of the Tatar eastern abroad was the Chinese cities of Kulja, Urumqi and Chavuchak. It is these cities that can be considered as the focus and expression of the essence of Tatar culture and life in eastern emigration. The Tatars in these cities created a unique cultural environment - in the image and likeness of the one that was at home, a kind of "Tatar civilization".

Within the period of investigation, the main areas of use of the Tatar language in Kulzh, Urumqi and Chavuchak were detected, which are numerous and diverse under the conditions of existence in multinational cities. The Tatar language functions primarily as the language of education in Kulzhe, Urumqi and Chavuchak: the Tatar language was the language of instruction in primary and secondary schools: Tatar school, the girls' school, "Nur" school, Gulandam Hanim school, "Maksudiya" school, Gumary school, Chanyshhev school, Tatar school in Urumqi and others. Tatar schools were visited not only by the Tatars, but also by the Uighurs, the Kazakhs, the Uzbeks, the Dungans and the Chinese.

The Tatar language was widely used in services: it was the language of trade in 60 shops of Tatar entrepreneurs, household, transport, legal services were rendered, as evidenced by numerous announcements in the Tatar newspaper "Alga", information in city address and reference books, etc. The Tatar language was the language of posting.

Cultural life of the Tatar Kulja - literary, theatrical, musical - was extremely active for a small provincial town. The influx of creative intelligentsia, especially during the period of pre-revolutionary emigration from Russia to China, contributed to the development of the Tatar cultural life of Urumqi and Kulji.

The main sphere of use of the Tatar language in Kulzh and in Urumqi was popular sphere - the sphere of family and other informal communication with representatives of their ethnic community. The means of communication within ethnic groups, with the family, in Kulzh and in Urumqi, remained the native language, which, being an essential feature of the ethnus, contributed to ethnic self-identification. In Kulzh, one could do without the knowledge of the language of the country of residence - the Chinese, using only their native language and the Uyghur language.

Thus, it can be noted that in the centers of the Tatar eastern emigration - Kulzh, Urumqi, Chavuchak - the structure of culture, life and way of life corresponded to the Tatar traditional and Islamic canons, and the

Tatar language was used in all spheres of communication, despite being in a foreign country and with prevalent population of this country.

As is generally known, all the refinements of the material and spiritual culture of the Tatars are mirrored in language and especially in the units of lexical level. "Language is a whole world, capable of lexically and semantically embracing the entire many-sided culture".<sup>8</sup> Considering the vocabulary of a certain period, one can draw conclusions about the state of spiritual and material life of the people.

The Tatars living in China have not lost their native vocabulary and still actively use it in their speech. The preservation of it in active use was favoured by the fact that they are in use in the related Uighur language. For example, *nan* - хлеб /bread, *narın* - овощной суп / vegetable soup, *inäk* - корова / cow, *itskyı* - goat / коза, *yarıq* - светло / light, *käyen* – потом / then, *käptär*- голубь / pigeon, *raqta* – хлопок /cotton, *klit* - ключ / key, *qulup*- замок / lock, *bakali*- бакалы/ groceries, *çömkä* - гвоздь / nail , *qat-qat* - пирог / pie, *bal prännek* - пряник / gingerbread, *çırağ* - свет / light, *tabança* - пистолет / pistol, *çapan* - куртка / jacket, *mumay* – бабаушка/ babushka, *mösek* - кот / cat, *payraq* - носки / socks, *yullıq* - гостиниц / hotel and others.

It is important for the topic of our research that most of them, knowing the Tatar language, know Tatar folklore. Modern existence of Tatar folklore in the environment of Tatar-speaking descendants allows making curious observations. For example, what genres of folklore turned out to be the most popular nowadays, what are not just aesthetic for them, but also ethnocultural, linguistic informatics and meaningful.

At the present time, when gathering the Tatars who live in China sing the most relevant genres - short songs. Obviously, such genre preferences depend on the pragmatics of song genres, and on their emotional impact. Thus songs can be both folklore, and of literary origin. However, this is not fixed by the performers. These songs were learned and passed over the course of dozens of years verbally, with many distortions and additions. Such songs include, for example, "Ozin köy" ("Long Melody"), "Duslarım" ("My Friends"), "Qızıl tölke" ("Red Fox") and others.

Information about the peculiarities of culture, national perception of the world, identity is preserved and transmitted from generation to generation by lexis. Confirmation of this point of view is found in.<sup>9</sup> Thus,

<sup>8</sup> L. V. Bazarova, "Towards the Issue of Language and Culture, 2015, available at: <http://www.philoloqy.ru/linquis-tics1/dazarova-07.htm>, accessed 12. 07. 2017.

<sup>9</sup> R. S. Nurmukhametova, R. R. Zamaletdinov, M. R. Sattarova, "The vocabulary of Tatar literary language (the first half of the XX century)," in *Life Science Journal*, XI (2014), no. 10, p. 670-673; F. R. Sibgaeva, "Lexis connected with person in tatar language," in *International multidisciplinary scientific conferences on Social sciences and arts SGEM, 2014. – 1-10 September, Albena, Bulgaria*, III (2014), p. p. 123-129.

words help to preserve the continuity and unity of the traditions of culture. This layer also reflects the originality, uniqueness of the people. In the songs of the Tatars living in China, there are words with a cultural-marked specificity of meaning, reflecting the referents that are characteristic only of the Tatars and lacking in vocabulary of other peoples. For example, names of dishes of national cuisine; proper names and so on. They reflect the typical reality of the Tatars, their culture and do not have correspondences in word stock of other languages.

The songs, which include onomastic vocabulary, have a vivid cultural-marking. Of particular interest are the songs, one of the components of which is the traditionally a Tatar name (for example, Rokiya, Xösäyen, Xalidä, Mörşidä and others) or a geographical name, such as Kazan, İdel (Volga), Arça (this is the name of the district in Tatarstan), Ağıdel (White) and others. So, for example, Qulimdağı yüzegemneñ isemnäre Xösäyen, aralarıbız yaqın bulsa, barır idem kön sayın; Almağaç gölläre almalı, bik zor şähär dilär Qazanni; Ağıydeldä ike sal, berse – qayın, berse – tal. Min ütärmen tañ aldınnan, täräzä açıp qarap qal. The presence of purely Tatar anthroponyms and toponyms in songs is a marker of the identity of the Tatar people.

Being folk creations, songs as an important element of human existence could not bypass the spiritual resources of the nation. For example, the songs with vocabulary related to the history of the Tatar people, its writing, as well as rituals and traditions. Rituals and traditions express truly national phenomena, which are transmitted from century to century. They are inseparable from the life of the Tatars. This led to the fact that many of them were reflected in the songs that the Tatars who live in China sing. For example, the national holiday is Sabantuy: Aq qalqañıñ aq tügel, qalqaq kiyar çaq tügel. Uynap-kölep utırırğa, Saban tuyı çaq tügel.

### **Summary**

So, at present the Tatar diaspora in China is an unusual ethno-cultural phenomenon. Developing inside of another socio-political system, the Tatars in many respects could preserve their identity, native language and the basic elements of traditional national culture. We come to the conclusion that one of the most important bases for preserving Tatar culture and identity for this ethnic group is language.

The study showed that the Tatars living in China are a unique object for analyzing the role of language in a cultural transmission. The study of speech and language competence of the descendants of Tatar emigrants of the PRC allows to reveal the specific features of the language of Tatar resettlers, that functions in metropolitan and multilingual societies, and also to assess the various ways of interaction of languages in China.

At the same time, there is no doubt that folklore performed tasks of fixing, preserving and transmitting cultural values in the Tatar-speaking environment. Different folklore forms, emphasizing the national colour, the vivid expressive imagery, inherent in folk art, stimulate among the Tatar emigrant and their descendants the tendency to preserve the most important foundation of the national identity - the native language. Having a working knowledge of Chinese as a means of everyday communication, the bilinguals of Xinjiang realize spiritual needs and express their Tatar culture and identity in the forms of Tatar folklore.

Modern Tatars who live in different countries, because they have different experience of acculturation due to historical reasons, use the same language, but in different national variants.

### **Conclusion**

According to the results of the work, we understand that it is impossible within the framework of one article to fully analyze these most interesting phenomena, which mirror culture, everyday life and traditions, moral principles of the Tatar people. A number of aspects require a more profound, special analysis.

It should be noted that the study of the spoken language of the Tatars living in China is of special scientific and practical value. Besides, the language of the Tatar Eastern emigration represents a broad field for further research. For example, it requires development from the point of view of sociolinguistics, which would allow describing the influence of age, profession, social status and other factors on the state of the Tatar language, and also it deserves attention from the linguistic point of view, in particular phonetic features of the language of the Tatars residing in the PRC.

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Galina A. PAVLOVA, Alexander V. GERASIMOV

## Comparative Analysis Of The Content Of Metals And Ecotoxins In The Hair Of 7-Year-Old Girls, Living In Different Environmental Conditions\*

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**Abstract.** The investigation and the comparative analysis of the content of metals (ecotoxins) in the hair of 7-year-old girls, attending the first grade of a comprehensive school, living in different environmental conditions, were carried out. In a modern industrial city with a developed petrochemical infrastructure, there are chemical substances in the air, which often exceed the maximum permissible concentration, and the prolonged exposure of toxic substances causes a change in the functional state of the developing organism. In the conditions of technogenic pollution of the environment, it is especially important to study the impact of metals and ecotoxins, having a toxic effect on the human body.

The scale of growth of modern production is so large, that the amount of substances, emitted per unit of time, is much greater than the amount, which can be neutralized by the environment. Based on the numerous observations, it can be stated, that children are particularly sensitive to the impact of unfavorable environmental factors. Growing organism is characterized by the lowest threshold of perception to the influence of pollutants, high reactivity to external influences, and the degree of its adaptive capacity depends on the age, gender and a number of other individual characteristics.

Such experimental direction has an applied significance and is of great scientific and practical interest, since it reflects the general state of the organism and the morphofunctional status of children of the age under study, living in different environmental conditions. On this basis, the study of the content of metals and ecotoxins in the hair of seven-year-old girls, attending the first grade of a comprehensive school, living in different environmental conditions, was carried out.

The following methods were used in the study: biochemical, statistical and the method of directed selection of the contingent. In the process of the study it has been found, that environmental pollution is one of the causative factors of reducing the adaptive capacity of the body, and the peculiarities of hair chemical composition, in regards to the studied substances, are determined by the ecological conditions of living.

**Keywords:** children, metals, ecotoxins, ecological conditions.

### Introduction

Pollution of the environment with various poisonous substances leads to unfavorable consequences in health of the population, especially children. It is expressed in changes of physiological parameters, the occurrence of diseases and a number of other effects.<sup>1</sup>

The study of the impact of the consequences of technogenic metals and ecotoxins accumulation in the human body has become extremely important for the health and safety of population<sup>2</sup>.

\* Acknowledgements: The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> V. B. Antonov, "Anthropogenic environmental diseases," in *Clinical medicine*, LXXI (1993), no. 3, p. 15-19; I. V. Chikeneva, "Consequences of the influence of heavy metals on the environment, in the impact zone of industrial enterprises," in *Concept*, XII (2013), p. 1-8; V. O. Dorzhonova, *Phytoextraction and phytotoxicity of heavy metals in contaminated soils. Extended abstract of Cand. Sciences (Biology) Dissertation*, Ulan-Ude, 2013.

<sup>2</sup> A. P. Avtyn, A. A. Zhavoronkov, M. A. Rish, L. S. Strochkova, *Human microelementosis: etiology, classification, organopathology*, Moscow, 1991; I. V. Mudriy, "The impact of chemical soil contamination on human health," in *Hygiene and Sanitation*, IV (1991), p. 32-37; V. G. Nadeenko, S. P. Saichenko, *Embryotoxic and mutagenic effect as a criterion for regulating metals in the environment. Actual problems of hygienic*

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Existing in the human body in a concentration above the critical level, metals and ecotoxins have an impact on various organs, leading to a change in the overall resistance of the body, and various health problems.<sup>3</sup>

It is known, that chemical pollutants, coming from the environment, accumulate in the body and have a toxic impact even in a low concentrations.<sup>4</sup> The intake and accumulation of poisonous substances in the body, even in small doses, threatens the health of the population and especially the children's contingent.<sup>5</sup> The literature data indicate that the absorption of toxic substances occurs more actively in children than in adults.<sup>6</sup>

To date, a significant number of studies have been carried out to identify the impact of environmental pollution on the physical development and morbidity of children, but insufficient attention was paid to compensatory adaptation and the

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*regulation of chemical factors in environmental objects.*.. Perm, 1989, p. 128-130; F. Perger, *Belastungen durch toxische Schwermetalle – ihre Folgen für die Abwehrlage des Menschen*, Zurich, Arzte Fortbild., 1992, p. 157-163; B. A. Revich, *Pollution of the environment and public health. Introduction to ecological epidemiology*, Moscow, International Independent Ecological and Political University, 2001; B. L. Vallee, "The metallobiochemistry of zinc and cadmium," in *Delft. Progr. Rept.*, XII (1988), no. 2, p. 131-147; R. P. Walt, T. K. Daneshmend, Y. N. Fellows, "Zinc deficiency in children with dyslexia: Concentrations of zinc and other minerals in sweat and hair," in *Brit. Med. J.*, CIVC (1988), no. 6622, p. 607-609.

<sup>3</sup> Chernykh, N.A., Baeva Yu.I. (2004). Heavy metals and human health. Bulletin of the Peoples' Friendship University of Russia. Ecology and life safety. 1: 125-135.

Chubirko, M.I., Pichuzhkina, N.M. (2008). Hygienic diagnostics of the influence of atmospheric air pollution on public health. Health of the population and life environment, 1: 19-20.

Teplaya, G.A. (2013). Heavy metals as a factor of environmental pollution. Astrakhan bulletin of ecological education, 1 (23): 182-192.

Wemmer, V. (1990). Umweltgifte im kindlichen organismus. Belastung durch schwermetalle. Kinderartz. Bd.21, 10: 1383-1388.

<sup>4</sup> Z. Yu., Bilibina, E. D. Tselykh, *The connection of high content of toxic and potentially toxic elements in the hair with some indicators of the structural and functional status of adolescents in Amursk, Khabarovsk Krai. Materials of the scientific-practical conference "The phenomenon of crisis in the context of humanitarian knowledge"*. Khabarovsk, Publishing house of the Far Eastern State University of Humanities, 2009, p. 96-100; S. D. Caruthers, S. A. Wickline, G. M. Lanza (2007). "Nanotechnological application in medicine," in *J. Nanotech. Sci. Appl.*, I(2007), p. 17-32; Y. Gumbrowski, "Zur Kinetik des Kadmiums im menschlichen Organismus," in *Z. ges. Hyg. Bd.*, XXXIV (1988), no. 1, p. 40-43; C. L. Keen, M. E. Gershwin "Zinc deficiency and immune function," in *Annu. Rev. Nutr.*, X (1990), p. 415-431; M. Wilhelm, I. Lombeck, F. K. Ohnesorge, "Biological Monitoring anhand von Hairanalysen im Rahmen einer Pilotstudie zur Versorgungs-bzw. Belastungs situation von Vorschulkindern mit essentiellen und toxischen Spurenelementen," in *VDI – Ber.*, MCIX (2987), p. 51-67.

<sup>5</sup> D. M. Dementieva, V. V. Smolnikova, M. S. Dementiev, "The influence of subthreshold concentrations of various substances in the soils and reservoirs of the Stavropol Territory on the incidence of child population," in *News of Samara Scientific Center of Russian Academy of Sciences*, XIII (2011), no. 7, p. 1585-1588; A. B. Imethenov, C. Z. Dorzhiev, D. D. Maksarova, A. A. Manketova, "The impact of technogenic pollution of the Dzhidinsky tungsten-molybdenum plant on the health of Zakamensk children (Republic of Buryatia). Human Ecology," in *Bulletin of the Buryat State University*, IV (2015), p. 229-236.

<sup>6</sup> I. I. Romanova, (2001). *Integrated assessment of the impact of anthropogenic pollution of the environment on the morphofunctional status of school-age children: Dissertation of Candidate of Biological Sciences*, Kazan, 2001; O. V. Savchenko, "Clearance of the body from heavy metals, using enterosorbent, based on calcium alginate," in *Human Ecology*, VIII (2014), p. 20-24.

development of nonspecific resistance of children's organism in response to chronic effect of atmospheric admixtures, exceeding the maximum allowable concentration (MAC).<sup>7</sup>

Therefore, the urgency of studying the physiological systems, which ensure the adaptation of organism to changing environmental conditions, is quite obvious.

The purpose of our work was a comparative analysis of the content of metals and ecotoxins in hair of seven-year-old girls, living in different environmental conditions.

The following task was set in accordance with the purpose: to determine the content of metals in the hair of the examined group of children, depending on the environmental conditions of living.

### **Materials and methods**

The following methods were used in the study: the method of directed contingent selection, the method of atomic-adsorption spectrophotometry, statistical methods.

The study was conducted in the secondary school №130, in the area of the petrochemical enterprise location, which was selected as a relatively environmentally unfavorable region (REUR) and in the secondary school № 40, located in a relatively environmentally friendly region (REFR) in Kazan.

30 girls of the first grade, practically healthy, with an average level of physical development, participated in the investigations. The survey was conducted in the morning during the whole week.

For our research, we have formed qualitatively homogeneous groups of children in the REUR and REFR. To create homogeneous groups, the method of directed selection of the contingent was used.

The study of the content of metals in children's hair was carried out by atomic-absorption spectrophotometry (AAS). The method is based on the measuring of absorption of a resonant line of a certain element when light passes through a cloud of vapor (free atoms) of a given element. To determine the significance, the standard values of the Student's t-test were used.

### **Results and discussions**

In the conducted studies, the content of metals (ecotoxins) in the hair of 7-year-old girls, living in the REUR and REFR, revealed significant differences in lead content (Pb). Thus, in children, living in the REUR, the content of Pb in the hair was  $16.54 \pm 2.90 \mu\text{g/g}$ , while in children, living in the REFR it was  $5.02 \pm 0.97 \mu\text{g/g}$  ( $p < 0.01$ ). The value of  $8-9 \mu\text{g/g}$  was taken as a permissible level of Pb in the hair of children, and  $24 \mu\text{g/g}$  was the critical level. In our studies, the number of children, living in the REUR, with a high content of Pb in the hair was 73%, and in the REFR - 19%.

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<sup>7</sup> F. F. Dautov, *Study of public health in connection with the environmental factors*, Kazan, 1990; E. P. Gora, "On the general patterns of adaptation of the child's body," in *Materials of the XI International Symposium "Ecological and Physiological Problems of Adaptation"*, Moscow, 2003, p. 137-138.

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The comparatively high content of Pb in the hair of the children, living in the REUR, shows the negative influence of the environment on the developing organism and suggests, that children, living in the REUR, can be the subject to a number of diseases.

The content of essential microelement zinc (Zn) in the hair of 7-year-old girls, living in the REUR, was  $101.9 \pm 15.1 \mu\text{g/g}$ ; in children, living in REFR, the amount of Zn in the hair was slightly higher and amounted to  $103.5 \pm 7.5 \mu\text{g/g}$ . We detected significant differences in the content of copper (Cu) in the hair of 7-year-old girls, living in the REUR and REFR. In the REUR, the amount of Cu was  $8.13 \pm 1.52 \mu\text{g/g}$ , while in the REFR it was  $3.88 \pm 0.2 \mu\text{g/g}$  ( $p < 0.01$ ).

It has been established, that such potentially toxic metals as Cu and Zn, are in certain doses vital microelements.

The concentration of Zn, lower than  $110 \mu\text{g/g}$ , and Cu, lower than  $7 \mu\text{g/g}$ , in the hair evidenced about zinc and copper deficiency in children.<sup>8</sup>

It is stated, that the content of Zn in the hair of children within  $118 \mu\text{g/g}$ , Cu -  $6.91 \mu\text{g/g}$  is not hazardous to health. However, excessive accumulation of Cu in the body leads to disruption of vital functions.<sup>9</sup>

It was found, that low concentrations of Cu in the hair correlate with mental retardation in children (Shrestha Krishna, 1988). High concentrations of Cu with other metals in children's hair are associated with underachievement. An antagonism between Zn and Cu has been established. A violation of the balance of these elements in the body entails a shift in the metabolism of essential fatty acids. The content of Zn and Cu in the hair of studied children allows to suggest, that such quantities of these metals are not dangerous for the health of children, but children may be prone to a number of diseases, connected with a violation of microelement balance in the body.

In our studies, significant differences were found in the content of iron (Fe) in the hair of 7-year-old girls, living in the REUR ( $16.6 \pm 2.76 \mu\text{g/g}$ ), and living in the REFR ( $54.2 \pm 8.78 \mu\text{g/g}$ ) ( $p < 0.001$ ). One of the abnormal human conditions is iron deficiency - iron deficiency anemia (IDA). We defined a reduced Fe content in the hair of 7-year-old girls, living in the REUR, in 64% of cases. In the developing organism of the child, IDA manifests itself in the form of rapid fatigue, a decrease in concentration of attention, especially weakening of positive psycho-emotional reactions. Significant difficulties in oral and written representation of thoughts, as well as increased excitability and inadequate behavior reactions were revealed in children of primary school age, having experienced anemia at the early age. The average concentrations of Fe in the hair of sickly children are  $22.41 \pm 3.31 \mu\text{g/g}$ . The low Fe content in the hair of 7-year-old girls, living in the REUR, may indicate an iron deficiency, which can cause a number of diseases and poor adaptation of children to environmental conditions.

<sup>8</sup> A. V. Skalniy, G. V. Yatsyk, N. D. Odinaeva, (2002). *Microelementosis in children: prevalence and ways of correction: Practical guide for physicians*, Moscow, 2002.

<sup>9</sup> *Ibidem*.

In 7-year-old girls, living in the REUR, the cadmium (Cd) content in the hair was  $4.44 \pm 0.36 \mu\text{g/g}$ , whereas in children, living in the REFR, the Cd content was  $4.00 \pm 0.34 \mu\text{g/g}$ . M. Wilhelm, I. Lombeck, F.K. Ohnesorge (1987) stated, that the Cd content in the hair of children within  $4.2 \mu\text{g/g}$  is not hazardous to health. However, in Russia, the permissible level of Cd in the hair is  $1 \mu\text{g/g}$ .

Cadmium is an inhibitor of the activity of a number of enzymes. The chronic impact of Cd on human health causes impaired renal function, pulmonary insufficiency, osteohalisteresis, anemia and anosmia. There are data on the carcinogenic, mutagenic, gonadal and embryotoxic effects of Cd, on its probable participation in the development of cardiovascular diseases, in particular, hypertension. Cd has a pronounced effect on the metabolism of certain microelements, primarily Zn, Cu, Fe.

This impact is manifested at the level of enzymatic processes, absorption, deposition and elimination of elements. Cadmium poisoning largely depends on its interaction with Zn. With an excess of Cd, there is a decrease of Cu in the body. The above divalent metals, in turn, reduce the absorption of Cd; due to this, their protective effect in case of cadmium poisoning can be explained. So, this physiological antagonism can have some practical significance for preventing the poisoning of Cd, in regions contaminated with Cd. The Cd content in the hair of studied children is significantly higher, than the permissible level. This may indicate that these children are more susceptible to various diseases, as well as to various kinds of functional changes in the developing organism.

The content of strontium (Sr) in the hair of 7-year-old girls, living in the REUR, was  $7.27 \pm 2.10 \mu\text{g/g}$ , that is not significantly higher than the Sr content in the hair of children, living in the REFR ( $6.11 \pm 0.84 \mu\text{g/g}$ ).

There were not significant differences in the content of nickel (Ni) in the hair of studied children, living in the REUR and REFR. In children, living in the REUR, the Ni content was  $3.04 \pm 0.30 \mu\text{g/g}$ , and in children, living in REFR, the Ni content was  $3.95 \pm 0.59 \mu\text{g/g}$ . Ni belongs to the conditionally essential microelements. However Ni, accumulating in the body in elevated concentrations, manifests itself as a carcinogenic toxic element. So, the average concentrations of Ni in the hair of sickly children are  $0.44 \pm 0.06 \mu\text{g/g}$ . The toxic effect of Ni is accompanied by a decrease in the activity of a number of metalloenzymes, a violation of protein synthesis, RNA and DNA. Ni, coming with atmospheric air in high concentrations, reduces the viability of alveolar macrophages. Its accumulation in the lungs and kidneys is associated with the carcinogenic potential, since there are known cases of nickel cancer of kidneys and lungs. The embryotoxicity of Ni has been established experimentally.

The increased content of Sr and Ni in the hair of 7-year-old children, living in the REUR and REFR, may indicate the possibility of developing a number of diseases in the child's body and lead to morphofunctional shifts in the body's function.

Thus, the content of metals in the hair of 7-year-old girls above the critical level may indicate a toxic effect on the body from harmful emissions, as well as it

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may contribute to the morphofunctional shifts in the functioning of growing organism.

### **Conclusion**

1. Significant differences ( $p < 0.001$ ) in the content of Pb and Fe in the hair of girls, living in different environmental conditions, were revealed. These differences can be considered as an indicator of the influence of ecological environment on the children's organism.
2. The peculiarities of chemical composition of hair, in regards to the studied chemicals, are dependent on the environmental conditions of living.
3. The content of metals and ecotoxins in the hair of children above the critical level indicates a toxic effect on the body, and contributes to the morphofunctional shifts in the functioning of the growing organism.

### **Summary**

The results of the research broaden the notion about the functional state of the organism of 7-year-old children, living in different environmental conditions.

This direction of the research has applied significance and is of scientific and practical interest, since it reflects the general state of the organism as a whole, and the morphofunctional parameters of 7-year-old children, living in different environmental conditions.

In the experimental studies, significant differences in the content of Pb in the hair of 7-year-old girls, living in the REUR, were found, compared with the REFR ( $16.5 \pm 2.9 \mu\text{g/g}$  and  $5.02 \pm 0.97 \mu\text{g/g}$ ,  $p < 0.01$ ).

From the obtained results it is obvious, that the content of Pb in the hair of the studied group of children exceeds the permissible concentration, and that can negatively affect the formation of a growing organism.

Our results indicate a low content of Fe in the hair of studied girls ( $16.6 \pm 2.7 \mu\text{g/g}$  and  $54.2 \pm 8.7 \mu\text{g/g}$ ,  $p < 0.001$ ), as well as high content of Cu ( $8.13 \pm 1.52 \mu\text{g/g}$  and  $3.88 \pm 0.2 \mu\text{g/g}$ ,  $p < 0.001$ ).

The comparative analysis of the content of Zn, Cd, Sr and Ni in the hair of 7-year-old girls, living in the REUR and the REFR, did not reveal any significant differences.

Thus, the content of metals in the hair of 7-year-old girls above the critical level may indicate a toxic effect on the body from harmful emissions, as well as it may contribute to the morphofunctional shifts in the functioning of growing organism.

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## Culture-Specific Terms As Verbal Expressive Peculiar Features Of National Cultures\*

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**Abstract.** *The issues concerning the translation have become more topical, since foreign literature remains one of the main, and perhaps the primary source of knowledge about other cultures. The practice of translating fictional texts proves the complexity of conveying national specifics and reveals the need for a more detailed study of this phenomenon. The mastery of an interpreter is not only in the ability to reveal the units of translation with a national-cultural component of meaning, but also in an understanding of what to preserve in translation and how. In the process of studying and interacting languages, the problem of understanding and translating culture-specific terms is always relevant. In every language there are the words and phrases, the so-called culture-bound terms that express the concepts of a certain culture and are absent in other languages, which can cause difficulties or misunderstandings in intercultural communication. This article deals with the issues of studying and translating the units with a national-cultural element of meaning. The proposed material reflects the national and cultural specifics of real things, shows their connection with historical events, changes in public life. The questions of equivalent translation of culture-bound terms are discussed. The authors show the dependence of the choice of translation strategy on external socio-cultural and pragmatic factors.*

**Keywords:** equivalent translation, culture-bound term, ways of translation, language, culture.

### Introduction

As is known, in the act of communication there can be not only linguistic, but also cultural barriers that represent the specific concepts of foreign culture, cultural phenomena that have no analogues in other cultures. As I.S. Alekseeva notes, “overcoming the cultural barriers is a more complex problem”<sup>1</sup>. So, in translation there are many details that require special attention, for example, culture-bound terms.

The translation of culture-specific elements is a part of a large and important problem of conveying national and historical originality. When translating such units, the translator should strive to preserve not only their meaning, but also the “foreignness” in the target language. In the process of translation, the main question is which equivalent is the most proper for a particular cultural-marked unit and why. The strategies and the ways of rendering the culture-specific terms which the quality of the choice of equivalents depends on are called for answering the translator’s question. The problem of translation of culture-bound items is one of the key in translation studies.

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\* Acknowledgements: The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> I. S. Alekseeva, *Introduction into Translation Studies: textbook for the students of higher educational establishments*, Sankt Petersburg and Moscow, Philological Department of SpbSU, Publishing center “Akademiya”, 2012.

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The scholars understand this linguistic and cultural phenomenon in different way. The scope of the notion of culture-specific element is treated differently. However, the recognition of the significance of this layer of vocabulary in the creation of a linguistic image of the world, the reflection of the historical experience of a certain people, its mentality, and cultural traditions remains unquestionable, which causes undiverted attention of Russian and foreign linguists to the problems of national-specific vocabulary.

It should be noted that these linguistic units have been given enough consideration in both Russian and foreign linguistics. One of the first detailed investigations of the culture-specific terms in respect of the aspect of the problems of translation studies was the work of S.I. Vlakhov and S.P. Florin "Untranslatable in Translation". The work emphasizes that the culture-bound items, that deliver national and historical color, as a rule, do not have exact correspondences (equivalents) in other languages, and therefore, when translating, they require a special approach.<sup>2</sup>

The problem of rendering the culture-bound terms from the Russian language to the Tatar language is covered in the works of such authors as E.K. Khabibullin and A. S. Yusupova (2015), R.R. Salakhova and F.R. Sibgaeva (2014). R.R. Zamaletdinov, R.M. Bolgarova and E.A. Islamova,<sup>3</sup> pay attention to the specifics of translating comparative constructions in the works of literature.<sup>4</sup> However, not all problems are given sufficient coverage to in the literature. This is the relevance of this article.

In the process of translation, the translator faces the culture-specific concepts of a particular country, with their sociocultural peculiarities. This always gives rise to a certain complexity, but at the same time, provides a strong interest in this topic from the translator.

This article concerns the translation of culture-bound terms on the basis of the fiction translations of Russian classical literature into the Tatar language.

## Materials and methods

It becomes interesting to study the features of the translation of various types of culture-bound terms using a specific linguistic material. The works by A.I. Kuprin, I.S. Turgenev and their translations into the Tatar language are the material of investigation. These works were chosen for analyzing, because they reflect the life-style of different historical epochs and strata of society, they highlight the culture of the people. Besides, these works belong to different genres,

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<sup>2</sup> S. Vlakhov, S. Florin, *Untranslatable in Translation*, Moscow, International Relations, 1980.

<sup>3</sup> E. K. Khabibullina, A. S. Yusupova, "Lexical transformations in the translations of the modern Tatar literature into the Turkish language," in *Journal of Sustainable Development*, VIII (2015), no. 5, p. 164-168; R. R. Salakhova, F. R. Sibgaeva, "Cross-linguistic differences as a type of lexical difficulties in Russian-Tatar translations," in *Journal of Language and Literature*, V (2014), no. 4, p. 325-328; R. R. Zamaletdinov R. M. Bolgarova, E. A. Islamova, "Specifics of Translation of Comparative Constructions in Literary Works," in *Philology and Culture*, IV (2014), no. 38, p. 91-94.

<sup>4</sup> R. R. Zamaletdinov, R.M. Bolgarova, E. A. Islamova, 2014."Specifics of Translation of Comparative Constructions in Literary Works," in *Philology and Culture*, IV (2014), no. 38, p. 91-94.

which is also very important when choosing a way of translation. Based on the analysis of the ways of translating the cultural and everyday element in the works of these authors, one can draw conclusions relating to a wide range of works of fiction.

The reliability of the obtained results was evaluated by using the method of observation, which in this paper is represented by the procedure of comparative analysis used in analyzing the form and content of the target text in comparison with the form and content of the original text. This analysis aims to expose the patterns of realization of the language units that have a national and cultural specific. The method of linguistic description, presented in this paper as a procedure, as a semantic analysis, based on vocabulary interpretations of the meanings of lexical units. The method of transformational analysis that fixes the features of translation transformations in general and by individual types.

### Results and discussion

In the translation there one can encounter different cultures, personalities, levels of development, traditions and attitudes, the difference of which can cause considerable difficulties in the process of translation. The main task of the translator is to keep all the complexities of the translation in mind and try to express the author's idea as accurately as possible, at the same time not forgetting to deliver various author's literary tricks.

One of the groups of background knowledge takes on a great importance for the theory and practice of translation, that is, the one that relates to phenomena to be specific for another culture, a different country, and is necessary for the readers of the translated work, so as to learn the details without loss of its content. This part of the background knowledge is culture-specific words, being a linguistic phenomenon; they belong to the category of nonequivalent lexicon and are a part of the background knowledge, representing a significant interest in the study of the interaction of language and culture.

The issues of interaction of languages and cultures are of interest for the study of Russian and foreign scholars. This problem is covered in the works of many scientists of different branches of knowledge, since the study of cultural-specific concepts is at the intersection of such scientific areas as linguoculturology, linguistic studies, translation studies, sociology, and history of language. So, the problems of the relations between language and culture, language and history are considered in the works of G.R. Mugtasimova (Yuisufuva, 2016), G.K. Gilazetdinova (2016), Z.N. Kirillova (2016-2016)<sup>5</sup> and others.

Among the objective difficulties in translating the works of Russian writers into the Tatar language is the discrepancy between Russian and Tatar culture-

<sup>5</sup> G. Kh. Gilazetdinova, I. Zh. Edikhanov, A. A. Aminova, "Problems of ethnocultural identity and cross-language communication," in *Journal of Language and Literature*, V (2016), no. 3, p. 29-42; Zoya N. Kirillova, Gulnara F. Kalganova, "Activities of the Tatar Studies' Scientific Society," in *SGEM, BK 3: Anthropology, Archaeology, History & Philosophy Conference Proceedings*, II (2016), p. 335-340; Z. Yuisufuva, A. S. Yusupova G. R. Mugtasimova, E. N. Denmukhametova, "Paroemiological units of the tatar language with culture-specific," in *Modern Journal of Language Teaching Methods*, Special Issue, 2016, p. 161-165.

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specific terms and the vocabulary corresponding to them. The most difficult translation of those words and expressions, which in both languages are similar in meaning, but have a different "volume".

Undoubtedly, the stereotyped ideas about another nation have an influence upon the translation. They include the belief that, adherence to florid and romantic style of the language is characteristic of the Russians. Speaking of the speech of the characters, firstly, when translating, it is necessary to keep the specifics of their time in mind and, secondly, to be able to feel and convey the individuality of the writers.

The works of V.S. Vinogradov, A.A. Reformatsky, A.D. Schweitzer, I. Levyi, S. Vlakhov, S.<sup>6</sup> Florin and other scholars treat various ways of rendering the culture-specific terms.

S. Vlakhov and S. Florin refer to two main difficulties when translating the culture-bound items: 1) the lack of correspondence (equivalent, analogue) in the target language due to the lack of the object designated by the culture-specific element in the speaker's language, and 2) the necessity, along with the objective meaning (semantics) of the culture-specific element, to convey the coloring (connotation) - its national and historical richness.

At the same time, some culture-specific concepts have single correspondences in the translation language. Single correspondence means that in most cases the given unit of the source language is translated by the same unit of the target language. As a rule, when translating such culture-specific terms, that have single correspondences, there is no practically difficulties that arise.

The possibilities for translating the culture-bound terms that actually occur in translations are reduced to four main ways: transliteration or transcription, the invention of a new (or complex) word based on already existing elements in the language, analogizing translation that is specified in the context and hyponymic translation (that is, the substitution of the specific concept for generic).

When choosing the most appropriate way of translation, it is necessary to pay special attention to the place, presentation and comprehension of an unfamiliar culture-bound term in the original text. Unknown is most often a foreign culture-specific element. The author introduces it into the text of a literary work in describing the reality that is new to the speaker of a given language, for example, by narrating about a life that is strange to the reader. When conveying these words that are unfamiliar to the reader of the original text, such rendering is required from the translator that would allow of perceiving the described item, having sensed at the same time its specific "fragrance of foreignness", characteristic of local or national historical coloring, for which the author admitted these foreign elements to the text.

Consequently, it can be concluded that the most successful introduction of an unfamiliar culture-bound term into the text should be considered the one that would ensure its quite natural, free and easy perception by the reader without using by the author special means of its comprehension. Those real things are not required for the most part to be explained that are familiar to the readers. The

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<sup>6</sup> V. S. Vinogradov, *Translation: General and Lexical Issues*, Moscow, KSU, 2004.

regional specific item are needed no explanation with even better reason. However, in doubtful situations, the translator must check up on whether the word in question exists in the target language, whether it corresponds to the meaning of the culture-specific concept in the source language and what its phonetic and graphical appearance in the target language is.

Currently, several significantly different viewpoints about possible methods of rendering the culture-bound items have been expressed in translation studies. In this paper, we relied on the ways of translation of the culture-specific terms into the literary text proposed by V.S. Vinogradov (Vinogradov,2004; 118-122), as well as by S. Vlakhov in co-authorship with S. Florin (Vlakhov,1980, 93).

Next, we will take a detailed look at these ways of translation of the culture-bound terms on the basis of the examples of translations of the culture-specific elements into the Tatar language of works by Russian writers.

The transcription of culture-specific terms implies its mechanical transfer from the source language to the target language by the graphic means of the latter with the maximum approximation to the original phonetic form. One can give a lot of the examples of this method of translation from Russian to Tatar. The national Russian holidays such as Easter, Christmas, Ascension, Easter fast are not rendered by the translators through the other means of translation but by transliteration, since this method is the most successful. But at the same time it is worth noting that modern dictionaries give the translation of the word Рождество / Christmas as “Раштва” (“Rashtua”), but until the 90s of the last century this word was rendered by the way of transliteration of the Russian variant.

The main function of culture-specific terms in the fiction translation is the creation of a national peculiarity of the original, the reproduction of a specific atmosphere inherent in the life of the people who are native speakers of the original language. It is transliteration that enables to perform this function. At the same time, excessive saturation of the translated text with a high degree of occasionalisms can lead to clogging of the language, which makes it difficult to perceive a work of literature. Let us consider some samples of the translation. A.I. Kuprin writes: «У, какой ветер, паныч, на дворе, — сказал он, садясь на корточки перед заслонкой. — Позвольте запалочку, паныч» (“Olesya”). (“Oh, what a wind, a panitch, in the yard,” he said, squatting down in front of the oven door. “Do you mind my smoking, panitch”). R. Dautov translates “U-u, tişta yaman salqın cil quzgalğan, paniç, - dide ul. — Qaya, ut qabızğıç biregez äle, panic” (“Olesä”). The analysis is of the translation shows that the method of transliteration, applied by R. Dautov, «paniç» makes it a culture-bound term and emphasizes the national peculiarity. This method of translation is also used in translating names, geographical names, etc. It is a reproduction of the phonation of foreign sounds. It helps to preserve the national coloring of culture-specific concepts that we encounter in the work. For example, «Голубчик, Андрей Ильич, да оставьте же, мой милый, ну что за охота из-за глупостей расстраиваться» («Moloch») («Golubchik, Andrei Il'ich, come off it, my darling, what makes you getting upset about silly things») — «Söyeklem Andrey İlyiç, yä, nigä kiräk inde sezgä

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mondiy yuq-bar öçen üzegezne ğazaplarga, tökeregez barısına da» («Molox»); «Ваше Сиятельство, Глубокоуважаемая Княгиня Вера Николаевна!» («Garnet Bracelet») («Your Excellency, Dear Princess Vera Nikolaevna!») – «Waşesiätelstwo, Moğtabärxanım, Xörmätle Qnäginä Vera Nikolayevnal» («Granatqaşlı beläzek») andothers.

The works widely represent ethnographic elements, which require a special approach and extensive explanation in the translation. For example, I.S. Turgenev in his work «Notes of the Hunter» introduces the phrase «белая изба» («white izba»), which contains information about the living quarters of the Russian people: «Они состоят обычно из темных сеней и белой избы, разделенной на две перегородкой, за которую никто из посетителей не имеет права заходить» («They consist usually of dark hay and a white izba, divided in two by a partition the other side of which none of the visitors has the right to go»). For the Russian people, «белая изба – это изба станционных смотрителей, куда заходят путники переночевать и поменять лошадей в старину; в настоящее время это гостиный двор для путников, желающих отдохнуть» («the white izba is a hut of stationmasters, where the travelers used to stay for a night and change horses in the old days; now it is a guest yard for travelers who want to relax»). V. Zyatdinov translates: «Gädättä alar qarañğı öyaldı häm ikegä bülgän aq öydän toralar». The translator avoids transliteration and chooses calquing. This way is sometimes used instead of transcription and transliteration, since it reveals to some extent the meaning, unlike the alphabetic or sound reproduction of the name. Calquing is the translation of words or their parts. The basis is the coinage of a completely new word or a set word combination in the target language. This new linguistic unit in some way copies the structure and composition of the source original lexical unit.

The selecting of a functional analogue is used to improve the understanding of the culture-specific words by the speakers of another language. If such correspondence is found, then the reader will necessarily understand the meaning of the linguistic unit, but there will be no national coloring of the word, so it is possible to miss the “recognition” of the said country or people. In some cases, they can convey not quite correct idea of the nature of the object or phenomenon they designate. But still, when translating from Russian into Tatar, this way is used. For example, «... и в накрахмаленное жабо воткнул булавку с камнем. Называемым кошачьим глазом» («Notes of the Hunter») («... and in a starched jabot he stuck a pin with a stone. Called the cat's eye») – «...qraxmallanğan yaqasına “mäçe küze” dip atalğan qaşlı bulawqa qadağan» («Awçı yazmaları»). V. Zyatdinov translated the word «жабо» using the functional analogue «yaqa». Although jabot is the trimmings of a blouse, dress or man's shirt in the form of a frill made of cloth or lace coming down from the neck to the chest, also a kind of collar, and yaqa is a collar.

In translation of culture-specific terms, the translators choose a descriptive way of translation as well. For example, «Скоро он убедился, что это была Нина в темно-зеленой длинной развевающейся юбке, в желтых перчатках с крагами, с низеньким блестящим цилиндром на голове» («Olesya») – «Qıznın

östendä ozin, cilferdäwek itäkle quyı yäsel yubqa, beläkkä citkän kün perçatqa, başında yalturap torğan täbänäk eślápä – tsilindr ide» («Olesä») – «Soon he was convinced that it was Nina in a dark green long fluttering skirt, in yellow gloves with leggings, with a short shiny cylinder on her head». In this passage, the preservation of the culture-specific word was justified and natural. Descriptive translation, or as it is also called, explanatory one, is used in the absence of other means to express the meaning of the culture-specific term. This method is very convenient; it helps the foreign public to understand the semantics of the non-equivalent vocabulary as precisely as it is possible. Such explanatory phrases or even sentences are given in the form of a descriptive turn, detached by commas and following immediately after the culture-bound item, or entered outside the text as the comments. But this method is considered to be very cumbersome and uneconomical, so it is not always possible to apply it when translating the texts.

Culture-bound terms play a huge role in the works we have analyzed, because they describe the national environment of the n people of the 19th century. Culture-specific elements are very important in translation studies, so their use has been studied. They help to understand the life of any particular people.

### **Summary**

We have defined the essence of culture-bound terms in our work, studied the main aspects of conveying the culture-specific concepts when translating, considered the types of semantic correspondences between lexical units, which can be reduced to three main ones: full correspondence, partial correspondence and lack of correspondence.

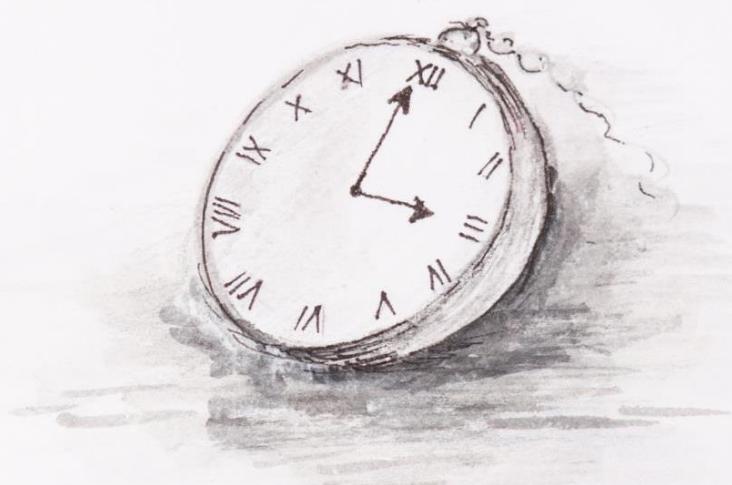
We have also found out in the context of our study what problems can arise when rendering culture-specific terms and highlighted the main difficulties that arise in the process of translating them, such as: the lack of correspondence in the target language (equivalent, analogue); the necessity, along with the objective meaning (semantics) of the culture-specific term, to convey the color. In addition, five most common ways of translation of culture-bound terms have been singled out: transcription (transliteration), hyponymic translation, analogue, periphrasis (explanatory, descriptive, explicative) translation and calquing.

### **Conclusion**

Having analyzed these methods in detail on the basis of the examples of translation of culture-specific terms in different works, we can conclude that when choosing the most suitable technique of translation, it is necessary to take into account the way in which the author of the original text conveys a culture-bound item and the means he uses to make its semantic and connotative content clear to the reader.

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## *Management*





### **Brand Pyramid**

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**Abstract.** *This article analyses the pyramid of brand in the market. The study was carried out to illustrate how the habitual buyer becomes committed buyer for a particular brand. Brand speaks to our customers on an emotional level to build loyalty among consumers. Build loyalty and revenue are the two main dimensions for the climbing the pyramid. People feels a strong optimistic emotional touch with a product creates brand loyalty and in turn it leads to repeat purchase. The study focused on various factors like most preferred brand, factors which influence to buy a particular brand, price offered. This article clearly shows how a habitual buyer becomes a brand friend then he becomes a committed buyer.*

**Key word:** Buyer, loyalty, products, quality and pyramid.

### **Introduction**

The "Brand Pyramid" is a strategy which helps to know each step of our customers from the initial stage to the peak. In the first level customers have no emotional attachment to our products but little aware of the brand. Next people compare the cost with the quality of the products and check whether it meets the needs and wants. Customers compare the performance of our brand with the performance of other brands. Gradually brand is on the customers' short list. Customers are happy with switching cost, price and performance of brand at various levels, brand becomes the integral part, and customers select the brand indirectly exclude the other brands. Then they becomes brand friend finally a committed buyer of a particular brand.

According to marketing expert Seth Godin, a brand is a "Set of expectations, memories, stories and relationships that taken together, account for a customer's decision to choose one product or service over another. Rajan<sup>1</sup> states that "firms try to reduce the cost of the brand for increase the volume of sales and consumer value". Macrae<sup>2</sup> clearly explains the combination of brand awareness, brand image, brand evaluation paves the ways for brand emotional attachments. <sup>3</sup>identifies "success of branding depends upon three things product quality, service quality and distribution quality. Customers are satisfied a loyal towards the product depends upon the performance of the brand.

### **Objectives**

1. To study about how to acquire the new buyer
2. To identify the ways of converting the habitual buyer to committed buyer.
3. To find the path to retain the loyalists.

### **Research methodology**

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<sup>1</sup> N. Rajan Nair, R. Nair Sanjuth, *Consumer Behavior, Marketing*, Moscow, 2000.

<sup>2</sup> Macrae Chris, "Re-thinking brand management: the role of brand chartering," in *Marketing Intelligence and planning*, XVI (1996), no. 7, p. 46-55; \*\*\*, "Loyalty of Indian Youth", *International conference on Humanity, history and society*, XXXIV (2006), p. 129-132.

<sup>3</sup> [www.emeraldinsight.com/doi/abs/10.1108/JBIM-05-2015-0101](http://www.emeraldinsight.com/doi/abs/10.1108/JBIM-05-2015-0101), accessed 01.12. 2017.

Research comprises defining and Re-defining problems, formulating hypothesis on suggested solution, collection and at last carefully listing the conclusion to determine whether they fit the formatting hypothesis. Structured Questionnaire has been used to collect the data. Study was based on the primary and secondary data. The random sampling technique is used to collect the data from various respondents in Chennai city. Regression and t- test has been used for this study. Before going to the full-fledged data collection with 110 respondents, the questionnaire was tested with 50 respondents to measure the reliability and the end of the reliability test found the Cronbach alpha values stood at 0.83.

### **Limitations of the study**

1. The main objective of the study is to examine the concept of brand pyramid. Hence this study does not focus on other sectors.
2. The study was limited to 110 respondents chosen by random sampling from customers in south Chennai.

### **Analysis and interpretation**

Statistical tool has been used for analyzing the data using multiple regression test for establishing relationship between the three variables such as Brand performance, Brand awareness and committed buyer and Paired sample t-test. The analysis for the study are as follows:

### **Multiple regression**

Table no.1 Descriptive Statistics

	Mean	Std.Deviation	N
Committed buyer	1.428	0.584	15
Brand Performance	2.027	0.735	15
Brand awareness	3.633	0.676	15

Table no.2

Model Summary<sup>b</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the
				Estimate
1	.871 <sup>a</sup>	.758	.718	.311

a. Predictors: (Constant), Brand awareness, Brand performance

b. Dependent Variable: Committed buyer

Table no.3

ANOVA<sup>a</sup>

Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2	1.823	18.807	.000 <sup>b</sup>
	Residual	12	.097		
	Total	14			

a. Dependent Variable: Committed buyer

b. Predictors: (Constant), Brand awareness, Brand performance

Table no.4

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
		B	Std. Error			
1	(Constant)	-.801	.473	-1.695	.116	
	Brand performance	.584	.116	.732	5.017	.000
	Brand awareness	.288	.127	.332	2.273	.042

a. Dependent Variable: Committed buyer

Table no.5

Residuals Statistics<sup>a</sup>

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.53	2.45	1.43	.510	15
Residual	-.474	.436	.000	.288	15
Std. Predicted Value	-1.758	2.003	.000	1.000	15
Std. Residual	-1.522	1.401	.000	.926	15

a. Dependent Variable: Committed buyer

The **Table 1** gives the descriptive statistics namely mean and standard deviation for the three variables and number of variates. Mean of committed buyer is  $1.428 \pm 0.584$ , the Brand performance is  $2.027 \pm 0.735$  and the Brand awareness is  $3.633 \pm 0.676$ .

In **Table 2**, the value 0.871 given under the column R is multiple correlation coefficient. These three variable are correlated significantly.

**Table 3** gives the results on ANOVA, since the p-value given under significance column is  $<0.01$ . This tells that the Brand performance and Brand awareness (two independent variables or predictor variables) contribute significantly to the change in committed buyer (dependent variable).

**Table 4** gives the coefficients, these values are needed to formulate regression equation. The value under column B against constant is the “a” value (Y- intercept) in the regression equation and the values against Brand awareness (0.288) and Brand performance (0.584) define the slope of the regression lines and are the values of b1 and b2 in the multiple regression equation.

$$Y = a + b_1 X_1 + b_2 X_2$$

Hence, the multiple regression equation is formulated as

$$Y = -0.801 + 0.288X_1 + 0.584X_2$$

**Table 5** gives the residual statistics in which the number of cases, mean and standard deviation for the predicted values of the dependent variable are given.

Paired sample t- test

Null hypothesis: There is no significant relationship between committed buyer and brand salience

Paired Differences			99% Confidence Interval of the Difference		df	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	Lower	Up		

Table no.6

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	"Before Brand salience- Habitual buyer"	10.65	15	.814	.210
	"After Brand Salience - Committed buyer"	11.23	15	.942	.243

Table no.7

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	"Before Brand salience-15 Habitual buyer" & "After Brand Salience - Committed buyer"		.911	.000

Table 6 gives the mean habitual buyer before Brand salience as 10.65 with a standard deviation of 0.81 and 11.23 with a standard deviation of 0.94 as committed buyer after Brand salience.

Table 8 gives the t-value, degrees of freedom, significance level and 99% confidence interval for the mean difference. The t-value of -5.815 for 14 degrees of freedom (df) is highly significant as significant value for two -tailed test is 0.000 (Table no.8). Therefore, we reject the null hypothesis. Hence, buyer becomes committed mainly because of Brand salience.

					per			
Pair 1 "Before Brand salience- Habitual buyer" - "After Brand Salience - Committed buyer"	0.587	0.391	.101	0.887	- 6	0.28 5	5.81 5	14 0.000

### Results and conclusion

Various factors influence the strength of a specific product or brand. Firm must identify these factors from various ways, find an effective way to launch a new product effectively and work out to turn a weak brand into a successful one. Consumer have no brand loyalty when they purchase the brand for the first time then it becomes habitual for them according to the performance. They are ready to pay the premium price or sometimes satisfied with the switching cost too. Consumers become customer due to brand friend and it paves the way to committed buyer. Then customers become loyal customers will consistently purchase products from the preferred brands. Irrespective of their price and convenience, companies also develop brand ambassadors. Customers often purchase it creates stronger relationship and it leads customer to champion for the products and services and creating a powerful referrals and marketing that will help to drive for new customers. Current customer scan be more important than acquiring new ones. Firms take steps to implement a customer loyalty program, send regular customer new letter emails, and delight the customers, offer discounts. Current customers is the asset of our firm. They only know the brand, products and the services. This will help to find new customers.



M. D. MOLEV, I. A. ZANINA, A.G. ILIEV, Y. E. CHERTOV

## Risk Assessment For The Rostov Region Population During The Unpromising Coal Mines Elimination

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**Abstract.** Article is devoted to describing scientific research results in the field of population safety concerning justification of the action program to eliminate coal mines. In work it is shown that safety of inhabitants and the environment in the territory of the liquidated mines can be achieved only on the basis of potential technogenic risk complex assessment from all range of factors accompanying process of the coal enterprises closing. The methodology of identifying dangers and forecasting negative impact of the liquidating actions for population health and safety is stated. In particular, the assessment technique of the developed mine space flooding dynamics is described. In a final part of the article data on introduction of researches methodology is provided to practice scientific and technical maintenance of liquidating works in the territory of the Russian Donbass.

**Keywords:** Technogenic risk, coal mines elimination, negative impact factors, danger assessment methodology, flooding dynamics, the region safety model.

### Introduction

Elimination of so-called unpromising coal mines of Russia is an important factor of social and economic development for coal-mining regions. The importance of this problem is caused, first, by the scale of the carried-out activity. Thus, for example, in the territory of the Rostov region during elimination 47 of 59 coal enterprises were closed.<sup>1</sup> Secondly, the technology which cornerstone is full flooding of excavations is applied as the task solution. This process is followed by emergence of the new technogenic phenomena which were not observed during operation of the enterprises, but exert negative ecological impact on the habitat and safety of the population within the region. This brings up distinctive processes:

- pollution of the water-bearing horizons and drinking water intakes in the liquidated enterprises zone;
- flooding and deformation of a day surface, including in the territory of settlements;
- uncontrollable release of gases from the liquidated excavations into the atmosphere;
- deterioration in a soil cover condition owing to ground waters level rising.

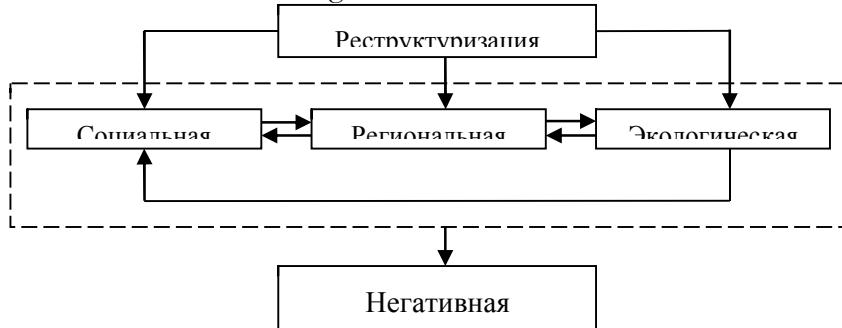
Cumulative influence of technogenic factors causes soil pollution and hydrographic network of the region mineral salts pollution with heavy metals and other harmful substances. Besides, on mountain withdrawal of mines stores of solid and liquid production wastes are placed: the waste heaps, sludge collectors are formed being essential sources of the hydrosphere, lithosphere and atmosphere pollution. According to official statistical data, billions of tons of solid waste are

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<sup>1</sup> M. D. Molev, S. A. Maslennikov, I. A. Zanina, N. I. Stuzhenko, *Forecasting of a condition of technosphere safety: the monograph*, Shakhty, ISOiP (branch) of DGTU, 2015.

"Risk Assessment For The Rostov Region Population During The Unpromising Coal Mines Elimination," *Astra Salvensis*, V (2017), Supplement no.1, p. 139-149 stored in waste heaps and sludge collectors in the territory of the Russian Federation and annually about 15 million tons are added to them.<sup>2</sup>

Thus, unpromising coal mines elimination represents a significant negative source of impact on ecological safety of the population and the environment in regional scale. Authors consider that it is consistent to display current situation as logical scheme submitted in the figure 1.



Реконструкция угольной отрасли Социальная сфера Региональная экономика Экологическая ситуация Негативная трансформация среды обитания	Reconstruction of coal mining Social sphere Regional economy Ecological situation Negative habitat transformation
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Fig. (1). Negative impact of coal mines elimination on the region

The considered problem relevance is that mine elimination in the territory of the Rostov region currently continues. Therefore, authorities of the subject of the Russian Federation and production services of the coal-mining enterprises are faced by the purpose: to provide normal activity conditions for the population of miner's territories and to minimize negative impact of the arising technogenic factors on the regional natural and technical system (NTS). In order to achieve the specified purpose it is necessary to solve the following problems:

- identification of all range of factors defining character and scales of ecological consequences of mine elimination;
- assessment of a role of the revealed factors on the processes (technogenic risk assessment) taking place in NTS;
- development of a rational complex of methods and techniques for geoecological observations;

<sup>2</sup> V. I. Golik, V.I. Komashchenko, S. A. Maslennikov, S. G. Stradanchenko, "Increase in completeness of use of a subsoil by deep recycling of enrichment of coal," in *Mountain magazine*, IX (2012), p. 91-95.

- formation of optimum set of organizational and technical actions, the liquidating works directed to prevention (minimization) of negative impact.

The vast diversity and scale of the technogenic influence connected with this elimination causes obligatory scientific maintenance of organizational and technical works. Use for works safety assessment of the existing standard techniques leads, as practice shows, to technogenic accidents of regional scale.<sup>3</sup> The main reason is that the specified methodical recommendations do not allow obtaining a solid data to adopt administrative decisions.

The detailed analysis of publications on the considered problem. Vartanov<sup>4</sup> shows that there are no monographs and articles in which the evidence-based development technique of a complex of organizational and technical actions for coal mines elimination taking into account potential technogenic risk for the population and the regional habitat is given. In this situation authors consider it expedient to state results of our own researches.

### **Research methodology**

The methodology, according to classical philosophical definition, is the doctrine about structure, the logical organization, methods and means of activity in a certain branch of science and technicians. Methodological bases of NIR represent a close interlacing of elements of the theory, characteristic of the present stage of scientific and technical development, and practice at the solution of such large complex economic problem as development of actions for protection of the regional environment at a stage of unpromising coal mines elimination in the Russian Federation.

The offered concept of justification and application of organizational technical solutions is based on the following fundamental physical and mathematical theories: system analysis (theory of systems), basic provisions of the research theory of operations, theory of prognostics and principles risk management (risk analysis). Let us state the specified positions taking into account their adaptation to the problem considered within the present article.

The research of the main questions of activity safety, its structure and functions taking into account considerable variety of implementers of technological processes, and also organizational forms, being in permanent interaction, demonstrates that coal mines and cuts together with the surrounding environment

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<sup>3</sup> M. D. Molev, S. G. Stradanchenko, S. A. Maslennikov, "Theoretical and experimental substantiation of construction regional security monitoring systems technospheric," in *ARPN Journal of Engineering and Applied Sciences*, X (2015), no. 16, p. 6787-6790.

<sup>4</sup> A. Z. Vartanov, A.D. Ruban, V. L. Shkuratnik, *Methods and devices of control of the environment and environmental monitoring*, Moscow, Mountain book, 2009; A. V. Mokhov, "Influence of flooding of coal mines on dynamics of hollow space in the carboniferous massif," in *Mountain information and analytical bulletin*, III (2008), p. 196-205; V. I. Golik, S. G. Stradanchenko, S. A. Maslennikov, "Experimental Study Of Non-Waste Recycling Tailings Ferruginous," in *International Journal of Applied Engineering Research*. V (2015), no. 15, p. 35410-35416; M. S. Pleshko, S. G. Stradanchenko, S. A., Maslennikov, O. V. Pashkova, "Study of technical solutions to strengthen the lining of the barrel in the zone of influence of construction near-wellbore production," in *ARPN Journal of Engineering and Applied Sciences*, I (2015), p. 14-19.

"Risk Assessment For The Rostov Region Population During The Unpromising Coal Mines Elimination," *Astra Salvensis*, V (2017), Supplement no.1, p. 139-149 form the difficult dynamic natural and technical system (NTS). According to authors, it is also logical to consider process of ensuring ecological safety of NTS as difficult organizational and technical and technological education. The structure of the considered system consists of a set of the components which are formed proceeding from their functional characteristics and relationship in the course of functioning of system in general.<sup>5</sup> Basic scientific research demonstrates that for a successful solution the level of the applied methods of a research has to correspond to complexity of the analyzed system. The analysis of publications showed that efficiency of system approach is confirmed with practice of development of difficult systems and results of their introduction in various branches of the Russian economy, including at the enterprises of coal branch.<sup>6</sup> The purpose of the system analysis – is to concentrate the main efforts on the complex key problems which are not giving in to the decision by simpler methods, for example observation. For practical realization of theoretical practices of a research of ecological and eco-economic systems it is necessary to use the integrated system analysis (ISA). ISA, from the point of view of authors, has to include the joint analysis strategic, morphological, functional and genesis-predictive a level of system of "standard" and their comparison with similar striations of the studied system. The integrated system analysis also allows to improve a goal-setting in system and not to lose track of such important system properties as synergetic effect emergence, unevenness of development of elements of system, existence of "narrow" places in system, openness and adaptability of system. Realization of the specified approach when forming the program of organizational and technical actions for mine elimination is new application of the known theoretical provisions and provides reliability and completeness of information.

It is known that as a quantitative measure of technogenic and ecological danger serves risk assessment that is visually illustrated by the scheme represented in the figure 2.<sup>7</sup>

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<sup>5</sup> V. N. Kokhanenko E. V. Duvanskaya, M. D. Molev, I. A. Zanina, A. G. Iliev, "The New Approach When Solving The Equation of The Extreme Current Line In The Problem of Free Spreading of A Turbulent Flow" <[http://www.ripublication.com/ijaer10/ijaer10n4\\_133.pdf](http://www.ripublication.com/ijaer10/ijaer10n4_133.pdf)>. - International Journal of Applied Engineering Research <<http://elibrary.ru/contents.asp?issueid=1425464>>, accessed 12. 07. 2017; G. S. Rosenberg, V. K. Schitiks, P. M. Brusilovsky, *Ecological forecasting*, Togliatti, Ecological institute Ran, 1994; S. G. Stradanchenko, S. A. Maslennikov, E. V. Shevchenko, V. I. Golik, Y. I. Razorenov, C"oncrete Activation in Disintegrator During Mine," in *Shaft Fixing and Applied Sciences*, 2016, p. 1191-1195.

<sup>6</sup> A. A. Yemelyanov (ed.), *The system analysis in management*, Moscow, Finance and statistics, 2007; I. V. Bestuzhev-Lada, *The workbook on forecasting*, Moscow, Thought, 1982; M. D. Molev, "Methodology of control and forecasting of a condition of the coal massif," in *Mountain information and analytical bulletin*, IX (2007), p. 159-162; V. I. Golik V.I. Liashengko, S. A. Maslennikov, "Safe parameters of an artificial roof at underground mining operations," in *Safety of work in the industry*, IX (2016), p. 48-51.

<sup>7</sup> M. D. Molev, S. A. Maslennikov, *Technological hazards of the population of big cities: monograph*, Shakhty ISOiP (branch) of DGTU, 2016.



Fig. (2). Logical communication between danger and risk assessment

The main criterion of effectiveness of liquidating works is the level of safety of the population of the territory and environment therefore authorities of the territorial subject of the federation and the public of the region need to know a condition of NTS in the short-term and long term. General "denominator" in risk assessment, forecasting of its parameters and management of risk is that they make three stages of uniform process of the decision-making based on the characteristic of risk. Such community is caused by their main criterion function - definition of priorities of the actions directed to reduction of risk to a minimum. For obtaining result it is necessary to know as its sources and factors (the analysis of risk), their behavior in the long term (forecasting of parameters of risk), and the most effective ways of its reduction (management of risk). Thus, in practice it is necessary to carry out the system forecasting consisting in the most reliable representation of living conditions of people at implementation of actions for closing of mines. This purpose is objectively achievable when using in a complex with the system analysis and a research of operations of so-called methodology of prognostics which contains laws and ways of development of forecasts of development of dynamic systems. It is important to specify the probabilistic nature of the studied processes from which follows that activities for forecasting of ecological safety of the population of coal regions, has to be guided by the integrated system analysis. Authors decided to determine an essence of this mathematical procedure as a method of "a double complex", i.e. a research and assessment of parameters of a condition of NTS by a complex of methods.

The technique of the analysis of risk of the population organically fits into the general system of researches of settlement terms of mines because each action has to be analyzed from the point of view of its impact on the objects and processes forming the habitat. The declared position is represented to authors reasonable as it is confirmed with practical experience. So, dynamics of a state and development of NTS, is, derivative function from interaction more than twenty sources of geomechanical, physical and chemical and hydrodynamic character .

The described methodology of researches of risk of the regional population makes base of scientific maintenance of liquidating actions in coal branch at the same time a formula of calculation of total risk from negative impact of technogenic factors on NTS it is possible to write down in a look:

$$R = P_1 \times P_2 \times P_3 \times P_4,$$

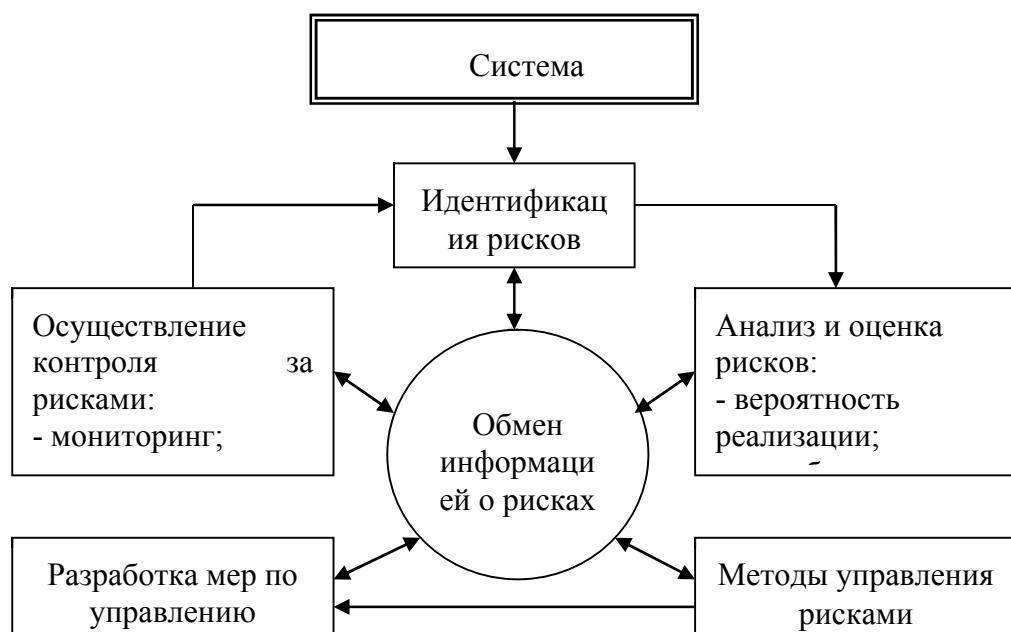
where:  $R$  - risk (probability of causing damage);  $p_1$  - probability of emergence of the event causing formation and action of dangerous factors;  $p_2$  - probability of formation of dangerous levels of physical fields and fields of concentration of the harmful substances influencing people and other objects;  $p_3$  - probability that the specified levels of fields and loadings will result in a certain damage;  $p_4$  - probability of refusal of means of protection of negative technogenic impact.

Risk in the light of the considered problem – is quantitative assessment of stability of the NTS various components and potentially irreversible destruction of the habitat of the population. In the course of the research it is necessary to estimate all types of risk: individual, technical, ecological, social and economic. At the same time the environmental risk expresses probability of violation of further normal functioning and existence of ecosystems and objects as a result of anthropogenous intervention in the environment. Scales of environmental risk are reflected the concept "consequences" which represent the generalized negative result of an event - ecological damage. The structure of risk including presence of two key parameters allows estimating quantitatively risk on a formula

$$R = \lambda Y,$$

where:  $\lambda$  - frequency of emergence of certain type accidents;  $Y$  - damage size from realization of a negative event, rub.

Components of the described methodology provide a full complex of researches of negative impact of the natural and technogenic processes which are potentially accompanying restructuring of the coal enterprises: identification of dangerous factors, their assessment, including technogenic risk. The developed technique is open system and has ability to optimization of design decisions and formalization of results. The general scheme of assessment and management of potential environmental risk is submitted in the figure 3.



<p>Система управления рисками Идентификация рисков Осуществление контроля за рисками: - мониторинг; - реагирование; - оценка эффективности. Разработка мер по управлению рисками Обмен информацией о рисках Анализ и оценка рисков: - вероятность реализации; - ущерб от реализации. Методы управления рисками</p>	<p>Risk control system Risk identification Risk control: - monitoring; - reaction; - efficiency assessment. Risk management measures development Exchange of information about risks Analysis and assessment of risks: - probability of realization; - damage from realization. Risk management methods</p>
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Fig. (3). Risk control system functioning scheme

### Theoretical and pilot studies data

Authors of the article executed large-scale researches of a problem of the scientific maintenance of mine elimination in the territory of the Rostov region which is the typical Russian coal basin on geological and hydrogeological conditions. Geological, geophysical and surveying materials of the coal enterprises and research organizations, and also the extensive factual base received by authors when performing skilled and methodical works for 1994 - 2007 were analyzed. The analysis of data allowed establishing factors which potentially define geological, hydrogeological and ecological processes in time and regional space, and also logistic communication between them. The Ministry of Energy of the Russian Federation in 1994 made the decision on elimination of unprofitable mines of the region in the way of full flooding.<sup>8</sup> Realization in practice of this document led to the fact that the leading role in geomechanical and hydrogeological processes at a stage of closing of the enterprises is played by dynamics of mine waters. Also, according to results of the author's researches confirmed with practice of observations the fundamental conclusion was drawn on formation of the uniform technogenic underground water heat-sink horizon. The similar underground horizon, for example, was formed in the territory of the being Shakhty and Nesvetayevsky coal districts in 2003.

At the same time, dynamics of the hydrosphere in combination with other technogenic factors (about 20 sources of various physical, chemical and geological nature) makes negative impact on NTS. The role of the specified factors is shown

<sup>8</sup> V. E. Zaidenwarg, A.M. Navitny, V. F. Tverdokhlebov, "Hydrogeological aspects of mine elimination in Russia," in *Coal*, XII (1999), p. 28-30.

"Risk Assessment For The Rostov Region Population During The Unpromising Coal Mines Elimination," *Astra Salvensis*, V (2017), Supplement no.1, p. 139-149 in influence on hydrogeological and geomechanical processes:

- balance of the superficial and underground hydrosphere;
- chemical composition and bacteriological condition of a surface water and underground water intakes;
- formation of streams and ways of the movement of gas mixes;
- change of marks of a day surface;
- the nature of engineering-geological processes in the massif of rocks;
- to the loudspeaker of a geomechanical and geodynamic condition of breeds of the massif.

Dynamics of mine waters in the course of flooding of mines defines conditions of transfer of the harmful and toxic substances which are contained in the underground geological environment, and also migration of the gases making the underground atmosphere. Unpromising coal mines elimination of the region by means of full flooding caused on the lowered sites of the territory flooding and bogging of lands of agricultural purpose, an exit to a day surface of so-called "dead air", pollution of the atmosphere emissions of pedigree dumps. Materials of observations of processes of mine elimination in the Rostov region testify as to registration cases of "dead air" in cellars of private houses (for example, in the territory of the settlement of the mine of Krasin in the city of Shakhty), and flooding of the land plots in several miner's settlements.<sup>9</sup> About real threat of inadmissible pollution of sources of water supply for local population, that is almost ecological disaster of regional scale, in case of uncontrollable process of flooding it is possible to judge by composition of the mine waters which are pumped out from the developed space and presented in the table below.

Table 1. The maintenance of elements in drainage waters from the liquidated mines of the former LLC Rostovugol (according to the Shakhty Sanitary & Epidemiological Service, 2000)

	Mineral Maintenance, mg/dm <sup>3</sup>								
	Pb	Cd	Li	Mo	Mn	Cr	Sr	Ti	Zn
lubokaya	0,005	0,015	0,455	0,03	1,35	0,025	6,8	0,05	0,05
rasin	0,003	0,005	2,6	0,02	2,8	0,02	5,0	0,06	0,1
ayskaya	0,003	0,045	0,34	0,035	0,02	0,013	9,5	0,1	0,1
irnaya	0,003	0,009	1,35	0,02	0,02	0,013	7,0	0,05	0,12
aklonnay	0,003	0,006	0,34	0,01	0,02	0,01	8,5	0,04	0,08
ubileynay	0,003	0,005	0,22	0,009	0,1	0,01	4,5	0,02	0,1
uzhnaya	0,004		1,3	0,015		0,02	8,4	0,02	0,22
		0,009				0,015			

Conclusions about the leading role of mine waters dynamics are confirmed by results of the expert assessment executed on the basis of the analysis of the

<sup>9</sup> V. M. Yeremeyev (ed.), *Environmental monitoring of elimination of unpromising mines of East Donbass*, Shakhty, YuRO AGN publishing house, 2001.

materials published by the leading scientists of research institutes VNIMI, VNIGRIU, IGD of A. A. Skochinsky and specialists of the production organizations for a problem of unpromising coal mines elimination.<sup>10</sup>

Thus, the logical step to authors of article represented carrying out pilot and theoretical studies on development and realization of system of regional hydro monitoring in the territory of the liquidated mines. The basic methodological principles were as a result formulated; methods, means, a measurement technique, processing and interpretations of data are proved. So, in the course of skilled and experimental works the hydro monitoring technique was tested and introduced.

For justification of a rational complex of actions for decrease in the negative impacts accompanying mine elimination, authors in 1989-2005 conducted monitoring pilot studies of the hydrodynamic mode with use of the electric level gage of an original design.<sup>11</sup> For establishment of the main characteristic tendencies of flooding for the specified period about eight hundred natural measurements in thirty seven trunks and observation wells of 19 liquidated mines which are located in the territory of the Rostov region are taken. On the basis of the analysis of the representative massif of results conclusions are drawn:

1. Speed of rise in water level, collecting in the developed space of mines of the pool, depends on cumulative influence of the geological, hydrogeological and mining conditions developing on concrete flooded sites of the coal massif and fluctuates within 0,01-2 m/day. At the same time the initial stage of flooding (on the so-called lower underground horizons) is characterized by higher gradients of speed. On the top horizons of the liquidated mines rates of rising of water considerably decrease that characterizes saturation of the developed space by mine waters.

2. Extent of filling with water of the developed space of mines makes from 0,3 to 0,9 that is caused by types of rocks, technology of working off of mine fields, a tectonic misbalance of the coal massif, etc.

3. The established integrated characteristic of flooding dynamics of the developed space of mines within the region can serve as the most plausible criterion for forecasting of development of the current hydraulic situation, in again closed mines. Validity of this statement is caused, in our opinion, by large-scale selection of the actual data attracted to the analysis.

For definition of integrated dependence of flooding on a complex of geological, hydrogeological and mining factors authors made the analysis of the experimental materials reflecting results of measurement of levels of flooding for the liquidated mines which are located in the Russian Donbass. Creation of schedules of rise in level of mine waters as functions of the current time is for this purpose carried out. The family of the constructed curves reflected results of own regime observations in mountain withdrawal of mines of associations Rostovugol and Gukovugol: Kalitva, Stepanovskaya, Komissarovskaya, Naclonnaya, Mirnaya, Nesvetayevskaya, Sinegorskaya, Sokolovskaya, Tatsinskaya. The analysis and

<sup>10</sup> I. M. Verzilov, M. F. Shilovsky, *The analysis of changes of the hydrogeological conditions caused by flooding of the closed mines*, Moscow, NNTs IGD publishing house of A. A. Skochinsky, 1999.

<sup>11</sup> *Ibidem*.

"Risk Assessment For The Rostov Region Population During The Unpromising Coal Mines Elimination," *Astra Salvensis*, V (2017), Supplement no.1, p. 139-149 synthesis of actual data showed, first, similarity of schedules in a form, secondly, quite accurate splitting curves into three characteristic areas: an initial interval with a considerable gradient of speed; the average area having a schedule tilt angle within 40-20 degrees; a final piece with a tilt angle to abscissa axis less than 10 degrees. The constructed experimental dependences of flooding dynamics on time well it is approximated by regression in the form of a parabola piece with a horizontal axis of symmetry

$$y = a_0 + a_1 x - a_2 x^2$$

According to the made assessment, the determination coefficient characterizing convergence of experimental schedules from a theoretical curve makes 0,98-0,99.

Application of the integrated characteristic of flooding dynamics gives the chance to reasonably carry out the choice of options of organizational and technical liquidating actions in existential coordinates, including technogenic risk assessment of their realization. Within scheduling it is necessary to study possible options of succession of events according to the logical scheme "an event (action) - impact on NTS - a system response (risk of emergence of danger). Probabilities of all types of risk are calculated by the known formulas. As practice shows, very effective tool is development of "pessimistic" and "optimistic" scenarios of succession of events that allows minimizing risks of the operating decisions.

Within performance of risk analysis of the population it is necessary to pay special attention to application of computer modeling for the solution of all tasks arising at stages of scientific maintenance of process of mine elimination. At the same time quantitative assessment of consequences of realization of a concrete action is made on the basis of the mathematical model allowing comprehending in details and objectively behavior of natural and technical system. Modeling application as practice shows, represents the effective modern tool of assessment of potential risks in actual practice of carrying out these or those technical works .

Such model has to reflect the most important lines of all processes and the phenomena connected with mine elimination and on which safe functioning of NTS and, in particular, health and safety of local population most depends. At creation of model the mathematical apparatus of varying complexity can be used. The method of statistical modeling can be applied to risk assessment when planning organizational and technical actions for liquidation of the coal enterprises when the condition of system depends on a large number of the random factors which are difficult combined among themselves. Is defined by output parameters of functioning of mathematical model of risk of accident, population mean of number of the struck inhabitants who are constantly living in the area endangered at realization of a negative event on an object (potential pollution of sources of water supply by mine waters, formation of a failure of a day surface, etc.).

Risk assessment allows developing a technique of management of risk at a stage of elimination of the concrete mine. Authors on the basis of the analysis of research results developed permanent model of techno sphere safety of the region which represents management information structure in geographical information

system form. The essence of the offered work consists in expeditious display of parameters of a condition of NTS on the map of the region in the electronic and paper version. The similar system of discrete and continuous monitoring of safety of the region allows registering, analyzing and predicting a condition of techno sphere and, respectively, risks for local population at implementation of the plan of liquidating actions.

### **Results and discussions**

The main approaches to risk assessment for the population of the coal-mining region during the developing and the program implementation of organizational and technical actions for unpromising coal mines elimination by way of full flooding are presented in the present article. The drafted theoretical and methodical provisions do not contradict fundamental scientific theories of geology, geomechanics and hydrogeology. Elements of author's methodology, including methods of the analysis and risk assessment, forecasting of consequences of implementation of the plan are consistently stated. Distinctive feature of the offered technique is the possibility of optimization of design decisions depending on specific conditions and formalization of results. On the basis of the analysis of materials of researches the original model of management of safety of the region taking into account potential risk of local population is offered.

The offered working hypothesis is confirmed in the course of skilled and methodical works with use of the basic methodological principles. Quality of expected data on results of the comparative analysis of forecasts of m of the actual materials is estimated at the level of 80-90%.<sup>12</sup>

### **Conclusion**

On the basis of the above research results it is possible to draw a conclusion that use of the methods and means making author's methodology of risk assessment for the population allows increasing eco-economic efficiency and safety of organizational and technical actions for unpromising coal mines elimination in the Rostov region.

Real confirmation of the author's methodology high technical and economic efficiency is proven by results of introducing technique and its separate elements in practice of scientific and technical maintenance of liquidating works.

The offered technique can be used in all coal regions as it is developed on the basis of the integrated system analysis and the theory of forecasting, and the established tendencies of development of negative ecological factors have universal character.

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<sup>12</sup> M. D. Molev, S. A. Maslennikov, I. A. Zanina, N. I. Stuzhenko, *Forecasting of a condition of techno sphere safety: the monograph*, Shakhty ISOiP (branch) of DGTU, 2015.

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## Portfolio Method Of Selection The Adequate Kpi System For All Types Of Organizations\*

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**Abstract.** Conceptually new direction, called "Performance Management (PM)" was formed at the turn of the XX and XXI centuries. In the article there is an attempt to retrace the interrelation of such instruments of Performance Management as Balanced Scorecard (BSC) and KPI (key performance indicator).

The key performance indicators of the strategy are defined in this article as the instruments of corporate control, consisting of a set of indicators in the context of the interests of the company's stakeholders. Comparing their dynamics, one can judge about the effectiveness of the strategy execution. It is recommended to use BSC at the strategic level and KPI on the operational level, but it is possible to use it as an independent method of corporate control.

Portfolio method of selection of adequate KPI system, depending on two factors, was proposed: the technology of KPI indicators development (according to the targets or business processes) and the possibility of connection the objectives with a separate structural unit (integration/disintegration). The matrix, determining the collective contribution (at the department level) into the implementation of the company's common strategy, has been optimized. Two approaches to the formation of the system KPI were approved: the target integration and process closed in the Tatarstan Customs, through the introduction of key performance indicators. This proves the universality of the used corporate control instrument, and the possibility of its implementation in state bodies.

**Keywords:** company's objectives, strategy, Performance management, Key Performance Indicators, matrix for the selection of KPI system.

### Introduction

First of all, generalizing and supplementing the definitions of Performance Management (PM)<sup>1</sup>, we define Performance Management as a holistic approach to strategy implementation, aimed at improving the company's ability to assess its state, and to manage its performance at all levels, taking into account the objectives of the main stakeholders. The concept of PM became an independent direction of management, which has not only a certain theoretical idea, but also the instruments for its practical implementation - Balanced Scorecard (BSC) and Key performance indicators (KPI).

The feature of PM concept is the development of a system of indicators, characterizing the execution of the strategy for a certain period. On the basis of KPI, the initiative reporting can be built, which is another effective instrument for Performance management.

### Methods

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\* Acknowledgements: We express our gratitude to the employees of Tatarstan and Perm Customs for the cooperation on development of this topic.

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<sup>1</sup> J. W. Campbell, "Identification and performance management: an assessment of change-oriented behavior in public organizations," in *Public Personnel Management*, VII (20159, no. 1.

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At the turn of the XX and XXI centuries, a fundamentally new direction was formed, called "Performance Management (PM)" (Klochkov A.K. 2010). Currently, this abbreviation is used to represent the units of company's management in automated analytical programs. But in this article "Performance Management" is considered in its second aspect, as an independent and holistic concept of monitoring the implementation of the strategy.

In addition, at least three different abbreviations are used:<sup>2</sup>

- Business Performance Management, BPM;
- Enterprise Performance Management, EPM;
- Corporate Performance Management, CPM.

CPM (Corporate Performance Management) is used by the analysts of Gartner and by the company Cognos (it was acquired by IBM in 2008).

It should be noted, that BPM can be considered as a continuation of the development of such systems as CRM (Customer Relationship Management System). CRM is an information system for automation the strategies of interaction with company's customers. Analytical CRM –is the reporting and analysis of information in different sections (customer funnel, the analysis of the results of marketing activities, the analysis of sales effectiveness in terms of products, customer segments, regions, and other possible options).

Today the concept of BPM is recognized by the world community, including such well-known analytical companies as IDC, Gartner and META Group. As early as in 2004, BPM Standards Group was formed due to the need for standardization of BPM. Industry Framework Document is the most important of its developments. It includes the definition of BPM, the characteristics of the main management processes, as well as the typical architecture of information BPM-systems. This standard also notes that BPM, CPM and EPM should be considered as equivalent terms.

Note, that just like the term PM, the concept of BPM system can have two meanings: the concept of management (a certain approach to making managerial decisions, and their practical implementation) and as an information system (a set of software and hardware, supporting the ideology of BPM and providing its practical implementation). In this article, we adhere to the first approach.

Next, the interrelation of such Performance Management instruments as Balanced Scorecard (BSC) and KPI (Key performance indicator) should be considered.

Balanced Scorecard is developed on the basis of the study, conducted in the early 1990s by the professor of «Harvard Business School» Dr. Robert S. Kaplan and the president of the consulting firm "Renaissance Solutions" David P. Norton (Kaplan, Robert S., and David P. Norton. 1992). The study was conducted with the aim of revealing new ways to increase the efficiency of activities, and achieving business goals.

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<sup>2</sup> Robert S. Kaplan, P. Norton David, 1992. "The Balanced Scorecard: Measures that Drive Performance," in *Harvard Business Review*, Jan.–Feb. (1992).

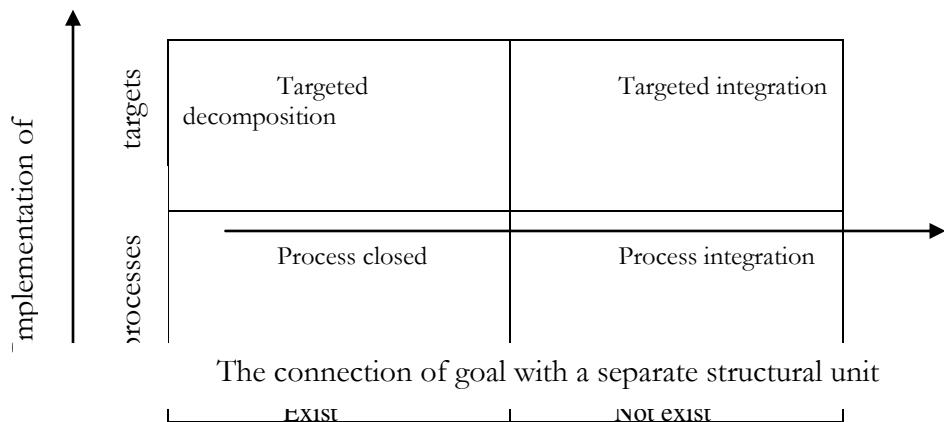
Balanced Scorecard (BSC) is based on the method of target management of P. Drucker<sup>3</sup> and on the method of describing the associations between goals, using "mind maps", which was created by Tony Buzan.<sup>4</sup> But due to a successful advertising campaign and promotion strategy, this technique has become recognizable, and it is difficult to quarrel with this statement.

There are three main technologies of KPI development:<sup>5</sup>

- according to the business processes;
- according to the targets;
- according to the projects.

Practical experience shows, that it is rather difficult to choose a suitable technology.

As a result of summarizing the conclusions from our consulting practice, we offer a portfolio method of selection the adequate KPI system for the organization. The choice is made taking into account two factors: technologies of KPI indicators development (according to the targets or business processes) and the possibility of connecting the goals with a separate structural unit (integration/disintegration) (Figure 1).



<sup>3</sup> Peter F. Drucker, *The Practice of Management*, Moscow, 1954.

<sup>4</sup> A. K. Klochkov, *KPI and staff motivation. Complete collection of practical instruments*, Eksmo, 2010.

<sup>5</sup> Yu. Polozhentseva, M. Klevtsova, "KPI-monitoring for university's performance improvement," in *Ekonomichnye sposoby*, XXI (2017), no. 1-2, p. 71-74.

Figure1. Portfolio matrix of selection an adequate KPI system for the organization

So, you can choose four approaches. The targeted approach can be decompositional (it means, that lower-level goals are derived from the top-level targets) and integration (when the contribution of several departments is taken into account in achieving a single goal). The process approach can be closed (the processes are unique for each department and are disjoint) and integration (when several departments are involved in the process). The integration approach can also be divided into the integration sequential (execution of the processes by the departments along the technological chain) and parallel (execution of the same processes in each department).

### Results and discussion

Our methodology has been tested in several organizations: printing firm, power supply company, trading companies, etc. So, the decomposition approach is recommended for the sales manager. The targeted integration approach is proposed for the project team, with the aim to bring a new product to the market. Process closed approach is recommended for accounting. Process integration approach is used for the Marketing Department.

Here is an example of Tatarstan Customs, where the task of KPI introduction was to increase the fairness in the remuneration of employees and to increase the effectiveness of achieving strategic goals.

To assess the work of inspectors of the customs post, we have chosen the targeted decomposition approach.

To assess the scope, complexity and quality of the work of the customs inspector, we developed an integrated indicator of the individual KPI "Personal effectiveness of the inspector". The method of analytical geometry was used to obtain the formula, which determines the indicator "Personal effectiveness of the inspector".

Volume (N) - is the sum of shares of import and export declarations, issued by the inspector from the total cohort of import and export declarations, issued by the customs clearance department and customs control department of the customs post.

$$N = N_{ins}/N_{ccd\ dep}. \quad (1)$$

Complexity (S) - is the arithmetical mean of the average number of goods in one import declaration and the average number of goods in one export declaration from the cohort of declarations, issued by the inspector.

$$S = N_{goods}/N_{ccdins}. \quad (2)$$

Quality (K) - the share of error-free declarations.

$$K = N_{ccd\ ins.} - N_{err\ ccd} \quad (3)$$

To determine the formula for calculation of the indicator "Personal efficiency of the inspector", we find the volume of the SNOOK pyramid, if the coordinates of its vertices are  $S(x_1; y_1; z_1); K(x_2; y_2; z_2); N(x_3; y_3; z_3)$ ; and the vertex O lies at the origin (the coordinates of the vertex  $(0; 0; 0)$ ).

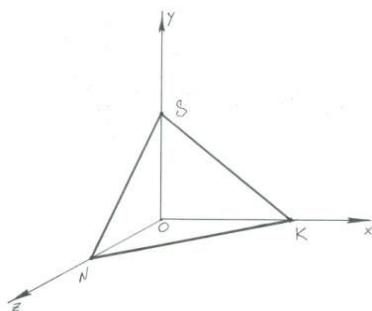


Figure 2. Mathematical model of the indicator "Personal effectiveness of the inspector"

Consider the vectors  $\overline{ON}$ ,  $\overline{OS}$  and  $\overline{OK}$ , using which the pyramid is built.

The coordinates of vectors are calculated as follows:

$$\overline{ON} = \{x_3 - 0; y_3 - 0; z_3 - 0\} = \{x_3; y_3; z_3\};$$

$$\overline{OS} = \{x_1 - 0; y_1 - 0; z_1 - 0\} = \{x_1; y_1; z_1\};$$

(4)

$$\overline{OK} = \{x_2 - 0; y_2 - 0; z_2 - 0\} = \{x_2; y_2; z_2\}.$$

The volume of the pyramid is calculated by the formula

$$V_{SNOK} = 1/6 \mid \overline{ON} * \overline{OS} * \overline{OK} \mid$$

(5)

Triple product of three vectors is calculated as follows:

$$(6) \quad \begin{array}{|c|c|} \hline \overline{ON} * \overline{OS} * \overline{OK} & \begin{array}{c} x_3 y_3 z_3 \\ x_1 \quad y_1 \quad z_1 \\ x_2 y_2 \quad z_2 \end{array} \\ \hline \end{array}$$

Where

$$X_2 = K; Y_1 = S; Z_3 = N;$$

$$x_1, z_1, y_2, z_2, x_3, y_3 = 0.$$

Matrix determinant is calculated, using the values:

$$\Delta = x_3 y_1 z_2 - x_3 y_2 z_1 - x_1 y_3 z_2 + x_2 y_3 z_1 + x_1 y_2 z_3 - x_2 y_1 z_3 =$$

$$= 0 \cdot y_1 \cdot 0 - 0 \cdot 0 \cdot 0 - 0 \cdot 0 \cdot 0 + x_2 \cdot 0 \cdot 0 + 0 \cdot 0 \cdot z_3 - x_2 y_1 z_3 = x_2 y_1 z_3$$

$$\text{Then } V_{SNOK} = 1/6 (x_2 y_1 z_3)$$

(7)

The formula is simplified:

$$V_{SNOK} = x_2 y_1 z_3$$

(8)

The values are substituted:

$$V_{SNOK} = S * N * K$$

(9)

$U = N * S * K$  - is the formula, which defines the "Personal effectiveness of the inspector".

$U$  is calculated taking into account the number of worked days (the efficiency for one working day).

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The average efficiency index for the customs post is determined taking into account the actual numbers.

The average indicator for the position (separately for each group of positions) is defined taking into account the actual numbers.

Personal effectiveness of the inspector is 100%, if  $U$  is more than the average for the position or is equal to it, taking into account the number of worked days. In other cases, the efficiency is calculated as the share of  $U$  from the average value for the position, taking into account the number of worked days.

Table 1.The example of calculation of "Personal effectiveness of the inspector"

Post-holder	$K*S*N$ ( $U$ )	Taking into account the number of worked days	Average ( $N$ )	Average for the position	Personal effectiveness
Inspector 1	0,116	0,017	0,014	0,018	93
Inspector 2	0,363	0,016	0,014	0,018	92
Inspector 3	0,645	0,029	0,014	0,018	100
Inspector 4	0,503	0,023	0,014	0,018	100
Inspector 5	0,371	0,017	0,014	0,018	94
Inspector 6	0,496	0,023	0,014	0,018	100
Inspector 7	0,199	0,009	0,014	0,006	100
Inspector n	0,058	0,007	0,014	0,006	100



Figure 3.The diagram of the indicator "Personal effectiveness of the inspector"for customs officials

Уникальность	Uniqueness
N	Number
N по должностям	Number for the positions
ГГТИ	Chief State Customs Inspector
СГТИ	Senior State Customs Inspector

### **Conclusions**

So, we introduced a new remuneration system, based on KPI, at one of the customs posts of Tatarstan Customs. Socio-psychological researches were conducted in April, May and June 2017. According to the interviewed employees, the fairness of load distribution between them has increased (satisfaction has increased from 26 to 39%). Satisfaction of the post employees with the level of trust, attention and support of management has increased by 20%. The number of employees, satisfied with the organization of interaction between the functional departments of the customs and the departments of the post has increased by 10%. Satisfaction with the psychological atmosphere in the team has increased by 14%. Thus, the first results of approbation gave a positive effect.

"Portfolio Method Of Selection The Adequate Kpi System For All Types Of Organizations," *Astra Salvensis*, V (2017), Supplement no.1, p. 151-157

## Analysis Of Universal Methodologies Of Process Management Of Industrial Enterprises\*

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**Abstract.** *Large global corporations use one or more process management methodologies to improve their business processes and economic performance. As a rule, each of the methodologies is intended for application in a narrow field of activity. However, there are several universal methodologies, the application of which is possible in any field of activity. The analysis and development of practical recommendations on the application of universal process management methodologies is an urgent task for industrial enterprises, taking into account their specific features. The article analyzes the most common methodologies in the practice of Western corporations, in particular, Hammer, SCOR and BPTrends Associates. We revealed their advantages, disadvantages and peculiarities of application. The disadvantages of Hammer methodology, which significantly reduces the possibilities of its practical application, are the lack of methods for methodology implementation and modification of business processes, as well as a high level of risk in implementing the reengineering projects. The revealed disadvantages of SCOR methodology testify to the need to use it in combination with other methodologies of process management. The methodology of BPTrends Associates, due to its disadvantages, should also be supplemented by the methods of other methodologies of enterprise management.*

**Key words:** process management, universal methodology, business process, enterprise improvement.

### Introduction

The application of the majority of modern process management methodologies is focused on solving only a few tasks of a certain business process of the enterprise. For this reason, most industrial enterprises use, as a rule, a combination of several process management methodologies complementing each other and allowing covering the most important business processes of the enterprise. However, there are universal methodologies for process control, the application of which is possible to analyze and improve any of the business processes of the enterprise. The following universal methodologies are the most common in the developed countries: Hammer, SCOR and BPTrends Associates. Let us consider them.

### Main Text

#### *Hammer methodology*

This methodology was proposed by Hammer M. and Champi D. in the 1990s and was known as the reengineering of business processes in the literature.

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According to this methodology, the company's activities should be built from scratch on the basis of the most advanced technologies. At the same time, the previously used technologies for executing business processes are rejected. The methodology developers gave the following definition to the reengineering: "a fundamental redesign of the organization's business processes in order to improve key performance indicators such as: quality, cost, pace, services".<sup>1</sup>

The methodology authors emphasize that it is possible to carry out reengineering within the framework of individual business processes or the entire enterprise as a whole. All the reengineering works should be carried out by the specially trained groups of employees.

The methodology developers distinguish the following principles of business process reengineering:<sup>2</sup>

1. Combining several works into one (assuming a significant reduction in time for execution of the optimized part of business process).
2. The executors of business processes make their own decisions.
3. The work is carried out where necessary.
4. Control operations are minimized.
5. Negotiations are minimized.
6. All communications are carried out through the business process manager.

From our point of view, the application of proposed reengineering principles can lead to negative results. For example, minimization of control operations can lead to a deterioration in the quality of products. The first principle of "uniting several works into one" is also ambiguous in understanding. So, there are some questions to the technologies of combining dissimilar works and operations. Certain difficulties arise with the justification of reengineering projects, because the previously applied lean business process can be destroyed and not create a more efficient new process.

The methodology author Hammer M. distinguishes the following methods in his book "Faster, Better, Cheaper. Nine Methods of Business Process Reengineering":<sup>3</sup>

- designing of business processes;

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<sup>1</sup> M. Hammer, L. Hershman, *Faster, Better, Cheaper. Nine Methods of Business Process Reengineering*, Moscow, Alpina Publisher, 2017.

<sup>2</sup> P. Harmon, *Business Process Change*, NY, Morgan Kaufmann, 2014; M. Hammer, *The Reengineering Revolution: A Handbook*, New York: Harper Collins, 1995; P. Harmon, *Business Process Change*, NY, Morgan Kaufmann, 2014; M. Hammer, *The Reengineering Revolution: A Handbook*, New York: Harper Collins, 1995; M. Hammer, L. Hershman, *Faster, Better, Cheaper. Nine Methods of Business Process Reengineering*, Moscow, Alpina Publisher, 2017.

<sup>3</sup> M. Hammer, D. Champi, *Reengineering of the Corporation. Manifesto of the Revolution in Business*, Moscow, Mann, Ivanov and Ferber, 2011.

- performers;
- head of the process;
- infrastructure;
- performance indicators;
- management;
- culture;
- experts in business processes;
- process management structure.

The methods of reengineering, proposed by Hammer M., are not the methods in a classical sense of this concept. From our point of view, Hammer M. listed the main inalienable attributes and structural elements of technology for implementing process management at any enterprise.

An undoubted contribution of Hammer M. and Champi D. to the evolution of enterprise management systems is the call to the world business community to analyze its processes, which has been seen and given an additional impetus to the study of management technologies, in the book "Business Process Reengineering. Manifesto of the Revolution in Business".<sup>4</sup> Reengineering can be seen as a business philosophy, rather than a specific set of practical tools and methods.

That is why, from our point of view, the percentage of successful projects for reengineering of business processes is small.

The methodology has the following advantages: a) significant increase in the level of efficiency in case of successful business process reengineering; b) universality of methodology (possibility of application in various spheres of economy); c) possibility of applying to the main and auxiliary business processes.

The methodology has the following disadvantages: a) lack of methods for methodology implementation and modification of business processes; b) high level of risk in the implementation of reengineering projects; c) lack of detailed attention to the implementation of structural elements of the business process; d) problems with justification of the feasibility of implementing the reengineering project.

#### *SCOR methodology*

This methodology is based on the analysis, management and optimization of supply chains of material resources and goods to the business processes of the enterprise. Planning (monthly planning of the production and sales volumes of commodity products), procurements (of all types of material resources), production (including the movement of material resources and intermediate goods in accordance with the technological

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<sup>4</sup> Levina T.V. (2017). SCOR-Modelling. (Electronic resource). URL: <http://lscm.ru/index.php/ru/po-rubrikam/item/801-scор-моделирование>, accessed on 30.03.2017.

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process), delivery to the customer (order management, transportation and distribution), organization of return flows (processes associated with the return of packaging and products for any reason) are the key things within the methodology. It should be noted that the provision of production and movement of inventory items within the framework of the main business processes is carried out in accordance with this methodology on the basis of the standard theory of production organization, which focuses on production cycles, control operations, management of production equipment (including repair). etc. <sup>5</sup>

Stages of SCOR methodology introduction (5, 6):

1. Modeling the business processes "as is".
2. Benchmarking reveals the best performance indicators in the industry, which are set as a target for the key business processes of the organization in question.
3. It is revealed the best management solutions and technologies of the leading enterprises of the industry.
4. Modeling the business processes "as should be".

To date, SCOR methodology is an international cross-sectoral standard for supply chain management, the current version is 10.0. This version of the methodology contains a description of 200 structural elements of the key business processes, about 500 of the most important business process indicators of the world's leading enterprises for benchmarking, and a description of the best management decisions.<sup>6</sup>

Within the framework of SCOR methodology, such business processes as "Marketing", "Sales", "R&D", "Customer Service" are not subjected to analysis. These business processes are considered in the framework of DCOR (product development and design) and CCOR (sales and support) methodologies.

The following indicators of the organization's performance are distinguished in SCOR methodology: supply reliability; duration of production cycles and delivery of finished products to the client; costs for the supply chain operation; profitability of supply chain logistics assets.<sup>7</sup>

The methodology has the following advantages: a) focus on logistics operations, the cost of which is significant in the cost of production; b) ability to establish, on the basis of information from SCOR database, optimal targets for individual business processes and their structural elements; c) opportunity to study and implement the best management solutions based on

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<sup>5</sup> M. A. Matushkin, E. G. Gorbunova, "SCOR-Model as a Tool to Improve the Quality of Management of Russian Enterprises," in *Business. Education.Law.Bulletin of the Volgograd Institute of Business*, I (2016), p. 50-55.

<sup>6</sup> SCOR Overview. Version 10.0.(Electronic resource). URL: [www.supply-chain.org/](http://www.supply-chain.org/), accessed 30. 03. 2017.

<sup>7</sup> M. Christopher, *Logistics and Supply Chain Management*, St. Petersburg: Piter, 2004.

SCOR database; d) ability to modify business processes, focusing on "reference" models.

The methodology has the following disadvantages: a) incomplete coverage of business processes of the enterprise; b) absence of original methods for analyzing the production processes; c) impossibility to assess the level of maturity of business processes; d) impossibility of forming a full-fledged management system.

### **Bptrends Associates methodology**

The methodology of BPTrends Associates was developed by the Company IDS in the 1990s. It is based on the BPM (Business Process Management) concept.

The BPM concept includes such principles as: a) visualization of business processes and their structural elements in one of the notations; b) analysis of the obtained business process models for their subsequent optimization; c) use of methods of other methodologies to optimize the business processes (Harmon, 2014).

The BPM concept includes such objectives as: a) reduction of time for executing the business processes; b) improving the quality of products of business processes and marketable products in general; c) development of a balanced system of indicators with a view to more efficient management of the enterprise as a whole; d) creation of opportunities to implement strategic goals of the organization in the coordinated tactical actions within the framework of business processes.<sup>8</sup>

In the framework of BPTrends Associates methodology, the analysis and management are carried out at the level of "enterprise", "business process" and "business process implementation".

The main and auxiliary business processes are highlighted, the balanced scorecard systems, business process management technologies and the order of their interaction are developed at the level of "enterprise".

The information is collected, the existing business process algorithm is modeled, the model is analyzed, and its redesign is made to improve it at the level of "business process".

The detailed documentation of business process and its structural elements, algorithms for their implementation, executors, material, information flows, controls, software are implemented at the level of "business process implementation".<sup>9</sup>

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<sup>8</sup> R. Burlton, *Business Process Management: Profiting From Process*, NY, Sams, 2001.

<sup>9</sup> A. Mahal, A. (2010). *How Work Gets Done: Business Process Management, Basics and Beyond*, New Jersey, Technics Publications, LLC, 2010.

At its core, BPTrends Associates is the methodology for implementing process management at the enterprise. This determines its strengths and weaknesses.

The methodology has the following advantages: a) full coverage of business processes; b) systematic approach to the description of business processes, their structural elements, process documentation; c) universality of the methodology, possibility of application in any industry.

The methodology has the following disadvantages: a) lack of original methods for analyzing the production processes; b) lack of systematic management of the enterprise.

### **Study results and discussion**

The considered universal methodologies of process control have their own specific features:

1. Hammer methodology focuses on the fundamental redesign of the organization's business processes based on the latest achievements of science and technology. The disadvantages of this methodology, which significantly reduces the possibilities of its practical application, are the lack of methods for methodology implementation and modification of business processes, as well as a high level of risk in implementing the reengineering projects. In our opinion, Hammer methodology should be considered as a philosophical management concept.

2. SCOR methodology is focused on the analysis, management and optimization of supply chains of material resources and goods to the business processes of the enterprise. A serious advantage of the methodology is the collected information on the most advanced business processes of advanced foreign enterprises. Based on this, you can analyze and optimize your business processes, focusing on benchmarks. The revealed disadvantages of SCOR methodology testify to the need to use it in combination with other methodologies of process management.

3. BPTrends Associates management methodology is a methodology for implementing process management at the enterprise and includes standard stages in the development of the process management system. The methodology, due to its disadvantages, should also be supplemented by the methods of other methodologies of enterprise management.

### **Summary**

The merit of Hammer methodology developers of Hammer M. and Champi D. is an appeal to the world business community to analyze their processes, which has given a powerful impetus to the study of management technologies. However, in our opinion, reengineering can be seen as a business philosophy, rather than a specific set of practical tools and methods.

SCOR and BPTrends Associates methodologies are intended for the analysis of certain types of enterprise activities. For this reason, these methodologies should be used in conjunction with other process management methodologies.

"Analysis Of Universal Methodologies Of Process Management Of Industrial Enterprises," *Astra Sahensis*, V (2017), Supplement no.1, p. 159-165

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## **Peculiarities Of Consumer Innovations And The Necessity Of Formation Of Management Tools, Oriented For The Future Consumer\***

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**Abstract.** *This paper presents the interpretation of consumer innovations as a management object in order to stimulate demand in the market of innovative products. Consumer innovations are treated as a form of realization of knowledge, skills and habits of consumers, which are reflected in the form of useful benefits used to meet personal needs. Consumer innovations are characterized by the presence of positive externalities in the form of exceeding the aggregate benefit over the private, while in the structure of their value a significant share belongs to innovative added value. The role of the consumer in the innovation process increases with the formation of the postindustrial society, which is characterized by changes in the motivation and content of labor activity. This is reflected in the substitution of the materialistic orientations of activity with postmaterialistic in the conditions of the postindustrial society. At the same time, the efficiency of the innovation process and the volume of externalities are determined by the intensity of communications with the participation of the consumer and the manufacturer, which expands the composition of management objects in the market of innovative products.*

*The paper suggests a methodical approach to the content of tools for managing the behavior of the future consumer (innovative product consumer), which is based on taking into account the individual predisposition to perceive innovation, assessing the perceived value of innovative goods by its producer and consumer, as well as the dominant factors in their decision making about choice subject to the economic activity of participants in the innovation cycle. It is determined that the implementation of such an approach provides a reasonable choice of key consumers (innovators), an increase in the proportion and number of consumption pioneers, the early majority, a decrease in the potential buyers' transaction costs for finding information about new products, and shortening of the duration of the innovation cycle.*

**Keywords:** Innovative products, consumer demand, consumer innovations, innovation cycle, future consumer focused management, methods of stimulating consumer demand, key competences of the manufacturer.

### **Introduction**

The development and implementation of consumer choice management tools in the market of innovative products presupposes a deep knowledge of the theory of consumer behavior, in terms of which the decision-making models of the industry market byers, CRM systems (Customer Relationships Management), behavioral economics proceeding from the need to formulate in a consumer a system of normative representations in accordance with the values of the company, a model for segmenting potential consumers of innovation on the basis of individual predisposition to the perception of innovation, etc. have been developed. The introduction of the provisions of alternative economic schools and trends that determine consumer choice factors in the system of innovation management allows the enterprise to implement a strategy of attracting (selecting) and managing its customers, ensuring their value in the long-term. At the same time, the transaction costs for information retrieval, monitoring of the quality of such products, and the protection of intellectual property increase. The complexity

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of the problem posed requires the use of the achievement of related sectors of scientific knowledge, such as psychology, sociology, political science, etc.

The presence of a significant external effect of consumer innovation production and the need to develop a system for managing the choice of future consumers, which should not contradict the strategic guidelines for the development of society, have determined the choice of the research topic of this paper.

The working hypothesis of the research is the thesis, according to which manufacturers are interested in developing and implementing a standard of innovators that reflects the constantly increasing composition of product characteristics, which can be considered as one of the sources for the development of innovative processes and the initiation of a new innovation cycle. In turn, the development of innovative management of tools for managing the choice of future consumers and its introduction into the system involves the need to determine the content of consumer innovation and the factors that determine the choice of the future consumer.

The development of the theory of consumer behavior started in the writings by representatives of the classical school of political economy. Further development of ideas about the laws and patterns of consumer choice is associated with the marginalist concept, which served as the basis for the formation of cardinal and ordinal approaches. Confirmation of the working hypothesis of the thesis research was carried out using the provisions of the theory of prestigious consumption by T. Veblen, the theory of fashion by G. Zimmel, modern consumption theories by J. Bordijar, P. Bourdieu, I. Goffman, K. Lancaster, H. Leibenstein, cultural dimension theory by G. Hofstede, and others. Some aspects of consumer behavior have been studied in the framework of marketing theory (I. Büsschen, Ph. Kotler, F. Trias de Bes, and others), models of segmentation of potential innovation consumers on the basis of individual predisposition to perceiving innovation (E. Rodgers), etc. Laws of consumer behavior in a postindustrial society were studied in the works by<sup>1</sup>, and others.

## Methods

The methodological basis of the study is the provisions of alternative schools of economic theory that define modern approaches to interpreting the patterns of consumer behavior, innovations and the innovation development, state regulation of the economy, the theory of social welfare, evolution and changes of technological structures. The multifaceted nature of the research object predetermined the need to use the provisions formulated in related fields of scientific knowledge, such as economic sociology and psychology, game theory, etc. In our study we used general scientific and specific research methods. The latter are the methods of content analysis, expert review, survey, etc.

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<sup>1</sup> D. I. Hawkins, R. J. Best, K. Coney, *Consumer behavior: Implications for marketing strategy*, New York, The McGraw-Hill Companies, Inc., 2004.

## Results

Recognition of consumers of innovative products as significant participants in the innovation process has led to an understanding of the need to search for management tools for their behavior, which are regarded as management tools focused on the future consumer. Traditionally, the development of product innovations based on the changes in the system of preferences and expectations of consumers, as well as the expansion of the commodity nomenclature on the basis of market segmentation, revealing the volume and specific features of demand in each segment, served as directions for influencing the consumer choice in the market of innovative products. At the same time, the potential of feedback to consumers able to generate ideas about the content of product innovations differing in their level of radical nature (basic, systemic, developmental, pseudo-innovations) is not used to the right degree in the system of innovative management.

The use of the consumer as a generator of ideas and the initiator of a new innovation process allows reducing significantly the level of uncertainty and the associated risk, as well as increasing the efficiency of innovation projects. This is due to the fact that the product innovation created on the basis of consumer preferences will allow implementing its preferences to the full extent, while fundamental and applied scientific research that initiates the market-type innovation process is a non-price supply factor that does not fully reflect the permanent changes in consumer preferences. Thus, the risk of the lack of demand for innovative products remains and hinders the commercialization of innovations. Subject to deterioration of the macroeconomic situation and a fall in aggregate expenditures, taking into account the consumer preferences serves as an instrument for stimulation of consumer expenditures in the market of innovative products.

In our study, we proceed from the theory by F. Crawford and R. Matthews, who interpreted the modern consumer as instavidual (neologism, formed from the words 'instant' and 'individual'), i.e. the needs of the "instaviduals" are constantly changing when the trend of individualization of consumption is implemented. Thanks to the development of information and communication technologies, the level of asymmetric information between the consumer and the producer decreases, which is manifested in the participation of the consumer in the production of goods (services). The concept of "consumer relevance" proposed by F. Crawford and R. Matthews is based on three principles:

1. Human values are a modern currency.
2. A commercial value is determined by human values;
3. For a modern consumer, values are much more important than benefits.

The formation of the consumer market, characterized by the above attributive properties, as well as the deterioration of the macroeconomic environment have led to the need to develop a management system that is customer-oriented and loyalty-maintaining. Client-oriented management as a tool for increasing the competitive potential of the enterprise is used by a number of successful enterprises in the Russian Federation and abroad, but its tools, along

with consumer innovations as an object of management, have not been adequately studied. Traditionally, the intellectually creative resource of the enterprise is considered as a generator of innovative ideas, which, in particular, is reflected in the theory of intra-firm entrepreneurship (H. Wissema, R. Wunderer, G. Pinshaw, T. Peters, M. Khizrić), the theory of innovative economy and economy based on knowledge in connection with the technology of entrepreneurial management (P. Aburden, P. Druker, B. Karloff, J. Nesbit, A. Toffler), etc. Recognizing the consumer as a generator and/or developer of innovative ideas (E. von Hippel) does not entail any analysis of tools used in the management process.<sup>2</sup>

In the course of the study, the content of the category "consumer innovation" is clarified, which does not have a single interpretation in the theory of innovation management. According to the approach by Moiseeva N.K., Kuzmenko V.Iu., Riumin M.Iu., which was formed within the framework of the communicative concept of marketing, consumer innovation "is a kind that reflects the communication functions performed by various elements of the marketing complex new to the consumer" (Moiseeva, 2004). According to this interpretation, consumer innovation "is considered as an instrument of brand representation, and on the other hand acts as a communicative tool able to influence various cognitive and mental processes of the consumer".<sup>3</sup> This approach allowed the authors to propose their own classification of consumer innovations (Table 1).

Table 1.Consumer innovation classification

Classification feature	Types of consumer innovations				
Provision of a long-term preference for the product	Innovations aimed at expanding the boundaries of the existing brand	Innovations aimed at strengthening the position of the existing brand			Innovations aimed at creating a new brand
Attitude to the elements of the marketing mix	Product innovations	Price innovations	Promotion innovations	Innovations in the distribution and sale channels	
Area (sphere) of influence on the consumer	Sense-affecting innovations	Action-affecting innovations	Perception-affecting innovations	Communication-affecting innovations	Thinking-affecting innovations

<sup>2</sup> F. Crawford, R. Matthews, *A myth about perfection*, Moscow, ROSMEN - Press, 2005.

<sup>3</sup> N. Moiseeva, "Technology of creating brand-oriented consumer innovations," in *Marketing*, V (2004), no. 78.

The analysis of this approach allows us to conclude that consumer innovations are viewed as an object of management in order to stimulate demand in the market of innovative products.

V.M. Anshin and A.A. Dagaev (2003)<sup>4</sup> share innovation-process and innovation-product, which allows them to interpret product innovations marketed as consumer innovations. However, according to their approach, consumer innovations are targeted at industrial consumers and manufacturers. The above work by Moiseeva, N.V. (2004)<sup>5</sup> uses the classification of innovations based on the subject of initialization, which allowed the author to identify industrial and consumer innovations. However, in the innovation process, the role of the consumer is limited to participation in the generation of an innovative idea. Thus, in the theory of innovation management, consumer innovation is primarily seen as a product innovation, which consumer is either an individual or a household, while the consumption of product innovation ensures the usefulness of the consumed goods and is not associated with its use in business.

According to the approach proposed in the thesis, the consumer (directly or indirectly) participates in all stages of the innovation process. At the same time, if they satisfy production needs, they act as corporate consumers; if they satisfy personal needs, they act as private consumers. Innovations include, among others, traditional (industrial) and consumer innovations, which corresponds to the approach formulated in the works by Pervova N.Iu. (2008).<sup>6</sup> Traditional (industrial) innovations are interpreted as a result of the implementation of the innovation process, where the fundamental and applied scientific research, design and commercialization of scientific knowledge accumulated by specialized divisions of enterprises implementing innovative development strategy are carried out. Consumer innovations occur as a form of realization of knowledge, skills and habits of consumers, which are reflected in the form of useful benefits used to meet personal needs. At the same time, both industrial and consumer innovations are characterized by the presence of positive externalities in the form of exceeding the aggregate benefit over the private, while in the structure of their value a significant share belongs to innovative added value.

The role of the consumer in the innovation process rises as the postindustrial society develops, which is characterized by changes in the motivation of labor activity, as well as by the transformation of the latter. This is reflected in the replacement of materialistic guidelines of the activity with postmaterialistic,<sup>7</sup> which we have identified in accordance with the principles of building the pyramid of Maslow's needs. Participation in innovation activity allows the consumer to satisfy the needs of the highest level in addition to material needs: the need for self-expression (to propose one's own idea), for contacts (to enter into communications

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<sup>4</sup> V. M. Anshin, *Innovative management (Text): a study guide*, Moscow, Delo, 2003, p. 528.

<sup>5</sup> N. Moiseeva. "Technology of creating brand-oriented consumer innovations," in *Marketing*, V (2004), no 78.

<sup>6</sup> N. Iu. Pervova, *Consumer innovations in organizations*, Mineral Waters, Shukhov BSTU, 2008.

<sup>7</sup> Maslow A. Maslow about management. Theory and practice of management (Text): (trans. from English) / A. Maslow. - St. Petersburg: Piter, p. 416.

with the manufacturer and other consumers), for recognition and success (to receive material and moral rewards), for involvement (to see its contribution in the creation of innovation), and for power (to realize its power over the manufacturer). At the same time, the content of labor activity changes and can take the form of distributed activities based on the use of information and communication technologies, and entrepreneurial activities that take the form of internal entrepreneurship. The share of the contribution of the intellectual-creative resource to the final product increases due to informatization and intellectualization of the latter. The likelihood of consumer innovations increases in the case of a low level of specification of intellectual property rights and high transaction costs for licensing and patenting.

A corporate consumer is guided by a different composition of motives during the production of consumer innovation, namely: he turns to the analysis of consumer preferences as a source of innovative ideas and tools to reduce the risks of unclaimed products as one of the key risks of innovation projects, and to reduce the time for the pre-project stage and increase customer loyalty, obtain reliable information about the composition of his preferences. Thus, prerequisites are formed for the transformation of absolute and relative advantages into sustainable competitive advantages of the enterprise. Therefore, both the manufacturer and the consumer are interested in the formation of consumer innovations, which determines the possibilities for their cooperation, as well as the need to develop tools and management technologies adapted to this type of innovation.

The generalization of ideas about the innovation process made it possible to distinguish the following stages in its composition (7, 8), which are present regardless of its type (market, linear, interactive, integration, network, information):

1. The stage of strategic analysis and development of the strategy of innovation-oriented enterprise development.
2. The stage of the birth of a new idea as a result of fundamental and applied scientific research.
3. The stage of research and development work, design development, embodied further in a prototype.
4. Sampling stage.
5. The stage of financial and economic justification of the production of a product or service innovation.
6. The stage of primary development.
7. The stage of the innovation diffusion, or the commercialization of the innovation.
8. The stage of the innovation dominance in the local market or sphere of activity, the transformation of the innovation into tradition.
9. The stage of the innovation replacement, which may coincide with the stage of birth of a new idea.

The conducted research shows that there are differences between the types of innovation process depending on the essence of the innovations - either consumer or traditional. Taking these differences into account allows us to justify

management tools, adapted to the type of innovation. Table 2 presents the stages of the innovation process, oriented to the future consumer.

Table 2. Stages of the innovation process focused on the future consumer

Stages of the innovation process	The content of innovation, the subjective composition of participants in the innovation process
The stage of a strategic analysis and development of the strategy of innovation-oriented enterprise development.	The manufacturer conducts a strategic analysis of the company's external environment, segmentation of the market taking into account the subject composition of consumers, develops an innovation-oriented development strategy that is aimed at adapting to the changing environmental factors or ensures their transformation in accordance with the targets of the innovation activity subject; conducts a preliminary analysis of the innovation project in order to determine its competitiveness
The stage of the birth of a new idea as a result of fundamental and applied scientific research	An innovative idea is the result of the implementation of in-house entrepreneurship, the subject of which simultaneously acts as a consumer of a product or service innovation
The stage of research and development work, design development, embodied further in a prototype	The consumer initiates ideas aimed at improving (developing) goods consumed
Sampling stage	The consumer, along with the manufacturer, participates in the selection of a sample intended for replication
The stage of financial and economic justification of the production of a product or service innovation	The behavior of the consumer (the volume of consumer spending, non-price factors of demand, etc.) is taken into account in the course of the financial and economic justification for the production of innovative products
The stage of primary development	Formation of distribution channels (sales) subject to consumer's preferences
The stage of the innovation diffusion, or the commercialization of the innovation	Innovations aimed at creating and expanding the boundaries of the existing brand in response to changing needs
The stage of the innovation dominance in the local market or sphere of activity, the transformation of the innovation into tradition	Development of the evolving innovations and pseudo-innovations in view of changing needs with the purpose of extending the innovation life cycle
The stage of the innovation replacement, which may coincide with the stage of birth of a new idea	Development of niche innovations adapted to the peculiarities of submarkets subject to the behavior of their participants

The study of the features of the innovation process initiated by the consumer allows us to conclude that it is characterized by a number of features that differ from the cycle of traditional innovations. Among them is the fact that the effectiveness of the innovation process and the volume of externalities is determined by the intensity of communications with the participation of the consumer and the producer. At the same time, this factor determines the outcome of all stages of the innovation process. In addition, the risks of developing and implementing innovative projects related to the perception of innovation by the consumer decrease, including the risks of erroneous planning, calculation and evaluation (due to market segmentation and consumer preferences accounting); risks of originality (as a result of consumer's initiation of an innovative idea); risk of the project uncontrollability (combination of project originality and design and cohesion and professionalism of the management team), etc. It should also be taken into account that traditional innovations initiated by the manufacturer involve a significant amount of fundamental and applied research, characterized by a significant amount of costs, whereas consumer innovations, characterized by a ready solution available, are not characterized by high science and capital intensity.

Thus, if there are the same stages in the innovation process of consumer innovations as in the innovation process of traditional innovations, it should be recognized that the significance of the latter for the formation of a closed innovation cycle changes, i.e. the stage of commercialization of consumer innovations initiates the next innovation process, stimulates the intellectual and material production of innovations.

In the course of the study, about 50 manufacturers, which have developed over 500 new innovative products, were studied in the Republic of Tatarstan and in the regions of the Volga Federal District. Using questionnaire survey of respondents, which are top managers and owners of enterprises, allowed us to identify and rank the factors of market success of new products. The study showed that among the factors of market success (in descending order of importance) are:

1. Correspondence of the product to the needs of the consumer.
2. Correspondence of the product to the key competences of the manufacturer.
3. Technological superiority of the product.
4. Efficiency of the innovation-oriented strategy of the enterprise development.
5. The level of management motivation.
6. The level of competition in the local commodity market.
7. Organizational structure of production management.

The management system, oriented to the future of the consumer, was formed as a result of the long evolution of innovative management tools. In the period from the early XX century to the 70s of the XX century, which was characterized by the dominance of the industrial-oriented approach and the linear type of the innovation process, the key participants in innovation activity were scientists, researchers and business process owners who focused on technological

innovation and R&D in order to reduce costs and improve the quality of final products. In the period from the 70's to the 90's of the XX century, a market-oriented approach to the innovation management system dominates, the key participants of which are marketers along with scientists, researchers, top managers, who focus on mass marketing and implement a differentiation strategy, taking into account the consumer qualities of innovative products (ergonomics, appearance, packaging, etc.). Selection of innovative projects is carried out on the basis of the use of portfolio matrices, methods of discounting and attracting consumers as experts. Marketing of product innovations is carried out using the product portfolio policy, communication strategies, and design.

## Discussion

T.I. Sherstobitova<sup>8</sup> considers the specific features of the innovation market functioning, the behavior of sellers and buyers in the process of marketing innovation, the formation and dissemination of innovations, marketing research on innovative products, the features of marketing innovation strategies, and the role of marketing in the commercialization of innovations<sup>9</sup>. V.D. Sekerin, S.A. Avramenko characterize the specific features of innovation marketing by showing its difference from the marketing of traditional products<sup>10</sup>:

- the goal of innovative marketing is the design of consumer properties of the innovation and the market strategy that ensures the satisfaction of consumers' needs;
- the subject of the impact is an innovation at different stages of the innovation process;
- marketing tools are focused on the design and creation of future demand;
- fragmentation of consumers is made on the basis of individualization of consumers' preferences;
- obtaining reliable quantitative data on markets and segments is impossible, because the innovative product itself can create a new market segment due to the novelty of the consumer properties of goods;
- very high level of uncertainty in decision-making; Possible mistakes in forecasting consumer behavior using qualitative methods, in choosing key buying factors.

O.M. Khotiasheva qualifies as the innovative marketing the following<sup>11</sup>:

- use of new methods of marketing research;
- application of new market segmentation strategies;

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<sup>8</sup> T. I. Sherstobitova, 2009. *Innovation marketing: a study guide*, Penza, PSU Publishing House, 2009, p. 12.

<sup>9</sup> O. M. Khotiasheva, *Innovative management: a study guide*, 2<sup>nd</sup> edition, Sankt Petersburg, Piter. 2006, p. 384.

<sup>10</sup> V. D. Sekerin, "Strategy of innovative marketing in the industrial market," in *Materials of the conference "Management in technical, ergotic, organizational and network systems"* (UTEOSS-2012) Sankt Petersburg, SSC RF "Concern "CSRI "Elektropribor", OJSC, 2012, p. 1097-1100.

<sup>11</sup> O. M. Khotiasheva, *Innovative management: a study guide*, 2<sup>nd</sup> edition, Sankt Petersburg, Piter, 2006, p. 384.

- selection of a new marketing strategy for the coverage and development of the target segment;
- change of the concept of the product range policy; modification of the product life cycle curve;
- repositioning of the product;
- change of the existing or use of a new pricing strategy, new methods for establishing the reference price and/or a system of discounts;
- building of new sales channels, change of the direction of the company's marketing policy, enter into new markets;
- use of new forms and means of communication policy (a new type, nature and means of advertising);
- selection of non-traditional methods for the company to stimulate sales and attract consumers).

A number of researchers note that innovative marketing includes both strategic and tactical components. At the same time, strategic marketing is aimed at studying the market and determining the competitive behavior of the enterprise; it is based on marketing research. Tactical marketing includes a program of marketing activities, operational management of marketing activities. By implementing tactical marketing activities, the firm follows the adopted strategy and simultaneously adjusts it in accordance with market requirements.

Strategic marketing can be either regular or remedial. Regular marketing is aimed at maintaining the competitiveness of innovative products and developing new sales markets, while remedial marketing is necessary in case of a significant decrease in competitiveness. These clarifications of the authors allow us to conclude that it is still not about innovative marketing, but marketing of innovations. Allocation of strategic and tactical aspects will be fair not only for innovative, but also for traditional marketing.<sup>12</sup>

## Summary

The marketing-oriented approach that became widespread in the theory and practice of the XXI century did not allow taking into account changes in individual needs. The globalization of the economic space and the informatization of the market led to a reduction in market barriers, which caused the transformation of individual industrial markets in the direction of perfect competition, where a single producer cannot significantly influence the market, since the supply substantially exceeded demand. This led to the need to change the system of innovation management and expand the subject composition of participants in the innovation process.

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<sup>12</sup> O. V. Mikhailiuk, On the specifics of innovation marketing and innovative marketing, 2017, Access mode - free. [http://www2.pglu.ru/upload/iblock/354/uch\\_2014\\_xii\\_07.pdf](http://www2.pglu.ru/upload/iblock/354/uch_2014_xii_07.pdf). Tested on 2.09.2017.

Thus, at present, the objective prerequisites have been formed for the development and implementation of an enterprise management system oriented to the future consumer.

### **Conclusions**

The introduction of appropriate tools, oriented to the future consumer, in the organization management system causes adaptability to the rapidly changing market conditions; consolidation of intellectual resources in certain areas of scientific and technological development; formation of highly effective internal information space; and a high level of integration of resources. The mandatory components of the implementation of the management system, oriented to the future consumer, are the presence of innovative organizations; innovation infrastructures; financing subsystems; and commercialization subsystems. A comparative analysis of three options for the organization development (lack of integration into open innovation space and accounting for consumer choice, a combined model of open and closed innovations using separate CRM-systems (Customer Relationships Management) and a complete transition to a distributed model of innovation organization subject to the consumer choice) allowed us to substantiate the conclusion about the preferences of the third option.

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**Evaluation Of The Successful Level Of The International Associations\***  
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**Abstract.** *This paper deals with the problems of assessing the success of the member countries of the international association G20 (the Big Twenty). The process of rating the success of these countries using quantitative and qualitative statistical estimates is presented. The proposed evaluation of countries included in this international association, illustrated by the success rate of each country, which it has achieved by using the best available resources and opportunities: natural, demographic, technological, cultural, educational, and institutional. When calculating the assessment of the success of countries - subjects of international associations - the authors proposed to conduct an indicator-based ranking for each specific indicator. The indicators considered in the paper serve as a basis for determining the place of the country in the modern world economy in accordance with the relevant social and economic aspects. They are directly related to the evaluation of development and welfare of society. Assessment based on combining quantitative and qualitative indicators is presented by the authors in the form of a rating. On the basis of this approach, a Comprehensive success rate of the international association of countries G20 was calculated. Data in rating tables presented in this paper serve as a good empirical basis for judging the success of the countries and possible ways of their socio-economic development.*

**Keywords:** assessment, indicators, international associations, success, information relevance, the Big Twenty G20.

## Introduction

In this paper, we will consider the assessment as a way to establish the significance of the level of success of the member countries of international economic associations.<sup>1</sup> As subjects of such associations, we took the G20 countries (hereinafter G20).<sup>2</sup> The relevance of the concept of "evaluation" arises no doubts, but has various scientific definitions:

- in philosophy, it is used as the significance of the acting and knowing;
- in pedagogy, as the teacher's opinion about the level of the student's knowledge;
- in economics, as a method of establishing the value of tangible and intangible objects;
- in metrology, as the determination of the approximate value of a quantity or parameter based on experimental data;
- in mathematical statistics, as a method of calculating a parameter from observations.

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<sup>1</sup> I. R. Sultanov, "Influence of the integration associations on forms of international cooperation," in *Right and the state: theory and practice*, X (2009), no. 58, p. 95-98.

<sup>2</sup> E. V. Galkina, I..V. Konopelko, (2014). "Informal international organizations in modern global politics (on the example of the G8 and the G20)," in *European Social Science Journal*, II (2014), no. 41, p. 501-506.

In our opinion, the essence of the concept of 'evaluation' is that it acts as an important function in the characterization, analysis, validation and decision-making at the level of regions, municipalities, industries, associations, and firms.

Evaluation defines a set of indicators: if, for example, the task is to assess the economy of the subject, then the following indicators such as the volume of output, production capacity, labor productivity, profitability, etc., will prevail. If it is necessary to assess the social parameters, then the indicators will be dominated by income level, cost of living, life expectancy, and a number of others.<sup>3</sup> At the same time, most of the indicators will be represented by quantitative values: tons, percent, monetary units, and years. The smaller part of such indicators will reflect the qualitative characteristics of the object of evaluation: high efficiency, low income, social insecurity, inadequate capacity, etc.

The term "indicator" is "in most cases, a generalized characteristic of an object, a process or its result, a concept or their properties, usually expressed in numerical form". In this case, we will be interested in economic indicators (both quantitative and qualitative), which the economic dictionary defines as "quantities, criteria, levels, meters, characteristics that allow judging the state of the economy of the country, region, enterprise, family, changes in this state, economic development, growth, and recovery or decline".<sup>4</sup>

In most cases, qualitative indicators will express the degree of conformity of the evaluated characteristic to the accepted standard, the maximum achieved value, the parameter established by the expert way, a certain ranking with the system of points or places. The composition of the indicators affects the type of assessment - it can be general and expressed by one or two indicators, or complex, when 15-20 indicators are used. If the number of indicators is calculated in several tens, then a detailed estimate takes place. At the same time, any of these types of assessment can contain both quantitative (tons, coefficients, cost criteria) and qualitative indicators. Evaluation can also combine quantitative and qualitative indicators and represent a rating in this form. This approach allowed us to calculate the Comprehensive Success Rating of countries of the international association G20.<sup>5</sup>

## Methods

Considering the Big Twenty (G20) countries, we note that they account for about 86% of the world's gross product, 80% of world trade (including EU mutual trade), and two-thirds of the world's population.<sup>6</sup>

We shall define the essence of the concept of G20:<sup>7</sup>

<sup>3</sup> Ch. Downie, "One in 20: the G20, middle powers and global governance reform," in *Third World Quarterly*, XXXVIII (2017), no. 7, p.1493-1510.

<sup>4</sup> B. A. Raizberg L. Sh. Lozovskiiy, E. B. Starodubtseva, *Modern economic dictionary*, 2<sup>nd</sup> edition, Moscow, INFRA-M, 1999, p. 479.

<sup>5</sup> S. A. Schirm, "Global politics are domestic politics: A societal approach to divergence in the G20," in *Review of International Studies*, XXXIX (2013), no. 3, p. 685-706.

<sup>6</sup> Ch. Downie, "One in 20: the G20, middle powers and global governance reform," in *Third World Quarterly*, XXXVIII (2017), no. 7, p. 1493-1510.

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- the format of international meetings of finance ministers and heads of central banks;
- a club of governments and heads of central banks of states with the most developed and developing economies;
- a forum for cooperation and consultation on issues related to the international financial system;
- an informal organization that unites countries from different regions of the world and with different levels of economic development, as well as leading international financial organizations on the basis of their interest in collective resolution of the world's major economic and financial problems;
- an international club in the format of meetings at the level of finance ministers and heads of central banks.

The proposed evaluation of countries included in this international association, illustrated by the success rate of each country, which it has achieved by using the best available resources and opportunities: natural, demographic, technological, cultural, educational, and institutional.<sup>8</sup>

For sufficient information value of the received estimate for a wide range of users, the number of its underlying indicators should not be too large – we think that 15-20 indicators will be quite acceptable.

At the same time, we do not in any way question the use of a much larger number of indicators - for example, when the British organization Legatum Institute compiled a Prosperity Index for 2016, the number of indicators was 104.<sup>9</sup>

When calculating the success estimate of the countries - members of international associations - we propose for each specific indicator to perform ranking as follows: the country with the highest value for the indicator is assigned the first place and gets 1 point. Each country having different values of this indicator is given a corresponding place and a corresponding point.

Let us suppose, for example, that a rating of the success of 10 countries of a conditional international association is made and 10 evaluation indicators are used. Theoretically, in this case, the first place in the rating would be taken by the country, which had the maximum achieved values for all indicators and, accordingly, took the first places and got 1 point for each first place. Then its score for the first places for all ten indicators will be 10 points. The last place will be for the country, which total sum of places for 10 indicators will be equal to 100 points, i.e. it had the worst achievements for all indicators, estimated at 10 points, and occupied the last places. However, in practice, the probability of such a situation is not high, unless among these subjects there is an undoubted leader and an outsider in all respects. In reality, the leader can become a subject who takes the first few

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<sup>7</sup> S. S. Sulakshin, An. N. Avinova, I V. Bogdan, "Quantitative assessment of the country's success," in *Problems of management*, II (2013).

<sup>8</sup> R. Andrews, S. Van de Walle, "New Public Management and Citizens' Perceptions of Local Service Efficiency, Responsiveness, Equity and Effectiveness," in *Public Management Review*, XV (2013), p. 762–783.

<sup>9</sup> G20 Official Website. URL: <https://www.g20.org>, accessed on 12. 03. 2017.

places, some of the second, perhaps some of the third, but its sum of places will be less than any of the other subjects rated.<sup>10</sup>

In this particular case, when assessing the level of success of the G20 countries, the country with the worst value of the indicator being ranked will take the last place and its maximum score will be 20.

When the ranking for all indicators is completed, the sum of places occupied by each country is determined. The country that has the minimum score is recognized as the winner in the Comprehensive Success Rating. The subsequent corresponding places will be taken by the countries with scores differing from that of the winner.

## Results

The suggested rating makes it possible to assess the economic and social status of any of the countries included in the G20. Analyzing the country's place in such a rating, it can be assumed that it depends not only on the volume of GNP, as is traditionally assumed in most cases, but also on country's achievements in the spheres of education, health, social progress, human development, and competitiveness. The aggregate of the results of achievements in these areas is often the determining factor in the formation of the rating - the leading countries are those that demonstrate success in the quality of life, the Internet expansion, and the fair distribution of citizens' incomes.<sup>11</sup>

## Discussion

Let us review in more detail our study, the results of which are presented in Table 1 and Table 2 (Table 2 is a continuation of Table 1).

Table 1. A comprehensive success rating of the G20 countries (indicators 1-9)

Country	Population mil. people	GNP bil. dollars		Place	Foreign trade turnover, bil. dollars		Place	Average monthly salary, dollars	Place	Life span, years	Place	Income difference, times	Place
		Total	per capita		Total	per capita							
		thousand	dollars		thousand	dollars							
1	2	3	4		5	6		7		8		9	
Australia	24	1,141	49	3	389	16	6	2,610	7	82.8	2	8.9	6
Argentina	41	884	22	1 2	115. 9	2.8	1 6	1,108	1 3	76.3	1 1	31.6	16
Brazil	20 5	3,199	16	1 5	363. 1	1.8	1 7	778	1 5	75	1 4	40.6	17

<sup>10</sup> N. O. Voskresenskaia, "International ratings as a reflection of the main criterion of the country's success - the people's happiness," in *Russia's development and constitutional construction: theory, methodology, and design: materials of the all-Russian scientific conference*, Moscow, 2012, p. 291-301.

<sup>11</sup> B. Hoyland, K. B. Moene, K. Willumsen, "The tyranny of international index rankings," in *Journal of Development Economics*, V (2012), vol. 97, no. 1, p. 1-14.

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Great Britain	61	2,702	42	6	1,03 8	17	5	3,065	2	81.2	7	10	8
Germany	83	3,860	47	5	2,35 7	28	1	2,720	6	81	8	6.7	1
India	1,2 83	7,998	6. 2	1 9	659. 7	0.5	1 9	295	1 8	68.3	1 8	7.8	3
Indonesia	25 2	2,848	11	1 8	293. 4	1.2	1 8	250	1 9	69.1	1 7	8.3	4
Italy	59	2,175	36	9	864. 4	15	7	2,445	9	82.7	3	10.2	9
Canada	34	1,634	48	4	829. 8	24	2	2,724	5	82.2	6	8.9	7
China	1,3 74	19,69 6	14	1 7	3,97 6	2.9	1 5	656	1 6	76.1	1 2	17.6	14
Mexico	11 8	2,230	18	1 4	776. 6	6.6	1 1	609	1 7	76.7	1 0	28.5	15
Russia	14 6	3,725	26	1 1	535. 6	3.7	1 3	1,215	1 2	70.5	1 6	16.4	13
Saudi Arabia	29	1,689	58	1	372. 3	13	8	1,000	1 4	74.5	1 5	>50	19
USA	32 2	18,03 7	57	2	3,75 1	12	9	3,263	1	79.3	9	8.9	5
Turkey	75	1,596	22	1 3	354	4.7	1 2	1,731	1 1	75.8	1 3	15.1	12
France	63	2,666	38	7	1,07 8	17	4	2,886	4	82.4	4	7.2	2
South Korea	50	1,853	36	1 0	966	19	3	2903	3	82.3	5	10.7	11
RSA	50	726	15	1 6	167. 2	3.3	1 4	1,838	1 0	62.9	1 9	43.1	18
Japan	12 7	4,843	38	8	1,27 3	10	1 0	2,522	8	83.7	1	10.7	10
European Union	51 0	19,20 3	38		10,5 87	21		2,284		79.6		8.5	

For convenience, we put the indicators under study in two tables 1 and 2.

Table 2. A comprehensive success rating of the G20 countries (indicators 10-17)

Country	Education index	Place	Number of universities in TOP-500	Place	Number of the Internet users per 100 people	Place	Human Development Index	Place	Social progress index	Place	Competitiveness index	Place	$\Sigma$ places	Country's rating
1	10		11		12		13		14		15		16	17
Australia	0.99 3	1	23	5	79	8	0.9 4	1	86.4 2	2	5.2	6	47	3

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Argentina	0.94 6	1 1	4	1 3	55.8	11	0.8 4	1 1	73.0 8	1 0	3.8	19	143	<b>12</b>
Brazil	0.89 1	1 2	4	1 4	48.6	13	0.7 6	1 5	70.8 9	1 1	4.1	18	151	<b>15</b>
Great Britain	0.95 7	8	51	2	87.5	1	0.9 1	5	84.6 8	3	5.5	3	50	<b>5</b>
Germany	0.95 4	9	41	3	82.3	5	0.9 2	2	84.0 4	4	5.6	2	46	<b>2</b>
India	0.64 3	1 9	7	1 1	12.6	19	0.6 1	1 9	53.0 6	1 9	4.5	15	179	<b>19</b>
Indonesia	0.84	1 6	3	1 7	14.7	18	0.6 8	1 7	60.4 7	1 7	4.5	14	175	<b>18</b>
Italy	0.96 5	7	15	9	55.8	9	0.8 7	9	77.3 8	9	4.5	11	91	<b>9</b>
Canada	0.99 1	2	21	6	83	4	0.9 1	4	86.8 9	1	5.3	5	46	<b>1</b>
China	0.85 1	1 4	16	8	42.3	15	0.7 3	1 6	59.0 7	1 8	5	9	144	<b>13</b>
Mexico	0.86 6	1 3	2	1 9	39.8	17	0.7 6	1 4	67.5	1 2	4.4	17	159	<b>16</b>
Russia	0.98 1	4	6	1 2	63.8	9	0.8 2	1 2	63.6 4	1 6	4.5	12	130	10
Saudi Arabia	0.82 8	1 7	3	1 7	54	12	0.8 4	1 0	64.2 7	1 5	4.8	10	138	<b>11</b>
USA	0.96 8	6	10 4	1	79.3	7	0.9 2	3	82.8 5	6	5.7	1	50	<b>4</b>
Turkey	0.82 8	1 8	2	1 8	45.1	14	0.7 6	1 3	66.2 4	1 3	4.4	16	145	<b>14</b>
France	0.97 8	5	20	7	81.4	6	0.8 9	8	80.8 2	7	5.2	7	61	<b>6</b>
South Korea	0.98 8	3	13	1 0	84.1	3	0.9 6	6	77.7	8	5	8	71	<b>8</b>
RSA	0.84 3	1 5	3	1 5	41	16	0.6 7	1 8	65.6 4	1 4	4.5	13	168	<b>17</b>
Japan	0.94 9	1 0	25	4	86.2	2	0.8 9	7	83.1 5	5	5.5	4	69	<b>7</b>
European Union	0.83		20 3		71		0.8 7		80.2 4		4.8		not calculated	not calculated

Absolute indicators in columns "2" - "population", "3" - "gross national product", "5" - "volume of foreign trade turnover" in the total number of evaluation indicators - fourteen - are mostly reference, and the ranking of each country's places depending on the specific value of the above three indicators is not made. We believe that in order to determine the rating of a country's success, the more significant are relative indicators - "volume of foreign trade turnover per capita" - indicator "4", "volume of foreign trade turnover per capita" - indicator "6", and "number of the Internet users per 100 people" - indicator "12" - rather than absolute indicators.

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Nevertheless, in our calculations, we also used a number of absolute indicators and, depending on the values reached, each country took the appropriate place. These indicators are "7" - "average monthly salary", "8" - "life span" and "11" - "the number of universities in the country ranking among TOP-500".

"Differences in family incomes" - column "9", is quite widespread and characterizes the excess of income of 10% of rich families over incomes of 10% of poor families in each country. In this case, the place of each country for this indicator is determined by the principle: the lower the value of the indicator is, the higher the place of the country in the rating is.

Indicators "10", "13", "14" and "15" (Table 2) reflect the indices of education, human development, social progress and competitiveness (Downie, 2017). The principle of assigning a place to the country in this case is different: a larger value of the index gives the right to occupy a higher place.

Column "16" shows the sums of places taken by each country for all the estimated indicators, except for the above-mentioned indicators "2", "3" and "5".

Column "17" indicates the final rating of countries' success by ranking the resulted sums according to the principle: the smaller the sum of places shown in column "16" is, the higher the country's rating is.

All the statistical material used in the estimates for G20 countries is derived from open sources and the Internet (12). In accordance with the achievements of countries on these indicators, the ranking of countries was carried out in the manner explained above.

It should be noted that Tables 1 and 2 contain no rating calculated for the European Union as an independent entity, as some of the EU countries are present as separate countries in the G20.

It should be borne in mind that when determining the rating of the G20 countries, in the case of equal ratings in two or more countries in column "16", the rule shall apply: the country with larger value of the indicator in column "4" – "gross national product per capita" is preferable. Accordingly, the final rating - column "17" of such a country – is also higher.

For example, in column "16" of table 2 of the G20 countries, the United Kingdom and the United States have an equal sum of places – 50 each, but the US has a preference in the rating, since this country has a gross national product per capita of 57.2 thousand dollars, while Great Britain - 42.1 thousand dollars. As a result, the USA took the 4th place, and the UK - the 5th in the rating of success - column "17". A similar situation occurs when ranking Canada and Germany.

## Summary

In a similar way, using the comprehensive rating for absolute and relative indicators, it is possible to assess the level of success of the countries of the European Union (EU). The data of the rating tables serve as a good empirical basis for conclusions about the success of countries and the basis for the forecast of possible ways of their socio-economic development.

The rating in this case testifies to this: the first three places were taken by Canada, Australia and Germany, the first two in terms of the total volume of GNP

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are behind a half of the G20 countries. And if the third place for Germany can be considered quite expected, then the fourth, taken by the US, to some extent surprises. Somewhat unexpected was the seventh place occupied by Japan: it would seem that the country will be clearly ahead of Canada and Australia. But, alas, the gap in the level of human development, education and social progress has not allowed Japan to do this.

For a more detailed analysis of the above rating, the countries can be conditionally divided into three groups. The leaders would be five countries: Canada, Australia, Germany, the United States and Britain. The middle group would include 11 countries, with places in the rating from 6 to 16. And, finally, the "outsiders" would be three countries: South Africa, Indonesia and India.

We believe that the results of the rating may be of some use to specialists and scientists engaged in research on the problems of international unions and associations.

### **Conclusion**

All the indicators considered in this paper serve as a basis for determining the place of the country in the modern world economy in accordance with the relevant social and economic aspects. They are directly related to the evaluation of development and welfare of society (13). Therefore, using these indicators is very useful and desirable.

We suppose that the materials proposed by the authors can be used in situational centers available at the level of regions and municipalities within the country, when developing solutions for the growth of the values of the estimated indicators to achieve a higher level of success.

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## Assessment Of Risk Management: Recommendations For Russian Federation\*

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**Abstract.** *Risk management and application of risk management technologies, development of a culture of risk management is one of the important aspects for ensuring sustainable development at the present stage. The topicality of the scientific article is the relative uncertainty of the development of market relations at the current stages of economic development, the factors that are crucial for the effectiveness of risk management when the state conducts a policy of risk management.*

*When studying the effectiveness of risk management and the impact of various factors on it, econometric and economic-mathematical methods of research were applied, the realization of which is carried out using the software package for econometric research Gretl.*

*The obtained results of the study make it possible to conclude that the following factors influence the effectiveness of risk management at the state level: the existence of effective ISO on risk management and those in developmental stage, adopted as national ones; availability of other current documents on risk management at the national or regional level; training of risk management specialists in educational institutions; country participation in the ISO / TC 262 committee on risk management standards; country participation in the UN Working Party WP.6 on risk management standards in regulatory systems.*

*The authors of the study based on the results obtained conclude that the grounds for reforming the system of risk management both at the state and business levels should have an integral character and imply the exchange of knowledge and experiences between different spheres of risk management.*

**Keywords:** risk management, econometric tools, econometric model of risk management, effectiveness of risk management, efficiency factors of management.

### Introduction

Modern problems of risk management in Russia are actively discussed in the Russian science at the modern world level of technologies from the very beginning of the twenty first century. According to the results of various Russian and international studies of recent years <sup>1</sup>, more than 30% of respondents of one of the topical problems of growth of the level and quality of risk management is called the lack of national standards on risk management, as well as the lack of

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<sup>1</sup> L. V. Belousova, "The Problem of State Regulation and Risk Management Support in Russia: research and analysis of the state of the branch," in *Lizing*, IX (2010), p. 12—24; Grishin P. (2016). The Assessment of Development of Risk Management in Russia. 2006. - URL: [http://www.insuranceforum.ru/conference/19jun06/pdf/Grishin\\_ru.pdf](http://www.insuranceforum.ru/conference/19jun06/pdf/Grishin_ru.pdf), accessed 31. 07. 2017; KPMG Russia and CIS. "Corporate Management Under the Conditions of Financial and Economic Crisis", 2009. - URL: [http://www.kpmg.ru/russian/aci/\\_docs/survey\\_results.pdf](http://www.kpmg.ru/russian/aci/_docs/survey_results.pdf), accessed 31. 07. 2016.; March Risk Consulting. (2008). The State and Development of the Systems of Risk Management in Big Companies of the RF. URL: [http://www.marsh.com.ru/RU/services/mrc/documents/mrc\\_briefing\\_issledovaniya.pdf](http://www.marsh.com.ru/RU/services/mrc/documents/mrc_briefing_issledovaniya.pdf), accessed 31. 07. 2016.

the programs of certification appropriate for risk managers on national standards and state standards in higher education institutions on risk manager specialty.<sup>2</sup>

The purpose of the study is to reveal the regularities between the factors influencing the level of development risk management of the countries, as well as to identify Russian recommendations on this basis in order to increase the level of organization and effectiveness of risk management in the Russian Federation.

This study used the expert assessments of the 12 factors of the risk management and the level of development of risk management according to the data of 14 states applying economic and mathematical methods and econometric methods.

## Methods

With the object of describing the model of the level of development of risk management at the state level and the impact of different factors on it, it is advisable to take advantage of the econometric methods of modeling of spatial data. Modelling will be performed using a software complex for econometric research Gretl.

As the data for econometric modeling of spatial data, expert assessments will be used. The expert estimates have been obtained through questionnaire by the indicators which influence the level of development of risk management at the state level, also the experts were asked to assess the effectiveness of developing risk management at the state level. Data on indicators, as well as the development of risk management at the state level are given in Table 1.

Table 1. Factors Influencing The Level of Development of Risk-Management in 14 Countries

N	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12
1	89	29	121	6	4	11	12	174	2	2	0	1	3
2	20	6	16	6	2	3	6	20	2	2	0	1	0
3	68	31	73	6	4	1	3	2	2	2	4	2	0
4	27	13	39	4	1	1	3	0	1	0	0	0	1
5	38	22	41	4	1	1	1	0	2	2	0	0	0
6	22	12	31	4	1	0	1	0	2	2	0	1	0
7	29	6	45	4	1	0	1	1	2	2	4	0	0
8	19	5	6	6	2	1	1	2	2	0	0	0	1
9	17	7	16	2	1	1	1	1	2	0	0	0	0
10	13	4	10	2	0	1	1	1	2	0	0	0	0
11	15	8	38	4	2	3	3	2	0	2	0	0	0
12	5	1	4	6	2	2	6	0	0	0	0	0	0
13	7	8	3	4	2	1	1	0	0	0	4	0	1
14	18	3	36	6	1	1	1	2	2	2	4	0	1

<sup>2</sup> L. V. Belousova, "Index of Development of State Regulation of Risk-Management and the Program of State Support for Risk Management Development," in *The Problem of Risk Analysis*, I (2013), p. 64-77.

For the purposes of the econometric study, the following designations were introduced:

$Y$  – the level of the development of risk management of 14 countries according 100- pointed scale;

$X_1$  – availability of effective ISO standards on risk management and those in developmental stage, adopted as national ones;

$X_2$  - availability of other current documents of general national or regional level;

$X_3$  - training of the specialists in the educational institutions;

$X_4$  - existing national organizations and the associations of risk managers;

$X_5$  – existing of the representatives of GARP in the country and a region;

$X_6$  - PRMIA representatives in force in the country and a region;

$X_7$  – the existing representatives of other international organizations and associations (SRA, RIMS, RMA);

$X_8$  – participation of the country in the committee ISO/TC 262 on the standards of risk management;

$X_9$  – participation of the country in working group WP.6 of the UNO on the standards of risk management in the systems of normative regulation;

$X_{10}$  – existing and regional initiatives, legislative acts, support programs on risk management of small and medium size enterprises;

$X_{11}$  – availability of current databases of operational risks;

$X_{12}$  – availability of current databases of emergencies.

When assessing independent factors in the study and their influence on the dependent factor (the effectiveness of risk management), it is reasonable to use the ordinary least squares method, which consists in minimizing the sum of the quadratic deviations between the observed and estimated values (calculated by the derived equation of regression) of independent factors. The formula of the ordinary least squares method:

$$Y = a*X + b \quad , \quad (1)$$

where:

$Y$  – predictable indicator;

$a$  and  $b$  - coefficients;

$X$  - referenced designation of independent factor.

The coefficients and  $b$  are calculated by the following formulas [Davidson, MacKinnon ,2004]:

$$a = \frac{\sum_{i=1}^n (Y\phi * X) - (\sum_{i=1}^n X * \sum_{i=1}^n Y\phi) / n}{\sum_{i=1}^n X^2 - (\sum_{i=1}^n X)^2 / n}, \quad (2)$$

$$b = \frac{\sum_{i=1}^n Y\phi}{n} - \frac{a * \sum_{i=1}^n X}{n}, \quad (3)$$

where:  $Y\phi$  – actual values of the factor of effectiveness of risk management;  
 $n$  – number of observations.

## RESULTS

The resulted model that illustrates the indicator of effectiveness of risk management is shown in Figure 1.

Модель 1: МНК, использованы наблюдения 1-14  
 Зависимая переменная: Y

	Коэффициент	Ст. ошибка	t-статистика	P-значение
const	-11,1028	6,73086	-1,650	0,3469
X1	0,946158	0,324116	2,919	0,2101
X2	0,381456	0,142025	2,686	0,2269
X3	1,54016	3,32937	0,4626	0,7242
X4	2,60332	4,95647	0,5252	0,6921
X5	-0,250551	3,49470	-0,07169	0,9544
X6	0,123040	2,48928	0,04943	0,9686
X7	0,116088	0,210004	0,5528	0,6785
X8	6,00459	3,25705	1,844	0,3164
X9	-3,06422	3,91066	-0,9881	0,5038
X10	0,638142	1,05900	0,6026	0,6547
X11	-2,47919	5,24755	-0,4724	0,7190
X12	-4,59194	6,87084	-0,6683	0,6249
Среднее зав. перемен	27,64286	Ст. откл. зав. перемен	23,51303	
Сумма кв. остатков	16,46336	Ст. ошибка модели	4,057507	
R-квадрат	0,997709	Испр. R-квадрат	0,970222	
F(12, 1)	36,29651	P-значение (F)	0,129067	
Лог. правдоподобие	-20,99970	Крит. Акаике	67,99940	
Крит. Шварца	76,30714	Крит. Хеннана-Куинна	67,23037	

Исключая константу, наибольшее p-значение получено для переменной 7 (X6)

Model 1: OLS, the observations 1-14

Dependent variable: Y

Coefficient Statistical error t-statistics P-value

The average of dependant variables Statistical deviations of dependant variables

The sum of quadratic residues Statistical error of the model

R-square

Corrected R-square

F(12, 1)

P-value(F)

Logical likelihood

Akaike criterion

Eliminating constant, the greatest p-value is obtained for variable 7 (x6)

Fig. 1 The econometric model of the effectiveness of risk management according to assessment of the experts, and the impact of of various factors on it

The graph of the deviation of the observed from the calculated values is represented in Figure 2, it shows the degree of the calculated values of independent factors on the actual ones, which helps to conduct a preliminary analysis of the degree of quality of the constructed model.

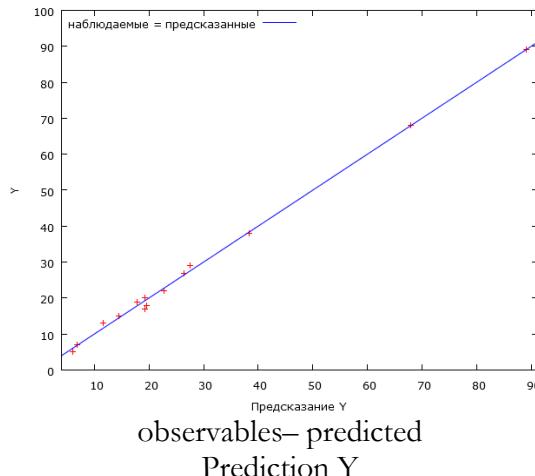


Fig. 2 The graph of distribution of the observed and calculated values by the model

The visual analysis of the graph allows of drawing the conclusion that the distribution of the observed values relative to the calculated values is negligible. This makes it possible to conclude preliminary about the reliability of the constructed model.

At the same time, it is necessary to estimate and analyze the main indicators of significance of the model on the whole: P-values of the coefficients and the coefficient of determination  $R^2$ .

Usually P-value is equal to the probability that a random value with this distribution will take on a value, not less than the actual value of the test statistics.

Let  $T(X)$  - statistics, used in testing a certain null hypothesis  $H_0$ . It is suggested that the null hypothesis is right, the spreading of this statistics is known. The function of distribution in this case:  $F(t) = P(T < t)$ . P-value in testing right-side alternative is determined as follows [Verbeek, 2004]:

$$P(t) = P(T > t) = 1 - F(t)$$

(4)

P-value in testing left-side alternative:

$$P_0(t) = P(T < t) = F(t)$$

(5)

In the case of two-sided test, p-value equals:

$$P(t) = 2 * \min(P_0, P)$$

(6)

If  $P(t)$  is less than a given level of significance, then the null hypothesis is rejected in favor of the alternative. Otherwise, it is not rejected.

In other words, P-value shows the probability that the corresponding t-statistics may turn out to be more than the observed one.

If P-value is less than 0,05, the coefficient is significant at the level 0,05.

If P-value is less than 0,01, the coefficient is significant at the level 0,01.

P-values obtained according to the results of the model are:

- $P_{\text{const}} = 0,3469;$
- $P_{x1} = 0,2101;$
- $P_{x2} = 0,2269;$
- $P_{x3} = 0,7242;$
- $P_{x4} = 0,6921;$
- $P_{x5} = 0,9544;$
- $P_{x6} = 0,9686;$
- $P_{x7} = 0,6785;$
- $P_{x8} = 0,3164;$
- $P_{x9} = 0,5038;$
- $P_{x10} = 0,6547;$
- $P_{x11} = 0,7190;$
- $P_{x12} = 0,6249.$

There are no significant factors in the model, which hits upon an idea about an error in specifying the model, presumably about including into the model of superfluous factors that underestimate the value of other factors.

Also, it is needed to verify the model's significance by the coefficient of determination to check the significance of the model on the whole.

A true coefficient of determination of the model dependence of the random value  $y$  on the signs  $x$  is estimated in the following way:

$$R^2 = 1 - \frac{V(y|x)}{V(y)} = 1 - \frac{\sigma^2}{\sigma_y^2},$$

(7)

where:  $V(y|x) = \sigma^2$  - conventional (by the signs  $x$ ) dispersion of dependent variable (dispersion of a random error of the model).

In this definition, the true parameters that characterize the distribution of random values are used. If to use a sample estimate of the values of the corresponding dispersions, then the formula for the sample coefficient of the determination will have the following form :

$$R^2 = 1 - \frac{\hat{\sigma}_y^2}{\sigma_y^2} = 1 - \frac{ESS/n}{TSS/n} = 1 - \frac{ESS}{TSS},$$

$$ESS = \sum_{t=1}^n e_t^2 = \sum_{t=1}^n (y_t - \hat{y}_t)^2 \quad (8)$$

where:  $y_t, \hat{y}_t$  - correspondently, actual and calculated values of dependent factor;

$$TSS = \sum_{t=1}^n (y_t - v)^2 = n \hat{\sigma}_y^2$$

- general dispersion;

$y_t, \hat{y}_t$  - correspondently, actual and calculated values of dependent factor;

$$\bar{y} = \frac{1}{n} \sum_{i=1}^n y_i$$

- sample average.

$R^2$

In the obtained model  $R^2$  was 0,9977. Interpretation of this indicator means that the model is unreliable, it is used significant by 99,77%, that is, 99,77 % of changes of the indicator of probability of violation of the tax security of organization according to expert assessments and the influence of the risks on it is explained by the constructed model, and 00,03% of change of the indicator is explained by the effect of random factors that were not included in the model.

At the same time, it is necessary to note that the model is inadequate because of the absence of significant actual factors in it, supposedly due to the introduction of various redundant variables in the model. We will carry out the test on the redundant variables in order to obtain an adequate 1 model, its result is shown in Figure 3.

Тестирование модели 1:

Нулевая гипотеза: параметры регрессии нулевые

X4, X5, X6, X7, X10, X11, X12

Тестовая статистика: F(7, 1) = 0,699012, Р-значение 0,729394

Исключение переменных улучшило 0 из 3 используемых критериев.

Модель 2: МНК, использованы наблюдения 1-14

Зависимая переменная: Y

	Коэффициент	Ст. ошибка	t-статистика	Р-значение	
const	-11,6974	3,70738	-3,155	0,0135	**
X1	0,955130	0,178389	5,354	0,0007	***
X2	0,461713	0,0599478	7,702	5,73e-05	***
X3	2,13203	0,727017	2,933	0,0189	**
X8	4,95817	1,23762	4,006	0,0039	***
X9	-3,68834	1,24828	-2,955	0,0183	**
Среднее зав. перемен	27,64286	Ст. откл. зав. перемен	23,51303		
Сумма кв. остатков	97,01993	Ст. ошибка модели	3,482455		
R-квадрат	0,986501	Испр. R-квадрат	0,978064		
F(5, 8)	116,9276	Р-значение (F)	2,95e-07		
Лог. правдоподобие	-33,41615	Крит. Акаике	78,83231		
Крит. Шварца	82,66665	Крит. Хеннана-Куинна	78,47737		

Model evaluation 1:

Null hypothesis: the parameters of regression are zero

"Assessment Of Risk Management: Recommendations For Russian Federation,"

*Astra Salvensis*, V (2017), Supplement no.1, p. 187-200

Test statistics: F (7, 1) = 0, 699012, P-value

The eliminating of the variables improved 0 out of 3 used criteria.

Model 2: OLS, observations 1-14

Dependant variable: Y

	Coeficient	Statistical error	t-statistics
P-value			
The average of the dependant variables deviation of dependant variables			Statistical
The sum of quadratic residues of the model			Statistical error
R-square square			Corrected R-
F(5, 8)			P-value (F)
Logical likelihood criterion			Akaike
Schwarz criterion			Hennan-
Quinn criterion			

Fig. 3 Econometric model of the effectiveness of risk management according to the assessments of the experts, and the effects of various factors on it after removal of redundant variables

As seen from the obtained model, P-values of the factors are:

$P_{\text{const}} = 0,0135$ ;

$P_{x1} = 0,0007$ ;

$P_{x2} = 5,73e-05$ ;

$P_{x3} = 0,0189$ ;

$P_{x8} = 0,0039$ ;

$P_{x9} = 0$ .

All the factors of the obtained model are significant, the coefficient of determination  $R^2$  is also significant and makes up 0,9865, which indicates a high quality of the constructed model and its adequacy.

The visual analysis of the graph of the observed and estimated values also proves the conclusion about reliability of the model (Figure 4), since the distribution of the the estimated values near the observed ones is minor.

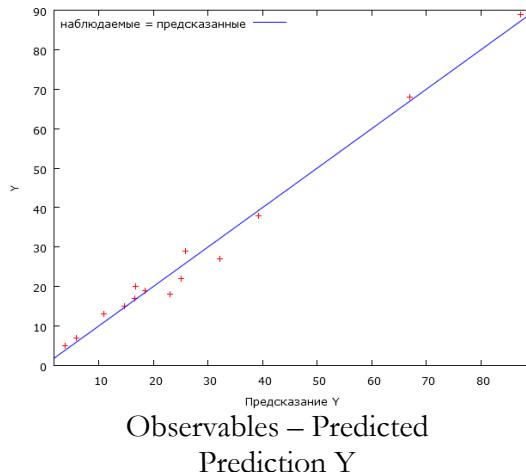


Fig. 4 The graph of the observed and calculated values by the new model

The final stages of the quality control test of the model are the tests on heteroscedasticity and multicollinearity.

Heteroscedasticity leads to the fact that the coefficients of regression are not the estimates with minimal dispersion, hence they have been no longer the most effective coefficients. As a result, the conclusions on the basis of t and F-statistics, and also interval estimates are unreliable, there takes place a bias between the dispersion and the standard errors of the model. If the bias is negative, then the estimated standard errors will be less than they need to be, and the test criterion is necessary to obtain reliable values.

To confirm the presence or absence of heteroscedasticity, it is advisable to use the the White test.

The test is conducted in the following way :<sup>3</sup>

a) reference model has the form:

$$y_i = b_0 + b_1 x_{1i} + b_2 x_{2i} + \varepsilon_i. \quad (9)$$

Using the method of least squares, its parameters are assessed and regression residuals  $\hat{\varepsilon}_i$  are obtained;

b) the auxiliary regression of the squared residuals for all regressors, their squares, the pairwise products and the constant are estimated:

$$\hat{\varepsilon}_i^2 = \alpha_0 + \alpha_1 x_{1i} + \alpha_2 x_{2i} + \alpha_3 x_{1i}^2 + \alpha_4 x_{2i}^2 + \alpha_5 x_{1i} x_{2i} + v_i, \quad (10)$$

where  $v_i$  - normally distributed error, independent on  $\varepsilon_i$ .

<sup>3</sup> Verbeek, M. (2004). A Guide to Modern Econometrics, 2nd edition. New York: John Wiley & Sons

It is known, that  $D(\varepsilon_i) = M(\varepsilon_i - M(\varepsilon_i))^2$ . However, if it is assumed, that  $M(\varepsilon) = 0$ , then  $D(\varepsilon_i) = M(\varepsilon_i^2)$ . Since the true value of squared residuals  $\varepsilon_i^2$  is unknown, then the question about the presence of heteroscedasticity is decided based on their sampling analogues  $\hat{\varepsilon}^2$ .

b) the null hypothesis is checked:

$$H_0: \alpha_2 = 0 \text{ and } \alpha_3 = 0 \text{ and } \alpha_4 = 0 \text{ and } \alpha_5 = 0 \text{ and } \alpha_6 = 0 \quad (11)$$

using F- Fisher criterion.

If the actual values of the statistics exceed the critical values of distribution  $F_{\text{расч}} > F_{\text{кр}}(\alpha, v_1 = p, v_2 = n - p - 1)$ , then the null hypothesis about homoscedasticity of the residuals is rejected, that is, one can make a conclusion about heteroscedasticity.

The graphic analysis of distribution of residuals according to the obtained model allows us to make the conclusion that the heteroscedasticity of residuals is absent due to the random character of the distribution of residuals of the model (Figure 5).

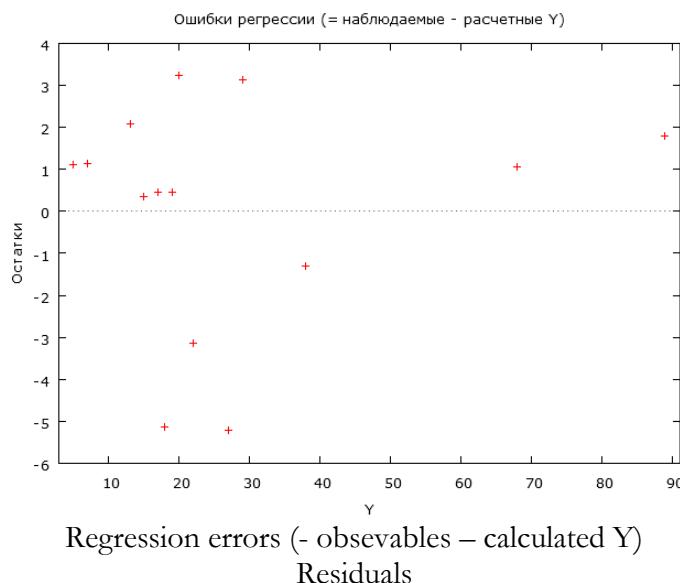


Fig. 5 The graph of distribution of the residuals by the obtained model

For the final confirmation of this assumption, it is appropriate to conduct the White test using the application software package Gretl, Figure 6 presents the results of the test.

Тест Вайта (White) на гетероскедастичность  
 МНК, использованы наблюдения 1-14  
 Зависимая переменная: ihat^2  
 Пропущены из-за совершенной коллинеарности: sq\_X9

	Коэффициент	Ст. ошибка	t-статистика	Р-значение
const	-2,29421	30,6096	-0,07495	0,9439
X1	-1,88534	2,45001	-0,7695	0,4845
X2	-0,128840	0,606836	-0,2123	0,8422
X3	5,02177	19,3519	0,2595	0,8081
X8	77,1361	37,5819	2,052	0,1094
X9	6,05611	6,87622	0,8807	0,4282
sq_X1	0,0401622	0,0789391	0,5088	0,6377
sq_X2	0,000965594	0,00374754	0,2577	0,8094
sq_X3	-0,612234	2,42678	-0,2523	0,8133
sq_X8	-36,6863	18,2334	-2,012	0,1145

Неисправленный R-квадрат = 0,819459

Тестовая статистика: TR^2 = 11,472425,  
 р-значение = P(Хи-квадрат(9) > 11,472425) = 0,244710

White test on heteroskedasticity  
 OLS, observation s 1-14  
 Dependant variable:  
 Omitted due the complete collinearity: sq\_X9

Coefficient	Statistical error	t-statistics
P-value	Unimproved R-square	
	Test statistics	
	p-value = P(Chi-square(9)	

Fig. 6 The White test for built-in model of the effectiveness of risk management according to the esatimates of the experts and the influence of different factors on it For final con formation of the presence or absence of

heteroscedasticity of residuals, it is necessary to find  $F_{\text{крит.}}$ , which is equal to 18,307( fig. 7).

Хи-квадрат(10)  
 Правосторонняя вероятность = 0,05  
 Дополняющая вероятность = 0,95

Критическое значение = 18,307

Chi-square  
 Right-side probability  
 Complementary probability  
 Critical value

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Fig. 7 Critical value for the White test

As a result, the White test has shown, that P-value constitute 0,240261 (which is greater than  $P = 0,01$  and  $P = 0,05$ ), for  $F_{pact}$  (11,4724)  $< F_{kp}$  (18,307). Thus, the hypothesis  $H_0$  about the presence of homoscedasticity of residuals is accepted and the alternative hypothesis  $H_1$  about the presence of heteroscedasticity of residuals is rejected, that is, the dispersion of the residuals is constant and the model is reliable.

Initial Final stage of verification of which the usually built econometric model risks the reliability is the verification of model management for the multicollinear pairwise dependent variables. Multicollinearity is understood the high correlatedness between the explainable variables  $X$ . It can be manifested in the functional (explicit) and the stochastic (implicit) forms. In the functional form of the multicollinearity at least the one of the paired association between the variables  $x$  is accepted to call the linear functional dependence. With the implicit form between the two explaining variables, there is a strong correlation.

Exact quantitative criteria for determining multicollinearity to be present or absent do not exist. Nevertheless, some heuristic approaches by its revelation are used, for example, the method of inflation, which is the following. In the initial model of multiple linear regression all the auxiliary models are searched, all auxiliary visual models of the existence are moved, in which any of the exogenous variables becomes the endogenous ones:<sup>4</sup>

$$X_j = \theta_0 + \theta_1 * X_1 + \dots + \theta_{j-1} * X_{j-1} + \theta_{j+1} * X_{j+1} + \dots + \theta_M * X_M + v_j \quad (12)$$

where  $\theta_j$  — coefficient of regression;

$j = 1, M$ ;

$v_j$  — random variable,  $v_j \sim N(*)$ .

The none calculates the coefficients of determination off all obtained models  $R^2_j$ . On the basis the obtained coefficients of determination, the inflation factors are calculated:<sup>5</sup>

$$VIF_j = \frac{1}{1 - R_j^2} \quad (13)$$

<sup>4</sup> Colin Cameron &Pravin K. Trivedi. (2005).Microeconomics: Methods and Applications. Cambridge University Press, 1034 ctp.

<sup>5</sup> Fiebig, D.G. (2007). Microeconomics: Methods and Applications by A. Colin Cameron &Pravin K. Trivedi. Economic Record 83, 112–113.

If minimal value of the inflationary factor is greater than 5(10), then one makes a conclusion about possible multicollinearity:

$$\min_{1 \leq j \leq M} VIF_j > 5$$

(14)

The results of the method of inflationary factors are in Figure 8.

Метод инфляционных факторов

Минимальное возможное значение = 1.0

Значения > 10.0 могут указывать на наличие мультиколлинеарности

X1	3,104
X2	3,906
X3	1,195
X8	1,200
X9	1,762

$VIF(j) = 1/(1 - R(j)^2)$ , где  $R(j)$  – это коэффициент множественной корреляции между переменной  $j$  и другими независимыми переменными

Fig. 8 The results of application of the method of inflationary factors with the aim to reveal multicollinearity

Method of inflationary factors

The minimum possible value

The values > 10.0 can indicate the existence of multicollinearity

$VIF(j) = 1/(1 - R(j)^2)$ , where the coefficient  $R(j)$  is the coefficient of multiple correlation between the variable  $j$  and other independent variables.

As a result, by means of econometric methods it is established that multicollinearity between independent factors is absent.

## Discussion

The obtained model of effectiveness of risk management at the state level ( $\mathbf{Y}$ ) and the influence of different factors on it is presented in the following form:

$$\mathbf{Y} = -11,6974 + 0,9551 \cdot X_1 + 0,4617 \cdot X_2 + 2,13203 \cdot X_3 + 4,95817 \cdot X_8 - 3,68834 \cdot X_9,$$

where:

-  $X_1$  – the presence of effective standards ISO on risk management and those ones being in the developmental stage, adopted as national ones;

-  $X_2$  – the presence of other existing documents on risk management of general state and regional level;

-  $X_3$  – preparation of the specialists on risk management in educational establishments;

-  $X_8$  – participation of the country in the committee ISO/TC 262 on the standards of risk management;

-  $X_9$  – participation of the country in the working group WP.6 of UNO on the standards of risk management in the systems of normative regulation.

### **Summary**

Proceeding from the actual results of the econometric modelling one can make the following conclusions for the system of risk management of the Russian Federation:

- it is necessary to develop national ISO standards for effective risk management, as by this indicator, Russia is significantly behind the developed countries (more than 5 times from the USA and the UK);

- by the regional management documents the situation in risk management is quite good (about 45 documents have been accepted), but should be backed up by national risk management standards;

- it is advisable to increase the number of profile programs on risk management and to graduate the specialists on practical risk management;

- Russia's participation in the ISO / TC 262 committee on standards of risk management and the UN WP.6 working group on standards of risk management is seen to be promising in terms of international and interstate exchange of experience in the area of risk management.

### **Conclusions**

Thus, the authors of the research studied the measure of effectiveness of risk management at the state level amongst 14 countries, both the developed countries and the ones with developing economies, based on 12 major factors. The results of the current research give grounds for reforming the risk management system at the state and business levels, the reforms should have an integral character and imply sharing knowledge and experience between different spheres of manifestation of risk management. The amount between countries in different spheres will be manifestations of risk management.

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## The Role Of Prayer Discourse For Karaganda Concentration Camp Image Creation In The Works Of Tatar Writer Ayaz Gilyazov And The Kazakh Poet

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**Abstract.** The article provides the comparative analysis of the novel-reminiscence by Tatar writer Ajaz Giljazov "Let's pray!" with the poem "The Black Headscarf" by Galim Zhaylybaev. The role of prayer discourse is determined to reveal the theme of Gulag. The analysis is conditioned by the whole complex of content elements from the texts of various genres - their themes, problems, conflict and an ideological sense. In the course of the comparison, not only similar features were found in the development of KARLAG (Karaganda labor camp) topic, but also the differences, which are conditioned by the specifics of the author's consciousness and the architectonics of the semantic and value horizons corresponding to two national literatures. Proceeding from the religious nature of the prayer genre, writers orient their artistic texts to a sacred word. Genre self-consciousness determines the speech characteristics of a literary prayer. A. Giljazov focuses on the canon of the Muslim Doga (a prayer) canon and the Koranic tradition, G. Zhaylybaev focuses on the requiem supported by the Turkic Syktaw (crying). Works are turned into a text-prayer for the sake of future generations, so that the horrors of the Stalin camp will not happen again.

**Key words:** Tatar literature, Kazakh literature, Stalin camp, Ajaz Giljazov, Galim Zhaylybaev, KARLAG.

### Introduction

The camp topic first appeared in the USSR literature during 1960-ies, during the Khrushchev's thaw. This is one of the interesting and innovative topics that determined the development of literature in our country. The authors of "camp prose" (A.I. Solzhenitsyn, V. Shalamov, A.V. Zhigulin, G.N. Vladimov, I. Salahov et al.), while understanding the phenomenon of totalitarianism in the USSR, paved the way for the freedom of thought and word.

### Materials

There are two works of Tatar and Kazakh literature in the focus of our attention devoted to the theme of KARLAG. This is a novel-reminiscence "Let's pray" by Ajaz Giljazov (1991-1993)<sup>1</sup> and the poem-requiem "The Black Headscarf" by Galim Zhaylybaev (2014)<sup>2</sup>, where the prayerful plot-archetype becomes the starting point of memories of the past in the name of the future. The novel "Let's pray!" was published in the journal in 1993, and in the form of a book in 1997. In 2016 it was translated into Russian, in 2017 - into Hungarian.<sup>3</sup> A. Giljazov outstripped the Kazakh scholars and writers in the development of

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<sup>1</sup> A. Giljazov, "Let's pray! The novel-reminiscence," in *Kazan uthary*, X (1993), p 7-98; *Ibidem*, XI (1994), p. 7-93; *Ibidem*, XII (1995), p. 4-98.

<sup>2</sup> G.Zhaylybaj, *The black headscarf*, Karaganda, Bolashak-Baspa, 2014.

<sup>3</sup> A. Giljazov, *Imádkozzunk*, Budapest, HVG Press, 2017.

KARLAG theme: artistically comprehending his past, the writer recreated the life of the camp in his novel from the moment of its creation to closure. The book by D.A. Shaymukhanov and S.D. Shaymukhanova "Karlag" (1997) on this topic appeared only in 1997. The poem by G. Zhajlybaev "The Black Headscarf" (2014) was translated by Rafis Kurban into Tatar language in 2015.<sup>4</sup> The poet's family was not touched by the Moloch of the Stalinist repressions. This topic was close to him, since he was born in Zhanaarkinsky district of Karaganda region, in the places where numerous camps were functioning.

### Methods

The methodological basis of the study makes the method of comparative analysis of texts. By this we mean such an analysis in which the common features of works are examined, but the differences are also emphasized; a certain "point of comparison" is stated and its more general background, and, perhaps, an alternative implementation in the texts is explored. The novelty of our study is that we have attempted to identify through the comparative analysis, the specific use of the prayer plot archetype in the disclosure of the Karlag theme by writers for the first time in the history of literary criticism.

### Discussion

Tatar writer A.M. Gilyazov (1928-2002) became famous throughout the Soviet Union in 1964, when his novel "Three arshins of the ground" was published in Russian, which was awarded by the prize of the magazine "Friendship of Peoples".<sup>5</sup> He was the prisoner of Stalin's prisons and camps. As a student of Kazan University, he was convicted in 1950 "for the attempt to create an anti-Soviet organization, for slandering the leader of the people".<sup>6</sup> Jezkazgan, Kengir, Balkhash, Aktas, Volynka - this is the route of the camp ordeal by A.M. Gilyazov. The documents preserved in the archives of the Tatar writer testify to the fact that back in the 1960-ies he wanted to write a memoir work about his camp past. He was inspired by A.I. Solzhenitsyn's novel "Ivan Denisovich's one day" and the poem by Eugene Evtushenko "Fears". The story of A.M. Gilyazov provoked a strong discussion not only in the local press, but also on the pages of the central newspapers. The persecution of the writer lasted for long two decades.

In his memoirs A.M. Gilyazov, along with the "cooling" of the social atmosphere, calls one more objective reason that made him to correct plans in 1960-ies: the desire to delete from his memory everything that reminded of the camp. The writer decided to carry out his plan only in the 1990-ies, during the period of national and ethnic relations aggravation in our country. Before the creation of the autobiographical work in August 1991, he traveled to Karaganda to the places of his camp past. This trip became the catalyst in the work on the novel "Let's Pray!" (1991-1993), which was conceived as a tribute to those who perished

<sup>4</sup> G. Zhaylybaev, *The black headscarf - The two poems*, Kazan, "Ilham" Publishers, 2015, p. 9-45.

<sup>5</sup> A. Gilyazov, "Three arshins of the earth," in *Friendship of peoples*, VI (1964), p. 65-104.

<sup>6</sup> A. Giljazov, *Let's pray! The novel-reminiscence*, Kazan, Tatarstan Publishers house, 1997.

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or survived in this Stalinist netherworld, like a prayer addressed to the fellow-sufferers in misfortune.

The genre of the work is defined by the author as a novel- reminiscence. This is a memoir text, where the historical documentary vision of the epoch is related with the circumstances of personal life. In the work, the prayer story archetype is the starting point for a macro dialogue recreation. The novel - reminiscence should have resulted in a text-prayer. A.M. Gilyazov refers a reader to the dominants, fixed in the Tatar national culture. A prayer text that reveals a special form of revelation, an imperative that can save from wrong actions are captured by readers' minds.

The national code by A.M. Gilyazov finds its embodiment first of all in the elements of such a genre form as *doga*. On the one hand, it is a tribute to the centuries-old tradition of Tatar literature, on the other hand, it is obvious that A.M. Gilyazov managed to create a unique text that has no analogues in the history of Tatar literature. The motif of *doga* (a prayer) becomes a structure-forming one in the work by A. Gilyazov. The writer seeks to realize the full potential of the word *doga* in his sign work: 1) a call; 2) a supplication, a request; 3) a prayer; a prayer record (worn on the chest like a talisman); 4) a curse.<sup>7</sup> The title of the novel contains the call to prayer. Creating the author's text-prayer, A.M. Gilyazov focuses on the traditional text of *doga* (a prayer) and on the *request for forgiveness* (*istigfar*), on the other hand, he creates a "performative text" aimed at a spiritual support seeking in the world, the confessional rethinking of the experience, and the prophetic prediction. A preaching discourse gave new functional features to the novel-memories, since the *doga* is realized by A.M. Gilyazov as an act in its highest ontological meaning. *Doga* ceases to be a word, closed in itself, but it is perceived as an event that holds the cataclysms of the era, the moral and the ethical dominant of the age and cosmic laws.

The work consists of three parts, each of which consists of sub-chapters. It is noteworthy that they give 37 in total, which in the light of the camp topics does not need comments. The national code is implemented not only at the title level, but also at the level of an epigraph. The image of the sage Lukman allows the writer to use Koranic and national codes. The writer A.M. Gilyazov turns out to be akin to the Eastern sage, who left a spiritual testament to his people.

The novel by A.M. Gilyazov consists of three parts, creating an original encyclopedia of the Tatar people life in the twentieth century. Focusing on the "Divine Comedy" by Dante, the writer builds an overall composition of the work. The first part of the novel-memoirs represents the "Hell" of Soviet reality. The composition of this part is organized in the way to show the negative aspects of life as fully as possible concerning all the components of the country contemporary for the author. Focusing on the composition of *doga*, A.M. Gilyazov includes the request for forgiveness in the work. The writer seeks to reveal the origins and the manifestation of freethinking in a tyrannical state. The subject of the novel is the

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<sup>7</sup> H. K. Baranov, *Arabic-Russian dictionary*, Moscow, Russian language, 1985.

private fate of the autobiographical hero. A.M. Gilyazov reveals the role of family, school, university and a camp in the development of one's own personality.

In the second part of the novel we plunge into the world of Stalin's camp purgatory, where positive images appear that are carriers of a free spirit. The camp is an important stage in the life of the novel-memory heroes, the place of their unbearable suffering and heroic deeds. A.M. Gilyazov within the tradition of the *doga* pronounces the prayer praising Allah, the creator of the worlds. For the author the Qur'an acts as a source of knowledge about a person, the meaning of his life.

In the third part of the novel, the writer describes his return from the camp. A.M. Gilyazov immerses the reader in the "pitch life" (F.Dostoevsky) of the last stage - the realm of violence, cruelty and arbitrariness. The inmates of Maikuduk, Chelyabinsk prison make a painful impression. The country-prison continues its existence after the tyrant's death. Together with the hero, the reader experiences the full burden of the unknown. A timid hope of liberation emerges only in letters to parents. The third part has a premonition of Paradise - the acquisition of freedom by the peoples in the era of perestroika. A. Gilyazov getting rid of the burden of heavy memories about the camp past with difficulty, sums up his grievous reflections: he is surprised at the arbitrariness and the cruelty of the communist leaders who brought so many troubles and sorrows to the peoples and generations, forced the whole nations to wander all over the world. The bloody hands of the tyrant leaders turned the story back. The ideas of Leninism turned into a plague that hit the world. The system of Ezhov, Jagoda, Beriya-Ryumin was aimed at the destruction of the thinking part of the country. A. Gilyazov's companions and teachers turned out to be prophets in their homeland, having predicted that the path to freedom in the Russian Empire will be very long. Stalin's prisons and camps have become real universities of the freedom of spirit. The leaders of national movements emerged from repressed ones during the perestroika years, they were truly inspired people.

In this plan, the autobiographical hero is given a special compositional function: he connects all the parts of the grandiose picture of life presented in three parts of the memorial novel, passes the path of a living soul creation in the regime aimed at the turning of citizens into the cogs of the state machine. A. Gilyazov appears in the novel-recollection as a writer-realist, meditating on universal values, a national leader restoring the lost sides of the Tatar national culture and Tatar national consciousness, a philosopher reflecting on the meaning of human existence, a historian and a sociologist, seeking the sources of tyranny and a moral support in the national past. At the end of the novel-recollection, the writer quotes the 24 verse of Surah "Ibrahim". He dreams that his book will bring great benefit to people in the creation of a "beautiful tree" of their souls, spread as a prayer-curse to the tyrants over the earth, ascended as a *doga* to heavens for "friends, fellow travelers, like-minded people and fighters".

Galim Zhajlybaj in his poem "The Black Headscarf", like the Tatar writer, resorts to prayer discourse. Obviously, the work is written under the influence of Anna Akhmatova's poem "Requiem" (1934-1960). It is no coincidence that the

poet calls this work a "song of freedom" that took off in the 1960-ies like a flag that pierced the atmosphere of totalitarianism with the rocket (p. 16.). Kazakh mournful chronicle of Karlag everyday life consists of 11 chapters, the 1st and the 11th of which are the frame of the rest.

The poet's goal is to create a requiem in honor of all those who got into Karlag's "black book": who disappeared, survived and carries the baton of memory about this tragedy. Each of the rhymes composing the poem is lyrical, but together they constitute an epic poem. Following A. Akhmatova G. Zhaylybaj resorts to the synthetic kind of artistic integrity. The events reflected in the poem that occurred with a huge number of people are the subject of the epic, but they are illuminated by the tragic and fascinating lyric poetry of the Kazakh poet.

In Turkic tradition, the function of crying is performed by *syktau*. The first chapter "Camp Karaganda" is built on the intonation of crying, on the recitative formula. Numerous exclamations, questions and addresses are used in it. In the syktau by G. Zhaylybaj the narrative beginning is intertwined with the emotional-lyrical one. Epic is composed of a description of Karlag activity and structure description. Emotional basis is manifested in the characteristics of the camp. According to the contents, the syktau becomes a funeral one. The lyrical hero tells about the life of Karlag inhabitants, the causes of death, about the culprit and forms a spiritual testament to the descendants in details, so that the "black scarf" will not again be on the head of one of the centuries in the future once again. The lyrical hero, like the hero of the Turkic syktau, wants to understand the causes of the tragedy. He talks about the former greatness of the lands that have been transformed by the will of totalitarian power from the "ever green steppe" into the "bloody tear of the Gulag Archipelago". The territory of the steppe Saryarka ("yellow ridge", the name of the steppe in Central Kazakhstan) is dear to him and his ancestors as the House of the Alash tribe, as the place of campaigns of Abylai Khan, where the batyrs died defending the father's country. At the same time, he describes contrastingly the "black night" of the repressive era, which absorbed the weeping of children and women, and the groans of the male batyrs. The hero of the poem curses "Stalin the Devil", exposing his tyrannical nature. This creates a contrast of light and dark, happy and tragic principles, peculiar not only for the Requiem, but also for the baits, dedicated to personal tragedies. The text is saturated with lexical units of the semantic field "crying". "Black Headscarf" has "timeless" images and motifs: the image of "grief", "fate" and "death". They are not felt in the poem as "eternal" ones, since they are inscribed very rigidly and realistically in the context of the present Stalinist camps. Thus, the genre features of the poem are determined here by the domination of the folklore element.

The settlement of Karabas served as the gates of Karlag, where the largest camp for political prisoners was located. There thousands of them died from famine and diseases in adobe buildings. It was a transit prison. The Tatar and Kazakh writer describe it in the same way as the realm of death. Unlike A.M. Gilyazov, G. Zhaylybaj uses an ancient name of this settlement - "Kongyrtube" ("Brown Roof") instead of Volynka. The poet tells about the prisoner tragedy from the camp "Alzhir", ("Akmoly" - the camp for "Motherland traitors" wives), Spask

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and Zhartas. The story of "Mamochkino Cemetery" establishment, where the children separated from their mothers-prisoners were buried, dying in the "children's complex", is filled with a huge emotional force.

In the poem "The Black Headscarf" G. Zhajlybaj combines the past and the present, subjective and objective, tragic and enlightened, like the Tatar writer. As the plot develops, it is obvious that the emphasis shifts from direct reproduction of vital realities, portrait authenticity to the comprehension of the tragic essence of Karlag.

At the same time, it is possible to trace a certain thematic similarity between the work of the Kazakh poet and the traditional liturgical funeral mass. So, the first part of the liturgy - Reguiem - contains the basic idea, in which the words "give eternal rest to them, Lord" are the most important. G. Zhajlybaj also has a call to sing a requiem in honor of all who were in Karlag. It is written with exalted words, which is characteristic of the funeral mass. The next part - Turba mirum ("The Wonderful Trumpet") - corresponds with the second part of the "Black Headscarf", where the native land, Karabas, is glorified and an angry intonation turned to the symbolic image of evil that crushed mankind. The motifs of Lagramosa ("Tearful") are present in the 4th and 6th chapter ("The Girl is crying", "Mamochkino Cemetery"), where the pain for the camp prisoner sounds. In Offertorium ("The giving of gifts"), one can trace the following thought - death as a gift to God. This motive can be found in the 7th chapter ("The anthem to childhood and youth"). The chapter "Kongyrtubə" is similar with the song Lux aeterna ("Eternal Light"), in which voices of the dead prisoners are heard: 1000 artists, 360 pianists and 100 painters. The poet implores to remember the dead. One can single out the specific stylistic features of the poem: the high pathos of oratorical speech, sorrowful lamentation, epic tales, elegiac meditation and naked lyricism. Hence the lexical correspondence: an elevated vocabulary, folk laments, philosophical vocabulary.

## Results

The novel-remembrance "Let's pray!" by A. Gilyazov and G.Zhaylibay's poem "The Black Headscarf" belong to the number of works on the camp topic. The focus of the writers' attention was KARLAG. The comparative analysis of these two works makes it possible to reveal the novelty of writers in the camp topic development. The role of prayer discourse is revealed within the framework of the study.

## Conclusions

A. Gilyazov and G. Zhaylybaj use the prayer discourse successfully during the creation of works dedicated to KARLAG. In memory of the genre religious nature, they orient their artistic texts to a sacred word. The speech features of literary prayer define genre self-consciousness. Writers seek to influence the inner world of readers by engaging in spiritual empathy and prompting for response. The genetic connection of the writer's prayer with a religious prayer is revealed in the context and the structure of the works. We observe the phenomenon of genre

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"memory". Nevertheless, the functionality of literary prayer genre is associated not only with the "memory of the genre", but also with the typological character of the spiritual nature concerning the works of this genre, which significantly distinguishes them from the texts whose genre features are determined only by literary criteria. At the same time, both works are perceived by a prayer not only for the deceased, but also for the sake of the future, so that such tragedies won't occur any longer.

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## **Investigation Of Organizational And Personal Factors Of Professional Burnout Of Personnel In The Consulting Organization\***

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**Abstract.** *Professional burnout is a process of gradual decrease in the intensity of emotional, cognitive and physical energy, accompanied by emotional, mental exhaustion and physical fatigue, personal detachment and a decrease in satisfaction in the employee's work in the organization. Professional burnout of employees of the consulting companies is characterized by a decrease in the evaluation of competence and the value of their activities, emotional exhaustion. The following factors have the greatest influence on the formation and development of this state: material satisfaction with work (the probability of developing the syndrome of professional burnout increases with an increase in the level of material satisfaction, since a career growth and, accordingly, salaries assume greater responsibility and additional workload), marital status (the persons being in a registered marriage have a lower level of professional burnout than those who are in a civil marriage and have no relationships), state of health (health problems contribute to the emergence of professional burnout syndrome), work experience in the company (more experienced employees have a less pronounced professional burnout syndrome). The organizational factors of professional burnout are inconsistency of work performed with salaries, high load, multitasking. Role factors have little effect on the professional burnout of employees of the consulting companies.*

**Key words:** professional burnout, personnel, labor efficiency, organizational factors, personal factors, role factors, material satisfaction with work.

### **Introduction**

We investigate the presence of professional burnout syndrome, as well as the factors causing it, among the employees of the audit-consulting firm.

We selected questioning, factor analysis, correlation-regression analysis using the Statistica software package as survey methods.

Professional burnout is a syndrome that is developed under conditions of chronic stress, leading to the exhaustion of emotional-energy and personal resources of the working person. The physical and neuropsychic loads experienced by the employees during their work are different, depending on the type of activity. The natural mechanisms of body regulation are activated with single and small loads, which help it to cope with the consequences of such loads. However, "self-regulation" does not always work. Professional burnout appears as a result of the internal accumulation of negative emotions without their "discharge" and "disposal". The paramount relevant task is to solve the problem of self-regulation of the employee's psychological state.

Thus, professional burnout is a process of successively reduction of the intensity of emotional, cognitive and physical energy, expressed in emotional, mental exhaustion and physical fatigue, personal detachment and reduced satisfaction with work.

The main reason for professional burnout is the discrepancy between the employee's personality and the work content, which results in a feeling of fatigue, imbalance.<sup>1</sup>

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There are the following options for the emergence of such a contradiction:

- requirements for the employee and the employee's capabilities;

- aspiration of employees to have a high level of independence in labor activity, determination of the ways and methods of achieving the results of work and rigid policy of the organization's management in matters of labor activity and its control;

- the efforts expended and the level of remuneration. This discrepancy leads to the fact that the employee begins to feel the non-recognition of his work, which leads to emotional apathy, a decrease in emotional involvement in the affairs of the team, the emergence of a sense of injustice;

- ethical values and the requirements given by the work. The result is emotional tension arising as a result of cognitive dissonance between the thoughts and real actions.

There are three main groups of factors among the factors of professional burnout: personal, role and organizational. The influence of a sense of self-worth in the workplace, opportunities for self-realization, professional advancement on the problems of professional burnout has been studied by many scientists <sup>2</sup>.

).If an employee feels the importance of his activities, then he experiences less stress, is emotionally stable. If he evaluates the work as insignificant, the syndrome develops faster. Its development provokes dissatisfaction with professional growth, dependence on the opinions of colleagues and lack of independence of the employee. The lack of the possibility of further training and professional improvement of the employee also contributes to professional burnout; he feels that he tramples on the spot in his development.

A significant impact on the burnout development is caused by a conflict of roles and role uncertainty, the situations in professional activity, in which joint actions of the employees are not coordinated in general <sup>3</sup>.The coordinated

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<sup>1</sup> M. Grabe, *Burnout Syndrome is a Disease of our Time. Why Do People Burn out and What can be Done against This*, St. Petersburg, Rech, 2008.

<sup>2</sup> A. S. Antoniou, A. Ploumpi, M. Ntalla, "Occupational stress and professional burnout in teachers of primary and secondary education: the role of coping strategies," in *Psychology*, IV (2013), no. 3, p. 349; J. Llera, E. Durante, "Correlation between the educational environment and burn-out syndrome in residency programs at a university hospital," in *Archivosargentinos de pediatria*, CXII (2014), no. 1, p. 6-11; M. A. Nezhad, "Investigating the relationship between the big five personality factors and professional burnout in the health care field," in *International Journal of Research in Organizational Behavior and Human Resource Management*, II (2014), no. 4, p. 176-188; T. D. Shanafelt, G. Gorringe, R. Menaker, K. A. Storz, D. Reeves, S. J. Buskirk, S. J. Swensen, "Impact of organizational leadership on physician burnout and satisfaction," in *Mayo Clinic Proceedings*, XC (2015), no. 4, p. 432-440; H. Wang, N. C. Hall, S. Rahimi, "Self-efficacy and causal attributions in teachers: Effects on burnout, job satisfaction, illness, and quitting intentions," in *Teaching and Teacher Education*, III, (2015), p. 120-130.

<sup>3</sup> A. S. Antoniou, A. Ploumpi, M. Ntalla, "Occupational stress and professional burnout in teachers of primary and secondary education: the role of coping strategies," in *Psychology*, IV(2013), no. 3, p. 349; A. Galęba, B. Bajurna, J. T. Marcinkowski, M. Galążka, *Professional burnout among doctors and nurses as a result of exposure to considerable stress at work*, Moscow, 2015; M. Craigie, R. Osseiran-Moisson, D. Hemsworth, S. Aoun, K. Francis, J. Brown, C. Rees, "The influence of trait-negative

teamwork, subject to distribution of responsibilities, protects the employees from the development of professional burnout syndrome.<sup>4</sup> High workload, tight regulation of the working time in the joint work of motivated colleagues contributes to the growth of efficiency, prevents the development of professional burnout.

The syndrome development is affected by many hours of uncertain work (dilution of functional responsibilities) or the work not evaluated by the manager. The authoritarian style of management contributes to the development of professional burnout and reduces the efficiency of employees' work.

Formation of these symptoms of professional burnout of workers for a long time can lead to a kind of professional burnout of the organization as a whole.<sup>5</sup> This burnout will manifest itself in the development of the employee's identical psychoemotional symptoms, behavioral manifestations inherent in the burnout syndrome. Often this is due to general pessimism in the organization, low level of satisfaction with work.<sup>6</sup> The researchers distinguish three main signs of professional burnout:

- exhaustion;
- personal detachment;
- loss of own efficiency.

### **Materials and methods**

We conducted a study of the level of professional burnout and the factors determining it, based on the questioning of employees of the consulting company. In total we interviewed 54 employees. The questions of the questionnaire made it possible to assess the gender, age, marital status, length of service, length of service in a particular company, position, educational level, frequency of overtime work, material satisfaction with work, presence of professional burnout.

The analysis by age structure has showed that 48% of employees are between the age from 24 to 26, 22% - from 27 to 29, 19% - from 21-23, 7% - from

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affect and compassion satisfaction on compassion fatigue in Australian nurses," in *Psychological Trauma: Theory, Research, Practice, and Policy*, VIII (2016), no. 1, p. 88.

<sup>4</sup> L. I. Askhatova, I. S. Bulnina, I. A., Rudaleva, I. A., Kabasheva, "Coaching as an Innovative form of Staff Development in Organizations," in *Mediterranean Journal of Social Sciences*, VI (2015), no. 1, p. 266.

<sup>5</sup> I. Arshava, A. Baratyns'ka, "Role of positive values and personality traits in preventing of professional burnout among law enforcement officers," in *European Scientific Journal*, XI (2015), no. 35; T. D. Shanafelt, G. Gorringe, R. Menaker, K. Storz, D. Reeves, S. U. Buskirk, S. J. Swensen, "Impact of organizational leadership on physician burnout and satisfaction," p. 432-440; R. Willard-Grace, K. Dubé, D. Hessler, B. O'Brien, G. Earnest, R. Gupta, K. Grumbach, "Panel management, team culture, and worklife experience," in *Families, Systems, & Health*, XXXIII (2015), no. 3, p. 231; B. D. Parygin, *Socio-Psychological Climate of the Team: Ways and Methods of Study*, St. Petersburg, Nauka, 2006.

<sup>6</sup> A. Jacquet, A. Grolleau, J. Jove, R. Lassalle, N. Moore, "Burnout: Evaluation of the efficacy and tolerability of TARGET 1® for professional fatigue syndrome (burnout)," in *Journal of International Medical Research*, VIIIL (2015), no, 1, p. 54-66; F. Lauermann, J. König, "Teachers' professional competence and wellbeing: Understanding the links between general pedagogical knowledge, self-efficacy and burnout," in *Learning and Instruction*, VL (2016), p. 9-19.

18 to 20 and 4% - from 36 to 40 years old. Almost half of the persons interviewed have a total work experience from 1 to 3 years, 29.63% of respondents have a work experience of 3-5 years and 18.52% of respondents have more than 5 years of work experience, as for the length of service in this company, the largest the number of respondents, namely 70.37%, work in this organization from 1 to 3 years. That is, the staff is very young in general.

To diagnose the degree of expression of the "emotional burnout effect", we used the technique of American psychologists.<sup>7</sup> The questionnaire consists of 22 statements reflecting the person's thoughts and feelings about his professional activity, and has three evaluation scales:

- "emotional exhaustion" (it is manifested in the sensations of emotional overstrain and in the feeling of emptiness, exhaustion of emotional resources; a person feels that he cannot give himself to work as before);

- "depersonalization" (it is associated with the emergence of an indifferent, negative and even cynical attitude towards people with whom it is necessary to contact by type of work; the contacts with them become impersonal and formal);

- "reduction of personal achievements" (it is manifested in a decrease in the evaluation of his competence, dissatisfaction with himself, diminishing the value of his activities, negatively treating himself as an individual; indifference to work).

The technique allows estimating the intensity of negative feelings and thoughts, which characterizes the burnout effect severity. The "burnout" development occurs for a long time, depends on the personal characteristics of an employee (lack of communication, shyness, emotional instability, low self-sufficiency, etc.) and the influence of production factors. Burnout develops earlier if the employee:

- evaluates his work as insignificant;
- is not satisfied with his professional growth;
- lacks independence, believes that he is unduly controlled;
- completely absorbed in his work (workaholic);
- feels role uncertainty due to unclear requirements;
- experiences an overload or, conversely, underload (the latter generates a sense of his uselessness).

## **Results and discussion**

According to the employees of the consulting company, the most significant causes of stress for them are:

- the discrepancy between the work performed and salaries;
- high load;
- doing several things at the same time.

Questioning allowed determining the level of emotional burnout of employees (Table 1).

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<sup>7</sup> C. Maslach, S. E. Jackson, *A social psychological analysis. Social psychology of health and illness*, Moscow, 2013, p. 227.

Table 1. The level of emotional burnout of employees

	Level of emotional burnout		Level depersonalization severity		Level of personal achievements reduction effect severity	
	Number		Number	%	Number	%
Critical	-		-	-	10	18.52
High	36	6.67	12	22.22	40	74.07
Medium	18	3.33	36	66.67	4	7.41
Minimal	-		6	11.11	-	-
Total	54	00	54	100	54	100

According to this technique, the "emotional burnout effect" is pronounced, if a high degree is observed on all three evaluative scales. There are 10 people (18.52%) who have a high degree of burnout effect in all three categories among the employees.

It should be noted that 66.67% of employees have a high degree of emotional exhaustion. It is manifested in a feeling of emptiness, exhaustion of emotional resources. 74.07% of employees have a high degree of personal achievements reduction effect severity (dissatisfaction with themselves, a decrease in the value of their activities, a negative attitude towards themselves as the individuals, indifference to work).

Further, we identified the causes and factors of professional burnout. The employees were asked to assess the degree of severity of their condition at the end of the business day. It is a sign of chronic fatigue syndrome. The results indicate a high level of chronic fatigue of employees. Most of them (37.04%) often feel themselves depleted, 25.93% - very often, 22.22% - daily.

Then we evaluated the influence of various personal and organizational factors on the development of professional burnout syndrome. We used the estimates of the statement "After work, I feel like a squeezed lemon" as a dependent variable. To determine the significant factors, we constructed a correlation matrix. It turned out that the most significant factors included: *x2* (marital status), *x6* (work experience in the company), *x7* (material satisfaction with work), *x8* (state of health).

We obtained the following model (Table 2, 3).

Table 2. Estimated variables of the model

Dependent variables	Coefficient	Statistical error	t-statistics	P-value	
const	6.21302	0.715470	8.684	1.75e-011	**

<b>X2</b>	-0.548817	0.170666	-3.216	0.0023	**
<b>X6</b>	-0.386095	0.0794737	-4.858	1.26e-05	**
<b>X7</b>	0.813609	0.207401	3.923	0.0003	**
<b>X8</b>	-0.414201	0.189469	-2.186	0.0336	*

Table 3. Summary table of the final results and tests

Test indicators of the model	Value
Mean dependent variable	3.814815
Sum of squared errors	18.82249
R-square	0.531174
F(4.6)	13.87911
Logarithmic likelihood	-48.16652
Schwartz criterion	116.2780
Standard deviation of the dependent variable	0.870352
Standard error of the model	0.619784
Corrected R-square	0.492903
P-value (F)	1.22e-07
Akaike criterion	106.3330
Hannan-Quinn criterion	110.1684

Regression equation:

$$\mathbf{y = 6,21 - 0,54x2 - 0,39x6 + 0,81x7 - 0,41x8}$$

The model constructed explains the dependence of the formation of the state of feeling of a "squeezed lemon" at 53.12%. The greatest influence on this state is provided by the factor of "material satisfaction with work". This factor is in direct proportion to the resultant, i.e. the more salary is, the more often a person experiences a feeling of fatigue and "squeeze". This dependence is explained by the fact that career growth and, accordingly, the employee's salary depend on how effectively he works during the year, masters mandatory training programs and seeks to assume new roles and tasks. A new position requires both greater responsibility and additional workload.

The next important factor is the employee's marital status. It turned out that the more stable the marital status was, the less pronounced the "squeezed lemon" syndrome manifests itself.

We have also found that the more an employee works for a company, the less often he experiences chronic fatigue syndrome.

The respondents were asked to rank the stress factors at work. The reasons for professional burnout (in descending order) are the discrepancy between the work performed, salaries, high workload, multitasking, overtime, inconsistency of the work performed with your qualifications, lack of clear job responsibilities, high responsibility, teamwork.

## Summary

The main reason for feeling fatigue, exhaustion, the state of "squeezed lemon" after a business day, is a high workload in the workplace. The fact that most of the employees have a work experience in the company from 1 to 3 years, and no one has worked for more than 5 years, suggests that the company has a high staff turnover, which is due to the fact that the employees "burn out" notwithstanding the workload.

According to the data, women suffer from chronic fatigue syndrome four times more often than men. In the analyzed company, the bulk of the employees are women. Only women were included in the sample, which actualizes the issue of preventing burnout in this company.

HR-specialists, organizational psychologists and business trainers should study the factors causing the development of professional burnout in order to diagnose the syndrome development in time and provide the necessary assistance to the employee.

The company needs to reconsider the organizational aspects of working hours and load on the employees, as the organizational factors also contribute to the burnout development apart from personal factors. They include: organization of working time, employee's workplace and teamwork. The emergence of professional burnout syndrome is influenced by excessive working hours, regular involvement of a person in overtime work, work on weekends, frequent business trips. All this deprives the employee of a proper rest.

It must be remembered that professional burnout can occur in a whole team. "Burnout" workers unite with the colleagues having similar problems, negative moods increase and the quality of work decreases as a result. The reasons for professional burnout in a team are often the organizational factors. Obviously, the consequences of collective burnout are deplorable. The personnel loyalty, quality of work, productivity of labor, and staff turnover increase as a result.

The syndrome of professional burnout is characterized by a feeling of dissatisfaction with oneself and the actions of surrounding people, indifference and even dislike of the profession and position. All these factors are not compensated by either a high salary or other benefits related to professional activity. In understanding this problem, it is important that the professional burnout syndrome cannot usually be overcome by short-term rest or reduced load. The only solution is to change the position or even the type of activity. Therefore, it is necessary to exclude the factors that could lead to its occurrence.

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## Comparative Evaluation Of Quality Characteristics Of Process Equipment\*

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**Abstract.** *A consumer estimates the product by two criteria: quality and price. Quality is a set of object properties that characterize its ability to satisfy statutory requirements or supposed needs of a person. The statutory requirements are needs that are regulated by normative legal acts; the supposed needs are needs that should be identified by market research. Objective features of the product occur during its development, manufacturing, storage, usage and have the valuation – price. Quality and price are two interrelated categories inherent in any product.*

**Keywords:** quality, processing equipment, car service, modernization, competition, integrated coefficient.

### Introduction

The quality of the product is evident through its properties, which can be characterized qualitatively and quantitatively. The qualitative characteristics for measurement purposes should be expressed in quantitative indicators, reflecting the characteristics of the products, when created or in the process of operation. The quality of complex technical products is characterized by a set of different indicators.<sup>1</sup>

The range of indicators to measure the quality should be selected based on the analysis of the following: customer requirements, requirements for mandatory and voluntary to use normative legal acts; the purpose and conditions of products operation, quality control of production; composition and structure of characterized properties, the possibility of determining numerical values of the quality indicators.

The application of progressive technological processes is impossible without introduction of new equipment, mechanization and tools. But even maintaining traditional technologies, the process of updating existing equipment and equipment of the enterprises with the missing equipment needs to be constant and continuous.<sup>2</sup>

The choice of technological equipment in the market conditions is always determined by the ratio of its price and quality. If the manufacturer (seller) of the process equipment sets the price, the quality assessment is the responsibility of the consumer (buyer). Generally, the quality of technical products is estimated by the indicators of its technological level, i.e. the relative characteristic of product quality based on the comparison (ratio) values of the properties describing the technical excellence of the products with the corresponding values of the best samples of equipment.<sup>3</sup>

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<sup>1</sup> J. Ahn, J. Park, "Product-to-Service Extension: The Impact of Brand Equity on Upscaled Service," in *Human Factors and Ergonomics In Manufacturing*, XXVI (2016), no. 6, p. 728-739.

<sup>2</sup> D. M. Lysanov, R. F. Utyaganov, "Methodological basis for the rational development of car service," in *International Journal of Applied Engineering Research*, X (2015), no. 22, p. 43063-43065.

<sup>3</sup> J. Jambor, J. Majerik, S. Bajcik, "Increasing quality of services by implementation of quality

The need to equip existing enterprises with new equipment is caused by many factors: obsolescence of individual samples, physical aging of equipment resulting from operation, introduction of special equipment that provides for the needs of the production.

Today the number of units of equipment at the autoservice enterprises does not meet the actual needs of production. Equipment by processing facilities in cost is 45 – 50%.<sup>4</sup>

Evaluation of new technology should be made with the point of view of customer requirements, on the satisfaction of which depends the welfare of the manufacturer. The market demand is only a competitive product, i.e. such that the set of qualitative indicators are superior to products-analogues, and the price from the point of view of the consumer corresponds to the incorporated level of quality.

### **Methods and models**

To assess the quality of products based on qualitative requirements it is proposed to use the integral quality coefficient, which is defined by "profiles". The products profile is a graphical image of the selected technical and economic indicators (TEI) of the product according to certain rules. The method can be used to assess the quality level by comparing the profile of competitive products. The larger the profile, the higher the quality of the object. Profile allows to represent different indices of products on one evaluation field and combine them into the integral index of quality.

The quality profile is built on the following principles:<sup>5</sup>

- the conditions of competition in the market, every technical and economic indicator of the product is essential and it is impossible to highlight some of them: all the properties of the product that characterize its quality are important for the consumer;

- all indicators have the same weight, and the estimated field is divided into equal areas, the number of which is equal to the number of estimated parameters. Many products TEI are closely interrelated, and giving greater weight to some of them can lead to an increased influence of this parameter on the integral indicator;

- evaluation field is divided into equal ( $n - 1$ ), where  $n$  is the number of TEI selected on the basis of consumer preferences, the estimated width of the field  $H$  is chosen at random;

- the scale of individual indicators is calibrated so that all values lie between the selected minimum and maximum values of the considered indicator;

- every TEI of the object is deposited on a pitch scale than the value of the index qualitatively better to the right it is located on a pitch scale;

- there are direct (dir) and reverse (rev) indicators. If the increase in value of

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management system in car market dealers," in *Annals of DAAAM and Proceedings of the International DAAAM Symposium*, 2010, p. 621-622.

<sup>4</sup> I. P. Kurnikov, *Efficiency of technical re-equipment of production*, Kiev, Higher school, 1983.

<sup>5</sup> I. M. Kostin, H. A. Fashiev H.A. 2002. *Techno-economic evaluation of freight vehicles in the development*, Naberezhnye Chelny, Publishing house of the Kama Polytechnical Institute, 2002.

indicator of the quality of the product improves, then the index is called direct, otherwise – reversed.

To build the quality profile of the selected individual object, the most important evaluation criteria based on the requirements of consumers for this type of equipment and rectangular evaluation field. For example, for estimating the brake tester, comprising scan lines, it is recommended to take the quality indicators given in table. 1.

Table 1 - Evaluation criteria for brake testers of different manufacturers

№	Name of indicators	Cartec (Germany)		CEMB (Italy)		GARO (Russia)	
		Test stand for brake systems		BDE 4004		FVP 2	
1	Permissible axle load, t	dir	18		16		13
2	The diameter of the vehicle wheels, mm	dir	500	1300	520	1300	520
3	Track width on the rollers, mm	dir	1000	3000	800	2850	800
4	The coefficient of adhesion between tyre and rollers	dir	0,9		0,9		0,8
5	The speed of rollers rotation, km / h	dir	2,6		2,5		2,2
6	Measurement range of axial weight, t	dir	0	18	0	16	1
7	Measuring range of braking force, kN	dir	8	40	0	40	5
8	Measuring range effort on the control, N	dir	0	1000	0	1000	100
9	The pressure in the pneumatic drive, kPa	dir	0	1200	0	1300	200
10	The response time, sec	rev	1,1		1,1		1,5
11	Length of rolls, mm	dir	1000		1000		1235
12	Diameter of rollers, mm	dir	300		300		301
13	Distance between axes, mm	rev	500		500		560
14	Electric motor power, kW	dir	11		11		7,5
15	Power Supply, V	rev	400		380		380
16	Weight, kg	rev	1320		1300		1200
17	Performance, vehicles per shift	dir	36		34		30
	Brake tester price, thousand RUB		925		1147		733

Any number of parameters can be included into the profile, which are the most important for this type of technological equipment from the point of view of consumers. With the increase in their number, the reliability of the assessment increases. Due to the shape of the profiles, it is possible to assess what particular model of equipment is superior or inferior to others.

The quality process equipment can be evaluated by the integral dimensionless index – the relative area of the profile built inside the evaluation rectangle due to the technical-operational, economic, and regulatory indicators

$$K_q = \frac{S_{dir}}{S},$$

where  $S_{dir}$  is the area bounded by the profile, sq.mm;

$S$  is the area of the evaluation of the rectangular field, sq.mm.

$$S_{dir} = h * (X_1 / 2 + X_2 + \dots + X_{n-1} + X_n / 2),$$

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h – random dividing distance between scales, mm;

$X_1, \dots, X_n$  – the coordinates of the vertices of the profile, mm.

$$S = h * (n - 1) * H,$$

H – the width of the evaluation field, mm.

Taking into account these formulas, the integral quality factor can be determined by the following formula

$$KK = X_1 / 2 + x_2 + \dots + X_{n-1} + X_n / 2(n - 1) * H.$$

Table. 2 presents the source data to build the quality profiles of the brake tester and the obtained values of coefficients of quality.

Table 2 - Source data to build the quality profiles of some brake stands, mm

№	Name of indicators		Range		Cartec (Germany)		CEMB (Italy)		GARO (Russia)	
	Test stand for brake systems		min	max	BDE 4004		FVP 2		CTC-13У-СП-11	
1	Permissible axle load, t	dir	13	18	0	100	0	60	0	0
2	The diameter of the vehicle wheels, mm	dir	500	1300	0	100	3	100	3	100
3	Track width on the rollers, mm	dir	800	3000	9	100	0	93	0	91
4	The coefficient of adhesion between tyre and rollers	dir	0	1	0	90	0	90	0	80
5	The speed of rollers rotation, km / h	dir	2	2,6	0	100	0	83	0	33
6	Measurement range of axial weight, t	dir	0	18	0	100	0	89	6	72
7	Measuring range of braking force, kN	dir	0	40	20	100	0	100	13	75
8	Measuring range effort on the control, N	dir	0	1000	0	100	0	100	10	100
9	The pressure in the pneumatic drive, kPa	dir	0	1300	0	92	0	100	15	77
10	The response time, sec	rev	1,5	0	0	27	0	27	0	0
11	Length of rolls, mm	dir	1000	1300	0	0	0	0	0	78
12	Diameter of rollers, mm	dir	200	350	0	67	0	67	0	67
13	Distance between axes, mm	rev	600	400	0	50	0	50	0	20
14	Electric motor power, kW	dir	7,5	15	0	47	0	47	0	0
15	Power Supply, V	rev	400	380	0	0	0	100	0	100
16	Weight, kg	rev	1400	1150	0	32	0	40	0	80
17	Performance, vehicles per shift	dir	30	40	0	60	0	40	0	0
	Quality coefficient					0,659510		0,708065		0,580071
	Brake tester price, thousand RUB					925		1147		733

When you build the profile, quality indicators can be grouped according to characteristics or properties of the product. For example, technical-operational, legal, economic indicators, quality of service can be independent groups.<sup>6</sup> Then it is possible to determine the quality factor of the product of this group of indicators.

<sup>6</sup> D. M. Lysanov A. M., Nazmutdinov, "The demand and operation of car service centers," in *International Journal of Applied Engineering Research*, XI (2016), no. 6, p. 4314-4317; D. M. Lysanov R. F. Utyaganov, "Criteria for evaluating the effectiveness of car service companies," in *International Journal of Applied Engineering Research*, XI (2016), no. 20, p. 10190-10191.

For example, all the economic indicators products are grouped together and for this portion of the profile the quality factor is calculated in terms of economic efficiency.

For the considered brake tester stands the places are designated as follows, according to the quality coefficients:

1. CEMB –  $K_q = 0,708$ ; 2. Cartec –  $K_q = 0,660$ ; 3. GARO –  $K_q = 0,580$ .

The quality profile for stand GARO (Russia) is built in Fig. 1.

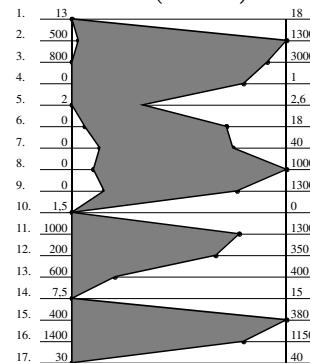


Fig. 1. Quality profile of brake tester GARO

As it is seen, the highest quality has the brake stand CEMB (Germany), which is the best among the counterparts by the criterion of "quality". It is substantially superior in technical and economic indicators of the stand GARO (Russia). To improve the quality of the products it is necessary to use new developments and advanced technologies of domestic and foreign enterprises operating in the market of technological equipment for servicing of automotive vehicles.

The value of the obtained quality factor depends on the choice of the order of the quality indicators, their number and calibration of scales. Profiles of all the compared products are based on the same evaluation field, so the above factors are unaffected on the final result.

The end result when using the method of "profile" does not depend on the sequence of quality indicators of the profile. Field evaluation on quality indicators for different products can be placed in a different order, but in all fields the minimum and maximum values of technical and economic parameters should be the same.

The order of brake stands for the quality factor coincided with the places identified by the experts working on the motor and auto service business.

It is not necessary to build the profiles for each object while determining the quality factor, although they are visible. The quality factor can be calculated analytically by the formula

$$K_q = \frac{Y_1 / 2 + Y_2 + \dots + Y_{n-1} + Y_n / 2}{n - 1}$$

where  $Y_1, \dots, Y_n$  are calculated values, defined by the formulas

$$Y_{i\text{dir}} = \frac{\Pi_i - \Pi_{i\text{min}}}{\Pi_{i\text{max}} - \Pi_{i\text{min}}}.$$

The equation is used for both indicators, higher values of which improves

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the quality of the product (permissible axle load, the adhesion coefficient of the tire with the rollers, the performance of the stand).

$$Y_{i\text{rev}} = \frac{\Pi_{i\text{max}} - \Pi_i}{\Pi_{i\text{max}} - \Pi_{i\text{min}}}.$$

The equation is applied for those indicators, higher values of which reduce the quality of the product (time of operation, the weight of the stand).

$$Y_{i12} = \frac{\Pi_{i2} - \Pi_{i1}}{\Pi_{i\text{max}} - \Pi_{i\text{min}}},$$

The equation is used for direct and reverse quality indicators.

$\Pi_{i\text{max}}$  and  $\Pi_{i\text{min}}$  are accepted boundary maximum and minimum values of the interval for  $i^{\text{th}}$  indicator (Table 2 and Fig. 1).

$\Pi_i$  – value of  $i^{\text{th}}$  indicator for the evaluated products;

$\Pi_{i1}$ ,  $\Pi_{i2}$  – initial and final values of  $i^{\text{th}}$  indicator for the evaluated product, if the range is studied in which the values of the indicator can change, and  $\Pi_{i1} < \Pi_{i2}$ .

For  $\Pi_{i\text{max}}$  it is recommended to take the maximum value of the  $i^{\text{th}}$  parameter among the products-analogues selected for the analysis, and for  $\Pi_{i\text{min}}$  – the minimum value of  $i^{\text{th}}$  indicator.

Using intervals of the maximum and minimum values of technical and economic indicators, the quality factor is determined for brake tester GARO:

$$\begin{aligned} K_q = & (0 / (2*5) + 780 / 800 + 2000 / 2200 + 0,8 / 1 + 0,2 / 0,6 + 12 / 18 \\ & + 25 / 40 + 900 / 1000 + 800 / 1300 + 0 / 1,5 + 235 / 300 + 101 / \\ & 150 + 40 / 200 + 0 / 7,5 + 20 / 20 + 200 / 250 + 0 / (2*10)) / 16 = \\ & 0,58007. \end{aligned}$$

In this expression, each member of the amount shows the role of a particular indicator affecting the value of the quality factor. For example, the ratio of  $0,8 / (1*16) = 0,05$  shows the share of influence of the friction coefficient of the tire with the rollers on the quality score and the higher this value, the better the product by this measure.

As a result of analytical calculations we get a value of quality factor, completely matching the value of this coefficient, calculated using the profile.

Field evaluation on indicators of quality for different products can be placed in a different order, but all fields  $\Pi_{i\text{max}}$  and  $\Pi_{i\text{min}}$  should be the same. If you change the values  $\Pi_{i\text{max}}$  and  $\Pi_{i\text{min}}$ , the value of the quality factor varies, therefore, for all of the objects being compared for record  $\Pi_i$  it is necessary to take the same  $\Pi_{i\text{max}}$  and  $\Pi_{i\text{min}}$ .

The experts due to the selected for the analysis technical-economic indicators evaluated these models of the equipment in real conditions. Some of the figures were obtained by direct measurement, the others – by scoring. Experts assigning scores to all indicators and defining the weight coefficients, obtained integral indicator of the quality of each study brake tester. The lines were placed due to the size of the quality factor.

### **Conclusions**

The measurement of equipment quality by competent experts and on the proposed methodology has shown that the results coincide. Unlike the method of expert evaluation, the proposed technique does not use weights, therefore, excludes a subjective influence of the experts' opinions on the result.

The proposed method allows to model the quality factor of a new model of equipment due to the selected indicators. Having the desired value of the individual technical-economic indicators of the level of the best competitive model, it is possible to define such values of particular quality indicators for certain groups of properties that would provide the best quality factor for a developing model.

This technique can be used for a reasonable choice of technological equipment to equip new or existing technical re-equipment of workshop dealer network.

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# *Linguistic*





## **The Development Of Critical Thinking Skills In Foreign Language Classroom**

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**Abstract.** *In recent years, the importance of developing of critical thinking skills in education has been widely acknowledged. More specifically, it is believed that the successful incorporation of these skills in the teaching of English as a second or foreign language have a central role. This belief is based on the premise that there is a close relationship between knowledge and thinking and between language learning and thinking processes. The first part of this article presents the research findings and a short literature review on critical thinking, core critical thinking skills, then we present suggestions for successful usage of critical thinking activities in the English language classroom. We hope that this article will serve as a starting point for English teachers to evaluate their current teaching practices, and motivation to develop critical thinking skills in their classroom.*

**Key words:** critical thinking, core critical thinking skills, affective dispositions, education, ESL

### **Introduction**

Today's students will inherit a complex and rapidly changing world, a world in which they'll be required to absorb new ideas, examine and interpret information, apply knowledge, and solve unconventional problems. To deal with the information explosion of the twenty-first century, students will need to develop systematic ways of thinking and reasoning. Critical-thinking skills will be essential.

Nowadays, critical thinking is an interest, important and vital topic in whole modern educations. Modern Education meant that all education tailored to the needs of this age because Modern education is a tool used to learn how to survive in this era. Because of that, all educators are interested to teach their students to think critically.

Defining critical thinking might seem difficult, especially because the term tends to be used repeatedly without actually reflecting on its true meaning. To begin with, we can state that critical thinking is a quality able to be developed throughout life. But critical thinking is not a dimension just applicable to education (in the formal sense of the term). So what it is? How can it be defined?

*The aim of this article* is to share both theoretical and practical ideas about critical thinking and its application within English language teaching and learning contexts. First, the authors seek to answer several fundamental questions connected with the topic: 1. What is critical thinking? What are the components of critical thinking? What are the dimensions of critical thinking? 2. Why to integrate and develop critical thinking skills in ELT? 3. How to create lessons with an element of critical thinking development? Then some concepts concerning critical thinking development are introduced which prove useful when designing a lesson.

### **Defining critical thinking**

Critical thinking is a rich concept that has been developing throughout the past 2500 years. The term "critical thinking" has its roots in the mid-late 20th

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century. We offer here overlapping definitions, together which form a substantive, transdisciplinary conception of critical thinking.

The concept of critical thinking we adhere to reflects a concept embedded not only in a core body of research over the last 30 to 50 years but also derived from roots in ancient Greek. The word "critical" derives etymologically from two Greek roots: "kriticos" (meaning discerning judgment) and "criterion" (meaning standards). Etymologically, then, the word implies the development of "discerning judgment based on standards."

In Webster's New World Dictionary, the relevant entry reads "characterized by careful analysis and judgment" and is followed by the gloss, "critical - in its strictest sense - implies an attempt at objective judgment so as to determine both merits and faults." Applied to thinking, then, we might provisionally define critical thinking as thinking that explicitly aims at well-founded judgment and hence utilizes appropriate evaluative standards in the attempt to determine the true worth, merit, or value of something.

Critical thinking, like many other phenomena, has been defined variously by many scholars. So it is worth discussing some of those definitions.

Ennis defines critical thinking as a "reasonable, reflective thinking that is focused on deciding what to believe or do". This definition implies that critical thinking enhances our judgmental ability".<sup>1</sup>

Similarly, Beyeris of the same opinion and maintains that critical thinking means reasoned judgments.<sup>2</sup>

Kelley and Browne maintain that critical thinking consists of an awareness of a set of interrelated critical questions, plus the ability and willingness to ask and answer them at appropriate times.

For Paul critical thinking is that "mode of thinking about any subject, content or program in which the thinker improves the quality of his or her thinking by skillfully taking charges of the structures inherent in thinking or imposing intellectual standard upon them".<sup>3</sup> Likewise, Lohani also define critical focusing on standards to be maintained. According to them, critical thinking is consciously observing, analyzing, reasoning, and evaluating, according to proven standards.<sup>4</sup>

A review of the pedagogical literature reveals that a growing number of studies focus on critical thinking, on what critical thinking skills can and should be taught, and on the most effective and appropriate framework for fostering it. Nevertheless, most educators and researchers agree that an important aspect of critical thinking is the ability to collect, evaluate and make use of information effectively and appropriately. As far as definitions for critical thinking are

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<sup>1</sup> R. H. Ennis, "Critical Thinking and Subject Specificity," in *Educational Researcher*, XVIII (1989), no. 3, p. 4-10.

<sup>2</sup> B. Beyer, "How to teach thinking skills in social studies and history," in *Social Studies*, IC (1995), no. 5, p. 196-201.

<sup>3</sup> R. W. Paul, "Critical thinking: Fundamental to education for a free society," in J. Willson & A. J. A. Binker (eds.), *Critical thinking: What every person needs to survive in a rapidly changing world*, 3<sup>rd</sup> edition, Santa Rosa, CA, Foundation for Critical Thinking, 1993.

<sup>4</sup> S. Lohani, S. et al.(eds). *Critical and Creative Thinking*. Kathmandu, Modern Printing Press, 1998.

concerned, definitions that draw upon philosophy often stress the metacognitive element of critical thinking, arguing that it can be defined as “thinking about your thinking while you are thinking to make your thinking better”. Similarly, Elder and Paul argue that critical thinking means that thinkers take charge of their own thinking. This also presupposes that people develop sound criteria and standards for analysing and evaluating their own thinking processes and use of these criteria to improve the quality of their thinking.

By contrast, most theorists who base their theories, research and definitions of critical thinking on cognitive and developmental psychology often define critical thinking as “thinking that is purposeful, reasoned, and goal directed. It is the kind of thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions”.<sup>5</sup> Despite these different perspectives, however, it is now widely accepted that a useful and effective conception of critical thinking needs to draw on both philosophy and psychology.<sup>6</sup>

It is generally recognised in the relevant literature that the ability to think critically constitutes a kind of intelligence, which students do not necessarily or naturally possess, but it is a skill, which can be taught in the classroom. It has been argued that “critical thinking skills” are not likely to develop spontaneously.

According to Santos and Fabricio the development of critical thinking presupposes an ongoing questioning of taken-for-granted assumptions,<sup>7</sup> while according to Schumm and Post, critical readers display the following characteristics: a) base their judgments on evidence, b) ask penetrating questions and evaluate ideas, c) distinguish between opinions and facts, and d) reflect on their ideas.<sup>8</sup>

Among the most prominent scholars who have addressed the issue of critical thinking are Matthew Lipman, Robert Sternberg, and Robert Ennis.

Lipman argues that there is a distinction between ordinary thinking and critical thinking. Ordinary thinking is simple, straightforward and without standards. By contrast, critical thinking is more complex and is based on standards of objectivity, utility, or consistency. He supports the view that critical thinking does not include only the mental processes which people employ to solve problems or to make decisions, but it involves “skillful, responsible thinking that facilitates good judgment because it relies upon criteria, is self-correcting, and is sensitive to context”.<sup>9</sup> Lipman further argues that, teachers should help students shift: a) from guessing to estimating, b) from preferring to assessing c) from grouping to

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<sup>5</sup> D. F. Halpern, *Thought and knowledge: An introduction to critical thinking*, 3<sup>rd</sup> edition, Mahwah, NJ, Erlbaum, 1996

<sup>6</sup> D. Kuhn, "Thinking as argument," in *Harvard Educational Review*, LXII (1992), no. 2, p.155-178; D. Kuhn, "A developmental model of critical thinking," in *Educational Researcher*, LIX (1999), no. 1, p. 16-25.

<sup>7</sup> D. Santos, B. F. Fabricio, "The English Lesson as a Site for the Development of Critical Thinking," in *TESL-EJ*, X (2006), no. 2, p. 1-23.

<sup>8</sup> J. S. Schumm, S. A. Post, *Executive Learning. Successful strategies for college reading and studying*. Upper Saddle River, N. J., Prentice Hall.1997.

<sup>9</sup> M. Lipman, "Critical Thinking-What Can It Be?," in *Educational Leadership*, IVL (1988), no. 1, p. 38-43.

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classifying, d) from believing to assuming, e) from inferring to inferring logically, f) from associating concepts to grasping principles, g) from noting relationships to noting relationships among relationships, h) from supposing to hypothesizing, i) from offering opinions without reasons to offering opinions with reasons, and j) from making judgments without criteria to making judgments with criteria .

In a similar vein, Sternberg supports the view that there are three categories of components of critical thinking: a) meta-components, that is, high-order mental processes which are employed in order to plan, monitor, and evaluate what the individual is doing, b) performance components which refer to the actual steps the individual takes, and c) knowledge-acquisition components, which refer to processes which individuals employ so as to relate old material to new material and to apply new material.<sup>10</sup>

Finally, Robert Ennis mentions 13 characteristics of thinkers with the ability to think in a critical manner. More specifically, he argues that they share the following features.

According to Ennis, they tend to: a) be open-minded; b) take a position (or change a position) when they are convinced by evidence; c) take into account the entire situation, adopting a holistic approach; d) seek precision and objectivity in information, making use of credible and reliable sources of information; e) deal in an orderly manner with the elements of a whole complex; f) search for options and alternative solutions; g) look for reasons; h) seek a clear statement of the issue; i) keep the original problem in mind; j) remain relevant to the point, and be sensitive to the feelings and knowledge level of others .

To conclude, critical thinking is that mode of thinking which stimulates higher level of thinking in individuals, and enables them to take rational decisions analyzing different contexts skillfully and wisely.

Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. In its exemplary form, it is based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness.

### **Components of critical thinking**

Brookfield identifies four components of critical thinking.

*Firstly*, identifying and challenging assumptions is considered a major tenet of critical thinking. Critical thinkers are always mindful of how assimilated assumptions shape their perceptions, understandings and interpretations of themselves and the world around them. *Secondly*, promoting the importance of context is crucial to critical thinking. The *third component* described by Brookfield <sup>11</sup>

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<sup>10</sup> R. J. Sternberg, "Practical Intelligence for Success in School," in *Educational Leadership*, III (1990), no. 1, p. 35-39.

<sup>11</sup> S. D. Brookfield, *Developing critical thinkers*, Open University Press, Milton Keynes, 1987.

relates to critical thinkers having the capacity to imagine and explore alternatives, that is, they are lateral in thought processes. *Lastly*, reflective skepticism – this author refers to individuals who recognize alternatives to supposedly fixed belief systems, habitual behaviors and entrenched social structures.

Thus, individuals who are critical thinkers become skeptical of claims to universal truths or to ultimate explanations and do not take things for granted or as real. For example, they become suspicious of those who claim to have the solutions to all of life's problems. Therefore, learning to think critically involves expanding a person's thought processes.

Kurfiss<sup>12</sup> perceives critical thinking as an investigation in order to explore a situation, question, problem or phenomenon. From this inquiry, the person is able to arrive at a reasoned conclusion that can be justified. As Kurfiss states, "in critical thinking all assumptions are open to questioning, divergent views are aggressively sought and the inquiry is not biased in favor of a particular outcome".

### **The dimensions of critical thinking**

The dimensions of critical thinking comprise of both (a) cognitive skills and (b) affective dispositions. Facione, Facione and Sanchez state that having the requisite cognitive critical thinking skills is essential to being a good critical thinker.<sup>13</sup> The concept of critical thinking is also associated with a set of personal attitudes or dispositions that can be used to describe an individual who is inclined to use critical thinking.

The American Delphi Project 1990, recognized six (6) cognitive skills core to the process of critical thinking for forming and improving judgements. Each core skill further constituted sub-skills as mentioned below:

*The cognitive critical thinking skills* can be understood as:

– *Interpretation*: to comprehend and express the meaning or significance of a wide variety of experiences, situations, data events, judgments, conventions, beliefs, rules, procedures or criteria; having the ability to understand the information you are being presented with and being able to communicate the meaning of that information to others.

– *Analysis*: examining ideas/arguments in problems, objective and subjective data and possible courses of action; having the ability to connect pieces of information together in order to determine what the intended meaning of the information was meant to represent.

– *Inference*: querying claims, assessing arguments (recognizes faulty reasoning) and reaching conclusions; having the ability to understand and recognize what elements you will need in order to determine an accurate conclusion or hypothesis from the information you have at your disposal.

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<sup>12</sup> J. G. Kurfiss, "Critical thinking theory, research, practice and possibilities," in *ASHE-ERIC Higher Education Report*, no. 2, Washington DC, Association for Study for Higher Education, 1988.

<sup>13</sup> N. C. Facione, P. A. Facione C. A. Sanchez, "Critical thinking disposition as a measure of competent clinical judgement: The development of the California Thinking Disposition Inventory," in *Journal of Nursing Education*, XXXIII (1994), p. 345-350.

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– *Explanation*: clearly explaining and defending the reasoning in which an individual arrives at specific decisions in the context; having the ability to not only restate information, but add clarity and perspective to the information, so it can be fully understood by anyone you are sharing it with.

– *Evaluation*: evaluating information to ascertain its probable trustworthiness; being able to evaluate the credibility of statements or descriptions of a person's experience, judgment or opinion in order to measure the validity of the information being presented.

– *Self-Regulation*: Having the awareness of your own thinking abilities and the elements that you are using to find results. For example, clarity, precision, accuracy, consistency, logicalness, significance etc.<sup>14</sup>

Skill	Core critical thinking skills	Subskills
Interpretation	"To comprehend and express the meaning or significance of a wide variety of experiences, situations, data, events, judgments, conventions, beliefs, rules, procedures, or criteria".	Categorize Decode significance Clarify meaning
Analysis	"To identify the intended and actual inferential relationships among statements, questions, concepts, descriptions, or other forms of representation intended to express belief, judgment, experiences, reasons, information, or opinions".	Examine ideas Identify arguments Identify reasons and claims
Inference	"To identify and secure elements needed to draw reasonable conclusions; to form conjectures and hypotheses; to consider relevant information and to reduce the consequences flowing from data, statements, principles, evidence, judgments, beliefs, opinions, concepts, descriptions, questions, or other forms of representation".	Query evidence Conjecture alternatives Draw logically valid or justified conclusions
Evaluation	"To assess the credibility of statements or other representations that are accounts or descriptions of a person's perception, experience, situation, judgment, belief, or opinion; and to assess the logical strength of the actual or intended inferential relationships among statements, descriptions, questions, or other forms of representation".	Assess credibility of claims Assess quality of arguments that were made using inductive or deductive reasoning

<sup>14</sup> \*\*\*, "American Philosophical Association. Critical thinking: A statement of expert consensus for purposes of educational assessment and instrument. The Delphi Report: Research findings and recommendations prepared for the committee on pre-college philosophy", in *ERIC Document Reproduction Service No. ED 315-412*, 1990.

Explanation	“To state and to justify that reasoning in terms of the evidential, conceptual, methodological, criteriological, and contextual considerations upon which one’s results were based; and to present one’s reasoning in the form of cogent arguments”.	State results Justify procedures Present arguments
Self-Regulation	“Self-consciously to monitor one’s cognitive activities, the elements used in those activities, and the results educed, particularly by applying skills in analysis, and evaluation to one’s own inferential judgments with a view toward questioning, confirming, validating, or correcting either one’s reasoning or one’s results”.	Self-monitor Self-correct

These skills are employed interactively in the reflective reasoning process of making a judgement of what to believe or do. Therefore, in thinking critically, a person not only tries to determine judiciously what to do or what to believe, a person is also able to apply the core critical thinking skills to one another. In other words, one may analyze one’s own inferences, explain one’s own disposition or evaluate one’s own analysis.

Generally by “Disposition” is meant a person’s inherent qualities of mind and character and both Ennis and the Delphi project agreed that it was not sufficient possessing critical thinking skills but also the critical thinking disposition to use them. The Delphi experts stated that only a person having a “critical spirit” was more apt to use the skills.

By critical spirit, they did not mean to be negative but one in possession of a probing inquisitiveness, a keenness of mind, a zealous dedication to reason and a hunger or eagerness for reliable information. Such as, critical thinking demanded a fearless attitude to consistently pursue one’s goal. Both Ennis and Delphi project had given us some critical thinking dispositions that an individual had to possess to carry out critical thinking. Let us first consider the critical thinking dispositions as listed by the Delphi project:

– *Open-minded*: having an appreciation of alternate perspectives and willingness to respect the right of others to hold different opinions. Understanding other cultural traditions in order to gain perspectives on self and for others;

– *Inquisitive*: curious and enthusiastic in wanting to acquire knowledge, wanting to know how things work, even when the applications are not immediately apparent;

– *Truth-Seeking*: courageous about asking questions to obtain the best knowledge, even if such knowledge may fail to support one’s preconceptions, beliefs or interests;

– *Analytical*: Thinking analytically and using verifiable information. Demanding the application of reason and evidence and the inclination to anticipate consequences;

– *Systematic*: valuing organization and a focused and diligent approach to problems of all levels of complexity;

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—*Self-Confident*: trusting one's own reasoning and inclination to utilize these skills, rather than other strategies, in order to respond to problems. For example, making decisions based on scientific evidence and responding to the values and interests of individuals and society.

Let us now consider Robert H. Ennis's view. He defined disposition as a tendency to do something, given certain conditions. The list provided according to Ennis is more amenable to use in teaching.

1. Seek and offer clear statements of the thesis or question.
2. Seek and offer clear reasons.
3. Try to be well informed.
4. Use credible sources and observations, and usually mention them.
5. Take into account the total situation.
6. Keep in mind the basic concern in the context.
7. Be alert for alternatives.
8. Be open-minded.
  - a. seriously consider other points of view.
  - b. withhold judgment when the evidence and reasons are insufficient.
9. Take a position and change a position when the evidence and reasons are sufficient.<sup>15</sup>

Facione and Sanchez and Chenworth<sup>16</sup> state these dispositions, attributes/attitudes, or habits of mind could be considered as the elements of a process of reasoning in an individual's character that propels or stimulates an individual towards using critical thinking. Without these dispositions the engagement of critical thinking will not occur.

Although there are varying definitions for critical thinking, the definitions described above reflect certain unique elements. Critical thinking is associated with elements such as knowledge, active argumentation, reasoning, initiative, intuition, application, analyzing complex meanings, identification of problems, envisioning alternatives and making contingency related value judgements. Critical thinking is substantially larger than the sum of its parts, because it is a process that promotes attitudes to continuously explore, redefine or understand. All these factors contribute to a process of purposeful reasoned interaction between a person and their interaction with a situation or surrounding circumstances. Bittner and Tobin explain that the critical thinking process is multifaceted and further state that "it is similar to an umbrella under which many types of thinking flow, depending on the situation".<sup>17</sup>

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<sup>15</sup> Robert H. Ennis, "The nature of critical thinking: Outlines of general thinking dispositions and abilities," 2013. Retrieved from <http://www.criticalthinking.net/longdefinition.html>, accessed 12.03.2017.

<sup>16</sup> L. Chenworth, "Facilitating the process of critical thinking for nursing," in *Nurse Education Today*, XVIII (1998), no. 4, p. 281-92.

<sup>17</sup> N. P. Bittner, D. Tobin, "Critical thinking: strategies of clinical practice," in *Journal for Nurses in Staff Development*, XIV (1998), no. 6, p. 267-272.

### **Use of critical thinking activities in English classroom**

Critical thinking activities engage students' logic, rationality and judgment in problem-solving inquiries. English classes benefit from critical thinking activities because these activities develop students' prior knowledge, encourage creative thinking and stress the importance of evidence-based problem solving.

#### **1. Ask questions**

Sometimes an easy answer isn't much of an answer at all. Getting your students to think about how they came to the answer that they did will challenge them to think critically, and it gets them using more language and using it in practical ways. For example, in an activity for using the simple future, you might ask your students what they will be doing in five years. One student might answer that he is going to be a movie star. You can ask questions like the following to get your student to think more critically: What makes you think that? What evidence do you see in your life now that will make that true in the future? By asking these questions, you challenge your student to think about his thinking. At the same time, you provide an opportunity for him to use English to express his ideas.

#### **2. Open ended questions**

In classes like grammar, one answer to a question is usually the right one. But giving these types of answers often doesn't require anything more than memorization and recall. When you can (and it might not be during a grammar lesson) ask questions that don't have a "right" answer and challenge your students to think on a deeper level. For example, if you were doing a vocabulary unit on food, you might ask a recall question about what a waiter says when taking someone's order. (What will you have?) An open ended question that will challenge your students to think more deeply might look like the following. If you were a server in a restaurant and worked the night shift, how would your life be different? How would you balance school and work? Encourage this type of thinking and expression and your students will benefit in more ways than one.

#### **3. Give a minute**

Part of your role in getting your students to think critically is giving them the time and the encouragement to do so. When you ask a question, giving your students a few minutes to think before they have to answer can mean the difference between a short easy answer and one that comes from serious thought. Doing this is easy. Simply count to sixty after asking a question to give your students a chance to think before they answer. You can also teach your students phrases like, "Can I have a minute to think...Give me just a minute" when they would like time to process their ideas. When they use these phrases, it tells you that they are actively trying to answer your question and gives them the space they need to put their ideas and words together before speaking. In addition, using this technique with native speakers will help those not familiar with ESL students know that your students are not unable to answer their questions but that they need a bit of time before they do.

#### **4. Encourage more**

For students of English as a second language, giving a quick answer is often appealing. A quick answer does the job and shows you can use language

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appropriately. However, a quick answer doesn't necessarily encourage critical thinking. Using phrases to get your students to say (and think) more will help them use deeper thinking. You can say things like the following: Tell me more about that. What else do you think? Why is that good/bad/scary/difficult/or not? What part is most interesting to you? Why? Asking these questions challenges your students to say more.

### **5. Provide scaffolds**

When learning something new or tackling a new problem, all people sometimes need support. You can support your ESL students as they are learning new skills by giving them tools to help them. Giving examples, breaking tasks into smaller more manageable steps, giving hints or clues, and providing reminders can all help your students by giving them temporary supports in a new and challenging task. As your students become more adept at that task, remove these supports and encourage their successes, big and small. In the meantime, be patient and give them the assistance they need to reach success.

### **6. Encourage argument**

Encouraging argument doesn't mean letting your students go for one another's throats. Critical thinking means being able to make an argument for your beliefs or opinions. You can encourage your students to express logical and reasonable supports for their opinions during discussions and for writing assignments. Doing so will help them think analytically which is part of thinking critically. Have students give reasons or examples that support their ideas, and they will learn to support their arguments naturally.

### **7. Make predictions**

Making predictions is a tool that is quite useful in the ESL classroom. You can ask your students to take a guess at what comes next in reading assignments (fiction, essays, informational articles) as well as video segments you play in class (movies, television shows, recorded dialogues). When they make these predictions, they not only have to think critically, they will be using the language skills they are learning. The next time your students are reading a passage or listening to a segment, hit pause and ask them what they think will come next.

### **8. Take two sides**

Thinking about both sides of an argument will challenge your students to think beyond their own opinions and beliefs. A simple way to do this is to take a controversial statement and challenge your students to list some reasons in support of the statement as well as some reasons against it. Take the thinking a step further and teach your students how to make a refutation, either spoken or in writing, a skill that is often useful in the academic world.

### **Findings and discussions**

Before English teachers adopt interventions to develop their students' critical thinking, it is important that they bear in mind that a friendly, supportive and non-threatening classroom atmosphere can have a positive impact on students'

motivation and language performance and that a “positive climate for learning has been identified by many educationalists as a critical factor in effective learning”.<sup>18</sup>

This chapter presents some practical recommendations that English teacher can employ, after taking into account their students’ need, language proficiency, the coursebook, and the curriculum.

Paul suggests that teachers should use cooperative learning as often as they can, speak less so that students have more time to think, think aloud in front of the students, use appropriate questions that probe various dimensions of their thinking, use concrete examples to illustrate abstract concepts, and generally design all activities so that students “must think their way through them” .<sup>19</sup> Teachers can foster critical thinking by stimulating active learning, since it can lead to effective and lasting education, by encouraging well supported conclusions, and by building from students” experiences.<sup>20</sup>

Ennis proposes the following guidelines that teachers should adopt in order to promote their students’ critical thinking skills. He argues that educators should be aware of the cognitive and mental processes that constitute critical thinking. They should also be familiar with the tasks, skills, and situations to which these processes are applied, and use a range of classroom activities that promote these processes. Furthermore, he provides a framework for such instruction. He divides critical thinking into four components, each consisting of several specific skills, which, as he argues, can be taught to students .<sup>21</sup> These are: a) defining and clarifying, b) asking appropriate questions to clarify or challenge, c) judging the credibility of a source, and d) solving problems and drawing conclusions In addition, teachers can support the development of critical thinking by asking students many questions which require students not only to seek or retrieve information, but also to analyze, logically process, apply, and evaluate it. Teachers also need to organize and implement teaching activities and tasks, a basic element of which is to involve students in supporting their answers, arguments or conclusions. In addition, supplementary materials beyond the workbook and the coursebook are necessary so as to cater for their students’ specific needs, preferences, language ability and to take into account their own teaching situation (e.g. equipment, curricula, classroom size etc.).

Ornstein provides a list of guidelines that teachers can use in order to enhance creative thinking. Teachers should: a) make available different resources for working out ideas, b) foster a tolerant attitude toward novel ideas, c) encourage students to engage in tasks requiring them to apply exploration, testing, searching, and prediction skills, d) resist accepting one “correct” answer or a predetermined

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<sup>18</sup> S. Little, "Preparing tertiary teachers for problem-based learning," in D. Boud, & G. Feletti (Eds.), *The Challenge of Problem Based Learning*, London, Kogan Page Limited, 1997, P. 36-44.

<sup>19</sup> R. Paul, "Critical Thinking: What, Why and How," in *New Directions for Community Colleges*, LXXVII (1992), p. 5-24.

<sup>20</sup> J. Chaffee, "Teaching Critical Thinking Across the Curriculum," in *New Directions for Community Colleges*, LXXVII (1992), p. 25-36.

<sup>21</sup> R. H. Ennis, A Logical Basis for Measuring Critical Thinking Skills," in *Educational Leadership*, VIII (1985), no. 2, p. 44-48.

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pattern, e) teach skills for avoiding peer sanctions, f) teach students to value and take pride in their own creativity, g) encourage autonomous and independent learning, h) look and listen carefully, stir up the unmotivated students, don't accept superficial, „easy“ answers, i) develop a spirit of adventure in the classroom, j) encourage the habit of working out the full implication of ideas, k) provide active and quiet places-where students can "mess around" or "do their thing", while at the same time providing guidance and direction, l) make students more sensitive to their environment, n) encourage manipulation of objects and ideas, and o) keep alive the excitement of learning and thinking, encourage, stimulate, motivate.<sup>22</sup>

According to Pierce, teachers who wish to foster their students" thinking skills should focus on the following: a) improve students' metacognitive abilities, b) use effective questioning strategies, c) have students use oral and written language often and informally, d) design tasks that require thinking about content as a primary goal, e) teach explicitly how to do the thinking needed for the tasks, and f) create a classroom atmosphere that promotes risk-taking and speculative thinking.<sup>23</sup>

As far as Strategies for Teaching Critical Reading and Textbook Reading are concerned, it has been argued that critical reading "is dependent on critical thinking. Critical thinking involves asking probing questions, having an open mind, and reaching a logical conclusion based on evidence".<sup>24</sup> They provide the following set of strategies for teaching textbook reading: a) distinguish between textbook reading and critical reading, b) introduce the assigned reading in a preceding class, c) students are assigned to write something in response to the text as homework, and d) design a focused, informal writing-to-learn task based on the reading.

Moreover, according to Üstünlüoglu teachers can activate critical thinking in the language classroom by making students aware of their perceptions, assumptions, prejudices, and values. More specifically, he proposes language activities which: a) help the learners become aware of their perceptions and how they may differ from those of others, b) help students identify their assumptions, and think about whether their assumptions are justifiable, c) make students aware of their prejudices, as they can impede critical thinking, d) help students create new though patterns, think imaginatively and critically, instead of seeing only one possibility, and e) make students aware of the values on which they base their judgements and evaluations.<sup>25</sup>

In relation to writing skills, Correia suggests that language teachers should incorporate active reading tasks, such as summary writing and note taking, which require students to go beyond a superficial reading of the text to read between the lines, rather than engaging in activities such as multiple choice questions and true-false statements. To this end, she suggests that students should work "together in

<sup>22</sup> A. C. Ornstein, *Strategies for effective teaching*, 2<sup>nd</sup> edition, Madison, WI, Brown & Benchmark, 1995.

<sup>23</sup> B. Pierce, "Ways to Improve Students" Thinking," in *Handbook of Critical Thinking Resources*, Prince George's Community College, 2004.

<sup>24</sup> B. Reed, B. Pierce, "Strategies for Teaching Critical Reading and Textbook Reading," in *Handbook of Critical Thinking Resources*, 2004.

<sup>25</sup> E. Üstünlüoglu, "Language Teaching through Critical Thinking and Self-Awareness," in *English Teaching Forum*, VIIIIL (2004), no. 3, p. 2-8.

pairs or groups, with or without guidance from the teacher, in order to negotiate answers to questions. Tasks considered active may include creating diagrams and filling in tables”, generally tasks that “enable students to interact with the text and each other” and tasks that require students to “to voice their own opinions about the text and discuss those opinions with other students and the teacher”.<sup>26</sup>

Similarly, to overcome students’ difficulty in reading between the lines, and in order to foster critical reading, Tully has used “a mind mirror project to help students synthesize key story elements to create a visual representation of the character’s perspective”.<sup>27</sup> He believes that mind mirror projects can lead not only to students who are “self-aware, confident, and autonomous critical thinkers”, but they can them improve their critical thinking skills in future academic endeavours.<sup>28</sup>

Moreover, to help students see both sides of an argument, Elbow suggests an activity, in which students work in pairs and take turns supporting and arguing against the same issue. This helps students have empathy with other people’s opinions.<sup>29</sup>

Bean also provides a number of step that teachers can use in order to integrate “writing and critical thinking activities into a course” [30]. He also suggests that teachers should present problems a) as formal writing assignments, b) as though-provokers for exploratory writing, c) as tasks for small group problem solving, and d) as starters for “inquiry-based class discussions”.<sup>30</sup>

Moreover, questionnaire projects are highly likely, apart from integrating the four macro skills, to contribute to focused language use and the development of critical thinking, due to their potential to increase cognitive skills such as interpretation and self-regulation.

Finally, in order to develop creative thinking skills, teachers should create the classroom conditions necessary to encourage students to make inferences, to encourage them to think intuitively and spontaneously, and use inquiry-discovery teaching techniques. English teachers should also encourage students to make educated guesses (based on the evidence, data and information they have available), to follow hunches, and to make leaps in thinking, rather than think in a “straightforward” manner.

## Conclusion

While it is generally accepted that critical thinking have a central role in education and that they constitute a principal goal of learning, EFL/ESL classes do not always promote the development of critical thinking skills. English teachers

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<sup>26</sup> R. Correia, "Encouraging Critical Reading in the EFL Classroom," in *English Teaching Forum*, VII (2006), no. 1, p. 16-27.

<sup>27</sup> M. M. Tully, "Mind Mirror Projects: A Tool for Integrating Critical Thinking into the English Language Classroom," in *English Teaching Forum*, VIII (2009), no. 1, p. 10-17.

<sup>28</sup> P. Elbow, *Embracing contraries: Explorations in learning and teaching*, Oxford, Oxford University Press, 1986.

<sup>29</sup> J. C. Bean, *Engaging ideas: The professor's guide to integrating writing, critical thinking, and active learning in the classroom*, San Francisco, Jossey-Bass, 1996.

<sup>30</sup> C. Kagnarath, C. Theara, A. A. Klein, "Questionnaire Project: Integrating the Four Macro Skills with Critical Thinking," in *English Teaching Forum*, VI (2007), no. 1, p. 2-9.

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need to be aware that "Knowledge, by its very nature, depends on thought...all knowledge exists in and through critical thought" and that classroom climate is conducive to the development of critical skills .

However, the integration of critical thinking skills, which is "an important step in students" development, not only as English language learners, but as scholars in whatever field they choose to pursue" , remains a challenge. The theoretical as well as the practical issues described in this article are intended to equip English teachers with a sound basis for promoting critical thinking skills in their classrooms. The suggestions and proposals do not constitute "ready made" rules or guidelines that teachers can use indiscriminately. Instead, they should be considered as starting points for teachers to evaluate their current teaching practices, and motivation to incorporate critical thinking skills in their classrooms.

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## Contemporary Methodology Of Teaching Kazakh Language In Russian-Speaking Groups Of Students

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**Abstract.** *Kazakhstan is a multilingual area. There is a growing tendency to pay more attention to the Kazakh language taking into account its governmental and social significance. The article is focused on Russian-speaking students, who learn Kazakh language at the universities. We argue that the modern approaches, methods and techniques should be realized in teaching Kazakh language. On the basement of S.S. Kunambayeras's cognitive linguacultural methodology, we presented four stages of communicative competence formation in teaching Kazakh language. Each stage fulfills its own specific functions and the set of certain skills are formed on each stage, which is equipped by the most effective methods and techniques. Experiment showed that the usage of contemporary methodology promoted the effective acquisition of Kazakh language by Russian-speaking students of university.*

**Key words:** Kazakh language, Russian-speaking students, universities, modern methods, techniques, competency-based language teaching, communicative, person-centered, lingua-cultural, approach

### Introduction

The special importance of this article is determined by the fact that there is an interest in studying Kazakh language by Russian-speaking students of the universities. It should be mentioned that approaches, methods and techniques being chosen proclaim an integrated philosophy of teaching and never clash with each other, representing a very strict hierarchy. Approach is a set of correlative assumptions dealing with the nature of language teaching and learning, whereas method is an overall plan for the orderly presentation of language material, no part of which contradicts, and all of which is based upon, the selected approach. To speak further, a technique is a particular trick, stratagem, or contrivance used to accomplish an immediate objective. Techniques must be consistent with a method, and therefore in harmony with an approach as well.<sup>1</sup>

The integrity of these three notions must be realized in teacher's classroom management when he organizes the classes of Kazakh language, which is considered as a foreign one, for Russian-speaking students. Classroom management is characterized as the actions taken to create an environment that supports and facilitates academic and social-emotional learning. Toward this goal, teachers must develop caring, supportive relationships with and among students; organize and implement instruction in ways that optimize students' access to learning; use group management

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<sup>1</sup> C. Jack, S. Richards, Theodore, *Approaches and Methods in Language Teaching*, Cambridge UP, 1986, p.18.

methods that encourage students' engagement in academic tasks; promote the development of students' social skills and self-regulation.<sup>2</sup>

### **The identification of the approaches**

Several approaches will help us to see how far they influence the final stage of teacher's classroom management. *Communicative approach* starts from a theory of language as communication and originated as a result of change in the British language teaching tradition dating from the late 1960s. The desirable goal here is a communicative competence that presupposes correct and adequate use of linguistic system. Thus, learning occurs through interaction between students and teacher. The range of exercises and activities compatible with a communicative approach is unlimited. Exercises enable learners to attain the communicative objectives of the curriculum, engage learners in communication, and require the use of such communicative processes as information sharing, negotiation of meaning, and interaction. A variety of games, role-plays, simulations, and task-based activities have been prepared to support classes. Many proponents of communicative language teaching have advocated the use of "authentic" materials in the classroom. These might include language-based realia, such as signs, magazines, advertisements, and newspapers, or graphic and visual sources. It should be mentioned that principles of communicative approach include the following statements: learners learn a language through using it to communicate; authentic and meaningful communication should be the goal of classroom activities; fluency is an important dimension of communication; communication involves the integration of different language skills; learning is a process of creative construction and involves trial and error.<sup>3</sup>

Competency based education stipulates the successful functioning in the real world of work. *Competency-Based Language Teaching* approach had been widely adopted by the end of the 1970s, particularly as the basis for the design of work-related and survival-oriented language teaching programs for adults. Competencies consist of a description of the essential skills, knowledge, attitudes, and behaviors required for effective performance of a real-world task or activity. In organizing learning process, all competencies are described in terms of elements that break down the competency into smaller components; criteria that specify the minimal performance required to achieve a competency; examples of texts and assessment tasks that relate to the competency. The group of scientists of Kazakh Ablai Khan University of International Relations and World Languages under the supervision of S.S.

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<sup>2</sup> Carolyn M. Evertson, "Handbook of Classroom Management," in *Research Practice and Contemporary Issues*, Lawrence Erlbaum Associates, 2006, p. 32.

<sup>3</sup> <http://tntee.umu.se/lisboa/papers/full-papers/pdf/g4-lundgren.pdf>, accessed 12. 03. 2017.

Kunanbayeva<sup>4</sup> suggested the set of the competences for those who acquire foreign language. Linguistic competence provides acquisition of language means and rules with the purpose to create linguistically correct utterances in oral and written forms of intercultural communication. Speech – communicative competence provides the formation of the ability and readiness to realize communicative intention in different situations of oral and written communication on the basement of listening, speaking, reading and writing. Linguo-cultural competence reflects the correlation of culture and language in the process of communication. It provides linguo-culturally adequate communication with the representatives of other society inserting the foundation of the secondary conceptualization of the world. *Socio-cultural competence* is understood here as an ability to reflect environment by means of a language; to form the background of a foreign picture of the world taking into consideration the position of the native speakers; to generate secondary cognition.

The main reason, supporting the importance of *lingua-cultural approach* is that language is not an autonomous construct but social practice both creating and created by the structures and forces of the social institutions within which we live and function. Culture and communication are inseparable because culture not only dictates who talks to whom, about what, and how the communication proceeds, it also helps to determine how people encode messages, the meanings they have for messages, and the conditions and circumstances under which various messages may or may not be sent, noticed, or interpreted. Culture is the foundation of communication.<sup>5</sup> This approach will help students to understand the fact that all people exhibit culturally conditioned behaviors and social variables such as age, sex, social class, and place of residence influence the ways in which people speak and behave. It will help to increase their awareness of the cultural connotations of words and phrases in the target language, to develop the necessary skills to locate and organize information about the target culture. Finally, it stimulates students' intellectual curiosity about the target culture and encourages empathy towards its people. At any rate, the foreign language classroom should become a 'cultural island', where the accent will be on 'cultural experience' rather than 'cultural awareness'. From the first day, teachers are expected to bring in the class posters, pictures, maps, and other realia in order to help students develop 'a mental image' of the target culture (Peck). Another insightful activity is to divide the class into groups of three or four and have them draw up a list of those characteristics and traits that supposedly distinguish the home and target cultures.

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<sup>4</sup> S. S. Kunanbayeva, *Theory and practice of modern FLE*, Almaty, 2010, p. 43.

<sup>5</sup> [http://radicalpedagogy.icaap.org/content/issue3\\_3/7-thanasoulas.html](http://radicalpedagogy.icaap.org/content/issue3_3/7-thanasoulas.html), accessed 12. 03. 2017.

The *person-centered* approach was developed from the concepts of humanistic psychology. The humanistic approach views people as capable and autonomous, with the ability to resolve their difficulties, realize their potential, and change their lives in positive ways. The psychologist Carl Rogers (1902 - 1987), who proposed new humanistic ideas for counseling, developed the person-centered approach.<sup>6</sup> Person-centered education, with a counseling-originated model, embraces a constructivist learner-centered model. Learner-centered model aims to make teachers more sensible to their learners' need as the students undertake a more participatory and a more active role in language learning. The attention switches from teaching language form to teaching function in accordance with the learners' needs. Hence, the individuality of every learner, their learning styles, and multiple intelligences begin to be acknowledged by the educators. Likewise, the traditional teaching manner, in the learner-centered approach, the teacher has the role of knower and active organizer. Although in the learner-centered approach responsibility of the learning is on the shoulders of the learners. Learning in learner-centered model is a non-linear, recursive, continuous, complex, relational, and natural, which is enhanced in contexts where learners have supportive relationships, have a sense of ownership and control over the learning process, and can learn with and from each other in safe and trusting learning environments.

### **Discussion and findings**

Having analyzed some of the most popular approaches, we concluded that a single approach, even a very effective one, could not satisfy the multifaceted demands of modern society. In other words, we can speak of integrated character of the above-mentioned approaches, which satisfies the set of multiple demands of today's society and makes a qualified Kazakh language teaching available.

Taking into account S.S. Kunanbayeva's cognitive linguacultural methodology of the effective organization of Kazakh language teaching for Russian-speaking groups we present four stages of communicative competence formation. Each stage fulfills its own specific functions and as a result, the set of certain skills are formed on each stage. Each stage must be equipped with particular means of teaching with the help of various visual Internet resources that teacher can use during the lesson. There should be mentioned that visualization plays a very important role in what we call cognitive learning. Moreover, it can give the learners a chance to perceive correctly and memorize the necessary material and interpret the meaning of the conveying message expressing their own creativity and individuality.

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<sup>6</sup> Carl Rogers, Harold C. Harold Reinhard, On Becoming an Effective Teacher - Person-centered," in *Teaching, Psychology, Philosophy, and Dialogues with Carl R*, 2013.

The first two stages of methodology (*perceiving basic notions* and *accumulating relevant data*) are equipped with thematic units, which are presented in the form of text to read or track to listen to. However, teacher can vary an organization of data perception with the help of video. The advantages of using videos on the first two stages are the following: it is more action-packed and eventful than any reading or listening, so it helps to keep your students attentive; the most important fragments of information that need to be memorized are usually accompanied by voice shades and different facial expressions, which facilitates the process of memorizing necessary material. The third stage is a stage of quasi-communication. It is characterized by implementing images, videos and speech paradigms. Quasi-communication stage presupposes the modeling of typical communicative situations. In other words, students are being prepared to free, spontaneous communication by role-playing typical communicative acts with the help of speech clichés. During this stage, students train both monologue and dialogue speech; the communicative tasks are conveyed by means of images and video tracks. Students are offered to watch the video and afterwards, teacher provides them with a set of communicative tasks to fulfill. To provide an example, we have chosen the video track that shows students the procedure of E-tandem method of learning language. Video track <sup>7</sup> deals with the peculiarities of E-tandem method of learning foreign languages. The two girls, Ainura who is Kazakh and Helen who is Russian want to learn mother tongue of each other. They meet via Skype and teach each other the first phrases by talking and messaging. Ainura teaches Helen how to introduce herself in Kazakh; Helen teaches Ainura how to do it in Russian. They talk about themselves in their mother tongues on Skype and by e-mail. For their next meeting they must translate these texts into the language they want to learn using their partner's text as a model. After the track is shown, the students are offered the following tasks: monologue: Express your opinion about advantages and disadvantages of E-tandem language learning. Dialogue: discuss with the partner the specificities of organizing E-tandem learning and share opinions about the ways partners can overcome learning difficulties despite they are not language teachers. Writing: Write an essay discussing advantages and disadvantages of oral (telephone, video conferencing, etc.) and written (e-mail, letters, instant messaging, etc.) E-tandem. *Speech paradigms can be used on the third quasi-communication stage.* Speech paradigms can be defined as handouts that provide learners with necessary speech clichés that help them to sound natural and be aware of native speakers' norms of starting/continuing/concluding their speech in different situations. In other words, they can be defined as linking words and phrases

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<sup>7</sup> [http://www.youtube.com/watch?v=iGDxCg90Its&feature=player\\_embedded](http://www.youtube.com/watch?v=iGDxCg90Its&feature=player_embedded), accessed 12. 03. 2017.

that are grouped for usage in a particular case (discussion, argument, etc.) and presented in a compact form so as to be a constant helper for a learner till he/she memorizes it well. The third stage of quasi-communication prepares students for the next stage of free communication where they should be able to participate in a free spontaneous discussion, debate, etc.

On the stage of free communication the case study could be implemented.

The term 'case study' covers a wide range of problems posed for analysis, but most types include several key elements. Most cases are based on real or constructed events, which could reasonably take place. They tell a story, one involving issues or conflicts needed to be resolved—though most case studies do not have one obvious or clear solution. The information contained in a case study might be complex (including charts, graphs, and relevant historical background materials) or simple — a human story that illustrates a difficult situation requiring a decision.<sup>8</sup>

Case studies are involving real characters in actual situations. A good case presents an *interest-provoking issue* and promotes *empathy with the central characters*. Case studies usually generate animated class discussion, especially if students feel that the case will serve as a basis for wide-ranging exploration. Instructors can emphasize that the analysis will be a group project, and that no one will be criticized for raising naive questions or uncertainties. The group must recognize the significance of cooperation in working toward the goal of making sense of the problem, and that everyone is required to actively work together on the analysis. Without a clear sense that they are free to experiment with hypotheses, students will tend to remain silent until they feel that the 'right' answer has been identified. With case-based teaching, students develop skills in analytical thinking and reflective judgment by reading and discussing complex, real-life scenarios.<sup>9</sup> The case method is a student-centered, highly interactive pedagogy that changes the classroom process. The case study illustrates a number of features that permits us to treat it as the most effective technology that should be used as a key for teaching Kazakh language in Russian-speaking groups: it is based on real events (or describes events that can really take place); it contains implicit information that needs to be investigated; it presupposes to have an open-ended solution (or several ones); it develops collaborative skill; it lets students express their creativity.

Problem-based learning can also be used on the stage of free communication. It consists of carefully designed problems that challenge students to use *problem solving techniques, self-directed learning strategies, team*

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<sup>8</sup> [http://www.stanford.edu/dept/CTL/cgi-bin/docs/newsletter/case\\_studies.pdf](http://www.stanford.edu/dept/CTL/cgi-bin/docs/newsletter/case_studies.pdf), accessed 12. 03. 2017.

<sup>9</sup> <http://www.crlt.umich.edu/tstrategies/tscbt.php>, accessed 12. 03. 2017.

*participation skills, and disciplinary knowledge.* In problem-based learning (PBL) courses, students work with classmates to solve complex and authentic problems that help develop content knowledge as well as *problem-solving, reasoning, communication, and self-assessment skills*. These problems also help to maintain student interest in course material because students realize that they are learning the skills needed to be successful in the field. PBL is characterized as a student-centered approach, teachers as “facilitators rather than disseminators” and open-ended problems serve as the initial stimulus and framework for learning. Instructors also hope to develop students’ intrinsic interest in the subject matter, emphasize learning as opposed to recall, promote group work, and help students become self-directed learners. The students are given the *freedom to study those topics that interest them* the most and to determine *how* they want to study them. Students should identify their learning needs, help plan classes, lead class discussions, and assess their own work and their classmates’ work.<sup>10</sup>

Students develop a deeper awareness and ownership of important concepts in the course by working on activities, a basic tenet of the constructive approach to learning. That is, students must learn to be conscious of *what information they already know about the problem, what information they need to know to solve the problem and the strategies to use to solve the problem*. It helps students to become more effective problem-solvers and self-directed learners. However, many students are not capable of this sort of thinking on their own. For this reason, the instructor must become a tutor or “cognitive coach” who *models inquiry strategies, guides exploration, and helps students to clarify and pursue their research questions*. The instructor plays a critical role in helping students to become self-directed learners and must create a classroom environment in which students *receive systematic instruction in conceptual, strategic, and reflective reasoning in the context of a discipline that will ultimately make them more successful in later investigations*.

The first class meetings in a PBL course include brainstorming sessions in which issues central to the course are identified. Alternatively, the instructor can create an extensive list of topics and ask students to focus on those topics that seem most interesting. Based on student input about course topics, the instructor develops ill-structured problems. Students then work on the problems in groups of three to eight students, depending on the number of students in the course and the number of available instructors or tutors. Regardless of how topics were selected, the instructor presents the problems to student groups before providing any formal instruction on the topic. However, problems are introduced with “minilectures” that provide some context for the problem and identify areas of potential difficulty.

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<sup>10</sup>[http://www.stanford.edu/dept/CTL/cgi-bin/docs/newsletter/problem\\_based\\_learning.pdf](http://www.stanford.edu/dept/CTL/cgi-bin/docs/newsletter/problem_based_learning.pdf), accessed 12. 03. 2017.

During class time and outside of class students work with their group to solve problems. Throughout each class the instructor must ensure that all students are involved in the problem-solving process and must familiarize students with the resources needed (e.g., library references, databases) to solve the problems, as well as identify common difficulties or misconceptions. With multiple groups exploring different problems or even examining similar problems, the task of coaching groups may be too much for one instructor. Thus, the instructor may want to consider using teaching assistants or tutors who are familiar with PBL methods and techniques to assist groups. Upon completing the research or inquiry phase of problem solving, groups may be required to write a report and present it to the rest of the class.

In order to check the effectiveness of the methodology described in article we organized an experiment in control and experimental Russian-speaking groups of students at the Kazakh Ablai Khan University of International Relations and World Languages. The students of the control group had the traditional classes of Kazakh language while the students of experimental groups had classes of Kazakh language based on presented methodology. All groups had equal number of class-hours. The students of experimental groups showed the growth according to all parameters. The table shows the comparative results of before and post experimental diagnostics.

Table 1– The results of experiment in control and tested groups

Skills	Diagnostic s	Control group		Tested group	
		Average index %	Difference in growth of indexes %	Average index %	Difference in growth of indexes %
Language accuracy	Before Post	3.5% 4%	+ 0.5	3.3% 4.7%	+1.4
Realization of communicative intention	Before Post	3.5% 4%	+0.5	3.3% 4.3%	+1
Understanding of Kazakh speech	Before Post	1.5% 2.7%	+1.2	1.6% 4.3%	+2.7
Average index	Before Post	2.8% 3.6%	+0.8	2.7% 4.4%	+1.7

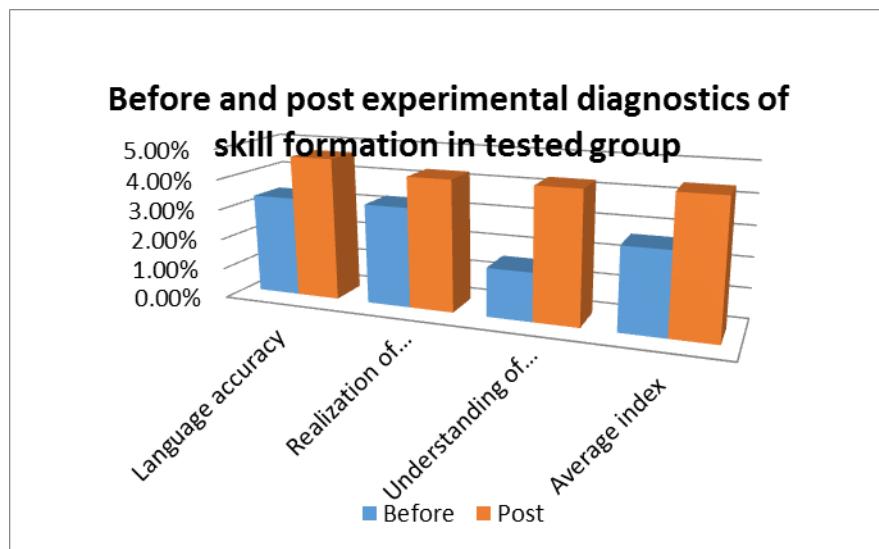


Figure 1 – Dynamics of skill formation in tested group

### Conclusion

To conclude, it should be said that an approach, being a general guideline for teacher, provides a set of principles to follow in the class. However, the realization of the principles depends on teacher's methodology. We presented four stages of communicative competence formation and showed how the teacher can expand the guideline model of learning process with the help of innovative methods and techniques. Therefore, following the guidelines of general approach, the teacher should stay creative modifying the already set model of teaching with his own innovations and personal research.

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## **Kazakh Linguistics: Problems, Tendencies And Prospects Of The Development**

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**Abstract.** This article views the problem of *the development and perspectives of Kazakh Linguistics*. In the article, the authors consider Linguistics as one of philological sciences and directions of humanitarian education. Kazakh Linguistics as a scientific discipline develops according to the modern paradigms of world Linguistics and science in general, which can conditionally be considered in the context of three modules: the taxonomical module, the structural module, the cognitive (linguocognitive) module. A number of important measures for the improvement of the current state and definition of positive prospects for Kazakhstan Philology is proposed, taking into account the fact that today the mission of philological sciences as service to the ideals of the society humanization becomes especially topical.

At the present time, Kazakh linguistics has to be transformed to answer first of all to challenges of the present and transformations of the Kazakh language as the national and the State one. For this purpose, the article reveals the main tendencies of the development of the Kazakh language connected with the processes which took place since obtaining the Independence of the country and which embraced all former post-Soviet cultural space.

The following main tendencies in the modern language environment of the Kazakh ethnocultural community are distinguished: kazakhization, the consolidation of the Kazakhstan society around the State language, the threat of growth of information of hedonistic character in the Kazakh language, strengthening of the role of English in the society, latinisation, preference to use the Latin alphabet. In connection with these tendencies, the authors suggest changing the priorities of the development of the linguistic science and directing the efforts of linguists to researches in the field of the cognitive module in Linguistics, at the same time taking into consideration also the topical issues of the taxonomical and structural modules. Basic researches of the language phenomena of not only the intercultural but also of the special intracultural space created in the territory of Kazakhstan owing to historical factors are necessary. Also the reforms in philological education at the higher school are necessary; besides classical specialties, it is offered to prepare staff on adjacent specialties and to expand the qualififer of philological specialties, it will allow raising a demand for philologists in the society and also satisfying a demand of the society for qualitative modern specialists in the Kazakh language.

**Keywords:** philological education, ethnization, kazakhization, identity, intercultural interlingual space, intracultural language space, trinity of languages, post-Soviet space, cognitive module.

### **Introduction**

In the offered article, the general state and problems of the development of Philology as 1) a science and 2) a direction of humanitarian education in connection with the tendencies and trends of the modern language situation in the Republic of Kazakhstan will be considered.

Modern philological sciences and education not only in Kazakhstan but also around the world underwent considerable evolution throughout the XX<sup>th</sup>

century. Their analysis requires special in-depth studies. Therefore, in this article we tried to track only the general tendencies in Kazakhstan philological science and education.

Modern Linguistics as the most important component of philological sciences expanded the object of its research thus much, that now it provides the effective solution of tasks not only of the language sphere of public life, but also of other areas connected with processing and storage, transformation and accumulation of the huge volume of knowledge, formation and improvement of their software and information support. Linguistics exceeded the limits of humanitarian and book-learning science. Its sections appeared which are adjacent to natural, technical sciences, directions of the applied character, i.e. in scientific thought its image as a purely verbal fundamental science became outdated long ago. However, it is necessary to pay attention to the fact that despite such progress in the expansion of the borders of philological knowledge and the object of this science, scientists are not satisfied with the width and depth of researches in many directions and aspects of philological studies, - that is connected with prompt globalization changes in the world.

Problems and prospects of the development of Kazakhstan philological science are defined by us, proceeding from the positive and negative tendencies revealed on the basis of the pilot sociolinguistic research.<sup>1</sup>

The analysis of the conducted research results revealed the following:

1) The positive dynamics in the perception of the State language by citizens is observed independently of their ethnic origin, especially in the youth environment. Thus, the kazakhization tendency, i.e. the growth of quantity and quality of carriers of the State language is fixed;

2) The hidden discontent of the population in connection with actualization of the language problem moved towards the aspiration and readiness to learn the language. Thus, the tendency of the consolidation of the Kazakhstan society on the basis of the State language is observed;

3) The strategically important point worthy of serious consideration is the limited consumption of information in the State language (15,6% - it is 3,4 times less than in Russian and 1,8 times lower than in the mixed form in two languages). Moreover, among the Kazakhs the information in the native language is perceived only by every 5th of the respondents. The respondents connect it not so much with the rejection of the native language as with the poor quality of the information content in the State language. Such negative trend in the information space of Kazakhstan, in our opinion, demands the special attention and acceptance of drastic measures for its elimination.

4) Kazakh and English act as languages which are priority for learning. The tendency: the transition in the long term from the trinity of languages to Kazakh-English bilingualism; In the joint researches with political scientists, relying on

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<sup>1</sup> M. Nurgaliyeva, A. Fazylzhanova, "The pilot sociological study of the language situation in the aspect of trinity of languages," in *Language. Culture, Communication-1. Collection of scientific articles*, Almaty, "Eltanym baspasy", 2013, p.18-40.

sociological researches of 2010<sup>2</sup> and analyzing the common-for the post-Soviet space-tendencies of transition from the trilingual model of multilingualism "the national language – the Russian language – the English language" to the bilingual one "the national language - the English language", we expressed the opinion that the tendency of Kazakh-English bilingualism will be amplified every year.<sup>3</sup> The results of many researches directed at studying not only of this but also other problems demonstrate that this tendency gains momentum and in the near future can only be amplified [see also 5]. In particular, according to the results of the BISAM center researches which were carried out for definition of the quality of the higher education in Kazakhstan in 2010, the obvious tendency to the transition to Kazakh English bilingualism among the studying youth was revealed.<sup>4</sup> In addition to it, the facts of negative indicators of the demographic process among Russian diasporas are imposed.<sup>5</sup> Thus, it is quite possible that the nowadays dominating trilingual model in Kazakhstan will give way to the model of bilingualism whose components are the State and the English languages.

5) The wide use of Latin especially in the Kazakhstan youth environment in Internet space, modern communications substantiates the latinization tendency.

In modern Kazakhstan philological science, despite the existing appreciation concerning its adequacy to the paradigm of world Linguistics and philological science in general, according to scientists-experts, against the background of the revealed tendencies and trends of the development of the State language, the following problems of the development of the philological science are revealed:

- connected generally with an inadequate reflection to these objective external changes;
- insufficiency of the development of scientifically based answers to the new challenges connected with socio-political, economic and cultural changes in Kazakhstan space;
- uncoordination of researches of Kazakhstan scientists in the field of Sociolinguistics, Linguosociology;
- along with researches both of general-theoretical problems and problems of the linguo-cognitive, linguo-psychological, linguo-political, linguoculturological directions, descriptions of the structure and dynamics of the language processes, language existence in the new geopolitical conditions of Kazakhstan are insufficient;

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<sup>2</sup> The higher education in Kazakhstan: the state in 2010.<http://www.bisam.kz/research/reports/education.html>, accessed 12.03. 2017.

<sup>3</sup> R. Kadyrzhanov A. Fazylzhanova, "The model of trinity of languages and the national identity of Kazakhstan," in *Tiltanym*, I (2012), p. 71-81;

<sup>4</sup> The higher education in Kazakhstan: the state in 2010. <http://www.bisam.kz/research/reports/education.html>; accessed 12. 03. 2017.

<sup>5</sup> E. D. Suleimenova, *Language processes and policy*, Almaty, "Kazakh University", 2011; E. N. Kovtun, S. E. Rodionova N. S. Sergiyeva, "Specializations within a speciality," *Philology: the current state of the problem. Materials of the meeting of the XVI plenum of the Council on Philology*.

- Neurolinguistics has not been studied enough, and the language as a factor of the formation of public consciousness has been insufficiently explored;

- researches in Corpus linguistics which is the base for scientific works for the creation of artificial intelligence of the speech automation and use of the language in modern innovative information technologies are uncoordinated.

If we consider Philology as a branch of high school education, besides the aforesaid shortcomings of the theory of science, there are a lot of problems in it connected with the reforms in the education system of Kazakhstan conditioned by external and internal processes. In this case, in relation to the high school philological education, the comprehension of the need of changes, from our point of view, should be started from searches of answers to the questions:

- What place is taken by the philological direction among other fields of education?

- What is the demand of the modern society for the philologist's profession?

- What is the value and what are the prospects of the development of Philology?

Despite the change of the value priorities and former motivation of receiving the philological education (earlier it was love for books, poetry, a desire to write verses, to be a writer, an akyn), according to the last observations of experts, the decisive factor is the prospect of the further employment. It is also necessary to note that attractiveness of Kazakh Philology as a speciality increased due to obtaining of independence by the Republic of Kazakhstan, the cultural boom and revival of the Kazakh language as the national and the State one. In this regard, we believe that Kazakhstan needs to consider the experience of Russian higher education institutions where for the last ten-fifteen years practically all classical universities opened various additional specializations in their subdivisions (including the philological faculties), which concretize the vocational training of graduates and raise the demand for them in the labour market. Within the speciality "031001 (021700)-Philology", now there are 42 additional specializations which are imposed on the so-called basic profiles of training (domestic, foreign, classical Philology, studying of languages and literature of the peoples of Russia). Some of additional specializations have the scientific character ("The Theory of Linguistics", "Ontolinguistics", "Baltistica", "Bible Studies", etc.), but the most part is applied. Among the latter are such training profiles popular nowadays as "Philological ensuring of "document science", "Literary criticism and editing", "Philological ensuring of journalism", "Philological support of information and publishing activities", "Theory of translation and translation practice", "Philological ensuring of advertising", "Management in philological education", "Philological ensuring of public relations", etc. Now Kazakhstan philological education and especially its Kazakh departments lack such differentiation of specialization.

However, one should not neglect the classical fundamental philological knowledge, because narrow specializations represent a "superstructure" over the

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<sup>6</sup> <http://lib.znate.ru/docs/index-240997.html?page=3>, accessed 13. 07. 2017.

fundamental knowledge and demand initial mastering of the extensive theoretical material. In this regard, it must be admitted that to date the content of Kazakhstan high school philological education quite often lags behind in the aspect of continuous replenishment and updating by innovative knowledge not only from the world but also the domestic science. Therefore, it was offered more than once to develop the mechanisms of the introduction of scientific achievements of Kazakhstan and world Linguistics in high school training courses, lectures, seminars.

We will address to the problems of Kazakh Philology. In the official assessment of the scientific boom of 2009-2010, concerning a sharp increase in number of master's and doctoral dissertation defence on Philology, the reproach was often audible that these sciences became a "springboard" for casual people because of a relative ease of the procedure of scientific researches in comparison with natural and technical disciplines. However, it is possible to dispute on this statement, of course excepting some isolated cases.

While considering the problem in the context of the global events and tendencies occurring in the Post-Soviet states, we will note that in general the growth of the number of scientists who were granted a degree in Philology is most likely a reflection of the revival of national consciousness, search for the own ethnocultural identity. After all only the language as a universal and unique phenomenon contains the cultural codes, background knowledge, prescientific systems of knowledge, cognitive units, precedents, all conceptosphere of knowledge, elements and systems of all types of consciousness of the ethnocultural society. Therefore, in the transition period of the development of the society, the fact of directing of scientific minds to the wealth and content of the language of their people is quite natural.

Kazakh Linguistics as a scientific discipline developed and develops nowadays according to the modern paradigms of world Linguistics and science in general. This paradigm can conditionally be considered in the context of three modules:

1. *The taxonomical module* (the XIX century – the beginning of the XX century). Comparative Linguistics classifies the world languages into far-related and closely-related ones, distinguishes the groups from them by genetic and typological general features. One of the basic postulates is "there are no causeless phonetic changes". Scientific theories and doctrines in Psychology, Biology could not but affect the development of general Linguistics. Language units are classified by the phonetic, morphological and syntactic structures. On the basis of general Linguistics the local ones are formed.

2. *The structural module* (the second half of the XX century). The theoretical views and postulates of this period, - revolutionary for linguistic knowledge, were developed on the basis of F.de Saussure's doctrine. Currents and schools of structuralism appeared in Europe and America. The dominating direction of the linguistic researches was the problems of the language as a self-sufficient immanent

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system "within itself". Thus, the language units of each separate language layer, elements forming these units, and also their verbal interrelation were defined. The phonetic, morphological, syntactic, lexico-semantic structure of the language was considered "within itself" and "for itself" autonomously.

3. *The cognitive (linguocognitive) module* was created in the XXI century as the dominating paradigm of linguistic researches whose basic principle is the humanization of the linguistic thought, philological doctrines. Within this module, the search and definition of units and systems of the cognition process as the results of the mental activity of a person and whole language collective are carried out; in other words the structure and system of concepts of public consciousness of the ethno-language, cultural community come to light.

While identifying the new theoretical bases of teaching the State and also other languages at educational schools of various level, it is necessary to adhere to such new paradigm in Linguistics as the cognitive module.

In contrast with the structural module within which the language was considered outside a person, outside the society but "within itself and for itself", i.e. as "means of communication" (the technocratic point of view), within the cognitive module the language is considered as the system of the language community knowledge which reflects its spirit, consciousness, spirituality, i.e. the culture and language as two sides of one phenomenon – the language in the context of culture. Teaching the Kazakh language in RK on the linguocognitive basis assumes an immersion into intracultural language space, and when teaching the Russian and English languages – into intercultural interlingual space. These spaces which were classified and revealed by professor Nurgeldi Uali can be briefly described in the following way:

The intracultural language space is the system of knowledge which is formed in public consciousness of the language collective on the basis of the internal potential of its own language / culture, and the intercultural interlingual space is the system of knowledge which is formed in consciousness of the language collective on the basis of interaction with other cultural-language socium.<sup>7</sup>

The semantics of words and phrases contains superficial and deep knowledge, but for their disclosure it is not enough to train only the nominative aspect, i.e. the superficial meaning, but also it is important to train deep knowledge which comprises the world outlook of the ethnos, its material and intellectual culture, spiritual, religious, moral and esthetic preferences – all these values are combined into the cultural and language entity, making up the conceptosphere of the ethnos. The integrity of the language semantics and cultural semantics in the ethnolanguage collective consciousness forms the intracultural language space. Teaching the State language outside this space or teaching only the language semantics of the language units, ignoring the cultural semantics, will lead to the

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<sup>7</sup> Altynbekova O. B. Migration in Kazakhstan: the new status of Russian// Published on the website of the Institute of Humanitarian researches of the Tyumen State University, on: <http://ihs.utmn.ru/shell/%C0%EB%F2%FB%ED%E1%E5%EA%EE%E2%E0.doc>, accessed 01. 03. 2017.

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defective perception of the language, to the mechanical skills and superficial knowledge which often do not yield results, - that in many cases comes to an end with waste of public funds and time for training.

Therefore, for the increase of the teaching efficiency and also strengthening of the language identifying function, the expansion both of the language and also all other types of subject knowledge, it is necessary to develop the concept of teaching not only of the Kazakh language and literature courses but also of all subjects in the Kazakh language on the linguoconceptological basis.

Not only the adequacy to the world development of the linguistic science but also modern challenges which Kazakhstan faces today demand from Kazakh Philology the development of the linguocognitive module and also its implementation in the philological education.

However, in many branches of the philological science, language systems and their functioning in communication still continue being considered outside a person and the society, consciousness and cognitive processes. Kazakh lexicophraseology, - its equivalentless part which most brightly reflects the specifics of thinking, priorities and cultural wealth of the ethnocultural language collective - especially requires active researches. Also there is an acute shortage of sociolinguistic, linguopolitical, linguoregional researches on the Kazakh language, as for today the demand grows on the part of the civil society and official structures for scientific and analytical data on the language situation, language policy, language construction. In the light of the aforesaid we will note the following especially important direction of Kazakh Linguistics adjacent to methods and psychology of language teaching.

It is necessary to upgrade the concept of teaching the Kazakh language as the State one considering the geopolitical position of the country, the priorities of the short-term and long-term perspective of the development of the society and the State economy, the preservation of the culture of the State-forming ethnos and the cultural diversity of the country, the special form of tolerance and cultural dialogue as a historically developed phenomenon of Kazakhstan polyculturalism. It is necessary to consider the conditions and difficulties of the national identity formation, the specific criteria of the external and internal stability, the sustained economic growth whose basis should be, first of all, the spiritual safety of the country.

Due to the above-mentioned unoccupied niches in the Kazakh linguistic science, a number of the difficulties reducing the quality and level of high school education in this sphere of science arose. Especially we will note the following shortcomings of high school training at philological faculties concerning the fundamental linguistic systems on Kazakh Linguistics:

- first, monitoring of textbooks on the basic lecture courses revealed the fact that many of them contain systems of knowledge only of *the structural module* (see above):

- the taxonomical module, i.e. comparative studying of the Kazakh language, has been presented in uncoordinated way and has not been summed up as a completed concept;

- the cognitive module is presented only partially, and in some main subjects such as Kazakh lexicology, Grammar, the Standard of speech it is absent at all except for additional special courses, which are obligatory not for all contingent of students.

We will address to the state of Russian and foreign Philology in RK. Russian Philology in Kazakhstan has rather wide experience and is known in the former Soviet Union for powerful schools and linguistic directions. The detailed description of the state of Russian philology can be found in analytical articles of Kazakhstan scientific specialists in Russian philology (8; 9).

In this article we considered it expedient to place emphasis on shortcomings of the Kazakhstan linguistic education in higher education institutions concerning Russian and foreign philology.

Whereas teaching the Kazakh language in RK on the linguocognitive basis assumes an immersion in the *intracultural* language space, teaching Russian, English and other languages, according to the requirements of the cognitive module, requires ensuring of an immersion in the *intercultural* interlingual space. However, the latter have not been introduced into the system not only of high school but also preschool and school education yet. What does an immersion in the intracultural language space represent in ordinary understanding? It is learning of a foreign language on the material of that cultural environment in which this foreign language is spread in this interval of time and space. I.e. English is learned not only for communication with the British or the Americans, but also so that a Kazakhstan citizen, learning it, can express his own feelings and interests, realities and features of the national culture in it.

The content of teaching Russian in Kazakhstan should not copy textbooks of the Russian Federation and should be filled with the material of the Kazakhstan content and depth. In this regard, it is necessary to introduce the qualitative content of knowledge and information not only of structural-semantic, but also of ethnocultural, linguocultural character on Contrastive Linguistics, comparative studying of Kazakh-Russian or Kazakh-English into the content of education on Russian and foreign philology in RK. Thus, a specialist in Russian or English trained on the material of that cultural environment (i.e. Kazakhstan) in which he is located together with the requirement of communication with representatives of English-speaking countries will meet the requirements of a specific nature, will be able to apply knowledge of other languages in the context of the Kazakhstan culture, thereby broadening the sphere of his professional activity.

The research team proposes a number of important measures on the improvement of the current state and definition of positive prospects for Kazakhstan Philology which demand the urgent realization:

- the time has come for the transition from the quantity of training materials to their quality: it is necessary to carry out general monitoring, analysis and examination of Kazakh educational, reference and other books regarding the

compliance to the standards of the modern Kazakh language, when using it as the State language of RK;

- at a new stage of the development of the State language it is important to integrate the Kazakh language with other subjects, thus strengthening its priority in the society consciousness. As the Kazakhstan component of the content of education, - i.e. the systems of prescientific national knowledge and scientific modern knowledge are stored, transformed, generated in the Kazakh language in the form of precedents, words, phraseological units, terms, onyms, hyperonyms, hyponyms, zoonyms, ergonyms, antroponyms, etc., they should be introduced into the content of the Kazakhstan education for the formation of unique knowledge of the cultural, geographical and spatial environment, its history, the material and spiritual world as a universal phenomenon, thereby promoting the formation of new Kazakhstan patriotism;

- in the light of the aforesaid it is necessary to develop Kazakh Philology, Kazakh Linguistics, theory and technique of teaching the State language. It is especially important to pay attention to the quality of philological education and also its *differentiation into narrow specializations* necessary for the modern market: philologists-russianists and anglicists with knowledge of the Kazakh language, techniques and specifics of teaching Slavic and Roman-German languages for Kazakh-speaking people; specialists-psychologists for the development of the children speech at different age categories with knowledge of specifics and psychological fundamentals of mastering the Kazakh language; educators with basic knowledge of Ethnopedagogics, Kazakh folklore, art texts; logopedists with knowledge of the articulary and acoustic base of the Kazakh language and psycho-physiological features of the Kazakh speech; announcers, administrative assistants, clerks, managers, PR managers, advertisers and many other experts with knowledge of the Kazakh language; it is necessary to bring up the personnel of Kazakh-speaking IT – experts, programmers and computer engineers.

## Conclusion

In the conclusion it is necessary to pay attention to that fact that for today the mission of philological sciences as service to the ideals of the society *humanization* becomes especially topical. In the century of globalization, ignoring of the humanitarian knowledge developed by philological sciences quite often leads to the imbalance in the spiritual life, moral atmosphere, social and ecological culture of the society, and it often has long-term negative consequences both for the country and for an individual. Therefore, it is important to explain their importance to politicians, administrative managers and organizations of various education levels, - that was sounded at the first all-Kazakhstan Congress of Philologists initiated and organized in 2013 by MES RK. In this regard, we also propose to introduce the humanitarian subject "Kazakstantanu" at all training courses on specialities of technical universities, and the similar subject "National Conceptology" - at all courses on public and humanitarian specialities for the

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patriotic education of young people and teaching them the universal values (this suggestion was for the first time initiated by professor, Dr. of Philology Z.K.Akhmetzhanova).

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## **Actual Problems Of Teaching Kazakh Language As A Closely Related Language**

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**Abstract.** *The article is dedicated to the development of theory and methods for teaching Kazakh language as related to the Turkic-speaking, basing on cultural and spiritual ties. This problem has not been properly studied in linguodidactics. In this regard, the first scientific steps are made in the development of methods for teaching Kazakh language as closely related language. The problem of learning Kazakh language for the representatives of Turkic people was considered in some researches, but the technology as a related language and system has not been studied. In the process of creating language teaching methods it was noticed that there were few fundamental studies concerning practical learning objectives of Kazakh language for the Turkic-speaking people (related languages).*

**Key words:** learning of a related language, common words, vocabulary, dialogue of culture and knowledge.

### **Introduction**

### **Practical significance**

The textbook "Kazakh language" developed by the authors has its own special place in methodical science. This teaching material is divided into four parts can be particularly interesting for teachers. Electronic materials on CD were developed as an addition to the textbook. At the end of the article one can find a definition of the status of native language, opening prospects for cooperation in the scientific, educational, cultural and social spheres of Turkic-speaking people in the conditions of modern globalization.

Teaching materials of "Kazakh language" is a study that has a special place in methodical science, understanding of which comes through understanding of relevant material by comparing linguistic phenomena of native language and target language.

### **Contribution of this article to the world science**

This article gives an opportunity to familiarize with the process of teaching and learning of Kazakh language by Turkic-speaking people. Defining cultural basics of learning Kazakh language for the related language people in regional and cultural direction is shown in close contact with the methodology of languages teaching.

The goal of the study is to create a scientific and theoretical basis for the methodology of teaching Kazakh language as a closely related language, development and improvement of linguistic knowledge and skills, formation of logical thinking in the target language and communication functions, as well as the possibility of entering into communication in society.

The objective of the article is to form teaching methodology based on the integration of the linguistic system of two languages; examine the methodology of teaching Kazakh language as a closely related from the linguistic, psychological, and educational point of view; discuss the use of information technologies; identify the main areas of learning the correct pronunciation, vocabulary enrichment of students; offer a new technology of teaching Kazakh (Turkic) languages on the basis of comparative studies, compile a dictionary of common (similar) words.

In the process of studying Kazakh language speakers tend to develop cognitive abilities, learning the target language culture is given in comparison. At the same time the definition of Kazakh language cultural features and related linguistic ties with the Turkic language are studied in the regional and cultural direction.

### **Methodology**

This work involves contrastive and comparative methods. From the position of the main content this methods are determined by the interaction of comparative learning of related language system features with the native language phenomena and a full understanding of the teaching language. The principle of comparative method is a full understanding through the interpretation of the relevant material by comparing the linguistic phenomena of the native language and the target language. Contrastive and comparative methods are aimed at the formation of multilingual personality, development of lingual, linguoculturological, socio-cultural and cognitive competencies. Intercultural approach to learning makes it possible to compare two or more culture.

The study of Kazakh language culture specifics comes through the understanding of their national and cultural characteristics and traditions. In connection with the use of pragmatic approach in this study and theory of speech acts, the interest in the mechanisms of communication through the target language and its communicative function is increased. Using a pragmatic approach for the development of communicative competence in multilingualism promotes better assimilation of the material and provides positive motivation for language learning.

### **Results**

Methodology of teaching Kazakh language as a closely related language is explained and characterized; methods and techniques of training closely related languages are systematized; the ways of oral and written skills formation of students in the study of related languages are systematized; a dictionary of common (similar) words of Kazakh, Turkish, and Uzbek languages is compiled.

This work uses contrastive and comparative methods. From the position of the main content this method is determined by the interaction of comparative learning of related language system features with the native language phenomena and a full understanding of the target language. The principle of comparative method is a full understanding through the interpretation of the relevant material by comparing linguistic phenomena of the native language and the target language.

The use of contrastive and comparative method for the development of communicative competence in a multilingualism promotes better assimilation of the material and positive dynamics in the motivation to learn the language. Students have shown great interest, activity and communication skills in the classroom. From the position of the main content this method is determined by the interaction of comparative learning of related language system features with the native language phenomena and a full understanding of the teaching language. The principle of comparative method is a full understanding through the interpretation of the relevant material by comparing the linguistic phenomena of native language and target languages.<sup>1</sup>

The use of pragmatic approach in this study and theory of speech acts, increases the interest in the mechanisms of communication through the target language and its communicative function. The use of pragmatic approach for the development of communicative competence in multilingualism promotes better assimilation of the material and provides positive motivation for language learning.

Education is carried out in conjunction with spiritual development and education of a person. It can be proved by the fact that a person is evolving in the process of learning another language (psychological feelings, affect), expands its knowledge (cultural knowledge) during communication with others and may form cultural and educational dialogues (types of cultural and educational dialogues: text in a cultural direction, interactive and innovative exercises).

The use of pragmatic approach in this study and theory of speech acts increases the interest in the mechanisms of communication through the target language and its communicative function. All kinds of communicative exercises are connected with the need to create a situation of real communication, mastering parameters and developing the skill to transfer acquired material for all similar situations. Hence, a variety of interactive exercises, role-playing situations, games, simulations of real communication were created.

In the process of learning the native language is used by student as a basis for comparison or to predict possible errors. When learning Kazakh language as closely related language we rely on native language, native culture and personal experience of students. Specifics and culture study of Kazakh language comes through the understanding of their national and cultural characteristics and traditions. Intercultural approach to education gives opportunity to compare two or more cultures, and identify similarities and differences.

## **Discussion**

Analysis of research works devoted to theoretical problems of Kazakh and Turkish languages was made. This problem was studied by the following researches: A.Kaydarov, M.Orazov "Introduction to Turkology"; T.Kordabaev

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<sup>1</sup> V. E. Acosta, "On the problem of teaching grammar of second closely related foreignlanguage, taking into account linguistic experience of students in the first foreign language," in *Scientific journal: Socio-economic phenomena and processes*, X (2011), no. 32.

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"Turkic and Kazakh linguistics"; A. Amanzholov "Turkic philology and history writing"; A.N.Nurmakhanova "Comparative Grammar of Turkic languages"; M.Tomanov "Comparative grammar of Turkic languages"; S.Kenesbaev, G.Musabaev "Modern Kazakh language"; G.Musabaev "History of Kazakh language and grammar. Section I"; A.Iskakov "Modern Kazakh language"; B.Sagyndykuly "Etymological basis for the development of Turkic languages lexicology"; Zh.K.Tuymebaev "History of Turkish-Kazakh-Mongolian ethnolinguistic relationship"; Sh.Kurmanbaeva "Comparative analysis of verbal phraseological units of the Turkish and Kazakh languages"; L.Shongaraeva "Phonetical and morphological description of the main roots in Turkish and Kazakh languages"; G.Sagidolda "Turkish-Mongolian language communication: toponymy and phraseology"; M.Eskeeva "Philosophical linguistics of the ancient Turkish written monuments"; A. B. Erdzhilasun (under the general editorship) «Türk Lehçeleri Grameri», Mustafa Oner «Bugünkü Kıpçak Türkçesi, Tatar, Kazakve Kırgızıverlerinin karşılaşışlı grameri»; Mehmet Fatih Kiriscoglu «Saha (yakut) türkçesigrammeri»; Kenan Koç (group of authors) "Kazakh-Turkish Dictionary"; S.Murat "Succession of average vocabulary of Turkic and Kazakh language vocabulary"; Karadzha Oktay Selim" Numerative phrases of Turkic language"(based on Kazakh and Turkish languages).

In the works mentioned above the issues of studying grammatical categories of Turkic languages is studied, but the problem of closely related Turkic languages of education is not considered.

Position of teaching Kazakh language in regional and cultural direction is carried out through materials related to Kazakh and other related languages. Academicians A. Kaydar and M. Orazov expressed the following opinion: "Turkic people are not separated from each other, on the contrary they lived in ethnic groups that had close contact, sometimes had conflicts, sometimes not, ie, leaving an ordinary life. Therefore, their history in many ways, social conditions, culture, traditions and customs, religion and language were common".<sup>2</sup>

Native scientists such as K. Kadasheva, U. Assanova, B. Ashikbayeva were the first who prepared monograph in Kazakh linguistics <sup>3</sup> and education materials for teaching methods of Turkic languages as related. The term "learning of closely related languages" was first applied in this work. In many works devoted to the methods of teaching foreign languages <sup>4</sup> we can meet the term "closely related language" (Bulakhovsky LA, 1931), but not research studies not educational materials.

Academician M.V. Sherba claims that "knowledge of another language helps to understand more deeply the structure of the native language".<sup>5</sup>

<sup>2</sup> A. Kaydar, M. Orazov, *Introduction to the turkology. Textbook*, 3<sup>rd</sup> edition, Almaty: Aris, 2004.

<sup>3</sup> K. Kadasheva, U.O. Assanova, B.G. Ashikbayeva (2012) *Methods of teaching Kazakh language as closely related (for speakers of Turkic languages)*, Almaty, Cantal-press 2012.

<sup>4</sup> L.A. Bulakhovsky, *Textbook of Russian language for schools with Ukrainian language of instruction*, Kharkiv, 1931.

<sup>5</sup> L. V. Szczerba, *Language system and speech activity*, Moscow, Editorial URSS, 2004.

L. G. Kashkurevich in respect of related languages education methodology stated: "Learning of a closely related language is a complex process, since it is connected with assimilation of not only macro-differences, but also linguistic micro-differences in very difficult conditions, when students create a view of the sounding similarity for vocabulary and some grammatical categories."<sup>6</sup>

Scientist E. Hall states that "culture is communication, and communication is culture".<sup>7</sup>

Consequently, for the establishment of a dialogue between cultures and people speaking related languages, i.e. for communication, the following criteria are mandatory: feel connection with other people and society; feel like a representative of any culture; self-examination in the course of the relationship with other cultures; represent spiritual heritage of the two related cultures. Through such positions a dialogue of cultures of student is made, student studies mutual spiritual renewal, mutual development and enrichment of inner and outer world, concepts of knowledge and truth.

The statements about the importance of education in the development of intellectual potential and strength of the human mind has changed radically. The main result of science and education mastering in the research system of the XXI century turns into a major problem. Therefore, the study of language is an integral part of the humanity value system, which is directly related to national integrity, defining ethnic identity as a new trend of the new century in linguistic research.

President Nursultan Nazarbayev has noted that: "The discovery and establishment of the Turkic Academy and Cultural Heritage Fund is our desire to unite the youth, to explore the common history and language together".<sup>8</sup>

Today, efforts are being made on the development of "Turkish Studies" concept. It is known that in recent years, scientists of Kazakhstan and Turkish-speaking countries research and develop, express thoughts and vision about the common problems of related languages. It must be stressed that, from the date of independence declaration in Turkic-speaking States, Kazakhstan has close cooperation in the field of economics and politics, joint activities aimed at strengthening the cultural and scientific relations, in order to further develop and expand the scope of practical application. For example, in the city of Turkestan after opening of the International Kazakh-Turkish University named after A. Yasaui thirty-two students from Turkic-speaking countries in the world are learning Kazakh language in high school.

The concept of related languages includes, firstly, the learning and teaching of national languages, studying in Turkic languages. Secondly, in all regions, where representatives of Turkic people live, learning of related languages is seen as the

<sup>6</sup> L.G. Kashkurevich (1995) "Practices and teaching methods of teaching closely related languages in high school," in *The magazine "Russian language abroad"*, Moscow, 1995.

<sup>7</sup> E. Hall, D. Fast, *Language of the body. How to understand foreigner without words*, Moscow, Veche, Perseus, AST, 1995.

<sup>8</sup> The Great Silk Road, *Alash Reflection*, Almaty, 2012, p. 29.

study of phonetic, vocabulary, grammatical structures differences, as well as mastering the skills of oral and written communication.

It is known fact that Turkish people live in isolation geographically and politically. For centuries they lived far apart, but the Turkic-speaking nations and nationalities were united in spirit, which is expressed in language, religion, history and culture. It is proved by the presence of common words in closely related languages (in one language some words are used passively, in other actively). Such common words that hold a spiritual heritage of the Turkic people, can become a unifying element in the dialogue of cultures, rapid communication conductor in the XXI century. When it comes to related languages, the researchers have the opinion that, in contrast to other related languages "Turkic languages are in a more close relationship".<sup>9</sup> "In Turkic languages common words are words that are saved from the ancient Turkic language and found today in all Turkic languages. Therefore they are called common Turkic words. Common Turkic words are proof of the fact that Turkic people have the same roots. Turkic languages spread from the ancient Turkic dialects main language".<sup>10</sup>

Scientists and researchers, due to the differences in the meanings and similarities for Turkic languages, consider the following key words:

- 1) Words, connected with everyday life of people;
- 2) Cognates;
- 3) Words for animals and plants (flora and fauna);
- 4) Natural phenomenon;
- 5) Words, indicating quality and quantity;
- 6) Words, associated with grammatical categories;
- 7) Words for livestock (A. Bolganbayuly, G. Kaliuly, 1977).

When learning Kazakh language as a related language (and when learning Turkic languages) it is necessary to pay attention to phonetic structure, morphological structure, lexical composition and syntactic differences, and develop a method of teaching. Although the meanings of Turkic words in Turkic languages are similar and very close, but there are differences in pronunciation, orthoepy. As a result of internal and external political and economical relations between all Turkic languages have undergone a number of changes. In this regard, there are differences in the phonetic structure of these languages, such as:

- 1) Sound changes occurring at the beginning and at the end of common words;
- 2) Alternation of sounds in common words;
- 3) Omission of sound in common words;
- 4) particular sounds occur in the middle of common words.

The sphere of phonetics in linguistic data of related Turkic languages creates conditions to determine the similarities and differences in the lexical composition of common words, and find the relationship of related languages in

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<sup>9</sup> M. Tomanov, *Contrastive grammar of Turkic languages*, Almaty, Kazakh University, 1992.

<sup>10</sup> A. Bolganbayuly, G. Kaliuly, *Lexicology and phraseology of modern Kazakh language*, Almaty, Mektep, 1977.

cultural topics for competent mastering of norms with correct pronunciation and spelling. The teacher can use the methods and techniques that ensure the possibility of acceleration, stopping on the differences in the sound system, that was mentioned above (in Turkic languages, including Kazakh, Turkish, Uzbek).

When learning related languages Russian scientists to achieve communicativeness of language paid special attention to regional and cultural aspects and believe that "students should learn the language through the establishment of regional and cultural competence".<sup>11</sup>

According to Russian scientists, the most important thing when learning a foreign language is regional and cultural studies. Scientists believe that "... the use of regional geographic information at language lessons has an applied nature. This information is included in the system of education while students acquainting with national and cultural characteristics of verbal behavior of native speakers. Such information provides not only cognitive, but also communicative needs of students, promotes the formation of a geographic, communicative and social competence".<sup>12</sup>

The educational aspect of teaching methodology of Kazakh language in regional and cultural respect appears in any subject. Educational aspects in this respect can be considered in four directions: provide a special education on Kazakh culture to students; make comparisons of common and different features of Kazakh and Turkish culture; conduct tours to the places of Kazakh attractions; organize familiarization with the spiritual and cultural heritage of Kazakh people.

A particularly delicate task in front of the teacher when teaching Kazakh language in regional and cultural respect is not to down grade the role of the language and culture of another country. In psychology this problem is called "tolerance".<sup>13</sup> Parenting of tolerance requires from teachers and students to be calm and tolerant in choosing methods that will control the formation of moral attitudes towards other cultures.

National development and life of every nation is clearly expressed through language. Each language is a property of ethnic culture. Language saves cultural values in the vocabulary, grammar, proverbs and sayings, etc. At the same time, the language is a bearer and keeper of national values. Language is a weapon and cultural object. Language without culture is not viable. Thus, it is possible to recognize the mentality of people and relationship between them through close cooperation of language and culture.

The cultural cognitive competence is formed as a result of understanding the spiritual Kazakh (related languages) national heritage and the deepest examination of related cultures nature through relationships, through the perception of the need for spiritual education and fixation of knowledge and skills.

<sup>11</sup> T.M. Balykhin, *Methods of teaching Russian as a second language (new)*, Moscow, 2010, p. 187.

<sup>12</sup> A. N. Shchukin, *Methods of teaching speech communication in a foreign language. A manual for teachers and students of linguistic schools*, Moscow, ICAR, 2011.

<sup>13</sup> V. P. Petlenko, *The basics of valeology. Thirdbook*, Moscow, 1999.

The texts created with regard to regional and cultural aspects form the teaching materials, and linguistic identity through the text information evaluates, observes and interprets linguistic facts. Linguistic, communicative and cultural-cognitive competencies are formed on the basis of texts and ensure development of linguistic structure and unity of cognitive systems.<sup>14</sup>

Scientists have proved that introduction of the communicative techniques and skills of a student as part of the communication is interconnected with the cultural and cognitive aspects. In language teaching it is necessary to give information about the culture of two countries, and to pay particular attention to the problem of student's communicative culture formation.

Language and culture is an indivisible concept, considered as unity. Language is a mirror of national culture, and culture is associated with language. At the same time when the problem of cultural relations is topical, there is another problem on improving understanding between communicants. One of the critical moments in achieving a high level of cultural communication is that the linguistic view of the world is forming at the same level and understanding from the part of all participants. In this regard, it is necessary to create new methods of language teaching. These methods are based on linguistic view to the process of learning languages.

Currently in the process of teaching Kazakh language as a related language education in regional and cultural respect is a very urgent problem. Today the integration ties of mutual cooperation for related nations has a special significance, cultural and educational dialogue obliges to form international tolerance and trust, mutual service as the most important thing in relationships.

Cultural and educational dialogue is not the studying of the national culture, but deep understanding of home national culture. Linguistic personality in the process of learning the related language, learning home culture, the other culture and identifying common elements that unite the two related cultures, consciously recognize the similarities and differences of both cultures, thus beginning to understand their nature.<sup>15</sup>

Cultural and educational dialogue helps to understand mentality, language, religion. Linguistic personality recognizes the linguistic view of the world through the linguistic forms and categories, during the research and understanding of the spiritual and national character. During formal and informal bilateral meetings with representatives of related nation on acquaintance with the culture of the interlocutor could lead to misunderstandings or cultural shock. So, the following question arises "how to carry out cultural and educational dialogue during teaching related languages?".

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<sup>14</sup> Lu L., Ghoshal A., S. Renals, "Cross-lingual subspace Gaussian mixture models for lowresource speech recognition", in *IEEE/ACM Transactions on Audio, Speech and Language Processing*, XXII (2014), p. 17–27.

<sup>15</sup> Miguel Rios, Serge Shar, "Language Adaptation for Extending Post-Editing Estimates for Closely Related Languages," in *The Prague Bulletin of Mathematical Linguistics*, CVI (2016), p. 181–192.

Cultural and educational dialogue helps to understand the linguistic view of the world on the level of learning language. Through linguistic view of the world one can truly understand national characteristics, notice the linguistic differences, cultural and informative connections. However, the national psychological views of related languages appear in the forms of language and vocabulary. For example, the word "uzu" (cut) in Kazakh language (cut flowers) in Turkic language means "uzildim" (be overawed), i.e. "I'm in sorrow and overawed."<sup>16</sup>

In the process of entering into cultural and educational dialogue it is necessary to have a greatest coverage of similarities and differences in traditions and customs of related languages. It is possible to recognize the beauty and richness of language through preparation of cultural and educational dialogue, conversation. The vocabulary in disclosure of the linguistic view of the world is very important, because words are indicators and keepers of the national culture semantics. The most important moment is to understand a word and its meaning.<sup>16</sup>

At the lessons of Kazakh language as related language, knowledge is only necessary for active use of speaking skills. The most important thing is that students use knowledge not for systematization of language laws and their formulations, but for usage in the communication process, i.e., on practice. Language knowledge according to the content are formed in orthoepical, lexical, morphological, syntactical, stylistical, orthographical, punctuative, and word-formative plan. Orthoepical, grammatical and other principles are implemented during the listening and form communicative speech skills and the ability to creatively express ideas and make dialogues, proposals, in terms of personal verbal skills.<sup>17</sup>

During educational process functions of the knowledge and relationship of skills are carried out. Firstly, the transition from education to the skills and abilities accelerates and shortens the path of speaking development. Secondly, the development of language laws and principles can be useful for better assimilation of the language. It should be noted that during the practice of language teaching in the formation of communicative abilities it is not recommended to give an extra linguistic information.

In teaching related languages communicative speech functions are the foundation of communicative abilities formation. These communication skills contribute to the formation of grammatical and orthographical skills.<sup>18</sup>

Education in regional and cultural studies covers the following directions:

- Everyday life: eating etiquette, culture of behavior during the holidays, etc.;

<sup>16</sup> Charlotte Gooskens, "The Intelligibility of Closely Related Languages," in *Journal of Multilingual and Multicultural Development*, XXVIII (2007), no. 6.

<sup>17</sup> Charlotte Gooskens, Cindy Schneider, "Testing mutual intelligibility between closely related languages in an oral society," in *Language Documentation & Conservation*, X (2016), p.278-305. <http://nflrc.hawaii.edu/ldc>, accessed 03. 03. 2017.

<sup>18</sup> Joan Kelly Hall, *Methods for teaching foreign Languages: creating a community of learners in the classroom*, New Jersey, 2005.

– Norms of conversational ethics: shildehana (reality, a holiday in honor of the newborn), toi, wedding, circumcision, religious holidays;

– Spiritual values: art, religion, politics, historical facts, social changes, the continuity of generations and understanding, family, ancestral traditions and customs;

– Reduction of grammatical structures.

Skills, formed on the basis of regional and cultural aspects are expressed as follows:

– Perception of differences and cultural characteristics of a native speaker from the target language culture;

– Disclosure of cultural values and spiritual heritage of the target language in the native culture;

– Formation of qualifications in order to overcome the obstacles of cultural stereotypes (overcoming misunderstandings, connection between the two cultures, etc.);

– Formation of personal views on the environment, friendships, family relations through the development of new background knowledge;

– Formation of cognitive ability (the ability to analyze, oratory skills, tolerance, stability and self-confidence, etc.).<sup>19</sup>

As a result of mutual cooperation with the Turkic countries in recent years the interest in the study of the Turkic languages had increased. Therefore, Kazakh language teaching problem for speakers of Turkic languages, i.e. for closely related countries also is an urgent problem that requires in-depth scientific analysis. Consequently, justification of the scientific interpretation for "teaching Kazakh language as closely related language" is a new direction in the comparative method of teaching Turkic languages.

## Conclusion

According to the results of the study we can state the following:

- Distinctive features of learning Kazakh language as related language were established;

- Content and structure of methodology for the study of related languages in cooperation and unity is established; for the first time methods and principles of the related languages study was established; problem of introducing a new technology that improves the efficiency of learning closely related languages between each other was proved from the methodological point of view;

- For the first time the dictionary of common words in Kazakh, Turkish, Uzbek languages was compiled as part of Kipchak, Oguz, Karluk languages;

- Suggestion of the methods for studying such kinds of conversational activities as listening, pronunciation, reading and writing which increase the possibility of communication;

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<sup>19</sup> St. D. Krashen, *Explorations in Language Acquisition and Use*. Portsmouth, NH, Heinemann, 2003.

- Introduction of the multi-level learning process for learning Kazakh language as related language as a new direction in the educational system;

- Learning in regional and cultural direction during the study of Kazakh language as related language is playing a huge role in the issue of mutual cooperation and communication of the related nations;

- This educational complex facilitates the process of learning, integration, interactive communication and management of cultural and educational dialogue for people speaking a related language;

- In the modern world, with high demand for language learning, renewal of learning lexicography has a direct impact on the creation of the dictionary for consumers, and other people (foreigners, representatives of local nations) people speaking a related language.

For people who speak closely related language the study of Kazakh language is aimed at solving specific problems and goals. These goals are the study of particular language material and provision of information on Kazakh language system and the knowledge of student connected with the culture of speech and the text theory along with providing some information about ethnolinguistics. The study of linguistic information provides knowledge for students on Kazakh language.

Despite the fact that the problem of learning Kazakh language for Turkicspeaking people has been repeatedly raised in scientific works, teaching methods of Kazakh language as a related language still was not systematically formed.

Thus, the creation of methodology for studying Kazakh language as related language to people speaking Turkic is an actual problem that requires an immediate solution. Scientists hold by an opinion that the language and culture of any nation is inextricably intertwined. Also, it is widely believed that in the process of language learning it is necessary to introduce the concepts of geography and culture, and information about the culture of this nation. However, this raises the question: "What are the elements of culture and to what extent it is necessary to present them to students learning the language?".

We believe that the most important thing is to give students information about how their contemporaries from Kazakhstan have linguocultural information.

The novelty of our work lies in the fact that it is dedicated to the creation of a methodological basis of learning Kazakh language as related language and preparation of a new textbook. Comparative studies related to the phonetic system and lexical, grammatical systems of modern Turkic (Uzbek) and Kazakh languages need to be considered for functional significance from the position of Turkic world integration. From this position, the creation of educational complex on the basis of contrastive and comparative methods of Kazakh and Turkic languages which have a common vocabulary, close grammatical structure, phonetic system and common roots determines an innovative direction of the project.

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## **Study Of The Grammatical Standards Of Use Of Russian Pronouns In A Foreign Language Auditorium\***

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**Abstract.** *The article examines the problem of mastering the grammatical rules of use of Russian pronouns among foreign Chinese students. The authors suggest the most effective methods and forms of learning based on the particularity of the functional peculiarities of the pronominal words. The leading methods of research are analysis, observation, questioning and summarizing. The article highlights some methodological aspects of the study of the errors of Chinese students-philologists' use of Russian pronouns. The Chinese students' errors are identified by the authors as a result of holding an ascertaining experiment. Special attention is paid to the study of the nature of errors and ways of their prevention and overcoming. The authors consider the comparative study of pronouns in Russian and Chinese languages as the most appropriate method. This method will help the teacher to understand the cause of interfering errors for Chinese students due to the differences of Russian grammatical system and the same one of native (Chinese) languages. You should also take into account the specifics of pronouns in the Russian language, the speakers' depending on the situation in substitution or index functions. We believe that this study contributes its part in the area of didactics and can present an interesting topic of study for all people involved in teaching Russian language to foreign (Chinese) audience.*

**Key words:** education, Russian as a foreign language, pronouns, errors, grammar rules, Chinese students.

### **Introduction**

The modern linguodidactic authorities offer the most optimal ways of learning grammar at the classes of Russian language.<sup>1</sup> Despite the large number of studies upon different aspects of the study of the grammatical structure of Russian language, there're still some gaps remained in the development of revision some grammar topics, which include the assimilation of the grammar rules of pronunciation among Chinese students. Speaking about the importance of mastering grammar in the process of learning Russian as a foreign language, Yang Fan notes that "the practice of Russian language teaching to Chinese students and a few studies of this question enable us to assert that the largest number of systematic errors are allowed at the phonetic, grammatical and syntactical parts of speaking Russian language in virtue of linguistic and extra linguistic factors".<sup>2</sup>

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\* Acknowledgements: The research is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> L. A. Artemova, "Peculiarities of Russian adjectives that describe the person in the Chinese audience," in *Philological Sciences. Issues of theory and practice*, VIII (2013), no. 26, part 2, p. 26-28; I. S. Fazliakhmetov, "Linguomethodological heritage of scholars of xx-the century: I.z.shakirova," in *Modern Journal of Language Teaching Methods*, Special Issue, 2016, p. 130-134.

<sup>2</sup> Yang Fan, "Teaching Russian to Chinese students-specialists," in *Russian Philology in the grammatical aspect of the Language and culture*, I(2014), p. 169-173.

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Students' training is increasingly becoming the subject of attention of researchers in conditions of modern higher education.<sup>3</sup>

One of the important aspects is the process of teaching Russian grammar and learning grammar rules of Russian language among Chinese students-philologists in the conditions of their higher education obtaining in Russian universities. The purpose of our article is to pay special attention to the rules of use of Russian pronouns, to identify the methodological and interpretation errors of Chinese students-philologists in the use of pronouns in speech and writing.

The study of using the standards in such part of speech as the pronoun is essential for the correct and literacy of foreign students' Russian speech. It is known that pronouns in Russian language "are fulfilling a deictic function, informing about the orientation to the pointed out object on the participants of the act of speech, and above all on the speaker, which focused the whole language system: I, you – the participants of the speech act, it is not party; my – relating to the speaker; this, then close / close to the speaker, etc." (15, 205-206). The specific semantic content of the pronoun can be received only in context of a particular situation in speech. For example, the pronoun it can refer to any noun masculine singular (this can be as a person and an object): Anton is a student. He is studying at the University. It's a bus. He goes to the city centre.

The second function which pronouns may take is anaphoric, or substitution, which "is reduced to the indication of the previous, less subsequent element in the context, and thus pronouns have the communicational meaning of words and text's fragments, that is, execute the text-forming function, like, e.g.: "The house stood in the orchard. The fire was not in it".<sup>4</sup>

The improvement in the theoretical foundations of teaching Russian grammar is of great importance in the course of learning about various aspects of studying the vocabulary and grammar of Russian language, including the comparison of this process with learning the same material in other languages.<sup>5</sup>

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<sup>3</sup> E. V. Belyaeva, Y. Li, "The Communicative strategy of language (on the material of speech errors Chinese students)," in *Philological Sciences in Russia and abroad: materials of the III intern. scientific. Conf. SPb.: published on its own rights*, Sankt Petersburg, 2015, p. 70-72; N. I. Kryukova, A. N. Zakharova, Dulina, G.S. Yusupova, Z.F. Belonovskaya, I.D. Bogdanova, "Didactic features of pedagogical interaction as the basis of university education," in *Man In India*, IIIC (2017), no. 3, p. 29 -41; Liu Qian, *Teaching Chinese students-philologists of oral speech using materials of historical content*. kand. PED. Sciences, . Moscow, MOSCOW STATE PEDAGOGICAL UNIVERSITY, 2015; G. M. Nurullina, L. A., Usmanova, "I.A. Bunin's idiosyncrasy: emotive and semantic dominants in description of natural phenomena," in *Journal of Language and Literature*, VII (2016), no. 3, . 199-202; D. I. Rakhimova, "Olympiad in Russian language as a form of bilingual student linguistic development," *Journal of Language and Literature*, VII (2016), no. 3, p. 145-148; R. N. Yakupov, K. S. Fathullova, E. N. Denmukhametova, "System testing levels of Tatar language proficiency," in *Journal of Language and Literature*, VII (2016), no. 1, p. 223 -226; Gyantse Zheng, "Linguistic and cultural differences as the basis of teaching Chinese students the Russian language," in *Philological Sciences. Issues of theory and practice. Tambor: Gramota*, XII (2015), no. 54, part IV, p. 205-208.

<sup>4</sup> G. M. Panova, *Morphology of the Russian language: ENCYCLOPAEDIA. dictionary*, Moscow, Komkniga, 2010.

<sup>5</sup> V. V. Babaitseva, *The Pronoun it and its functional homonyms*, Moscow, Flinta Science, 2014.; F. G. Galimullin, A. F. Galimullina, I. L. Mingazova, "Common roots, common spirituality: Literary

### **Materials and methods**

To achieve our goal, methods of research analysis, observation, description, comparison, synthesis were used. For the study involved the work of scientists on the theory and practice of teaching Russian as a foreign language, language teaching, textbooks and teaching AIDS on Russian as a foreign language, scientific articles. This article shows the results of an experiment conducted with Chinese students who had higher philological education. 50 students of 1-3 courses took part in the experiment. They are mostly the students of the higher school of Russian and foreign Philology of the Institute of Philology and intercultural communication of Leo Tolstoy, Kazan Federal University.

### **Results**

The first foreign students' acquaintance with the pronouns starts at the beginning lessons of Russian as a foreign language. Analysis of existing textbooks designed for the initial stage of teaching Russian as a foreign language showed that already at the first lessons students learn about personal pronouns, they get acquainted with the peculiarities of their pronunciation and usage. Further the study of the Russian language and other categories of pronouns are introduced. For example, in the contents of linguistic competence at the basic level of Russian language proficiency includes the value of the edit form and using personal (I, you, he, she, it, we, you (plural form), they), interrogative (who, what, which, whose, how), possessive (my, your, our, your, e.t.c.), demonstrative (this), attributive (a) and negative (nobody, nothing) pronouns.

As practice shows the use of Russian pronouns can cause some difficulties for Chinese students-philologists. This is due, on the one hand, to the specifics of pronouns in Russian language, their lexical, grammatical and functional characteristics, and on the other, to the differences in the grammatical system of Russian (in the course of studying) and Chinese (native) language, as well as the insufficient development of methods for the study of pronouns among Chinese audience. In the process of studying Russian as a foreign language, Chinese students appear interference errors due to the fact that the native language of the students (Chinese) and target language (Russian) are different according to the morphological typology of languages, as Chinese is an amorphous language, and Russian is an inflected one. The importance of differential data in the comparative

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relationships of the Tatar and Azerbaijani literature in the context of the dialogue of cultures," in *Social Sciences (Pakistan)*, XI (2016), no, 16, p. 3940-3945; D. H. Husnutdinov, Z. F. Yusupova Z.F, Shakurova, M. M., "Practical aspect of comparative research on the material of the Russian and Tatar languages: XIX-XXI centuries," in *Journal of Language and Literature*, VII (2016), no. 2, p. 191-194; S. S. Safanova, E. R. Zamaliutdinova, "Semantics and functioning of syntactic constructions in the mass media language," in *Journal of Language and Literature*, VII (2016), no. 4, p. 160-164; G. M. Nurullina (2016) "The use of dictionaries in teaching Russian language to bilingual students," in *Modern Journal of Language Teaching Methods*, Special Issue 2016, p. 92-96; T. Y. Schuklina, 2016)"Expressive word formation as lingocultural phenomenon," in *XLinguae*, IX (2016). , no. 3, p. 44 -50.

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study of languages for the development of national-oriented methodology of teaching Russian as a foreign language is emphasized by many researchers. It is also important to explore the nature of students' errors. "Despite of the General semantic closeness of the pronominal systems of these two languages in the use of Chinese and Russian pronouns", says Liu Yangming, "there are some significant differences that require, at first, the special comments from Chinese audience, second, the development of a special system of exercises for the formation of skills for proper using of Russian pronouns".<sup>6</sup> As you know, the results of the comparison provide a reliable linguistic basis for constructing methods of teaching Russian as a foreign language, as in the process of matching two unrelated languages reveals both similarities and differences, identify the causes of the transposition and interference to be taken into account in course of learning the grammar of Russian language among Chinese audience.<sup>7</sup> In Chinese the words do not change, there are no categories of gender, number, case, which are relevant for the Russian pronouns.

As it is informed, the study of the nature of Chinese students' errors in use of Russian pronouns gives a valuable material for scientific-methodical conclusions, as they reflect to the linguistic and psychological-pedagogical aspects affecting the possession of studying the peculiarities of the use of pronouns in both speech and writing. We have identified the most typical and common mistakes in Chinese students-philologists' of the 2nd course writing and speaking. At the initial stage there was the task to identify the most typical errors of Chinese students in use of pronouns, to identify the difficulties they faced in choice of pronouns. In this regard, the students were offered the following types of tasks: performing lexical-grammar test on the use of pronouns; working with the text; writing an essay. The results of the experiment helped us to build a system of teaching pronouns, which allows making out the skills of correct and appropriate use in accordance with the standards of modern Russian literary language.

The analysis of Chinese students-philologists' written works have shown that in the first place there are mistakes of inappropriate use of personal, demonstrative, possessive, interrogative and attributive pronouns. In the one case there was the presence of errors due to misunderstanding of the semantics of Russian pronouns (for example: the distinction between demonstrative pronouns this and that, this and this, then that, my and your, etc.), in the other case it was the

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<sup>6</sup> Liu Yangming, "The Russian demonstrative pronouns in Chinese audience," in *Languages of Russia and CIS countries as foreign: materials of the III inter-l scientific. -pract. Conf. (Kazan, 19-21 Nov. 2014)*, Kazan, Publishing house of Kazan Federal University, 2014, p. 403-406.

<sup>7</sup> N. I. Fedorova "Semantic, grammar and functional features of personal pronouns in Russian and Tatar languages," in *3rd International Sub-subjective Scientific Conference on Social Sciences @ Arts SGEM 2016 // Book 1. Conference on psychology, psychiatry, sociology, healthcare, education. conference proceedings*, Volume III. Education and Education Research (24-30 AUGUST, 2016). Albena, 2016, p. 897-902; Y. Lu, "To the question about studying of Russian pronouns (from the experience of working with Chinese students)," in *Philology and culture*, IV (2015), no. 42, p. 290-294; N. E. Minina, "The difficulties of studying Russian pronouns in the Chinese audience," in *Theory and practice of teaching Russian as a foreign language: achievements, problems and prospects: The materials of intern-l scientific.-method. Conf. (Minsk, 25-26 June 2009)*. Minsk: publishing house of BSU, 2009, p. 65-68.

influence of the native language, due to the specific use of pronouns in Chinese language (e.g., in Chinese personal pronouns are sometimes referred still **自己** "himself", "herself") in the third case it was the ignorance of the specifics use of pronouns in the situation of speech (e.g.: you and you, me, you, him, you and you (plural form)). As the analysis has shown, it is not only about violations related decline, spelling pronouns, but their imprecise use to link sentences in the text (for example: Is the audience. In the audience, the students study Russian language instead of the correct: "Is the audience. In this classroom, the students study the Russian language). We believe that the teachers' special attention to the nature of many errors will help to predict and to warn their appearing in future process of studying. This material allowed us to make some methodological conclusions, which are important for the further development of methods of teaching Russian grammar to the Chinese students in general and also the methodology of mastering the use of Russian pronouns in particular.

### **Discussion**

We have conducted practical classes with Chinese students of the 2nd course on the discipline "Russian language and the culture of speaking practice" devoted to the study of pronouns, and also carried out the test work (the results of the ascertaining and teaching experiments). During the practical classes after discussion of semantic, grammatical features of pronouns of one or the other category (e.g., personal, demonstrative, interrogative, negative, etc.), the Chinese students were acquainted with the use of pronouns in featured and scientific texts. We also actively used the examples of true-to-life situations of speech in order to show the way of the use some pronouns. Be routinely offered jobs in the construction and transformation of sentences and writing essays. The correction of mistakes and the analysis of the sentences and the essays written and compiled by the students was an important part of our educational work.

### **Conclusions**

In our opinion, in the course of studying Russian pronouns, from the methodological point of view, it is considered appropriate to indicate grammatical and semantic relationship of words, signs and the nominative role of the words, which are defined in the context. To prevent errors like mentioned above we believe it is methodologically justified to inform Chinese students-philologists about some of the functions of pronouns, which are most clearly manifested in the structure of the text. For such purposes, it is recommended to use the texts of featured, scientific, journalistic styles of speech, in which the most common pronouns are used to mean an interracial connection.

The analysis of oral speech and written work of Chinese students showed that the most common errors are connected with the violation of approval of pronouns – the words of the Deputy and delegate of the word, the use of the pronoun in the absence of the substituted words, violation of order of nominative words and the pronouns, the impossibility to formulate sentences with direct and

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indirect speech, etc. To overcome such errors, it is better to show the students the examples of grammatical and semantic relationship of words and also the signs and nominative words they may point in context, to develop and offer a system of exercises directed on formation of skills of correct and appropriate use of pronouns in students' speech.

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## **Comparative Linguistic-Cultural Analysis Of The Verbs Related To Food Intake Process\***

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**Abstract.** The present study is aimed at verbs and verbal combinations place determination with the component of food intake in the group of culturally-marked vocabulary using the material of English and Russian languages. In order to conduct a comparative study, the authors used both linguistic and general research methods, namely the method of analysis and synthesis, the method of contextual analysis, the method of component analysis, the descriptive method, etc. The method of comparative linguistic-cultural analysis was chosen as the main one. An undertaken research made it possible to establish the interdependence of verb and verbal combination origin with the component of food intake, to determine nonequivalent and connotative combinations. In order to conduct the research, the authors of this article selected an empirical material from a variety of lexicographic sources (monolingual, bilingual and multilingual dictionaries of English, Russian and other languages). The comparative analysis made it possible to detect the differences in the features of food intake perception, the process of its adoption, absorption, which can be explained by the cultural and social characteristics of country representatives, traditions, customs, everyday culture of everyday life and home way of life, habits, manners, national picture of the world and many other factors.

**Key words:** verbs of food intake, culturally-marked vocabulary, comparative analysis, linguo-cultural analysis.

### **Introduction**

The last decades are marked by the growing and ongoing interest of researchers in the sphere of comparative linguo-cultural analysis. The conceptual sphere of 'Food' is one of the spheres representing an integral part of a life of the human being, which deserves thorough study in various aspects. Among the works are the works by<sup>1</sup>, etc. Researchers believe that the conceptual sphere 'Food' is a great source of metaphorical interpretation of various aspects of human life. Food-intake process is indeed one of the most important components of material culture of any nation because all the processes associated with it remain to be a permanent object of interest of people, starting from the ancient times to the present. Within the context of the eating process, we come across the verbs and verbal phrases, which specify the culture of nutrition, the formation and development of traditions

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\* Acknowledgements: The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> S. I. Bakhtina, *Borrowed Vocabulary in the Thematic Group "Food and Drinks": XVIII - the Beginning of XXI Centuries. Author's Abstract. Dis. ... can. phil. sciences*, Kazan, 2008; K. M. Dullieva, *Comparative Analysis of Semantics of Verbs with the Component of Cooking: the Author's Abstract. Dis. ... cand. of phil.*, Kazan, 2008; T. D. Dyachenko, *Semantic-Syntactic Features of Lexical Units of the English language, Activating the Frame "Consumption of Food and Liquids" [Text]: dis. ... cand. of phil.*: 10.02.04: January 22, 04 / Dyachenko Tatyana Dmitrievna. – Belgorod, 2004; E.A. Gashimov, *Structural-Semantic and Pragmatic Characteristics of English Linguistic-Cultural Code: dis. ... cand. of phil.*: 10.02.04 / Gashimov Elchin Aydin oglu., Samara, 2005.

and food-intake behavior specific for any nation representatives in particular culture.

The process of consuming food should be viewed from the standpoint of a particular aspect of human experience, reflected in the mind and language of a person in the form of the structured cognitive knowledge. The intake of food can be characterized from the standpoint of the physiological and cultural, or even social, needs of the man.

The verbs and verbal combinations studied by the authors of this paper contain information about the characteristics of food intake, which is treated as a process related to the satisfaction of the physiological needs of man, and the process of eating, associated with the satisfaction of social, cultural, communicative needs of man.

The process of food consumption, presented in the language with the help of verbs and verbal combinations, has a structured character that reflects a variety of stages of the process itself (from the very beginning to the end). In connection with the fact that this group of lexical units makes it possible to emphasize the individuality of the language picture of the world of each individual people, it seems expedient to attribute this group to a culturally-marked vocabulary.

According to <sup>2</sup>, culturally marked vocabulary stands for words with some extra linguistic vocabulary. The researcher believes it is the main source of sociocultural information about the country of the language. It is obvious that the extra linguistic information obtained from the studied layer of vocabulary is unique and has no analogues in other cultures, which makes it especially valuable for study.

V.N. Telia (1986, 1996)<sup>3</sup> distinguishes two types of culturally marked vocabulary:

- 'units that contain the cultural component in the denotative aspect of the meaning';
- 'units that contain cultural information in the connotative aspect of meaning'.

The undertaken study proves that understanding of the components content of food-intake related verbs and verbal phrases helps to distinguish between the nonequivalent, background and connotative vocabulary. Besides, it allows to identify the allocation of background units.

## Methods

To implement the study, the researchers selected the empirical material from the monolingual and polylingual dictionaries and other literary sources in both the studied languages, which became a great research asset and made the study possible.

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<sup>2</sup> I. E. Averyanova "To the Definition of the Concept of Culturally Marked Vocabulary," in *Language Norm and Variability*. 1981, p. 10-19.

<sup>3</sup> V. N. Telia, *Connotative Aspect of Semantics of Nominate Units*, Moscow, Science, 1986; V. N. Telia, *Russian Phraseology: Semantic, Pragmatic and Linguistic-cultural Aspects*, Moscow, Languages of Russian culture, 1996.

To analyze the empirical data, the authors used a combination of methods of linguistic research. Among them are such methods as

- method of analysis of theoretical sources (psychological, sociolinguistic, linguistic and methodological sources),
- method of analysis and synthesis of information,
- method of contextual analysis,
- method of comparative analyses (used to identify and to distinguish main peculiarities and differences of the studied object in the compared languages),
- method of component analyses (used to analyze the essence and importance of each component of the verbal phrase under observation),
- method of linguistic observation,
- descriptive method,
- statistical method,
- method of generalization, etc.

## Results

According to<sup>4</sup>, 'the acknowledgement of the importance of the inclusion of the cultural component in research on fixed phrases is connected to a great extent with the adaptation of cognitive approaches'. This approach is to form strong theoretical ground to implement the comparative cultural research and analyses.

Speaking of the cultural component of any vocabulary, some scientists differentiate between nonequivalent, so-called 'background' and connotative vocabulary. The researchers, in their turn, find it important to speak of culture-specific concepts, which are defined by S. Vlahov and S. Florin (1980) as 'words and phrases of the national language', which include the names of objects, concepts, some geographic phenomena, cultural and material life of the bearers of some particular socio-historical characteristics.

Cultures of different nations differ from each other greatly. In order to identify these differences, it is of importance to analyze the essence of concepts that lie within. The cultural cognitive mechanisms belong to the cognitive concepts, reflecting basic beliefs, traditions, customs, etc.<sup>5</sup> distinguishes between geographical, socio-political and ethnographic culture-specific concepts.<sup>6</sup> classify cultural components into several groups:

- Customs, traditions and rituals,
- Traditional and everyday household culture,

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<sup>4</sup> J. Szerszumowicz, "Linguistic-Cultural Competence and Phraseological Motivation," in *Phraseologie and Paromiologie*, XXVII (2011), . p. Retrieved from [https://www.academia.edu/24514254/Linguo-Cultural\\_Competence\\_and\\_Phraseological\\_Motivation\\_Antonio\\_Pamies\\_Dmitrij\\_Dobrovolskij\\_ed\\_s\\_Schneider\\_Verlag\\_Baltmannsweiler\\_2011\\_pp.\\_403](https://www.academia.edu/24514254/Linguo-Cultural_Competence_and_Phraseological_Motivation_Antonio_Pamies_Dmitrij_Dobrovolskij_ed_s_Schneider_Verlag_Baltmannsweiler_2011_pp._403), accessed 12. 03. 2017.

<sup>5</sup> G. D. Tomahin, "Realities in Culture and Language. Realia - The Object and Reality - the Word," in *Methodological Mosaic*, VIII (2007), p. 20-28.

<sup>6</sup> I. Yu. Markovina, Yu. A. Sorokin, *Culture and Text. Introduction to Lacunology*, Moscow, 2008.

- Everyday habits and behavior as well as the associated mimic and pantomime (kinesic) codes used by the representatives of some linguistic and cultural community,

- National picture of the world,
- Art culture reflecting the cultural traditions of an ethnos.

Verbs and verbal expressions were selected by the researchers both in Russian and English languages. After the thorough examination of their meanings offered by several monolingual and bilingual dictionaries, the researchers worked with the concept analyses. What is important to mention is that the researchers analyzed not only the lexicographical sources but literary sources as well. It allowed to include a number of units under observation in groups.

## Discussion

The study proved that the above-mentioned components of the culture are characteristic for the verbs and verbal phrases of the food intake process as well. Such examples in the Russian language as *кушать*, *жрать*, *есть*, *глотать*, *лакомиться*, *обедать*, *ужинать*, etc. represent only some of them. This variety of variously connotated verbs are used in Russian not only in their direct meaning, but also in a figurative sense. Some of them belong to the colloquially reduced vocabulary and are used to characterize the manner of human digestion. Some belong to the crude vocabulary. Overall, their semantic analysis proves that there is a possibility to distinguish between such components of culture as the traditions of socio-normative sphere, everyday culture and everyday behavior.

In English, there is also a huge vocabulary that allows to describe the process of eating. Among such verbs are verbs and verbal expressions: *to eat*, *to feed*, *to bite*, *to chew*, *to take food and others*. If to consider a few vocabulary definitions in more detail, one would find out that *to chew* means *to crush the food between one's teeth before you swallow it*. In other words, *to chew* means *to bite and work (food) in the mouth with the teeth*, especially to make it easier to swallow (Oxford Dictionary). For example, *to feed* means *to give food to a person, group, or animal*. Thus, when analyzing the vocabulary definitions of the English verbs and verbal expression related to the food intake process, it is possible to distinguish such cultural components as everyday behavior, everyday culture and the national picture of the world.

The study has also allowed to distinguish between different groups of verbs and verbal expressions and to identify that there are verbs (*смаковать*, *лакомиться*), set expressions (*наесться досыпта*) and phraseological units (*вкусить сполна*, *кусок есть*).

Universally accepted concepts are traditionally considered to be the most difficult concepts for comparative analysis. It is obvious that they are to be quite constant across individuals regardless of their cultural or national belonging. However, the undertaken study has indicated that there are differences in the way people name the food intake process and actions, how they take and digest food as well as differences in the way they think about it. It is worth mentioning that background information is understood as a set of specific socio-cultural data that

are inherent in one or another nationality, they are mastered by representatives of nations and reflected in the language.<sup>7</sup> The difference between background information and realities is that the latter allow us to give the name first in the language. The allocation of background units is only possible if the cultural backgrounds of tokens of a pair of languages are compared, which makes the results of such comparisons relative.

### **Summary**

Food intake process reflected in verbs and verbal phrases both in English and Russian languages should be viewed as a complex linguo-cultural phenomenon, which needs to be thoroughly studied. The conducted study does not cover the remaining vast research area. Summing up, we can say that the hypothesis expected to be proven by the authors was fully confirmed. Undertaken comparative analysis has revealed differences, which can be explained by the cultural and social differences. Certain behavioral norms find their reflection in verbs and verbal expressions, though there is a common set of some subjective evaluations or attitudes towards behavioral models.

However, it remains impossible to disagree with Joanna Szerzunowicz (2009), who believes that 'methodology of linguo-cultural analyses still needs to be developed, with the aim of creating a general theory..., allowing for reliable research'. Our research does not pretend to provide or to disclose all the information on the issue under consideration, though it can be characterized by both theoretical and practical significance.

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<sup>7</sup> E. O. Startseva, I. F. Likhacheva, A. P. Mishin, "Background Knowledge: Implicit Information," in *Personality, Family and Society: Issues of Pedagogy and Psychology: coll. Art. By mater. XVII Intern. Scientific-practical. Conf. Part II*, Novosibirsk: SibAK, 2012.



## Perspective Trends Of Computer Assisted Learning Language Application For Chinese Language Teaching\*

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**Abstract.** *The urgency of the problem is caused by an active introduction of innovative computer technologies and teaching methods into all spheres of our life, including an educational environment. The purpose of the article is to study the foreign experience in Computer Assisted Language Learning application during Chinese teaching as a foreign language, as well as to find out the most promising trends for the development of this method. The leading method of this problem study is an analytical method to study the frequency of keyword words. As the keywords clear the contents of a whole thesis, if a certain keyword is repeatedly repeated in a text, it may reflect the fact that the topic of research presented by this keyword is an object of the study close interest. The frequency analysis of key words reflects the most relevant topics of research under the close attention of scientists. The main result of the study is that an intelligent CALL (ICALL), namely an intelligent computer training, is the newest term in CALL. ICALL, being a high-frequency keyword, occupies the seventh place in the list of key words of foreign journal articles. The materials of the article can be useful for researchers and teachers of Chinese as a foreign language during the compilation of teaching and methodological aids during the development and the implementation of innovative teaching methods at their lessons.*

**Key words:** Education, Computer Assisted Language Learning, CALL, Chinese Language, perspective trends of teaching.

### Introduction

Computer Assisted Language Learning (CALL) appeared in the 50-ies - 60-ies of the 20th century in the United States, after the popularization of personal computers and the use of information technologies, which began to develop rapidly. Warschauser<sup>1</sup> proposes the division of CALL into three stages of development: the behaviorism of 1970-ies and 1980-ies (behavioristic CALL), the communicative teaching of 1980-ies and 1990-ies (communicative CALL), and the integrative teaching in the 21st century (integrative CALL). Now the CALL methodology is at the third stage of development: on the one hand, information and network technologies have a wave-like development, and on the other hand, the government of many countries encourages the use of modern educational technologies by all possible means<sup>2</sup>. Jianling<sup>3</sup> believes that with the traditional teaching of a foreign language, a teacher occupies an authoritative place, and as the information technologies develop rapidly, a computer has already fully come to the forefront from an "auxiliary tool", computer networks are fully integrated into the teaching of a foreign language, so CALL entered the final stage of integration.

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<sup>1</sup> M. Warschauser, "Computer – assisted Language Learning: An Introductio," in Sandra Fotos (ed.), *Multimedia Teaching*, Tokyo and San Francisco, Logos International, 1996, p. 3-20.

<sup>2</sup> Su. Yang, "The origins and the development prospects of Computer Assisted Language Learning," in *Bulletin of Chinese Technologies*, 2011, p. 2.

<sup>3</sup> Chen Jianling, "The application of modern methods in teaching of English at high school. - Computer Assisted Language Learning," in *Computer Assisted Language Learning*, XII (2006).

Despite the fact that the development of CALL began later in China than in other countries, the policy of reform and openness promoted the scientific cooperation and the cooperation of scientific communities in the field of foreign language teaching, through the use of progressive foreign experience and achievements, the scientific community of China, without taking into account the theoretical and practical aspects of the research, have achieved significant results in 30 years.<sup>4</sup> In Russia, computer training of foreign languages began to be introduced relatively late, respectively, and accordingly the results and achievements were studied poorly. Therefore, it is necessary to combine domestic and foreign CALL research in order to understand the advantages of this training method, as well as the prospects for its development better.

### **Study methods**

The purpose of this study is to identify the most promising areas in Computer Assisted Language Learning.

An analytical method was used to study the frequency of keyword use. Frequency analysis is used to identify or express the main content in order to determine an access point and the development trends in this area.

The method of frequency analysis of keywords derives from the method of information processing in informatics, and is applied to a wide range of subject areas, including applied linguistics, pedagogy, soft technologies, biotechnologies, etc. This method is developed and reliable one. Limei Lu<sup>5</sup> use statistical methods to conduct comparative studies.

In practice, the frequency analysis of keywords can be divided into two categories. The first category is based on the study of all keywords frequency in the relevant literature area to determine an object of study interest. This method of the study has a wide range, detailed and accurate results, but in practice it faces great difficulties. The second category consists of a representative field selection in the field of research as a research sample, a sample analysis over a certain period of time, and the determination of all keyword frequency, the determination of this area study object in accordance with the frequency of keywords. This method is not only simple, and the volume of statistical work is relatively small, and besides its statistical result is more convincing.<sup>6</sup> Therefore, the second category of analysis is applied in this paper.

Chinese and foreign professional journals about CALL were selected as an object of research in this work. The foreign representative magazine is "Computer

<sup>4</sup> Pu Zhang, Suhua Song, *Debates on the use of digital technologies for the teaching of Chinese*, Beijing, Qinghua University Publishing House, 2014.

<sup>5</sup> Limei Lu, Jie Jiang, "The study of hot topics in the application of Computer Assisted Language Learning method based on the key words of the periodical scientific journal "Computer Assisted Language Learning" articles", in Educational technologies, X (2014).

<sup>6</sup> Hong Liu, Miaomiao Zhao, Miaomiao (2012). *Research on Hot Spot of Computer Assisted Language Learning between China and Overseas. Overseas Chinese Education*, Xiamen, Jinnang Printing House, 2012, p. 352-361.

Assisted Language Learning", all the keywords were selected from the articles published since 2012 until 2015. There were 13 issues, 130 articles, 508 keywords in total. The British publishing house "Computer Assisted Language Learning" is an international authoritative electronic publication dedicated to computer language.

The Chinese representative print edition is 《外语电化教学》(Computer Assisted Language Learning), the researchers sampled all the keywords from the articles published since 2012 till 2015. The total amount of works made 24 issues, 337 articles and 1127 keywords. "外语电化教学" is the only Chinese periodical published by the Shanghai University of Foreign Languages, which combines educational methods and the teaching of a foreign language. It was included in the CSSCI citation database (Chinese Social Science Citation Index).

The International Association for Teaching Chinese also publishes the journal "科技与中文教学" (Journal of Technology and Chinese Language Teaching). Researchers sampled all the keywords from the articles published between 2013 and 2015. There were just 3 issues, 16 articles and 69 keywords. To date, "科技与中文教学" is the only specialized publication that studies computerized teaching of Chinese language from a practical point of view. Since the magazine was created not so long ago, and the number of articles is also small in order to attract more research in the field of international computerized teaching of Chinese language and the teaching of foreign languages outside and within China, two collections of conferences were selected in the field of international computer training of Chinese hieroglyphs, one is the collection of Chinese language educational symposium articles "数字化汉语教学专题研究" from 2011, and the other one is the collection of articles of the seventh session of the Chinese international academic symposium of Chinese language audio-visual educational program "数字化国际汉语教学实践与反思". Since they are professional scientific publications, they may also reflect a contemporary situation and the development of audio-visual education system trends for Chinese language. Thus, 109 articles and 403 keywords were selected. Based on the selected keywords, three tables were compiled and analyzed.

## Results

### (1) Horizontal analysis

#### 1. Frequent keywords of three periodicals

Since the "discipline name" is the most common keyword in all three tables, and it does not have a real value in the study, therefore, the most common keywords are ten positions in the tables below, starting with the second line. Tables 1,2,3 show the frequency distribution of each group keywords.

Table 1. Statistical table of keywords in foreign works on CALL in the period from 2012 to 2015.

	Key word	Total amount of words	Total frequency
2	Online study (网络教学)	17	3,35%
3	Communication through a computer (计算机中介交流)	15	2,95%
4	Virtual world (虚拟世界)	12	2,36%
5	Linguistic body (语料库)	11	2,17%
6	Self-study (自主学习)	9	1,77%
7	Intelligent CALL (ICALL 智能 CALL)	8	1,57%
8	Learning of vocabulary (词汇教学)	8	1,57%
9	Ratio (态度)	8	1,57%
10	Reading (阅读)	7	1,38%
11	Agreement (共现)	7	1,38%

Table 2. Statistical table of keywords in Chinese works on CALL during the period from 2012 to 2015

	Key word	Total amount of words	Total frequency
2	Linguistic body (语料库)	33	2,93%
3	Internet (网络)	29	2,57%
4	Vocabulary (词汇)	26	2,31%
5	Teaching model (教学模式)	24	2,13%

6	Teacher (教学)	21	1,86%
7	Multimedia teaching (多媒体教学)	20	1,77%
8	English spelling (英语写作)	17	1,51%
9	Foreign language teaching (外语教学)	13	1,15%
10	Interpreting (口译)	13	1,15%
11	Context (语境)	13	1,15%

Table 3. Statistical table of keywords in the works of the international association and international conferences on CALL during the period from 2013 to 2015

	Key word	Total amount of words	Total frequency
2	Internet (网络)	20	4,96%
3	Multimedia (多媒体)	18	4,47%
4	Virtual world (虚拟世界)	11	2,73%
5	Projecting (设计)	9	2,23%
6	Tutorial (课件)	8	1,99%
7	Linguistic body (语料库)	8	1,99%
8	Distant Learning (远程教学)	6	1,49%
9	Computerized training (计算机辅助教学)	5	1,24%
10	Teaching model (教学模式)	5	1,24%
11	Mobile learning (移动学习)	5	1,24%

Table 4. Total frequency of key words

Keyword	Foreign Studies	Chinese Studies	International Conferences

Internet (网络)	3,35%	2,57%	4,96%
Linguistic body (语料库)	2,17%	2,93%	1,99%

The words "Internet" and "Linguistic body" presented in Table 4 are the most common keywords in all three groups of periodicals. A linguistic body is another study object of general interest, for example, the Chinese edition **“外语 电子化 教学”** has established a special section **“语料库 语言学 研究”** (The study of the linguistic body) in the materials of international conferences on teaching. There are also specialized sections on the compilation and the study of linguistic bodies.

Having analyzed these keywords, you can find that a lot of attention is paid to a student in foreign studies. The Chinese academic community and the international association pay more attention to multimedia and teaching methods, and in foreign studies, on the contrary, the ratio of these two keywords is very low (multimedia - 0.39%, teaching methods - 0.20%).

In Chinese studies, the key words "teacher", "interpreting", "context" have their own characteristics. It can be seen that Chinese researchers are focused on the role of a "teacher" study in CALL, the relevant works touch on many aspects, such as the level of teacher training - **“信息 时代 语言 教师 的 教育 技术 素养 探讨”** (issue 6, 2012), beliefs (issue 2, 2014), professional development - **“信息化 环境 中 外语 教师 专业 发展 发展 的 与 路径 路径”** (issue 6, 2015), a teacher's speech during a lesson - **“中学 英语 教师 课堂 课堂 话语 复杂 复杂”** (issue 3, 2015) and so on.

Foreign studies and the international association on the teaching of Chinese language pay close attention to the virtual world, in foreign publications the overall percentage of frequency reaches 2.36%, in the association it reaches 2.73%, and in Chinese only 0.35%. Since the publications of the international association for the teaching of Chinese are registered abroad, and a significant number of articles are also written by foreign teachers, so in fact foreign scholars using the virtual world for learning conduct more successful studies than Chinese researchers (both English and Chinese ones), who do not pay enough attention to this.

## (2) Vertical analysis

In order to trace changes in the objects of research, a diachronic analysis of the data was carried out. However, since the history of international association periodicals for the teaching of Chinese is very short, it is impossible to carry out a vertical analysis. Thus, we conducted a vertical analysis only for foreign and Chinese publications.

Table 5. Statistical table of English studies concerning the frequency of keywords in articles during 2012-2015

	Keyword	2012	2013	2014	2015	Total amount of words	Total frequency
1	Online learning (网络教学)	7	4	5	1	17	3,35%
2	Communication through a computer (电脑中介交际)	7	5	1	2	15	2,95%
3	Virtual world (虚拟世界)	0	4	3	5	12	2,36%
4	Linguistic body (语料库)	3	3	1	4	11	2,17%
5	Self-study (自主学习)	0	1	5	3	9	1,77%
6	Intelligent CALL (ICALL 智能 CALL)	5	1	0	2	8	1,57%
7	Study of vocabulary (词汇教学)	3	0	1	4	8	1,57%
8	Natural language process (NLP 自然语言过程)	4	0	0	2	6	1,18%
9	Interaction (互动)	1	4	0	1	6	1,18%
10	Blog (博客)	2	0	3	0	5	0,98%
11	Second language mastering (SLA 二语习得)	3	0	0	2	5	0,98%
12	Note (注释)	4	0	0	1	5	0,98%
13	Foreign language study (外语教学)	2	1	0	2	5	0,98%

In Table 5, we found special changes of keyword frequency over the past few years. For example, "independent learning", occupies the sixth place, and the frequency of word use increases from low to high. In 2012, the statistical result of this word was equal to zero, this indicates that an independent learning has not

become the study trend yet in foreign studies. In 2013, 2014, 2015, the attention to self-study was increased.

In Table 6, we found special changes of keyword frequency over the past few years. The training model, which occupied the 5th place, shows the frequency reduction trend as a keyword in the journal articles, indicating that the intensity of the learning model discussion in domestic CALL decreases every year. Multimedia teaching, which occupies the 7th place, is in a similar situation.

Table 6. Statistical table of scientific society key words concerning teaching English in China

	Key word	2012	2013	2014	2015	Total amount of words	Total frequency
1	Teaching of English at the University (大学英语教学)	9	8	10	8	35	3,11%
2	Linguistic body (语料库)	6	12	8	7	33	2,93%
3	Internet (网络)	9	12	4	4	29	2,57%
4	Vocabulary (词汇)	10	6	0	10	26	2,31%
5	Teaching model (教学模式)	9	7	7	1	24	2,13%
6	Teacher (教师)	8	3	3	7	21	1,86%
7	Multimedia teaching (多媒体教学)	7	7	5	1	20	1,77%
8	English spelling (英语写作)	3	4	5	5	17	1,51%

9	Foreign language teaching (外语教学 )	6	2	2	3	13	1,15%
10	Interpreting (口译 )	3	3	3	4	13	1,15%
11	Computerization (计算机 辅助)	3	2	2	4	11	0,98%
12	Translation theory (翻译 教学 )	3	3	1	3	10	0,89%
13	Information technologies (信息技术 )	2	2	4	2	10	0,89%
14	General education (通识 教育)	0	0	6	4	10	0,89%

Studying the composition of keywords in scientific articles, we found that even with the same keywords in different disciplines, the essence of the research is not the same one. For example, the keyword "virtual world". It can be seen that the study of the virtual world in the Chinese scientific community is still in the stage of instrumental application, that is, as a teaching tool for teaching Chinese language. While the English community pays more attention to the virtual world in a foreign language teaching, to the changes of a student's behavior, where the virtual world is no longer just a learning tool, but an important point in the development of teaching.<sup>7</sup>

### 3. Some new concepts

In the course of the study, we found that the international scientific community for a foreign language learning with the use of computer technologies is engaged in the research of some new concepts to which Chinese researchers do not pay attention, for example, intellectual CALL.

Virtual world

Foreign CALL aspects	Chinese CALL aspects
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<sup>7</sup> Lifei Wang, Jinlin Jiang, (2014). "The study of actual issues in foreign language teaching during the eleventh five-year plan," in *Study and teaching of foreign languages*, 2014, p. 9.

The use of virtual learning environments and computer-mediated communications to enhance the lexical competence of English teachers: quantitative and qualitative research	Tools for Chinese teaching in a virtual world
Verbal interaction in Second Life: to the pedagogical structure for a task development	Integration of Second Life into the teacher program for Chinese training
The impact of Second Life on the motivation of students studying a foreign language	Second Life and its application in Chinese language teaching

#### Linguistic body

Chinese Association for teaching English	International association for teaching Chinese
The analysis of training materials on English translation and the study of translation teaching, based on the linguistic body	Development and design of Chinese "interlingual corpus for Korean students", aimed at audiovisual teaching of Chinese language
The study of a metaphor nature, based on a linguistic body	Development of a multivolume annotation and its application in international Chinese education
The study of lexical models based on a linguistic body	Research and implementation of the "International database on the teaching of new words in Chinese Language"

#### Conclusions

Intellectual CALL (ICALL), namely intelligent computer training, is the newest term in CALL. ICALL occupies the seventh place in the list of key words of foreign journal articles, being a high-frequency keyword. And in Chinese publications this keyword has never been mentioned. Only in 2015 this concept appears in Chinese publications, but its number is extremely small. Yang Fang, Cao Yanbo (2015) believe that the prospect of computer linguistics development is intellectualization, its actual value is the provision of feedback in linguistics, the stimulation of computer use for easy interaction with network resources. The multimedia devices in linguistics should take into account the individual styles of

student learning. Thus, ICALL is one step ahead of CALL. This is the future trend of development<sup>8</sup>, worthy of our attention.

The studies are conducted to understand the general content of the learning process sections, to understand a general situation;<sup>9</sup> for example: Teacher training in synchronous cyber face - to - face classrom: characterizing and supporting the online teachers learning process (同步网络面对面课堂中的教师培训：对在线教师学习过程的描述和支持)、How can the use of blog software facilitate the writing process of English language learners ? 《如何使用博客软件为英语学习者的写作过程提供方便 ?). This suggests that Chinese scientific community in the CALL study is at an early stage. The researchers pay more attention to product development, and believe that with the gradual development of a product they will pay attention to the learning process gradually.

### **Summary**

The objects of CALL study in China are very different abroad. Even the same keywords demonstrate different research content. The English-speaking community began its studies much earlier, so now the focus is on the learning process and the parity of students. The Chinese community pays more attention to product development and scientific research due to the fact that they are at the initial stage of the CALL study now. Nevertheless, the Chinese community also closely follows the development of trends in international research, and makes its scientific contribution to the international promotion of the Chinese language.

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<sup>8</sup> Ye Zhu, Dai Weidong, "Status, methods and prospects for the development of Internet technologies during the teaching of foreign languages in China," in *Computer Assisted Language Learning*, 2009, p. 9.

<sup>9</sup> Fang Yang, Yangbo Cao, "Digital technologies and Computer Assisted Language Learning: opportunities," in *Educational technologies*, 2015, p. 4; C. Chapelle, "CALL in the year 2000: Still in search of research paradigms?", in *Language Learning and Technology*, I (1997), no. 1, p. 19-43.

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## Application Of Multimedia In The Process Of Chinese Language Teaching As A Foreign Language\*

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**Abstract.** The urgency of the problem under study is caused by the increased demands on the quality of foreign language teaching, including Chinese, the need to apply modern technologies and innovative teaching methods in educational process. The purpose of the article is to study the technology of multimedia teaching aid application in Chinese classes. The leading approach to the study of this problem is the problem-thematic approach. The main result of the study is the development of the most optimal and effective model of multimedia teaching aid application at the initial stage of Chinese language teaching. The materials of the article can be useful for Chinese language teachers at the initial stage of training, and also for teachers and methodologists.

**Keywords:** education, multimedia, Chinese, Chinese as a foreign language, TCSOL, presentation.

### Introduction

Modern education is developing at a rapid pace, the use of multimedia is becoming popular, thereby optimizing the teaching of Chinese as a foreign language.<sup>1</sup> However, the scientific research on multimedia teaching aid application is still not enough and further study of this topic is needed.<sup>2</sup>

In Russia, along with the growing interest to the study of Chinese as a foreign language, the requirements to the quality of teaching are increasing. In order to maintain the motivation of students at a high level, it becomes necessary to apply new technologies to lessons constantly.<sup>3</sup> At different levels of the language mastery, the plan and the content of classes, as well as the forms of multimedia tools differ.<sup>4</sup> During a lesson, a teacher teaches students comprehensively: pronunciation, vocabulary, grammar, hieroglyphs, so that students can use all this knowledge in life properly. In this study, based on the accumulated experience of one of the leading Russian universities teaching methodology, i.e. the Kazan Federal University, the application of various multimedia means is studied in Chinese teaching as a foreign language at initial levels.

### Methodological framework

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\* Acknowledgements: The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> A. Alikberova, *Chinese hieroglyphics: memorization forms and methods. The topical issues of teaching Chinese and other Oriental languages during the 21st century*. Kazan, 2017, p. 4-12.

<sup>2</sup> Ruoyun Liu, WeiHong, "The Attempt to Use Multimedia Teaching and Students'," in *Views on It. Overseas Chinese Education*, 2012, p. 1.

<sup>3</sup> O. M. Bagdullina, "Multimedia means of training in the process of professional training among the students of non-linguistic specialties," in *Siberian Pedagogical Journal*, XI (2010), p. 294 - 299.

<sup>4</sup> T. V. Khilchenko A. V. Dubakov, (2013). *Multimedia lesson of a foreign language and organizational and technological features of its design (Electronic resource)*, 2013. Access mode: <http://shgpi.edu.ru/files/nauka/vestnik/2013/2013-4-17.pdf>, accessed 12. 03. 2017.

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The methodology of research approaches allows us to see the main trends in the development of such a science as pedagogy, to evaluate the diverse practice of theoretical researchers, methodologists and practicing teachers, to understand the structure and the level of methodological knowledge of predecessors and contemporaries.

The conceptual provisions of scientific studies in the field of Chinese teaching at schools and universities became the theoretical and methodological basis of research. The use of methodology and the methods of the existing research contributes to the development of pedagogical science in the field of Chinese language teaching practice for preschoolers and schoolchildren, the ways and the methods of scientific research in this field.

The system-structural approach provides the opportunity to consider the system of Chinese teaching methods at secondary and higher schools comprehensively, and to choose the optimal methodical techniques for the use of interactive forms and audio-visual teaching aids in Chinese classes among pre-school and school age children. The system-structural approach also allowed to combine the data from different aspects of teaching in a single teaching methodology: hieroglyphics, listening, grammar, reading, etc.

The application of a general scientific logical method allowed to develop the created methodology in its continuity and consistency with internal logical relations between certain elements.

## **Results and discussions**

### *Teaching methods for nouns and action verbs*

In the modern multimedia training program, the following key categories are used relatively often: images, diagrams, text highlighting with color, numbers, sounds, and so on. Images, text highlighting and text voicing attract students' attention and motivate them. The identification of multimedia images can help students make contact with specific things effectively, representing a direct contact with objects. In order to implement the method of "direct study", it is necessary for us to identify effective tools that provide the advantage of this method.

The main principle of the method of direct study is to "develop a direct relation between the language and the objective world, namely to create a direct connection between a word and its meaning, without the translation into a native language if possible".<sup>5</sup> For a large number of specific nouns, for example, a tree, a river, a banana, a pig, a train, a zipao, a traffic intersection, etc., students can establish a direct relation between language and objects through photos.

Identified images can be of assistance to students in translation (mental translation), they involve thinking in a foreign language. This method is especially useful at the present time, when there are students from different countries in a class. For this reason, the translation of new material is performed in English (sometimes in Korean and Japanese), however, for the students whose native

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<sup>5</sup> Yanqun Zheng, (2000). "About the creation of multimedia educational units to teach Chinese as a foreign language," in *Practical linguistics*, 2000, p. 3.

language is not one of the abovementioned, the translation of new words can not be effective. Besides, some special words that do not have equivalents, such as: jiaozi (Chinese dumplings), tofu (soy cheese), mantou (buns), Buddhist temple, etc., do not have any correspondence in foreign languages and the images in a presentation are the most suitable and a convenient way to explain these nouns.

The studies of psychologists have proved that people perceive 80% of information visually. When a student receives visual stimulation in the form of an image, through a series of complex physiological and psychological processes, an object, shape, color, texture and many other concepts associated with the existing cognitive structure are formed, this plays a role in other aspects of cognitive ability and memory. The images give a visual impulse to the intuitive perception, prompting a student to compare the information with the original knowledge in order to understand the meaning of words better.

Modern Internet technologies provide great convenience for picture finding. A corresponding image can be found for the vast majority of specific nouns. In the training process, you can imagine 2-3 samples to create a direct relation to an object and a noun. You can use images in presentations quite easily and quickly. We believe that one can teach many specific objects using images.

However, some nouns with a rich cultural connotation, such as the Peking Opera, Tai Chi, etc., are better viewed using a video as an example, since images will not be enough to form a complete view of a student. A video helps to deepen the perception of the Beijing Opera - see the makeup of actors, hear the arias. The video about Taiji allows students to appreciate its features, breathing, hardness and the smoothness of action truly. However, watching a video takes more time, while not doing any good.

Multimedia tools provide an effective help in the study of verbs, helping to establish the connection of a specific verb with a specific action, for example: to swim, to jump, to climb mountains, to cook food, etc.

Many action verbs are adapted for this method of teaching, the study of verbs in Chinese is similar to the study of nouns.

#### *Teaching abstract words and grammar*

According to the main provisions of the functional methodology, the main task of teaching the language is to develop the communicative competence of students in a foreign language. It is focused on the development of situations in order to make students master a real and a believable language in real life situations. "The language and a situation are closely connected, if a necessary situation or a context is not enough in Chinese teaching, a teacher should create a plausible situation himself, the situation of "learning" and "teaching" provides many difficulties". The creation of situations in a language learning is very important, especially for teaching some abstract words and grammar. The appearance of multimedia in teaching facilitated the process of scenario creation. For example:

Explaining the expression "正在" (to be in the process) you can show a person sitting at a computer online, or the students in a classroom, and other photos, thereby showing "大卫 正在 上网" "David is online now" "学生们 正在

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上课" "students during a lesson", etc. Through these pictures and explanations, it is easy to understand the meaning of "正在".

During the teaching of comparative constructions, you can put several different types of bananas in a presentation. In the first pair of pictures show bananas of different sizes, and explain "这个 香蕉 比 那个 香蕉 香蕉 / 小" (this banana is larger / less); the second pair can demonstrate a fresh and a spoiled banana "这个 香蕉 比 那个 香蕉 香蕉 / 新鮮" (this banana is fresher than that); in the third pair you can show bananas with different prices, "These bananas are more expensive / cheaper than those". At the end, a teacher should show the comparison pattern "A 比 B + adj" at a presentation.

In the teaching of direction verbs, you can also use a couple of images, for example, helping students to understand the difference between the verbs "上来" and "上去". The first picture shows a man climbing a ladder, and above is a man who says "他 上来" (rose to the speaker). On the second picture the person rises, and the speaker remains below, he pronounces "他 上去" (rose from the speaker).

A teacher creates typical examples to help students understand the language, to teach him how to use it in different situations.

#### *Examples of hieroglyphs and numbers remembering in a presentation*

The use of a presentation during a lesson helps to save a lot of time for a teacher, instead of writing on the board, you can spend more time explaining the language constructs and expressions. We believe that at a presentation a key role should be given to the proposals with examples that accurately explain the training purpose; a text should be in a moderate amount, a large amount of text or, conversely, a small amount of explanatory text does not contribute to the achievement of a goal. Besides, various visual forms should be used in a presentation (for example, for certain words it is necessary to use boldface, underline, highlighting, etc.) that pay attention to certain words and constructions. The studies have shown that the introduction of additional forms (input enhancement) in combination with other methods of teaching and learning have a positive effect on the study of various constructions and words.<sup>6</sup> For example, have established through an empirical experiment that when you read the introduction of visual forms can lead to a significant increase of student attention. Their experiments have shown that the reading of a given phrase, highlighted by underscoring, significantly contributes to the acceleration of its mastering by students. Due to the fact that a presentation has a large set of different fonts,

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<sup>6</sup> S. Izumi, "Output, input enhancement and the noticing hypothesis: an experimental study on ESL relativization," in *Studies in Second Language Acquisition*, 2002, p. 24; J. Williams, "Memory, attention and inductive learning," in *Studies in Second Language Acquisition*, 1999, p. 21; Xiaobing Zhou, *Introduction to Chinese teaching as a foreign language*, Guangzhou, Zhong Shan University, 2009; Rhong Zhou, Lishang Liu, "The study of audio-visual learning tools on the expansion and the strengthening of English words vocabulary," in *Modern Chinese*, 2010, p. 1; S. Rott, "The effect of frequency of input enhancements on word learning and ext comprehension," in *Language Learning*, 2007, p. 57.

colors, animations, etc. we can take full advantage of these areas in order to increase the visualization of new material and achieve better learning outcomes significantly.

*Key points in teaching*

For example, during teaching a noun, an important point is the representation of nouns together with their counting words: 一个人, 一支笔, 一本书, 一张桌子, 一把椅子, 一辆汽车, 一只猫, 一棵树 ... they are defined by the features of Chinese language. Chinese has hundreds of classifications of countable words with tens of thousands of nouns different counting words are used for different nouns; Counting words are best highlighted by underlining or other visual forms.

Explaining the meaning of verbs, it is recommended to use them together with additions: 穿 (衣服, 裤子, 裙子, 鞋), 戴 (帽子, 手表, 眼镜), 讨论 (问题, 事情), 拍 (照片 电影, 广告), 收拾 (房间, 书架), a verb and a complement is best highlighted in different colors.

Explaining the adjectives, it is better to use them with antonyms: 重 - 轻, 胖 - 瘦, 贵 - 便宜, 干净 - 脏, 整齐 - 乱, etc., it is better to allocate adjectives and their antonyms in different colors.

*Standard examples*

Explaining the grammar, service words and particles during a presentation one should show the examples of standard sentences.

For example, the proposals of "availability" (存现句) in a presentation can be presented in three groups of 2 sentences: 教室里坐着二十多个学生, 墙上挂着两张地图 / (there are more than 20 students in the class, there are two maps on the wall) 教室里飞来了一只鸟, 留学生宿舍楼搬来了几个新学生 (a bird flew into the classroom, a new student moved to the hostel) / 教学楼前边骑走了了很多自行车, 树上飞走了一只鸟 (there is a lot of bicycles in front of the educational building, a bird has taken off from the tree). According to the research by Su Danjie and Lu Jiangming (苏丹洁, 陆俭明)<sup>7</sup>, the existence of an availability sentence can be reduced to three groups: an existential space - an existential mode - an existential matter (存现处所 - 存现方式 - 存现物), thus, they can be represented by three different colors and fonts; so they will be more intuitive and easier for learners. Based on this, a teacher can use the existing examples, or create their own examples for student training: 窗户旁边放着一台空调, 墙上挂着两台风扇 (there is an air conditioner near the window, there are two fans on the wall), 桌子上放着几本书, 黑板上写着一些汉字 (there are several books on the table, there are several hieroglyphs on the board); (In front of the car, a cat appeared in the room) 我们班来了一位新同学, 她家来了一位客人 (a new student came in our class, a guest came to our house);

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<sup>7</sup> Danjie Su, Jiangming Lu, "Syntactic analysis of a sentence in pedagogical practice," in *Teaching Chinese in the world*, 2010, p. 4.

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树上飞走一只鸟,教学楼前边骑走了很多自行车 (a bird took off from the tree, there is a lot of bicycles in front of the training building). All this allows students to master the rules of grammar thoroughly.

Even when you learn new words, it is best to offer 2-3 examples, for example the word "漂亮": 她很漂亮,她是一个漂亮的.

Foreign students do not have a sense for Chinese language, and its study without examples is not possible. Nevertheless, we believe that there should not be too many examples, as they spread the attention of students, and they can not concentrate on language practice.

#### *Interview of students about the use of multimedia learning*

In order to study the opinion of students studying Chinese as a second language about the use of multimedia in a classroom, a survey was conducted at the Kazan Federal University in February 2017 among the students of the 2nd course from Oriental and African Study department (profile: the languages of Asia and Africa (Chinese language) and the History of Asia and Africa (CPR), there were 41 questionnaires, 38 of them were filled in. There are the results of the questionnaire and statistical data below.

Survey questions	Amount of answers and options
1. Do you like to use multimedia during a lesson?	A. Like (38) B. Do not like (0)
2. Is it necessary to use pictures when you study nouns?	A. Yes (38)      B. No (0)
3. Is it necessary to use pictures when you study verbs?	A. Yes (38)      B. No (0)
4. How many pictures should be used during the teaching of nouns and verbs?	A. 1 (3)      B. 2 (18) C. 3 (15)      D. More than (2)
5. Is it good to use the situation photographs when you study abstract words and grammar?	A. Yes (38)      B. No (0)
6. How many examples with grammatical constructions should be in a presentation?	A. 1 (0)      B. 2 (9) C. 3 (10)      D. More than (19)
7. When you study grammar, how many explanations would you like to see in a presentation?	A. A lot (8) B. Only key ones (30)      C. Do not use at all (0)
8. Do you like the visual highlighting of important details?	A. Like (38) B. Do not like (0)

The results of the study show that 100% of students welcome the use of multimedia training; 100% of students, as a rule, welcome the use of pictures when they study verbs and nouns; 100% of students use images to study abstract words and grammar; 87% of students want to see 2-3 pictures when they study nouns and verbs, 8% of students want to use only 1 image, 5% want to use many images; 50% want to have 2-3 examples for each grammatical construction, 50% want to see more examples; 79% want to see only key explanations in a presentation, 21% want to see a detailed explanation; 100% of students welcome the visual highlighting of key details.

Thus, students are interested in the use of vocabulary, grammar with the application of multimedia, photographs and the pictures with explanations for the learning process. Nevertheless, the survey results show that half of the students believe that the use of 2-3 examples is not enough and they want to see more examples, which does not quite fit into the general methodological concept of foreign language teaching. We believe that by making some examples for presentation, teachers should be based on the actual level of students, this will help not only to enrich the proposals, but also to avoid an excessive use of examples.

### Conclusion

It is necessary to show key proposals in a presentation, there is no need to give a detailed description. Miller<sup>8</sup> developed the theory that a short-term human memory is capable to remember  $7 \pm 2$  elements. This is why we believe that key explanations in presentations are preferably regulated within this range. For example: an explanation of the grammatical structure "V + 着", for example "持 (chi) 续 (xu) continue", the example should be highlighted in color or by other visual means. Combined with the examples of "大卫 打着 篮球, 明河 唱着 歌, 同学们 坐着, 老师 站着" (David plays basketball, Ming He sings a song, students sit, the teacher is standing) and other suggestions, students will be able to understand, that "动词 + 着" design indicates an ongoing action or a condition. A detailed description in a presentation will not lead to a better understanding and memorization of a text. Another example: the explanation of the addition "V + V / adj." "结 (jiē) 果 (guǒ) result", the example should be highlighted in color or by other visual means. In combination with the examples "我看懂了这篇文章, 他做完作业 </s>; 衣服 洗干净了, 黑板 上的字 我看清楚了" (I read the article, he finished his homework, clothes is washed, I clearly saw the hieroglyphs on the board), students can understand the meaning of the supplement, and its structure.

Students like classes in Chinese language with the use of multimedia during the study of grammar and vocabulary, the effect of learning is obvious. Nevertheless, it should be noted that multimedia technologies are not a panacea, they can not solve existing problems, but only help to optimize the teaching process by offering modern teaching tools. Multimedia teaching methods should be used in the scientific theory of teaching, for specific educational purposes. Teachers should use multimedia tools to interact with students more closely and effectively, help them master the language, achieve learning goals. Besides, teachers should always be open to new techniques and innovative teaching methods.

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<sup>8</sup> G. A. Miller, "The magical number seven, plus or minus two: some limits on our capacity for processing information," in *Psychological Review*, 1956, p. 63.

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## Communicatives In The Differently Structured Languages\*

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**Abstract.** *The problem of the culturally conditioned use of Russian interrogative communicatives правда, не правда ли, так, так ведь, не так ли, хорошо, ладно (colloq), что, что ли, разве, неужели is solved in the article on the background of the equivalent English disjunctive question (in which the verbal-subjective inversion and different polarity are used, for example, didn't she, haven't they, doesn't it) and the Japanese particle ne.*

*In English such communicatives include the second part of the disjunctive question (didn't she?, isn't she?), synonymous with the Japanese particle ne? and Russian particles не правда ли? не так ли?*

*In the Russian language there are two groups of communicatives that can be translated into English by a disjunctive question: 1) particles that call for agreement (не правда ли, не так ли, так ведь) and synonymous with them; 2) particles that are not synonymous with communicatives, calling for agreement (что, что ли, разве, неужели).*

*Sentences with Russian particles не правда ли, не так ли and synonymous with them, as well as particles умо, что ли, разве, неужели are translated into English by a disjunctive question with a greater or lesser degree of frequency. Sentences with such particles as не правда ли, не так ли, так ведь are translated mainly by a disjunctive question.*

*For sentences with particles умо, что ли, разве, неужели the translation by a general or special question is more typical, although such sentences can as well have the disjunctive question as an English equivalent, that indicates the importance for Anglo-American thinking to emphasize the right of every person to express his opinion openly (agreement or disagreement with the point of view of the addressee).*

**Key words:** communicative, particles, English disjunctive question, cultural specificity, emotionality.

### Introduction

The urgent problem of national and cultural-historical specificity of language units remains current nowadays, in particular the contact-establishing elements in a harmonious dialogue.<sup>1</sup> Contact-establishing elements are called communicatives, which include not only a phrase - the reaction of the recipient, but also request the reaction of the sender to his own statement.

In English language to such communicative is the second part of the disjunctive question (didn't she?, isn't she?), synonymous with the Japanese particle ne? and Russian particles не правда ли? не так ли?

The functioning of the English disjunctives and the Japanese particle ne is due to the Anglo-American and Japanese standards. Anglo-American cultural standard emphasizes the right of every person to express the opinion openly, to do what one wants and to say what one thinks, but they are only provided that these

\* Acknowledgements: The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> C. Gallois, V. Callan, *Communication and Culture: a guide for practice*, Toronto, 1997; I. Kh. Safin, E.I. Kolosova, T. A. Bychkova, "Representation of Gender Concepts in the Russian and Polish Languages," in *The Social Sciences*, X (2015), no. 5, p. 562-565; E. Vereshchagin, *Modern Bible in popular form*, Lada, 2013.

actions do not conflict with the rights and freedoms of others. Therefore, the Anglo-American cultural standard does not forbid telling the recipient "I don't agree with you". Japanese cultural standard puts the group, not the individual in the first place, encouraging open harmony, unanimity and psychological unity, and thus, it forbids saying to another man "I disagree with you", even if this person is mismatched with the sender's point of view.

A. Vezhbitskaya, taking into account different cultural standards, notes that the Japanese particle *ne* expresses a call for agreement. It is often possible to be translated by English disjunctive questions that use the verb-subject inversion and a different polarity, for example, didn't she, haven't they, doesn't: She is Italian, isn't she? —*Она итальянка, не так ли?* However, Vezhbitskaya emphasizes the fact that the English language has also another type of disjunctives with the same polarity that are not reported on the possibility of disagreement: She is Italian, is she? —*Она итальянка, ведь так?*

In addition to the constructions with the particle *isn't*, *isn't*, *aren't*, there are some kinds of sentences with other question particles, and they are to be translated by English disjunctive questions . However, the question of culturally determined the use of Russian communication equivalent to the second part of the English disjunctive question needs some adjustment.

The relevance of this article contains an ongoing interest in the cultural topics in Russian culture and language and problems of inter-linguistic comparison of the "small" words that are important for an adequate study of the discursive vocabulary.

The purpose of this article is to identify the cultural specific of communicatives, which can be translated with disjunctive question into English.

## Methods

The descriptive method and such methods as observation, generalization and classification of material were used in this study. The main research methods are also the method of contextual interpretation and contrastive translation analysis.

## Results

In Russian language there are two groups of communication that can be translated into English disjunctive question: 1) particles, calling for the agreement (*не правда ли, не так ли, так ведь*) and their synonyms; 2) particles that are not synonymous with communicatives calling for the agreement (*чтоб, что ли, разве, неужели*).

Communicatives of each group have their own lexical meanings. The first group consists of the interrogative particles *правда*, *не правда ли*, *так*, *так ведь*, *не так ли*, *хорошо*, *ладно* (colloq.), or used either as a clause part or as a separate phrase. The intention in usage of Russian and English communicatives is different. If the English disjunctive question is used in cases when the speaker encourages the interlocutor to agreement, with a focus on the possibility of disagreement, the

Russian communicative are used when the speaker is interested in whether the interlocutor would agree with his point of view:

You are very strong? Really? (A. Tolstoy); *Вы очень сильный? Правда?* (А.Толстой) When we get our money, we spend it much more rational. Isn't it? (Ilf and Petrov) *Когда мы получим наши деньги, мы истратим их гораздо рациональнее. Не правда ли?* (Ильф и Петров).

In response to the request, the recipient can express either agreement or disagreement with the opinion of the sender, or to dodge the question:

– And in Moscow you had a business trip. Right?  
"So," I confirmed (Adamov);  
– What's the point if you become a billionaire or President, but in my heart will still worry, envy, anger, fear, vanity and emptiness? Conversely, if I have nothing, but in the soul – sacred peace, hesychia, peace, love, God, we have everything! Isn't it?

– I don't know... I don't like this... (Philipev)  
– *А в Москве представился командировочным. Так ведь?*  
– Так, – подтверждал я (Адамов);  
– *Что толку, если станешь миллиардером или президентом, а в душе по-прежнему будет тревожить, зависть, злоба, страх, суета и пустота? И, наоборот, если ничего не имеешь, а в душе – священный покой, исихия, мир, любовь, Бог, то имеешь все! Не так ли?*

– *Не знаю... Я не такой... (Филиппев)*

In contrast to the frequency of the English disjunctive question, not all Russian communicative of the first group are used regularly. Particles *не правда ли*, *не так ли* are generally infrequent. However, the use of any of communicatives is culturally justified, because in Russian these discursive words have increased linguistic particularity and they are key to the understanding of the peculiarities of the Russians' world vision.<sup>2</sup>

Interrogative particles of the second group are common, and one of them is the particle that. It is noted in <sup>3</sup>that the particle "that" expresses doubt and guess. However, this is not a singular meaning of this particle. Many Russian particles express epistemic and axiological relations in different proportions, that is, the description of the situation from the point of view of reliability / unreliability of information and evaluation of the content of the narrative in terms of good / bad, desirable / undesirable. The axiological value in phrases of good / bad, desirable / undesirable, according to scientists <sup>4</sup>is typical for the majority of Russian particles, surrounding the question: *что, неужели*, etc. So, R. Rathmayr(1985) considers that question like "So what, are you going with us?" (*Ты что, с нами идешь?*) has the

<sup>2</sup> T. M. Nikolaeva, *Separatistische linguistics. The story of the wandering of particles*, Moscow, Languages of Slavic cultures, 2008.

<sup>3</sup> A. Vezhbitskaya, *Culturally based scenarios: a new approach to the study of intercultural communication - speech Genres: Collection of scientific articles*, Saratov, Publishing house of State educational and scientific center "College", 1999, p. 112-132.

<sup>4</sup> L. K. Khalitova, *Constructions with interrogative particles in translations of Russian texts of the twentieth century in the English and Tatar languages: author. Diss. kand*, Kazan, 200, p. 18.

interpretation "I'm not quite sure that you want to come with us or not, but at least I don't want it."

We believe that the value of particle "that" includes speaker's difficulty in overcoming any obstacles, something that is unexpected: new information, speaker's embarrassment, the addressee's behavior, etc. The difficulty of speaking person can be often caused by desire for the speaker of a particular situation that can be proved by using words containing a negative coloration in the sentence – dissatisfied, annoyed, angry, etc.:

– Are you mad or something? (Shukshin); – So, he's an accountant too? – asked she with displeasure (Rubina). – *Ты что, с ума сошелся?* (Шукшин); – *Он что – тоже бухгалтер?* – спросила она недовольно (Рубина).

However, there are cases where the foreground stands the desire of the speaker just to make contact, although unpredictable.

– Yes, although I'm ready even now.....- officer confused, - I didn't expect this trip.

– What, you have no money? Well, say so. It doesn't mean anything (Herzen).

– *Да я хоть сейчас... только... – офицер конфузится, – я никак не рассчитывал на эту поездку.*

– *Что, денег нет? Ну, так и говорите. Это ничего не значит* (Герцен).

The author's context in this case may contain positively colored lexic: gently, kindly, with love, etc.:

– What, are you sleepy, sister? –heard she the gentle voice and turned around (Tolstoy) – *Что, ко сну морит, сестрица?* – услышала она ласковый голос и обернулась (А.Толстой).

Not less common particle whether (*что ли*) that actualized the matter or that the speaker's opinion regarding to in the requested information (a guess, the desirability of the situation, its justification). I. M. Kobozeva indicates the justification in contexts with a particle «*что ли*». She highlights the issues with inherent theme, where the intonation centre marks a statement of a comment to the question about his theme ("Today there is "Red Riding Hood" <...> do you remember this story?"), and issues with non inherent theme, where all the propositional content included in rheme and it isn't interested in speaking only as a possible explanation for the situation of which he is whether a witness or a part at the moment of speech (8. P. 303-306). I. M. Kobozeva notes that the particle whether (*что ли*) is found only in the issues with the non inherent theme in matter of so called "alleged reason". This question, from her point of view, must not contain words related to assessing the reliability of the statements, therefore, the following question would be semantically wrong: \*You probably don't know how to talk? \**Вы, наверное, не умеете разговаривать, что ли?*<sup>5</sup> Our material supports the view of I. M. Kobozeva(2009) on the regularity of the use of particle «*что ли*», showing that this particle is typical of the contexts, indicating the probable cause:

<sup>5</sup> A. A. Zaliznyak, *Polysemy in language and the ways of its representation*, Moscow, Languages of Slavic cultures, 2006.

- There'll be retribution... Oh, retribution will be brutal.
- What do you think the Germans will win? – asked Ivan Ilyich (Tolstoy).
- *Будет расплата, ох, будет расплата жестокая...*
- *Что же вы думаете: немцы нас, что ли, завоюют? – спросил Иван Ильич* (А.Толстой).

In this example, the interrogative sentence (What do you think the Germans will win?) (*немцы нас, что ли, завоюют?*) – the rheme of the statement is the cause of the topic of the question (The will be a reckoning... Oh, retribution will be brutal...) (*Будет расплата, ох, будет расплата жестокая...*), remaining outside the values of the interrogative sentences.

The interrogative particle *разве, неужели* are also quite common. A number of publications were devoted to them, which expressed the value of the inconsistency between the representation of the speaker about anything and the fact that this view is opposed by the particle, and at the same time, outlined of these particles. Thus, according to A. N. Baranov,<sup>6</sup> the particle *разве* and *разве P?* has the interpretation of "believing to the moment of speech, that there is some Q (where Q doesn't entail P) and realizing that in the moment of speaking there are circumstances pointing to the fact that P, I am saying that I am surprised by the existence of circumstances that indicate P, and ask you to confirm or deny P"; and the particle *Неужели R?* is interpreted as "believing that there must be some Q (where Q doesn't entail P) and realizing that in the moment of speaking there are significant circumstances that indicates that there is P, assuming that P in this situation I might say is possible, I am surprised by that and I may ask you to confirm or deny R".

Therefore, for A. N. Baranov,(1985)<sup>7</sup> the difference in the semantics of particles do and really boils down to is that in contexts with unless Q is a fact, that is the "real situation", in contexts to do Q is an assumption, that is, "expected situation".

We agree with A. N. Baranova's opinion about the use of the particles do and did. So, in the sentence Didn't she tell you? (Iskander) (*Разве она тебе не говорила?* (Искандер)) the situation P is contrary to the previous speaker's opinion that this situation can take place, as in the sentence Do you like those verses so far? (Herzen) (*Неужели эти стихи вам нравятся до сих пор?* (Герцен)) the speaker has no prior knowledge about P or not P, but he is more likely assuming that not P, not believing P is more likely.

Russian sentences with particles *не правда ли, не так ли* and their synonyms as well as *что ли, разве, неужели* are translated into English with disjunctive questions with a greater or lesser degree of frequency. Sentences with the particle like *правда ли, не так ли, так ведь* are translated basically with the disjunctive question:

<sup>6</sup> \*\*\*, *Russian grammar: scientific works*, Moscow, Russian Academy of Sciences. The Russian language Institute. 2005.

<sup>7</sup> A. N. Baranov, "The semantic category 'speculation' and 'fact' in the values of the particles do and do," in *Semantic aspects of formalization of intellectual activity. Abstracts of all-Union school-seminar*, Moscow, VINITI, 1985, p. 381-384.

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*Все сбылось, не правда ли? – продолжал Воланд <...> (Булгаков)*

*It's all true, isn't it? "Said Woland <...> (M. Glenny).*

For sentences with particles *что*, *что ли*, *разве*, *неужели* it is typical translation with the help of general or special question, although such sentences may have as its English equivalent and disjunctive question, what shows the importance for Anglo-American thinking to emphasize the right of every person to express their opinion openly (agreement or disagreement with the sender's point of view of):

*<...> неужели, Феденька, ты к обновленцам перейти собрался? <...> –*  
*А обновленцы что – не люди? (Ильф и Петров).*  
*"Surely you're not joining the Renovators, Theo dear?" <...>*  
*– They're human-beings, aren't they?" (J. Richardson).*  
*– Пойдешь, что ли, вечером? (Шолохов)*  
*– 'Come this evening, won't you?' (Society of Foreign Workers).*  
*– Товарищи казаки! Разве мы не все русские? (А.Толстой)*  
*– Comrade Cossacs! We're all Russians, aren't we? (Ivy and Tatiana Litvinov).*  
*– Неужели вы будете нас бить? (Ильф и Петров)*  
*– "You wouldn't hit us, would you?" (J. Richardson).*

## Discussion

In Russian language and culture the Anglo-American and Japanese cultural standards encouraging or prohibiting an open expression of the opinion based on the communicative question are not a priority. The sentences containing particles whose semantic is related to the request for agreement of the recipient, but also with particles without such values can both be translated into English language with disjunctive questions. However, Russian communicatives have cultural peculiarity which is explained by the most important feature of the Russian mentality – emotion, contributing to the rich of lexical meanings for the expression of modal-evaluative meanings. The conclusion confirms the results of R. Rathmayr, I. M. Kobozeva,<sup>8</sup> A. N. Baranova's<sup>9</sup> studies about the presence of Russian interrogative particles of individual lexical meanings such as epistemic and axiological relations, the values of the actualization of matter-Remy, which is a suspected cause non inherent themes of truth values / non sincerity of propositional content of phrases. The sentences with interrogative communicative *правда*, *не правда ли*, *так*, *так ведь*, *не так ли*, *хорошо*, *ладно* (прост), *что*, *что ли*, *разве*, *неужели* are translated into English with a substantial loss of meaning.

## Conclusion

In the present article the authors for the first time compare the second part of the disjunctive question with Russian particles and make the original conclusion that both these communicative are considered culturally specific, that is revealed by

<sup>8</sup> R. Die Rathmayr *Russischen Partikeln als Pragmalexeme*, Munchen, 1995.

<sup>9</sup> I. M. Kobozeva, *Linguistic semantics: Textbook*, 4<sup>th</sup> edition, Moscow, publishing house. "LIBROKOM", 2009.

comparing the Russian particles with their equivalent in English discourse. Although most of Russian particles have an individual lexical meaning, in translations most of them have the use of disjunctive question. The cultural particularity of the Russian particles is lost in translation. They lose emotional – modular aspect.

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## Artistic Peculiarities Of The Translation Of The Novel The Adventures Of Tom Sawyer By Mark Twain Into Tatar Language\*

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**Abstract.** *The article considers the history of Mark Twain's work reception in the Tatar literature. The comparative research method helps to identify the specificity of the text existence in a different cultural environment. During the issue study, the authors of the article pay attention to the main factors which influenced the relevancy to perceive the text with the means of the perceiving language. The geopolitical conditions and the social-cultural context stipulate the necessity to rely on the Russian translation tradition. Despite the fact that the novel becomes available for Russian readers in their native language at the very beginning of the XXth century, the novel was translated into the Tatar language only at the beginning of the XXI century. The main factors which influenced on the existence of such a time interval were the self-sufficiency of the availability in the state language of the country, as well as the lack of a sufficient number of skilled staff. The stylistic and lexical changes revealed during the translation of the novel into Tatar language are explained by the influence of traditions connected with the religious notions of nationality. Another reason for such transformations is the conformity of the Tatar text content with the moral norms of the perceiving national culture.*

**Keywords:** American literature, translation, reception, cross-cultural dialogue, Tatar literature.

### Introduction

An important condition for the implementation of an intercultural dialogue is the creation of a single cultural space. This, in its turn, implies the accessibility of cultural heritage sites, regardless of nationality, language or geographical barriers. In this case, during the implementation of globalization process, the role of fiction increases, and the comprehension of the historical experience of certain nations is achieved, and the acquaintance with the traditions and customs of various peoples occurs through literature and by literature.<sup>1</sup> In part, this process would not be possible without the availability of translation practice.

The peculiarity of Tatar translation practice is characterized by its close relationship with similar activities carried out in Russian literature. The significance of such a guideline is conditioned, first of all, by the geopolitical factor. Tatarstan has been part of Russia for centuries. Such geographical location, in its turn, determines the specificity of Tatar culture and science development, which is formed partly under the influence, and often in close cooperation with the Russian cultural tradition and scientific practice.<sup>2</sup>

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<sup>1</sup> L. F. Khabibullina, 2014. "Cultural identify of a person in the poly-cultural space terms: its social aspects," in *Life Social Journal*, XI (2014), no. 11, p. 248–251.

<sup>2</sup> A. Guzel, Radif R. Golikova, Als H. Zamaletdinov, Rezeda F. Vafina, "Mukhametshina The "New" strategy in teaching literature in a multiethnic environment (As exemplified by the republic of Tatarstan)," in *International Journal of Environmental and Science Education*, XI (2016), no. 6, p. 1237-1246.

### **Materials and methods**

Mark Twain's novel (1835-1910) "The Adventures of Tom Sawyer" (1876) in English,<sup>3</sup> as well as the translation of this work into Tatar language (2003) acts as the research material.<sup>4</sup>

The main method of our research is a complex method, including a) the comparative analysis of the original and translation, b) the elements of the conceptual approach, oriented to the identification of national universals, d) the structural-semantic method that takes into account the intertextual relations.

The application of these methods in their interrelationship is intended to help in the study of translation strategy typology, the study of "own" and "foreign" dialectic in artistic translation.

### **The reception of the novel the adventures of Tom Sawyer**

*BY MARK TWAIN in Russian Literature*

In 1873 Mark Twain decided to write a play. A rural cottage with a garden was chosen as the place of the setting for the first act. The work began with the words of 50 year old lady Winnie, who unsuccessfully appealed to the boy Tom. However, two years later, in a private letter to his friend William Dean Howells on July 5, 1875, Mark Twain states that he is ready to present his new story: "I have finished the story and left my hero a boy". (Read about this in 5, 123). As we see, in the process of the work on the plot, the author's intention changes and the most acceptable form for him is not a dramatic but a narrative one.

Mark Twain published his novel on June 9, 1876 in the English publishing house Chatto and Windus in order to prevent the appearance of pirate copies of his work. American readers were able to read his book only in December 1876, whereas the library of the congress had the work in January of 1877.<sup>5</sup>

Immediately after the publication Mark Twain's book becomes very popular, readers are fascinated by the fun adventures of a naughty boy named Tom. The author's fame is growing. And soon there is a requirement for the novel to be published in Russian.

From 1896 to 1899 the Panteleev Brothers printing house published a collection of works by Mark Twain (11 volumes) in St. Petersburg (The collection of works by Mark Twain . 1896-1899). The contents of the third volume included the book about Tom Sawyer translated by Sofya Ivanovna Voskresenskaya (1986).

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<sup>3</sup> M. Twain, *The Adventures of Tom Sawyer*, transl. by S. Ibragimova (in Tatar language), Kazan, Magarif, 2003.

<sup>4</sup> M. Twain, *The Adventures of Tom Sawyer* Hartford, The American Publishing Company 1884; <http://litbook.net/book/9348/the-adventures-of-tom-sawyer>, свободный. Проверено accessed 14.04.2017.

<sup>5</sup> J. Vinterikh, *Adventures of famous books*, Moscow, The Book, 1985.

In the second edition of the novel "The Adventures of Tom Sawyer" in Russian (1903) Mark Twain's text was called a story.<sup>6</sup> This translation was made by Maria Nikolaeva and it was addressed to the youth of all ages.

Since then, the work of the famous American writer is included in all recommended Russian book lists for children and youth. The book is regularly published in the translations of K. Chukovsky, N. Daruzes, M. Engelhardt, and others.

### Results and discussion

Despite the popularity of Mark Twain's novel "The Adventures of Tom Sawyer" in Russia, the Tatar translation school took some time to draw its attention to this text.

In part, this was explained by the fact that during the early years of Soviet power development the issue of translation practice was not raised. There was another task for literature. It was necessary to contribute to the development of a true citizen using the example of Russian artistic creativity models. An urgent need for "correct" artistic texts contributed to the development of the literary work.

The situation described above changes after a decade. In 1930-ies the Soviet school of literary translation is developed. The work on the translation of not only world literature but also Russian literature into the national languages of people living on the territory of the Soviet Union is intensified. However, this practice did not always lead to a desired positive result. The situation was similar in the Tatar ASSR. Despite the positive dynamics of the publication translated Tatar book. The quality of these publications was not always high. So in 1936, along with the works of such authors as S. Marshak, J. Vern, the translation of Mark Twain's novel "The Adventures of Tom Sawyer" into the Tatar language was carried out. At the same time, the publication, which we are talking in this article, is currently absent in the libraries of the Republic of Tatarstan and Russia, and the name of the translator is also unknown. The absence of this translation is quite understandable. In 1937, a devastating article appeared in the newspaper "Red Tataria", which blamed the quality of the translation: "Last year the translations of such books as M. Twain's "The Adventures of Tom Sawyer", S. Marshak's "Babes in a Cage", "80 thousand Miles under water" by J. Verne and many other works were unsuccessful. We have not resolved the issue of qualified translators and their training. Now this responsible work is carried out often by irresponsible and untested people".<sup>7</sup> Thus, it can be assumed that the publication of Mark Twain's novel translation did not have enough artistic value to be presented to the general reading public.

Indeed, during the Tatar translation school was developing, the issue of national literature work translation was a very challenging one. At the same time, another problem was not solved. It is the justification of text Russification in

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<sup>6</sup> Mark Twain, *The Adventures of Tom Sawyer*, transl. by S. Voskresenskaya, "The collection of works by Mark Twain," St. Petersburg, Publishing House by Panteleevs' brothers, 1896, p. p. 5-181.

<sup>7</sup> V. Vladimirsy, "Low quality of children's literature," in *Red Tatariya*, 1937, The 23rd of March, p. 3.

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translations for children.(?) All these aspects became the objects of profound professional discussions.

The situation got worse by the fact that there were no educational institutions for the training of professional staff capable of translating sphere. The activity of scholars studying the Tatar language was also behind. In particular, the lexical and stylistic norms of the language were not defined, which should be reflected in special dictionaries. The latest were also absent.<sup>8</sup>

It was also necessary to determine a translator's approach to an original text. So the creative approach contributed to the distortion of a meaning and the impossibility of a translated work content translation in its linguistic and national specifics. Whereas literal translation contributed to literalism, the difficulties arose associated with syntax and meaning.

Mark Twain's novel still had to find its place within the framework of the Tatar translation practice. So, in 2003 the publishing house "Magarif" pleased its readers with the publication of Mark Twain's novel in Tatar language (Twain M. 2003). The translation was made by Saima Ibragimova, a professional translator, the author of translations of such Western European and Russian authors as,<sup>9</sup> etc. The output data of this translated edition states that the translation was made from the original. At the same time, her biography does not contain information on professional knowledge of English. It is known that Saima Ibragimova graduated from the Kazan Pedagogical Institute in 1950 and was qualified as a teacher of Russian language and literature. Subsequently, she was engaged in journalistic and publishing activities. However the translated edition has the introduction, in which S. Ibragimova expresses her gratitude to her daughter for her help in this work. Such a reference suggests that perhaps the translation was carried out by her daughter, while S. Ibragimova took over the work on the text proof-reading and editing.

Let us turn directly to the artistic features of the completed translation.

The frontispiece of the book has a black and white portrait of the writer in profile with thick brows, a traditional mustache and the author's signature under his portrait. This peculiar style is preserved in all illustrations. Despite the fact that all images convey an adventurous spirit of the book, the color background of the book is made in brown tones. All images are made in pencil style. There are not many portrait sketches in the book. We see the sketch of the ship on the cover, half of Tom's body, without face, and the Mississippi River.

These illustrations perform an informative function. Their task is to help a young reader to support his interest in the adventurous spirit of the book on the one hand, and to maintain the interest in the story itself throughout the whole

<sup>8</sup> A. R. Abdulkhakova, *On some problems of translation activity in the Tatar children's literature - Russian literature in editions and translations*, Kazan, Kazan State Institute of Culture, 2015, p. 198-210.

<sup>9</sup> A. Chekhov, *Stories*, transl. by S. Ibragimova (in Tatar language), Kazan, The Tatar Book Publishing House, 1980; A. Gaydar, *Stories and short stories*, transl. by S. Ibragimova (in Tatar language), Kazan, Tatar book publishing house, 1989; A. Zegers A. 1954. *Stories*, transl. by S. Ibragimova (In Tatar language), Kazan, Tatkhnigoizdat, 1989.

narrative, on the other. So, the chapter "The cat and the painkiller" has a spoon full of medicine at the top of the page in the left corner, and there is a drawing of a cat just below on the right (4, 103). She sits with her back, her head slightly turned to the side. The absence of an image in profile contributes to the fact that the reaction of the animal to Tom's prank should be imagined by a reader.

The availability of the target reader, which is far from the cultural and national peculiarities of the American mentality, explains the presence of footnotes in the book. These remarks are intended to clarify unfamiliar cultural and historical realities, the content of which is unfamiliar to a Tatar-speaking reader. However, there are very few such footnotes in the book. Thus, the significance of the ancient measure of length is explained, the information about Daniel Webster's historical person is presented, the explanations of lexemes reflecting the specifics of the national context are provided.

However, there is no need to pile up the text with a lot of additional information. On the one hand, this would make the perception of a text more difficult and a reader would have to be distracted from the plot of the main story each time. On the other hand, it can be seen that the text underwent a significant transformation, which enabled the translator to convey the realities associated with the way of life and traditions of the American people by the compensatory means of the language.

So, in the first chapter Polly's reflections about Tom's unbearable nature are given. The reflections of the heroine are full of words referring to the devil and God:

«He's full of the Old Scratch, but laws-a-me! He's my own dead sister's boy» .

These were not excluded by the translator:

«Иблиснең иблисе бит ул, мин моны яхшы беләм, ләкин нишләмәк кирәк? Мәрһүм апамның улы бит» (4, 9) (He's the devil of the Devils, but what can you do? He is the son of my deceased sister) - (translated by A.V.)

At the same time, the intensifying meaning that was introduced in the original by the predicative expression in the Tatar translation was replaced by the double repetition of the noun 'iblis'. The presence of the objective case in the first case and the affix of belonging in the second repetition of this word in Tatar language leads to the characterization of the hero's uniqueness. At the same time, the mention of the name of God is missing, the exclamation "oh my God" is missing. The impossibility of Devil and God denomination presence within the neighboring sentences refers to the superstitious views of the Tatar people, according to which lexemes with such a confrontational connotative meaning cannot coexist. Saima Ibrahimova's translation replaces the emotional exclamation by the phrase that has a motive of resignation. It is the value that most closely corresponds to the character and the code of conduct in the Tatar mentality, which is reduced to humility and obedience.

## Conclusions

Lexical and stylistic changes in the translation of Mark Twain's novel "The Adventures of Tom Sawyer" into Tatar language allow us to identify "the loss of significative connotation". The transformation of stylistic loss conveys here the objective meaning of the linguistic sign, but not its pragmatic connotations. The equivalence in this case can be established at the denotational level. The main changes that were discovered in Mark Twain's novel "The Adventures of Tom Sawyer" in Tatar language are conditioned by the impact of the cultural and national traditions of the perceiving part. Also the fact that Mark Twain's in Tatar language is addressed to the readers of school age is of particular importance. The main task of children's literature is to realize the tasks of a child upbringing and education using the system of artistic images.<sup>10</sup> The setting of such a task is difficult to realize without the development of the speech skills for children, the culture of their speech, which, in its turn, cannot but affect the language features of a work of art.

### **Summary**

The clarification of the approach specifics realized in the process of artistic translation into of Mark Twain's novel "The Adventures of Tom Sawyer" into Tatar language made it possible to reveal the significance of the cultural difference reflected in the aesthetic vision of the world, in its national and linguistic specifics. The correlation of cultural, social, historical, national and individual order factors in the very "product" of the translation reception facilitated the identification of "communication" strategy with the original chosen by the translator.

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<sup>10</sup> A. H. Vafina, "About the translations of Charles Perrault's tales into Tatar language," in *Philological Sciences. The issues of theory and practice. Tambor: Gramota*, VI (2017), part 2, p. 21-23.

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## **Modern Virtual Learning Environment In Foreign Children Teaching Of Russian Language\***

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**Abstract.** *In this paper, the current state of contemporary virtual space from the position of the presence of opportunities to offer to use when learning Russian as a foreign language by foreign children and children of migrants, whose age ranges are from three to 14 years, as well as the assistive tools in teaching this age group the Russian language are given.*

*The rapidly growing volume of tools and applications brings the problem of the availability of technologies to the fore.<sup>1</sup> That is why virtual educational environment is already an integral element of teaching children and adults of all ages in the modern world. In terms of the ubiquitous information society the education sector is forced to adapt to the rapidly changing demands of the society, and therefore an inclusion of information and communication technologies and other supportive structures, such as the Internet, various educational platforms like Moodle, into the learning process at all stages is mandatory to achieve successful result of preschool, school and other training for children.*

*In this study, carried out in the framework of the project entitled "Competition courses open education in Russian language", implemented under the Federal target program "Russian language 2016-2020", we have studied the Internet in search of online resources that help children of different age groups in the study of Russian as a foreign language. An approximately equal ratio of the resources for the children-native speakers of the Russian language and resources, suggesting studying Russian as a foreign language was identified. Also the analysis of the identified resources and the classification according to various criteria with an aim of their classification was carried out.*

*As a result of this research, we came to the conclusion that in modern virtual space there are resources that can be used as auxiliary facilities for studying Russian as a foreign language by children, speakers of different languages. However, we believe that the role of the teacher (tutor, mentor) remains extremely important.*

**Key words:** Russian language, as foreign, foreign children, children of migrants, the virtual educational space.

### **Introduction**

Evolving over the past decades, the virtual space of the Internet has firmly entrenched in the toolkit of teachers in various fields. Different possibilities and perspectives that this environment offers us are also studied actively at the moment, both in Russia and abroad. So, giving a definition directly to the virtual educational space, Jenny Barker and Peter Gossman describe it as a software system based on web technologies and designed to assist in teaching and learning with the help of certain tools and different types of activities.<sup>2</sup> The Internet and

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\* Acknowledgements. The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> M. Kurek, J. Dulgosz "Designing Tasks for Complex Virtual Learning Environments," in *Bellaterra Journal of Teaching & Learning Language & Literature*, VII (2015), no. 2, p. 13-32.

<sup>2</sup> J. Barker, P. Gossman P. "The Learning Impact of a Virtual Learning Environment: Students' views," in *Teacher Education Advancement Network Journal*, V(2013), no. 2, p. 19-38.

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virtual learning environment introduce diversity and improve opportunities for foreign language learning available to teachers, the creators of courses and learners themselves, which in turn offer a new experience<sup>3</sup>. New technologies should be aimed at enhancing independent learning and cognitive activity of students<sup>4</sup>, that is, must be able to interest them.

Education of migrant children is another important topic of modern education. This is largely due to the fact that such children often study in mixed classes together with Russian children, slowing down the educational process due to their poor command of Russian, which in turn may cause misunderstanding and even ethnic conflicts.<sup>5</sup> The main task of teaching such children Russian as a foreign language is getting to prepare them for further study in Russian schools,<sup>6</sup> where the main language is Russian.

Web technologies used in creating Internet resources, electronic educational resources (EER), and so on, allow you to design an educational platform so that they really begin to be of interest to the children of the XXI century, who begin to use a variety of gadgets from a young age, even before learning to read. The widespread diffusion of modern information and communication technologies among the chosen age group determines the relevance of the study. The importance of studying this area is also motivated by the fact that teaching of Russian as a foreign language is considered to be a relatively young branch, as its methodology, in the form that we know was formed only 60 years ago<sup>7</sup>. And finding all sorts of auxiliary tools that can assist the teacher in the studying process is still very relevant.

The novelty of this work is that for the first time studying of the Internet environment on the presence of resources designed to teach children up to 14 years Russian language was carried out. It also offers a classification which is an attempt to structure the material found in the study.

The purpose of the study is to find out whether modern virtual space is to help the child who is not a native-speaker of the Russian language in the studying of Russian as a foreign language.

## **Materials and methods**

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<sup>3</sup> T. Can, "Promoting Learner Autonomy through Virtual Learning Environments," in *Akdeniz Language Studies Conference*, 2012.

<sup>4</sup> A. N. Bogomolov, "Model of a virtual environment of learning a foreign language," in *Higher education in Russia*, VII (2008), p. 57-61.

<sup>5</sup> A. N. Al-Kaysi, "Topical issues of teaching of migrant children in Moscow schools," in *Collection of articles: "Russian language as a foreign language: New in theory and methodology"*, Moscow, 2015.

<sup>6</sup> E. G. Danelyan, "Teaching children a foreign language of Russian oral speech and on the manual "Learning to speak in Russian," in *Collection of articles: "Russian language as a foreign language: New in theory and methodology"*, Moscow, 2015.

<sup>7</sup> I. V. Adashkevich, N. Kyslik, "In. The verb as the center of the language universe," in *Theory and practice of teaching linguistic disciplines at universities of non-humanitarian profile: materials of the international scientific practical Conf. dedicated to the 175th anniversary of Educational establishment Belarus State Agricultural Academy and the 40th anniversary of the Department of Russian and white Russian languages*, Moscow, BSAA Slides, 2015.

Materials for the study were the Internet resources found in the vast Russian-speaking and English-speaking world space by using the method of continuous sampling.

The research was held by using the search service Google.com keywords and combinations such as "Russian language for children", "Russian as a foreign language for kids", "learn Russian language", "Russian language learning", "Learn Russian Language", "Russian for kids", "Russian Language for children" and others. In the study of the found resources the methods of analysis and synthesis of the output data obtained through queries were used.

For the compilation of the theoretical justification of this research, we studied the currently available works devoted to the field of virtual educational space, as well as articles on related subjects both in Russian and in foreign languages. The experience of the use of interactive learning technologies in the older groups, specializing in Russian as a foreign language in Presovska University in Presov, in Slovakia, was studied with the purpose of confirming effectiveness of data tools.

## Results

In the study period, we detected more than 15 different resources dedicated to the study of the Russian language among foreign children and children of migrants, for whom the Russian language is fully foreign and is not a native language of communication. In general, in the study, we found more than 400 different resources, offering teaching Russian language as a native and as a foreign language to all age groups (Contest).

With the aim of systematizing and deeper exploration of the found material we produced the possible classification that we present below:

1. Availability:
  - a. Paid;
  - b. Free.
2. The resource level:
  - a. Professional;
  - b. Semi- professional;
  - c. Amateur.
3. Language orientation:
  - a. Focused only on Russian language;
  - b. Differently oriented.
4. The type of resource-media:
  - a. Full-fledged web sites;
  - b. Vlogs;
  - c. Exchangers.
5. For the organization:
  - a. Systematized, with a clear structure;
  - b. Without a clear system.
6. Origin:
  - a. Russian;

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b. Foreign.

7. The presence of types of speech activity:

- a. Representing all types of speech activity;
- b. Representing certain types of speech activity

Here, in our opinion, it is necessary to give explanations for each of the principles of division.

First of all, we have distributed resources in two large groups on the basis of availability of material located on it, for users. This classification is closely linked to the next, as a group of paid resources includes the majority of professional resources such as "Dinolingo", "Petralingua" etc. The website "Russian language for our children", created by the State Institute of Russian language named after A. S. Pushkin and "Duolingo", positioning itself as a free resource and offered on a wide variety of platforms, such as Android IO, which can be used in the training of children in the classroom and in the extracurricular setting, and the independent acquisition of Russian as a foreign language was an exception here. The application also offers a resource "Russian Language Learning Club".

The so-called "Amateur" resources should include sites created by enthusiasts. This, for example, the site "Let us not forget the Russian language. The Russian language abroad", which is the collection of manuals and other material that are useful for learning. Those resources that are created by people, whose activity is connected with the Russian language, for example, "Russian language for children," by Polina Sorel are treated as "semi-professional".

The further study reveals the close connection of the first and third principles of classification. Paid resources, (commercially oriented) are those sites that offer training not only Russian language, but other languages as foreign. In addition to online learning, which costs from \$47.99 (Petralingua; you have the option to purchase a subscription of one month) to \$99.95 (Dinolingo) for the year, they offer specially designed teaching materials at a price range from 90\$ to 250\$ for a full set. These teaching materials include a DVD with cartoons, CDs with songs, flashcards, posters, dictionaries, books with stories, books on the culture of Russia, the workbooks, the alphabet, a diary to track progress, coloring books, toys, a guide for parents (sort of Teacher's book in a classic educational teaching kit) in various combinations.

By the type of the carried resource the investigated websites can be divided, as it was already written above, into three main groups:

- a. Full-fledged web sites;
- b. Vlogs;
- c. Exchangers.

The first two positions are of particular interest to us, we have full-fledged websites and vlogs, located mainly on the video hosting YouTube. The third category was included to show that the modern virtual educational space offers not only online but also offline capabilities. Here we specify that the resources representing the third group (sites "URYA! Learn Russian Language!", "A single collection of e-learning materials", "Twirpx") seem to us to be useful in the search for additional textbooks, worksheets, and other materials, if necessary in their use.

However, due to the fact that we are conducting a survey, limiting our target audience to the children in the age group of 14 years old and studying Russian language as a foreign or non-native, it should be noted that these resources cannot be used independently by learners and require the help of a teacher or parent, speaking Russian.

Due to the huge popularity of video hosting YouTube, uploading vlogs there seems appropriate to us. This service is available in most countries of the world except, for example, the Republic of China, is free and easy to use and navigate. Here we can distinguish two separate training vlogs for children: "Shishkin school" and "Russian for all". First video blog is a series of lessons, which are originally created for Russian-speaking children, however, in our opinion, can be used for the education of children who do not speak Russian, and especially children of migrants who are in everyday language environment, and therefore learn the Russian language much faster than children learning a language in isolation in their native country. The second vlog is aimed at the audience of foreign citizens who do not speak Russian, and can be used independently.

It should be noted that the lack of systematic and structural integrity of the hosting YouTube, leads us to the fifth classification, which is based on the organization. A "Russian language for our children." Website can serve as an example of a structured resource. The organization as a separate classification criterion, was selected due to the fact that system of knowledge assimilated by the child, depends on how we are learning. The above mentioned vlog (YouTube) offers only a few themes that are not able to give the child a clear understanding of the language, will not help him to build self-statements, that is not going to develop his communicative competence of the secondary language personality, which in the end, is one of the objectives of foreign language teaching.<sup>8</sup>

The last two classifications do not correlate with the previous one, and exist independently. The division into Russian and foreign resources can be considered very conditional, so as to create a good training course for Russian as a forewing language should involve a native speaker in the process of creation in order to avoid errors when creating content. With regard to the scope of types of speech activity, this division also may not be accurate. Absolutely all of the found resources are focused on reading as a kind of speech activity, as it lies at the basis of perception and learning the material given in textbooks, videos, worksheets, etc. Listening, like reading relating to receptive types of speech activities is presented in most of the identified resources. The paid sites offer the whole learning kit, an integral part of which are audio and video. Productive speech activities, speaking and writing, in our opinion, cannot fully be used by the children in the self-study of Russian as a foreign language using the resources of the virtual educational space. A real, not virtual, teacher is necessary for correction of pronunciation and phonological errors.

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<sup>8</sup> N. Shcheglov N. "Te formation of communicative competence in learning foreign languages," in *Historical and socio-educational thought*, IV (2011), p. 105-107.

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Next, we present a summary table of our selected resources with their analysis on three criteria:

Table1.

Nº	Name	Availability	Organization	The opportunity to use it as an independent tool
1.	Dino Ligo ( <a href="http://dinolingo.com">http://dinolingo.com</a> )	Paid	Yes	Yes
2.	Duolingo ( <a href="https://www.duolingo.com/">https://www.duolingo.com/</a> )	Free	Yes	No
3.	Hello World: World Languages for Children ( <a href="http://www.hello-world.com/">http://www.hello-world.com/</a> )	Free	No	No
4.	Petaligua ( <a href="https://www.petralingua.com">https://www.petralingua.com</a> )	Paid	Yes	Yes
5.	Russian Language learning club ( <a href="http://www.learnrussianlanguage.ru">http://www.learnrussianlanguage.ru</a> )	Free	No	No
6.	Twirpx ( <a href="http://www.twirpx.com">www.twirpx.com</a> )	Conditionally free	No	No
7.	The united collection of e-resources ( <a href="http://school-collection.edu.ru">school-collection.edu.ru</a> )	Free	No	No
8.	Do not forget Russian language. Russian language abroad ( <a href="http://abvgd.russian-russisch.info/met/1.html">http://abvgd.russian-russisch.info/met/1.html</a> )	Free	No	No
9.	Russian as a foreign language for everybody ( <a href="https://www.youtube.com/channel/UCGA-o-hGOWYNXTFKWHAaqaA">https://www.youtube.com/channel/UCGA-o-hGOWYNXTFKWHAaqaA</a> )	Free	No	No
10.	The Russian Language for our kids ( <a href="http://rus4chld.pushkininstitute.ru">http://rus4chld.pushkininstitute.ru</a> )	Free	Yes	No
11.	Russian for kids ( <a href="http://www.russisch-fuer-kinder.de/">http://www.russisch-fuer-kinder.de/</a> )	Free	Yes	Yes
12.	Russian as a foreign language for kids ( <a href="http://assagames.com/nas/rus/">http://assagames.com/nas/rus/</a> )	Free	Yes	No
13.	Russian in 7 lessons ( <a href="https://vk.com/club31338076?z=video103694086_171322262%2Fea98a95e">https://vk.com/club31338076?z=video103694086_171322262%2Fea98a95e</a> )	Free	No	No
14.	The traditions of the Russian village ( <a href="http://universarium.org/course/431">http://universarium.org/course/431</a> )	Free	Yes	No
15.	URYAI!Let's learn Russian!	Free	No	No

16.	Pinecone school ( <a href="https://www.youtube.com/user/ShishkinaShkola">https://www.youtube.com/user/ShishkinaShkola</a> )	Free	Yes	No
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### Insights

From the data tables, and conclusions made in the course of its compilation, we come to the conclusion that virtual education space to date can be recommended to parents who want their children to learn the Russian language as foreign. However, training using only free resources of the Internet cannot be considered adequate, as it is not able to equally develop all kinds of speech activity, and therefore should serve only as an auxiliary tool in teaching the courses of Russian as a foreign language.

### Conclusion

At the same time, paid resources offer a much more elaborate system of education of foreign children, including in addition to traditional content, teaching materials various extra items that can interest the child and stimulate his desire to learn the Russian language.

Special attention should be paid to the lack of resources for migrant children (we have found only one resource on the migrant population as a whole). For this category of students the Russian language is not necessarily foreign but may be socially close, provided that the child resides in the territory of the Russian Federation.<sup>9</sup> This means that there an individual approach should be applied. So, for the teaching of Russian as a foreign language in terms of class, a teaching kit "Russian primer for migrants", which includes electronic maintenance of the complex was established. However, this kit is not in the public domain, and therefore a need to create free resources designed to teach Russian as a foreign language still exists.

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<sup>9</sup> P. I. Tender, "The First primer of the Russian language for migrants," in *Journal "Philology and culture"*, II (2012), p. 72-75.

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Albina F. MUKHAMADIAROVA, Mariya A. KULKOVA, Ekaterina V. FIRSOVA

## **Application of Corpus Technologies in Teaching German Vocabulary\***

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**Abstract.** *The reference to the corpus of texts and corpus technologies as a means of foreign language teaching is one of the actual directions for improving the teaching methodology. The corpus is characterized by representativeness, visibility and provides the teacher of foreign languages with broad search possibilities that allow creating various models of forming the key competencies of the student. The purpose of this study is to theoretically substantiate and empirically confirm the effectiveness of the methodology for the formation of the lexical skills of students in German with the application of corpus technologies. The analysis of existing approaches to tasks construction using corpus technologies allowed the authors of the study to construct their own complex of tasks consisting of three blocks. For each block the tools (concordance, statistical capabilities of the corpus, dictionary) was chosen, with the help of which either the teacher develops the tasks, or the students independently work with a corpus of texts under the guidance of the teacher.*

*To determine the effectiveness of the corpus technologies-assisted methodology for the formation of lexical skills in academic years 2015-2016, an educational experiment was conducted at L. Tolstoy Higher School of Russian and Foreign Philology of the Institute of Philology and Intercultural Communication of Kazan Federal University. Comparative analysis of the formation of lexical skills among the students of control and experimental groups at the ascertaining and control stages of the experiment has proved the effectiveness of the method of forming lexical skills using corpus technologies. The results of the research contribute to the development of web-didactics and DDL (training oriented to these corpora), a set of developed tasks can be an incentive to more intensive use of corpus technologies in foreign language teaching.*

**Keywords:** corpus technologies, lexical skills progression, a foreign language.

### **Introduction**

Currently, one of the most important and sustainable trends in the development of the world educational process is the use of modern information and communication technologies in teaching. The use of information and communication technologies in most Russian universities to date is reduced to turning to the Internet as a source of information for writing scientific works of various types, as a means of communication with a native speaker of a foreign language or as a platform for distance learning. However, the intensive development of corpus linguistics, determined by the possibility of electronic text layout on-line, and the creation of numerous corpora of national language, opens new opportunities for improving the methodology for teaching foreign languages.

The corpus of texts is one of the effective information tools on the basis of which it is possible to form the language competence of students. The corpus analysis of large amounts of language data provides sampling of representative material for teaching a foreign language and development of grammatical and

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lexical skills. The introduction of corpus technologies into the process of teaching led to the emergence of a new trend, known as Data Driven Learning (DDL) – “data-oriented learning”. For the first time the effectiveness of such training was substantiated by T. Jones, who is considered to be the creator of this direction. His thesis about the benefits of providing the students with the opportunity to work with these corpora independently, thereby turning them into researchers<sup>1</sup> was later proved by the example of various variants for the use of corpus technologies in the formation of grammatical and lexical skills<sup>2</sup>. However, despite the wide dissemination of DDL ideas, the use of corpus technologies in the foreign practice of teaching foreign languages remains at a fairly low level, which is in many respects accounted for the traditional nature of the criteria for organizing the corpora, which limits the possibilities of the teacher ability by non-linear methods of working with vocabulary.<sup>3</sup> The use of corpora in teaching of a foreign language in the Russian educational system is also restricted, and their successful application requires the creation of a DDL-friendly environment.<sup>4</sup>

It is the need to resolve the contradiction between the high effectiveness of corpus studies and their inadequate practical realization in teaching of a foreign language dictates the urgency of this study. The results of the study visually demonstrate the potential of corpus technologies in the formation of lexical skills in German teaching at the university and serve not only as an addition to the existing classifications of tasks within the framework of DDL, but also open new prospects for further analysis of the effectiveness of the use of corpus technologies for didactic purposes.

## Methods

In this study, the corpus of texts is understood as “a unified, structured and marked array of linguistic (speech) data in electronic form, intended for certain philological and, in the broad sense, humanitarian re-search”.<sup>5</sup>

The main distinguishing feature of the corpus is representativeness –the balance in relation to genres, functional styles, authors, time periods. The query results containing the required units are usually demonstrated in the form of a concordance, i.e. the list of all uses of the word in a context that helps to analyze large arrays of texts and highlight patterns. This study uses the German language

<sup>1</sup> T. Johns, "Should you be persuaded: two examples of data-driven learning," in *Classroom Concordancing Research Journal*, IV (1991), no. 4, p. 1-16.

<sup>2</sup> Language Learning and Technology. 2001. Special Issue. Using Corpora in Language Teaching and Learning. Vol. 5, No. 3, September . URL: <http://llt.msu.edu/vol5num3/stjohn/default.html>, accessed 03. 03. 2017.

<sup>3</sup> S. Braun, "ELISA – a pedagogically enriched corpus for language learning purposes," in S. Braun, KKohn & J. Mukherjee (eds.). *Corpus Technology and Language Pedagogy: New Resources, New Tools, New Methods*, Frankfurt/Moscow, Peter Lang, 2006, p. 25-47.

<sup>4</sup> O. E. Sadovnikova, 2013, Direct and Indirect Use of Corpora in Foreign Linguistic Didactics // Magister Dixit, P. 152-161. URL: <https://cyberleninka.ru/article/v/pryamoe-i-kosvennoe-ispolzovanie-korpusov-v-zarubezhnoy-lingvodidaktike>, accessed 09. 06. 2017

<sup>5</sup> V. P. Zakharov, "Search Internet Systems as the Instrument of Linguistic Studies," in *The Russian Language On-Line. – Kazan*, 2003, p. 48-59.

corpora such as the Mannheim corpus of the German language (IDS-Mannheim), the Leipzig corpus of modern German (Wortschatz Universität Leipzig), the corpus of the German language of DWDS (Digitales Wörterbuch der deutschen Sprache), the BACKBONE corpus (Corpora for Content and Language Integrated Learning).

The potential of using these corpora in practice of German teaching is quite high. First, corpus is the source of natural language examples. In connection with the fact that there are significant discrepancies between what is offered by the textbooks and how the language is really used by the speakers, the language in the textbooks differs in many respects from the language of literature, newspapers and oral speech. That is why the corpora data are more reliable than the artificial examples devised by the teacher or the author of the textbook. A distinctive feature of corpus techniques is the address of scholars to the actual use of language units.<sup>6</sup>

Second, the use of corpus technologies allows of organizing training through investigation.<sup>7</sup> The student-researcher can get involved in the process of mastering grammar and semantics of a foreign language at any stage, thanks to immediate access to the language material of the corpus, the convenience of the information retrieval system in the corpus and the flexibility in the formation of query criteria. By choosing, systematizing and analyzing language data, the student conducts his own study. The teacher coordinates the work of the student and determines the trajectories of his independent study.

The study of papers on the formation of lexical skills has made it possible to single out the main areas of work. It should be noted that in the teaching of foreign languages, not only individual words are taken up and studied, but also normative combinations of words, including codified and usual word combinations<sup>8</sup>, which inevitably leads to consideration of collocation compatibility.<sup>9</sup> This study views collocation as a typical and constant surrounding of a given word.

A methodical system was created within the frame work of this research. It consists of the components as follows: target, theoretical (conceptual), technological (procedural) and evaluation-productive blocks. After determining the objectives of the study and analyzing the theoretical literature on the topic during the procedural block on the basis of the model of language corpus-assistance learning developed by<sup>10</sup>, we identified three stages in the formation of tasks for the

<sup>6</sup> D. Biber, "Representativeness," in *Corpus Design, Literary and Linguistic Computing*, VIII (1993), no. 4, p. 243-257; O. V. Nagel, "Corpus Linguistics and Its Using in the Computerized Language Learning Text," in *Language and Culture*, V (2008), no. 4, p. P. 53-59.

<sup>7</sup> S. S. Dikareva, O. G. Chernyavskaya, "Corpus Web-Didactics: Princples and Prospects," in *Scientific Papers of Taurida National University Named after V. I. Vernadsky. Series "Philology. Social Communications"*, XXVI (2013), no. 65 (1), p. 350-355.

<sup>8</sup> M. V. Vlavatskaya, "Collocation of Words: The Normand Its Violation," in *Philological Sciences. The Issues of Theory and Practice. Tambor: Gramota*, X (2014), no. 40, part 3, p. 66-70.

<sup>9</sup> J. Sinclair, "The search for units of meaning," in *Textus*, IX (1996), no. 1, p. 75-106.

<sup>10</sup> O. G. Gorina, *The Use of Technologies of Corpus Linguistics for Developing Lexical Skills by Students Specializing in Country Study in Profession-Oriented Communication in English: Author's Thesis for Candidate of*

development of lexical skills with the application of corpus resources: 1) the selection of lexical units, determined by the objectives of training, 2) the choice of applied corpus technologies for working with vocabulary, 3) the assignments, devised by the teacher and / or independent work with the corpus.

**The first complex of tasks**, developed according to this scheme, involves the creation of a lexical / collocation profile of the word, using concordance, statistical capabilities of the corpus and vocabulary, and oriented to the independent work of the students with corpora of texts, for example: "Finden Sie Kollokationen zur Wortverbindung "Es geht" !" Fig. 1.



Fig. 1. Collocation of «Es geht»

**The second complex of tasks** (Fig. 2) includes the tasks for the formation of linguocultural and linguistic knowledge based on concordance and dictionary.

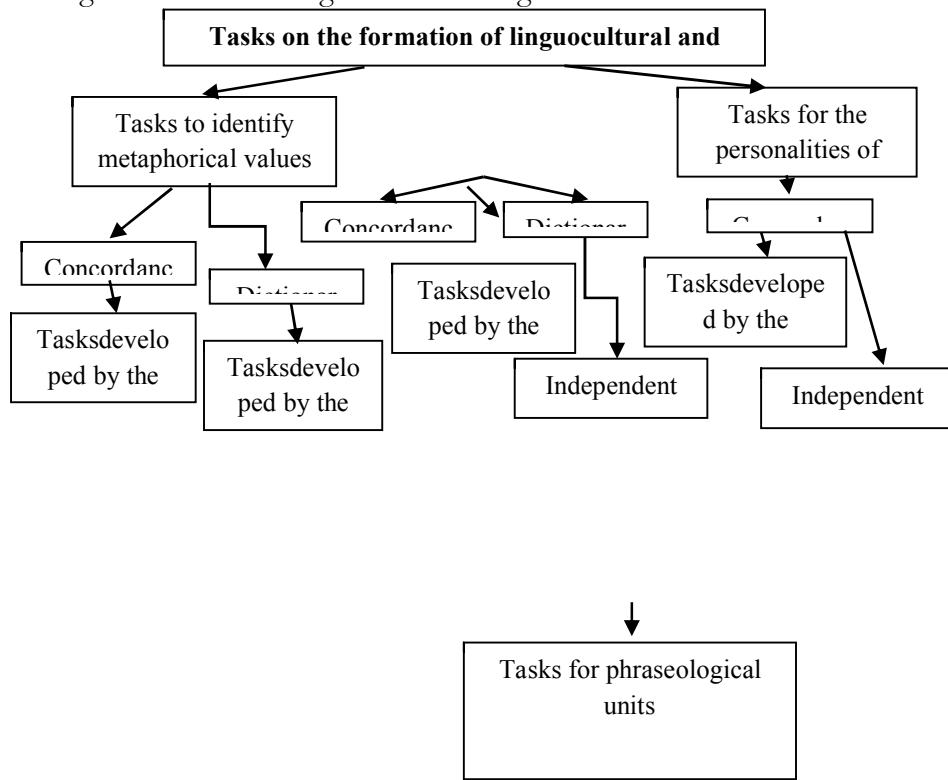


Fig. 2. The formation of linguocultural and linguistic knowledge

An example of this set of tasks is the work with anthroponyms of prominent personalities of Germany. The teacher chooses a well-known figure (it can be a public figure, a politician, an actor, for example, Angela Merkel, Gerhard Schröder, Til Schweiger, Fatih Akim, Heidi Klum, Alice Schwarzer and others) for constructing the tasks applying DWDS corpus. Students analyze the list of proposals from concordance, revealing the vital position of the person being studied, analyze the statements on a particular topic, if necessary, they choose the articles that are key, and make a portrait of this person. Using the query X && Y, one can find information about several personalities, for example, Angela Merkel und Barak Obama, Angela Merkel und Putin.

For example, in the context of the current topic “Angela Merkel und Flüchtlingspolitik”, students analyzed the well-known saying “Wir schaffen das” (“We will cope”), delivered by German Chancellor Angela Merkel on August 31, 2015, during a press meeting at the federal level. Students also fixed the opinion of the opposition in the federal parliament concerning the ongoing actions in the field of migration policy (Fig. 3). The task is based on concordance, an expanded context prepared by the teacher for conversation and discussion “Flüchtlinge in Deutschland”.



Fig. 3.Exampleofconcordanceonrequest«Merkel»

**The third link** in the methods of forming lexical skills are the combined mini-studies based on concordance, dictionary and statistical data of the corpora of texts. Instrumentation of the corpus texts makes learning an open creative process, in the center of which there is a student involved into independent research activity.

## Results

To determine the effectiveness of the methods for forming lexical skills with the application of corpus technologies, an educational experiment was carried out. Experimental training was conducted in academic years 2015 and 2016 within a semester course on “Practice in Foreign Language (German language)” of curriculum with labor intensiveness of 72 hours. The educational experiment was

conducted in groups of students of the 5th year of L. Tolstoy Higher School of Russian and Foreign Philology of the Institute of Philology and Intercultural Communication of Kazan Federal University. Students are trained according to the program

"Pedagogical Education. Foreign Language (English) and a Second Foreign Language". The experimental group consisted of 60 students, 60 students studied in the control group.

The students of the control group were trained according to the traditional method. In the experimental and the control groups, the students used the textbook "Themen Aktuell". In addition to it, they applied the electronic educational resource "Country Studies and Linguistic Culture (Second Foreign Language)", located on the platform "Distance Education of Kazan Federal University" (<http://edu.kpfu.ru/course/view.php?id=1671>). In the experimental group, the formation of lexical skills was carried out using the corpus technologies-assisted sets of tasks. A substantial ground for conducting the educational experiment was the themes on country studies in Germany, including the political landscape and cultural features.

The educational experiment consisted of ascertaining, forming and experimental stages in the control and the experimental groups. Within the framework of ascertaining stage of the educational experiment, we conducted the tests to determine the level of proficiency in the German language, the developed complex tasks require the students to have sound knowledge of the German language at a level not lower than B1.

Let us use the diagram to demonstrate the results of the formation of the lexical skills in the ascertaining and the control stages in the control and experimental groups (Fig.4, Fig. 5).

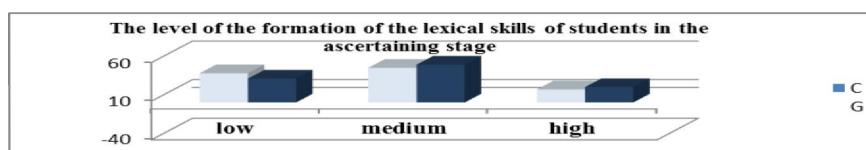


Fig. 4. The result of the formation of the lexical skills of students in the ascertaining stage  
(CG – control group, EG – experimental group)

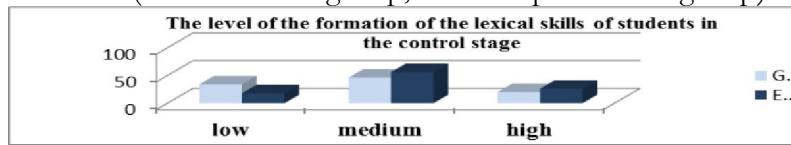


Fig. 5. The result of the formation of the lexical skills of students in the control stage

## Discussion

The statistical processing of the samples of the control and experimental groups was carried out using the Cramer-Welch criterion at the level of significance of 0,05.

The following hypotheses were proposed:

Hypothesis  $H_0$ : the difference in the results of the assignments done by students does not depend on the method of learning.

Hypothesis  $H_1$ : the difference in the results of the fulfillment of assignments by students is due not to accidental factors, but to the purposeful formation and development of the lexical skills with the help of corpus technologies.

The critical table value of the Cramer-Welch criterion is 1,96. The empirical value of the criterion after the first section before the experiment  $T_{emp}=0,26$ , that is lower than critical. Hence, then full hypothesis is accepted. After these consection, the criterion value is  $T_{emp}=3,51$ , that is higher than critical. Thus, the alternative hypothesis is accepted that differences in the level of formation of the lexical skills by the students are not due to accidental factors. Hence, it follows that the experiment confirms the effectiveness of the application of corpus technologies in the formation of lexical skills.

Comparative analysis of the level of formation of the lexical skills by the students in ascertaining stage and control stage of the experiment shows that the percentage of the students with low level of formation of the lexical skills has decreased from 38% to 34%, the average level has increased by 7%, the high level - by 6%.

### **Conclusion**

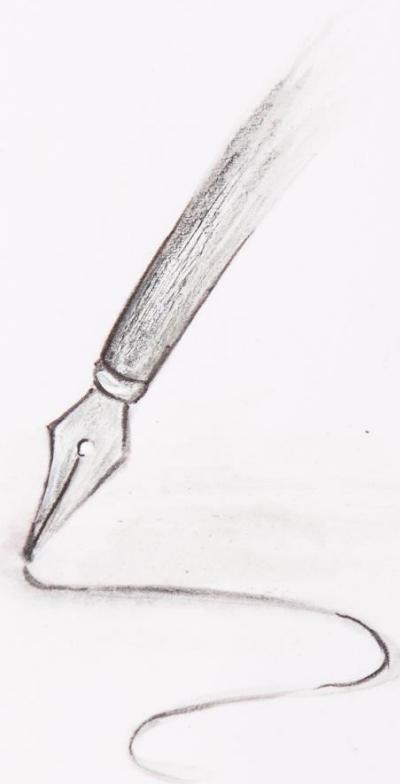
The model of the methodology for forming the lexical skills by students, developed in this study, to the full extent demonstrates the didactic potential of corpus technologies in the German language learning. The proposed methodological system for the formation of the lexical skills of students in German learning on the basis of corpus technologies consists of the target (goals, objectives), theoretical (conceptual, approaches and principles of teaching), technological (procedural, organizational forms, methods, teaching tools, training stages) and evaluation-result blocks (result of training). For each block, a tool set was chosen with the help of which the teacher himself develops tasks, or the students independently work with the corpora of texts under the guidance of the teacher.

A complex of tasks, having been introduced in the course of the educational experiment, that includes the construction of a lexical / collocation profile of a word, the tasks for the formation of linguocultural and linguistic knowledge based on the lexical skills and mini-research of vocabulary, facilitating the development of the student's independent learning, corpus technologies for didactic purposes. The results of the research once again prove the need to expand the range of innovative methods and techniques used in the daily practice of teachers and instructors of foreign languages and based on corpus resources.

The conducted research does not exhaust all potential of application of corpus technologies in training to a foreign language. The further development of corpus linguistics guarantees the creation of new possibilities not only for studying

"Application of Corpus Technologies in Teaching German Vocabulary," *Astra Sahensis*, V (2017), Supplement no. 1, p. 327-334  
linguistic phenomena within the framework of scientific research, but also for the practical purposes of teaching of foreign languages.

*Art and History*





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## **Economic Problems Of Dairy Production And Processing In Kazakhstan And Their Solutions**

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**Abstract.** *The paper discusses forms of organizational management structures in production and processing of dairy products (small scale commodity production, specialized agribusinesses with medium and large-scale production, processing enterprises with various forms of ownership) and their production effectiveness. Methods of various forms of public support for agricultural producers and processors of dairy products based on intensive technology have been presented. Introduction of progressive management forms of dairy production and processing enables the increased production of milk and milk products, improved competitiveness on domestic and foreign markets, efficiency and product quality, use of international standardization and certification system, import reduction.*

**Keywords.** Agricultural producers, production, dairy products, processing, government regulation, intensive technologies, import, export, production cost, profitability.

### **Introduction**

Dairy farming is one of the most complicated sectors in terms of technological and economical aspects and improvement of its effectiveness is a top priority. Paces of dairy farming development are accelerating due to addressing basic issues such as breeding, feeding and milk and meat production technology. In recent years, in general dairy farming industry in the Republic of Kazakhstan has overcome the period of restoration of dairy cattle population. The process of stabilization of breeding work in all forms of farms, including households, is strengthening and therefore in Kazakhstan a stable foundation for further enrichment of dairy cattle breeding resources will be established. The implementation of breakthrough investment projects is aimed to increase competitiveness of dairy production. Establishment of large dairy farms envisages a comprehensive solution of this issue, and this is not only the delivery of highly productive cattle, purchase of up-to-date technological equipment, but also construction of livestock facilities which comply with modern requirements for livestock facilities.

Rational use of available breeding resources, in particular the improvement of qualitative composition of breeding animals in order to make animal population of elite-record and elite class in the structure of herds at least 70-75% in breeding plants and 65-70% - in breeding farms-is the important reserve of targeted increase of animals' breeding and productive qualities. For further improvement of productive qualities of domestic animals, a phased approach in breeding works is needed, taking into account the characteristics of breeds and conditions of their distribution by natural zones.

### **Methodology**

Development of common priorities in dairy farming development, introduction of intensive technologies, purchase of breeding stock, improvement of public financial support management forms will facilitate reduction of production costs, milk and milk products sales and processing costs and increase their sales volumes on domestic and foreign markets.

## Results

Agri-industrial complex of Kazakhstan is one of the most important sectors of economy, which formulates food and economic security. Nine program documents have been developed on which basis the AIC policy has been implemented. Agri-industrial complex development program "Agribusiness-2020" for 2013-2020, State program of agri-industrial complex development of the Republic of Kazakhstan for 2017-2021<sup>1</sup>

Average annual food production volumes growth rates do not meet consumption and population income growth rates, which was replenished due to imports. In 2015 in the country foreign trade turnover volume of processed agricultural products and raw materials of food industry amounted to 3.2 bln. USD, while exports volume decreased by 6.5%. On average for 2011-2015, in dairy products the largest share of imports was cheese and cottage cheese (51%), butter - (36.4%). In 2015 dairy products in the structure of gross agricultural production amounted to - 18%, livestock production- 40.6%, share of breeding herd - 10.6%. On average for the period 2011-2015 the largest share of imported dairy products was cheese and cottage cheese (51%), butter - (36.4%). In Kazakhstan per capita consumption of milk was 238 kg (58%) while scientifically justified milk consumption rate is 405 kg.

In 2011-2015 the average milk production in Kazakhstan amounted to 5039 thous. tons, import - 742 thous. tons, exports - 38 thous. tons, domestic consumption - 5743 thous. tons, or security - 87.7%. Average milk yield per dairy cow in 2015 was 2321 kg in all farm categories, including agribusinesses - 4381 kg, peasant (private) farms - 1849 kg, households - 2334 kg. In 2015 in the structure of milk production the proportion was as follows: agribusinesses - 5.1%, peasant farms - 15.1%, households - 79.8%. The proportion of cow population was: in agribusinesses - 9.1%, peasant farms - 31.7%, households - 59.2%. Average annual milk yield per cow: Holstein breed - 6511 kg, potential - 8500 kg; black - motley breed - 4464 kg, potential - 6000 kg; Simmental - 5500 kg, potential - 4123 kg; Auletinskay breed - 4500 kg, potential - 3308 kg; Red steppe breed - 4500 kg, potential - 3388 kg; Alatau breed - 4500 kg, potential - 4068 kg; Milk yield per one cow was in all categories of farms - 2321 kg, including agribusinesses - 4381 kg, peasant farms - 1849 kg, households - 2364 kg. The share of breeding cow population was 10.1%.

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<sup>1</sup> The program on agri-industrial complex development in the Republic of Kazakhstan "Agribusiness-2020" for 2013-2020. Approved by Resolution of the Government of the Republic of Kazakhstan on "18" February 2013 # 151.

Change in cattle population in Kazakhstan (in 2015 increased by 4.6% compared to 2014.) is the prevailing factor which has the greatest influence on gross milk production, compared to cow productivity (in 2015 increased by 1.8% compared to 2014.), i.e. the main direction in milk production in Kazakhstan is its extensive form of development, due to increased number of cows.<sup>2</sup>

The high level of concentration of dairy cattle population by regions is observed in southern region, where 38% is concentrated, or 2332 thous. heads of cattle. Further, in terms of the share of cattle population are Northern regions - (24% or 1 517 thous. heads.) West region (16% or 1019 thous. heads.), Eastern (14%, or 839 thous. heads) and Central region, where 8% of cattle population is concentrated.

In terms of forms of entities, the highest productivity rates were observed in agribusinesses, where the average in the Republic is 4381 kg, and high levels of milk production are observed in Southern regions - 5340 kg, and Northern - 4365 kg.

Among dairy breeds the animals of black-motley breed and Holstein-Friesian breed are prevailing, whose number is respectively 67275 heads or 50.9% and 34747 heads or 26.3%. The effective public support is provided for improved efficiency of dairy production: subsidies for sales products, preferential lending, preferential taxation and investing.

Subsidizing of dairy farming in Kazakhstan is provided in the following areas, in 2015 48 mln. USD were allocated, of which for breeding work - 7 mln. USD (14.5%), for purchase of breeding young animals - 4 mln. USD (8.3%), for feed - 9.5 mln. USD (19.8%), for artificial insemination - 4.9 mln. USD (102%), milk production - 22.6 mln. USD. (47.2%).<sup>3</sup>

In dairy farming intensive technologies are introduced in the following areas: first level - the presence of own female cows and heifers stock (over 2 years) no less than 400 heads, an average milk cowherd - no less than 350 heads, an average milk yield - not less than 4500 kg; the second level - the presence of own female cows and heifers herd (over 2 years) no less than 400 heads, an average herd of milk cows - no less than 300 heads, an average milk yield - no less than 3250 kg; third level - availability of own breeding stock of cows and heifers (over 2 years) not less than 100 heads, an average herd of milk cows - no less than 60 heads, an average milk yield - not less than 2500 kg.<sup>4</sup>

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<sup>2</sup> H.Amerkhanov, "Dairy production: status, tendencies and prospects of development," in *Dairy and beef cattle farming*, III (2003), p. 9; \*\*\*, *Statistical Yearbook. Agriculture, forestry and fisheries*, Astana, Agency of RK on Statistics, 2010-2015; \*\*\*, *Analysis of global trends of public support for agriculture. Eurasian Economic Commission, Department of agri-industrial policy*, Moscow, 2015.

<sup>3</sup> \*\*\*, *Standards of production costs of subsidiaries' activities*, Almaty, Kazakh Research Institute Kazakh Research Institute of AIC Economy and Rural Development, 2012; \*\*\*, *Feeding of livestock and poultry and fodder technology in modern conditions*, Almaty, Bastau, 2008; E. A. Petukhova, N. T. Emelina, V. S. Krylova, *The workshop on feeding farm animals*, Moscoq, Agropromizdat, 2015.

<sup>4</sup> \*\*\*, *New achievements in the field of livestock production. Information Collection*. Almaty, Kazakh Research Institute of Livestock and Fodder production, 2011; \*\*\*, *Recommendations on subsidizing dairy production*

50 thous. tons of milk have been subsidized, including first level - 50%, second level - 30%, third level - 20%. The proportion of introduced intensive technologies in general milk production volume was 9.6%. In the structure of subsidies allocated in milk production, taking into account levels of intensive technologies: the share of the first level was - 68.3%, the second level - 19.6%, the third level - 12.1%.

In milk production and sales agricultural producers are paid 11.3 USD for 1 c of first level milk, second level - 6.7 USD, third level - 4.5 USD. In order to increase competitiveness of milk processing enterprises the subsidies are allocated for production and sales of butter and hard cheese, and powdered milk, so in 2015 the processing enterprises were subsidized for the amount of 1.9 mln. USD for production of cheese, butter - 22 mln. USD and powdered milk - 1.1 mln. USD. The subsidy rate per 1 kg of butter amounted to - 1.6 USD, hard cheese - 1.1 USD and powdered milk - 0.5 USD, which resulted in the increased profitability level, taking into account subsidies, for butter - from 6.7% to 22.4%, cheese - from 26.2% to 59%, milk powder - from 26% to 47.1%. In 2015 profitability level of agricultural enterprises per 1 c of milk was 30.6%, cost of 1 c of milk 31.6 USD, sales price - 41.3 USD. In structure of milk cost: wages with charges amounted to 20.3%, fodder - 44.3%, other expenses - 29.3%, sales costs - 6.1%.<sup>5</sup>

A comprehensive action plan of agricultural products processing and food industry development for 2013-2020 for enterprise production capacity loading, implementation of inter-sector coordination is operating.

Problems of worn-out equipment, level of mechanization, as well as shortage of working capital need to be solved through modernization and reconstruction of the existing dairy enterprises and providing them with working capital.<sup>6</sup> For these purposes investment subsidies are allocated for equipment and technique purchase in the amount of 30% of total cost.

One of the reasons of high proportion of dairy products imports - are high costs of processing enterprises for procurement of raw materials from agricultural producers. The level of public support for processing industry in Kazakhstan are 4.5 times lower than in Belarus (18%), and half than in Russia (6%). So, Belarusian and Russian producers of raw materials and processing enterprises have technological and technical equipment due to high public support volume.

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(*dry milk, cheese, butter*), Almaty, Kazakh Research Institute of AIC Economics and Rural Development, 2014.

<sup>5</sup> \*\*\*, "Resolution of the Government of the RK "On approval of the Rules of subsidizing livestock production development and increased productivity of livestock production from local budgets, approved on February 18, 2014 № 103," in *Statistical Bulletin. Financial and economic activities of large and medium-sized enterprises in the Republic of Kazakhstan*, 2015.

<sup>6</sup> \*\*\*, *Subsidized agricultural production of Kazakhstan (guide book)* Ministry of Agriculture of the Republic of Kazakhstan, Almaty, Kazakh Research Institute of AIC Economy and Rural Development, 2014; M. Aher, R. Dubman, G. Hanson, "Financial performance of specialized dairy farms" in *Agriculture inform bull. USDA. Agr. Research service*, 1991, p. 1-5; Brier G. Ahlbom-Brier, "Crossbreeding an opportunity to farm income," in *Dairy farming Annual, New Zealand*, IXL(1989)p. 23-43.

### **Conclusion**

For further successful development of livestock sectors, increased production of meat, milk and other products, ensuring their competitiveness on international market, it is needed to transfer dairy cattle farming sector to intensive basis of development and rational use of scientific achievements, advanced technologies, appropriate machines and mechanisms in production process, which will allow not only to reduce production costs, but also significantly improve their quality, which is impossible in small scale production.

Scientific researches in the field of selection and breeding of dairy cattle, feeding and maintenance, production technologies already today allow to increase livestock productivity, growth and development of young animals by 12-18% in medium and large farms and reduce fodder costs per product unit in the range of 8-14%.<sup>7</sup>

One of the main problems of current situation is undeveloped system of procurement and promotion of agricultural products from agricultural producers to sales markets, including enterprises on raw materials processing. Strengthening the role of intermediaries in sales almost displaced the procurement system, and completely eliminated the interaction between producers and processors of raw materials. Low purchasing prices for agricultural products do not stimulate the increase of production volume, which result in insignificant loading of processing enterprises capacities, reduction of their operation efficiency, and increased imports of food products. Produce of small and medium-sized domestic businesses are incompatible compared to foreign suppliers in terms of quality and prices.

Price disparity is considered as the main reason for financial problems of agri-industrial production. There are no effective price regulation measures on logistical resource market. Farm machinery, fertilizers, veterinary preparations are imported from foreign countries, and prices are close to the world prices, while domestic prices for agricultural products in the country are 1.5 - 2 times lower than in the world.

Small scale character of production doesn't allow to maintain agricultural production using intensive technology, providing the most complete utilization of material and labor resources. Labor productivity and use of innovative technology remain low, which first of all, reduces competitiveness of livestock produce and leads to the dominance of imported products and displaces local producers from sales market. The fact that most of livestock population is concentrated in households, leads to low productivity, lack of modern technology of livestock management and feeding.

Therefore, increased competitiveness of livestock products in the country should be based on the following activities:

\* rational and efficient use of breeding achievement in dairy farming;

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<sup>7</sup> G. Alderman, "Dynamics and diversity of animal production enterprises", in *On the eve of the 3-rd millennium, the European challenge for animal production. Proceed of symposium of EAAP*, Paris, 1991, p. 91-104; J. A. Grantham J. M. White, W. E., Vinson, "Genetic relationship between milk production and type in Holsteins," in *J. Dairy Sc.*, LVII (1974), no. 12, p. 1483-1488.

\* creation of a strong feed basis and organization of comprehensive feeding of dairy cattle;

\* creation of large specialized farms based on industrial milk production technology;

\* rational use of natural rangelands based on pasture rotation;

\* introduction of effective resource-saving technologies of milk production, which provide physiological needs for ensuring high productivity of dairy cattle.

Animal nutrition is one of the determining factors of increasing animal productivity. Standardized and comprehensive feeding of dairy cattle is the most important condition for long-term rational use of economically useful animal traits, maintaining their reproductive capacity, resistance to diseases and high milk productivity, conditioned by genetic potential.<sup>8</sup>

The use of standard diets will help farms of all forms of ownership to organize feeding of dairy cows on scientific basis, correctly determine the need of livestock in coarse, juicy and concentrated feed, minerals, vitamins, nitrogen-containing additives, as well as accurately calculate the size and structure of dairy cattle feed basis.

Establishment of the most efficient rotation and structure of herds which is directly influencing on the rate of expanded reproduction on farms and herd turnover, volume of produced and sold products, product on cost, profits and farm profitability level is very important for improvement of organization and planning of agricultural production.

In this regard, intensive use of female breeding stock, increased periods of cow productivity are very important in dairy farming. Therefore, herd structure with different level of milk yields and successful raising of heifers are very important for dairy farming economy.

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<sup>8</sup> V. Hogue, J. Hodres, "Genetic and phenotypic parameters of lifetime production traits in Holstein cow", p. 1900-1904; National Research Council, *Nutrient Requirements of Beef Cattle*, 6<sup>th</sup> edition, Washington, ed. Nat'l. Acad. Sci., 1984; Tilden Wayne Perry, Michael Cecava (eds.), *Beef cattle feeding and nutrition*, 2nd edition, Lafayette, Indiana, Department of Animal Sciences Purdue University West, 1984.

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## **Mechanisms Of Production Competitiveness Increase\***

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**Abstract.** *The quality of products is one of the most important means of competition, gaining and retaining of market positions.*

*Quality management is the main part of the production process, it is aimed not so much at the revealing of defects or rejection as on the check of product quality in the process its manufacture.*

*The quality problem, uneasy at all times, is especially acute now, in the conditions of the Eurasian Economic Union (EAEC). In such conditions it is necessary to compete with various representatives of enterprises using internationally recognized standards.*

*In this regard, enterprises should gradually introduce international quality standards, which means the transition to modern technologies, including environmentally friendly ones. This will also help enterprises that produce and process products to carry out their independent foreign economic activities, improve production efficiency and material well-being of production teams, to reduce the entry period to the international market and to create prerequisites for the introduction of labor organization modern methods.*

*The basis for this should be the principles of voluntariness and economic interest of a small agricultural producer and a large industrialist.*

*The quality of a product, its operational safety, reliability and design, the level of after-sales service are the main criteria for a modern buyer when you make a purchase and, therefore, they determine the success or failure of a company at the market.*

*A skillful implementation of standardization, metrology, certification and quality management principles and mechanisms contribute to the acceleration of economy effective reforming.*

**Keywords:** Quality management system, risk analysis, critical control points, international standards, products, competitiveness, production, security, reliability.

### **Introduction**

Modern quality management systems in all sectors, including the agrarian ones, should be developed and improved with the focus on the requirements of international standards ISO 9000, ISO 14000, OHSAS 18001.<sup>1</sup>

In this regard, there is an objective need to analyze and evaluate the international standards used in the field of quality management and to develop the recommendations on their basis for their adaptation and use at food industry enterprises and in the field of biotechnology. In order to address these issues, virtually all industrialized countries entered a new phase characterized by the development of integrated quality management systems (IQMS) based on quality management systems (QMS), environmental management systems (EMS) and on occupational safety and health management systems (OSHMS).

The quality problem becomes especially important in the conditions of the Eurasian Economic Union (EAEC), when it is necessary to compete with various

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\* Acknowledgments: The work was produced with the assistance FSBEI HE the Ural State Agrarian University, Ekaterinburg.

<sup>1</sup> E. N. Artemova, *Management of an innovative enterprise with the help of a quality management system: Educational-methodical complex*. [Electronic resource] - Electronic data. - Kaliningrad: BFU named after I. Kant, 2011. - 132 p. - Access mode: <http://e.lanbook.com/book/13132>, accessed 12. 03. 2017.

representatives of enterprises using the standards recognized by the world community. The solution of product quality problem will minimize the risks and difficulties associated with the entry and existence of Russian Federation in the WTO.<sup>2</sup>

Within the conditions of agribusiness development, the Customs Union and the World Trade Organization, it is necessary to follow the Technical Regulations, due to which the compliance with the norms of international veterinary and phytosanitary legislation is implemented.<sup>3</sup>

The history of Hazard Analysis and Critical Control Point (HACCP) concept appearance, which means the risk analysis in a critical control point begins in the 1960s when the company Pillsbury Co., the United States Army and NASA (National Aeronautics and Space Administration) began to develop jointly the production of safe food for a space program.

NASA company, in its turn, wanted to create the program of zero defects. HACCP was proposed as the result of their joint work, based on the analysis of failures, the regime and the influences that was used by engineers in construction calculations.

Pillsbury company adapted HACCP as the system that could provide the greatest safety during dependence reduction concerning the analysis of a finished product and presented HACCP concept at a conference on food protection in 1971. HACCP system was described for many biotechnological industries in such countries as the Czech Republic, France, Germany, Great Britain, Hungary, Japan, Malaysia, Spain, Switzerland and the USA. During its more than thirty-year history of existence, HACCP system become widespread in the countries of Europe, the USA and became a world-wide recognized method for food safety provision.

Also, the quality management system became widespread in the field of new functional composite (biocomposite) material creation and application.

### **Principles of hazard analysis and critical control point (HACCP) concept**

HACCP system obeys the same principles as any quality management system. For example, in such countries as the USA, Japan, Slovenia, the introduction of HACCP system is mandatory for food and biotechnological industries. Many food stores refuse to sale products without HACCP certificate.<sup>4</sup>

It is known that almost 30 years ago the principles of HACCP were formulated in the United States for the first time, and for 20 years HACCP systems in this country were introduced everywhere.

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<sup>2</sup> L. I. Vasiltsova B. A. Voronin, I. M. Donnik, "The problems of risks for the Russian agrarian sector under the WTO conditions," in *Agrarian Bulletin of the Urals*, III (2013), no. 109.

<sup>3</sup> B. A. Voronin I. M. Donnik, O. G. Loretz, "The provision of livestock products quality and safety in the framework of the Customs Union," in *Agrarian Bulletin of the Urals*, IV (2014), no. 122.

<sup>4</sup> V. S. Kukhar, *The economic efficiency of integrated quality management system introduction at small and medium-sized enterprises in the grain production of Northern Kazakhstan (using the materials of Kostanay region): the abstract from the thesis from the author striving for the degree of Economic Sciences Candidate (08.00.05)*, SPBSAU, St. Petersburg, 2012.

An important milestone in the development of HACCP systems was the adoption of the Directive 93/43/EEC "On Food Hygiene" in 1993, which obliged the member countries to develop national regulatory documents for HACCP. Thus, own regulatory documents appeared in most of the economically developed countries of the world, according to which food enterprises can create HACCP systems and confirm their compliance with the requirements of these documents.

The first breakthrough is connected with V.E. Deming. His theory of quality management is considered by many as the main factor that influenced the quality increase among Japanese products in 1950s. Dr. Deming developed the system of total quality control, which emphasized the systemic approach to production and, accordingly, improved the quality at the reduction of costs. The second serious breakthrough is related with the development of HACCP concept.

HACCP method necessary to ensure food safety was developed in 1960s by joint efforts of Pillsbury company, the laboratory of the United States army and the administration of aeronautics and outer space. In the course of the research the American space program has to develop such a control system for the production of food products, which would ensure their safety for health and the absence of toxins by 100%, i.e. the so-called quality assurance system with zero defects, to guarantee food safety for astronauts in space conditions. For this Pillsbury company introduced and applied the term HACCP for the first time, a system that could provide the greatest security and reduce the dependence on testing and a final product testing at the same time.<sup>5</sup>

### **Safety and production quality control system**

Traditional systems of safety and food quality control are based on the analysis of a final product, and this approach has significant drawbacks:

- It is required to control 100% of the production for complete confidence in food safety;
- In order to obtain representative results, large quantities of product samples are necessary for analysis;
- The evaluation procedures concerning the current safety of food are quite long and expensive;
- Food safety is guaranteed only for the tested types of danger.

HACCP system uses the critical point control approach at all stages of food production during its application in the field of food safety management to prevent the problems with their safety. Along with food safety improvement, other benefits of HACCP use are an effective use of resources and the timely response to food safety problems. Besides, the application of HACCP system can lead to a more

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<sup>5</sup> Sh. Sh. Magomedov *Product quality management. [Electronic resource]* / Sh.Sh. Magomedov, G.E. Bespalova. - Electronic data. - Moscow: Dashkov and Co, 2012. - 336 p. - Access mode: <http://e.lanbook.com/book/3602>, accessed 02. 03. 2017.

focused risk management by food control authorities and to stimulate international trade by increasing consumers' confidence in food safety.<sup>6</sup>

Despite the variety of HACCP user needs (producers of raw materials, food products and distributors), the current system contains the same three components as the original one:

- Identification and evaluation of all hazards associated with a final product (from cultivation, harvesting, processing to sale);
- Determination of steps and stages within the process of food products, during which these hazards can be controlled, reduced or eliminated (critical control points);
- Implementation of the control procedure at these points.

In 1971 Pillsbury company with the permission of NASA introduced HACCP system at the first American National Conference on the Protection of Foodstuffs. This event was the introduction of this concept in the food industry. In 1991, HACCP principles were included in Alimentarius Codex.

In 1993, the European Union Directive on Food Hygiene was adopted, according to which all food enterprises should implement the approaches similar to HACCP. The Directive states:

- "...food producers must identify every step in their activity that is critical to food safety and ensure that they are determined, implemented and applied on the basis of the principles used in the development of HACCP system..."
- "...member states must introduce the laws, regulations and administrative rules necessary to comply with the directive..."

In 1987, the American Society for Quality Control (ASQC) conducted a study to identify the factors that allow companies to produce products or provide services of consistently high quality.

The leaders of 250 large companies and 300 small firms were interviewed in writing, including the heads of 226 industrial companies and 324 service enterprises. Their assessment according to a ten-point scale related to eight areas of company activity to improve quality. On the basis of the research they revealed that the greatest value is related to the human factor, regardless of the size of a company or an economy sector.

This study is also supported by the survey of 20 high-quality companies, including IBM, General Electric, Ford Motor Company, Craisler Corporeiton, General Motors, Xerox Corporation and Procter & Gamble, which confirmed that they provide the utmost importance to human resource management. IBM company prefers "the maintaining of respect for an individual" as the highest value for the company among three core business principles. And this is not surprising,

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<sup>6</sup> A. G. Zekunov, *Ensuring the functioning of the quality management system: Textbook. [Electronic resource]* / A.G. Zekunova, V.N. Ivanov. - Electronic data. - Moscow: ASMS, 2012. - 176 p. - Mode of access: <http://e.lanbook.com/book/69268>, accessed 12. 03. 2017.

because outstanding entrepreneurs and experts in the field of quality argued that quality begins with a person.<sup>7</sup>

Therefore, it is not by chance that according to the results of the world business valuation in 2001, conducted by the analysts of Price Waterhouse Coopers company and the Financial Times, the winners are the companies that publicly profess the primacy of the human factor for the second time.

Henry Ford formulated his views as follows: "All strategic characteristics of the company work - quality improvement, the consumer's interest satisfaction, cost reduction, market share increase, innovation introduction - have one common dominant: they all depend on the abilities, qualifications and the sense of employee responsibility. People are our most important resource".

The Academician of the International Academy of quality (the United States) J. Juran also stands for the priority of an individual in matters of quality in his report "Back to the Future. Lessons from a Life": "The leading role of the company top management is to achieve quality and, as the consequence, the competitiveness, the training and re-training of staff at all levels; joint work on the problems in multi-functional teams; clear distribution of responsibilities and the provision of managers with appropriate authorities; the performers within the goals".<sup>8</sup>

The same tendency is confirmed by the publications of the last 10 years in the magazines specializing in quality issues, which add that the transition from mass production, which was formed in the late XIX - early XX centuries, to a new type of production takes place. It is called lean production (gentle or prudent production), where the role of an individual increases significantly.

The traditional task of a large number of similar products manufacturing is replaced by such a product production that needs to be given to a consumer within the required amount and when it is necessary. The new stage in history returns to a specialist-craftsmen, becoming an all-around professional, who is ready to produce individual-oriented products in new information and technological space. The following slogan becomes fashionable: "One person - one product". The creation of small teams with a high degree of interchangeability, enshrined in mentoring is cultivated.<sup>9</sup>

The winner of the European Quality Award from BT Payphones company, which is the member of the global telecommunications holding British Telecom, considers that the improvement is the improvement of quality through the creation of small teams, consisting of different company department representatives. This

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<sup>7</sup> V. S. Kuhar, "The Quality Management System at the Enterprises of Kazakhstan Republic Agribusiness Within a United Customs Union," in *International Business Management*, IX (2015), no. 4, p. 620-624.

<sup>8</sup> B. I. Kogan, *Integrated product quality management system: Textbook. [Electronic resource]* / B.I. Kogan, I.V. Miroshin, D.A. Malyshkin. - Electronic data. - Kemerovo: KuzSTU named after T.F. Gorbachev, 2012. - 112 p. - Access mode: <http://e.lanbook.com/book/6660>, accessed 12. 03. 2017.

<sup>9</sup> I. M. Donnik, S. B. Ismuratov V. S. Kukhar, "Quality management system - the provision of reliability and economic stability of enterprises within the conditions of regional economic integration," in *Agrarian Bulletin of the Urals*, X (2016), no. 152, p. 86-89.

makes it possible to attract people to work closely in order to deal with various problems.

Only in 1997 - 1998 about 220 of such teams were created, which united the workers of all levels. The head of each main or auxiliary production process is one of the Board of Directors members or its Chairman. A key principle of such events - the fixing of manufacturing processes for certain leaders.<sup>10</sup>

Such approaches are demonstrated by the firm Vaillant, where the implementation of zero defect idea contributes to the consolidation of responsibility for each worker and to the enhancement of his emotional relationship to the product which he manufactures. It required additional efforts from Vaillant in the training of employees and to refuse from Ford concepts of production conveying organization, which allowed to improve production year by year.

The principle of "one person - one product" has become the company radical response to the worker's need of putting his heart and soul into the production of boilers. In contrast to the conveyor production organization, where each worker performs a simple operation which is repeated many times, the new principle provides that a worker accompanies a product throughout the production cycle, working on it at every stage of manufacturing.

Naturally, the introduction of this method of work organization required the training of workers concerning all operations of product manufacturing, and the extra time and money are spent on this. At the end of the process chain the worker who manufactured the boiler, signs it. It encourages the worker to ensure the excellent quality and be proud of his work, because product are sent all over Europe then with the indication of his name.<sup>11</sup>

## Conclusions

Based on the stated above it can be concluded that one of the priority objectives for economy reforming is the creation of production quality assurance mechanism - the organization and implementation of a quality systems in accordance with international ISO 9000 standards and its certification.

In modern conditions and the introduction and certification of a quality system is the guarantee of reliability and economic stability of an enterprise, the method of product competitiveness increase, the gaining of confidence among consumers in the context of regional economic integration.

## Summary

Thus, the adherence to QMS (Quality Management System) based on ISO 9001 and HACCP is a sure way to improve the activity of enterprises, as this

<sup>10</sup> E. N. Mikheeva, *Quality control. [Electronic resource]* / E.N. Mikheeva, M.V. Seroshtan. - Electronic data. - Moscow: Dashkov and Co, 2012. - 532 p. - Access mode: <http://e.lanbook.com/eng/book/3603>, accessed 12. 3. 2017.

<sup>11</sup> V. S. Kukhar, "Organization of an integrated quality management system implementation at agribusiness enterprises in northern Kazakhstan," in *Scientific search in the modern world, the collection of materials from the 6th International Scientific and Practical Conference*, 2014, p. 82-88.

V.S. KUHAR, I. M. DONNIK, E. M. KOT, T. V. ZYRYANOVA, V. V.  
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system contributes to the organization performance and profit increase. So, the number of organizations with the compliance certificate to these standards increases in the world rapidly.

"Mechanisms Of Production Competitiveness Increase," *Astra Salvensis*, V (2017),  
Supplement no. 1, p. 343-349

Z. M. KHASHEVA, L. P. SHULGATY, V. I. GOLIK, Z.K. CHELDIEVA

## **Economic Regulation Of The Development Rates Of A Mining Enterprise**

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**Abstract.** *The article is devoted to the issues of flexible development of production processes at mining enterprises in the conditions of market economy formation. The mechanism for managing the economic activity of a mining enterprise is formulated on the basis of regulating the extraction of ores taking into account the ability to respond flexibly to internal and external factors. It is substantiated that the optimization of the output volumes of the mining enterprise within the framework of the mechanism of flexible adaptation to the market conditions is ensured by the use of innovative technologies for stockpiling with the provision of profit.*

**Keywords:** Flexible development, mining enterprise, market, economy, management mechanism, ore mining, optimization, stocks, profit.

### **Introduction**

Mining enterprises can function steadily and efficiently in a market economy, but providing such opportunities poses problems of coordination and regulation, resource allocation, search for alternatives, increasing the speed of response to internal and external changes in the natural environment, and organizational and economic processes in the economic system, which become particularly relevant.

In the economy, the direction of regulating the rates of flexible development of production processes develops.<sup>1</sup>

The aim of this type of research is to develop a mechanism for managing the economic activities of a mining enterprise based on the regulation of ore extraction rates, taking into account the ability to flexibly react to internal and external factors.

The phenomenon of production flexibility in relation to changes in the conditions for the sale of products is characterized by the volume of production and the price of the products.

The optimum variant of the volumes of ore extraction and production of metals in conditions of flexible functioning of a mining enterprise is determined by the methods of linear approximation and margin analysis.

Adaptation of mining production to internal and external factors of the enterprise's operation environment ensures an increase in the efficiency of the use of natural resources.

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<sup>1</sup> Z. K. Cheldieva, T. G. Khetagurova, "Flexible development of mining in the market conditions," in *Resource-reproducing, low-waste and nature protection technologies for subsoil development. International Conference*, Moscow, UDN, 2003, p. 403-405; T. G. Shelkunova, *Economic justification for the development of off-balance ores. Collection of Scientific works of post-graduate students, competitors and teachers of the Faculty of Economics "Modern problems of market economy reforming"*, Vladikavkaz, 2005, p. 56-62; V. I. Golik, Kh. Kh. Kozhiev, S. G. Stradanchenko, Z. M. Khasheva, L. P. Shulgaty, "Array management using ore processing tailings," in *International Journal of Engineering and Applied Sciences*, XI(2016), no. 6, p. 1223-1228; E. B. Ermishina, "Ways of diversification in the economic system of North Ossetia-Alania," in *Bulletin of the Adygea State University, Economic*, I (2011), p. 95-100.

Optimization of the output volumes of the mining enterprise within the framework of the mechanism of flexible adaptation to market conditions is ensured by the use of innovative technologies for the development of reserves, the main of which are those that ensure profit with minimal costs on prevention of dangerous manifestations of natural forces.<sup>2</sup>

The novelty of this kind of research is to substantiate a systematic approach to the study of the flexible functioning of a mining enterprise in market conditions, to develop a mechanism for managing the production and economic activities of an enterprise using methods of flexible process management based on the relationships between the mining enterprise and internal and external factors.

Management of flexible development of a mining enterprise is provided by modeling the parameters of internal and external environments in market conditions using linear approximation and margin analysis methods which allow the optimal variant to determine for volumes of extraction and production of concentrates. For example, in order to obtain the same amount of concentrate at the same cost in the Sadonsky deposit, the metal content in the ore may be 1.3 times lower in the case of block caving and 1.1 times lower in the case of sub-level caving than with the use of basic technology. At the same metal content in the ore, the cost of the concentrate at the sub-level caving is 55%, and at level caving is 16% lower than under the basic technology. The cutoff grade of metals in the ore varies depending on the cost of mining and ore dressing.

### **Results and their discussion**

In conditions of transition toward a market economy, resource-recovering, low-waste and environmental technologies for ore mining and processing do not provide the necessary technical and economic indicators of enterprise operation, since they cannot overcome the influence of the spontaneously developing market.<sup>3</sup>

The flexible development of a mining enterprise potential is the ability to extract a certain quantity of ore with such a quality and content of metals in a

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<sup>2</sup> V. I. Golik, Y. I. Razorenov, O. N. Polukhin, "Metal extraction from ore beneficiation codas by means of lixiviation in a disintegrator," in *International Journal of Applied Engineering Research*, V (2015).mp. 17, p. 38105-38109; V. I. Lyashenko V. I. Golik, "Means of geomechanical monitoring of rock massif with underground mining of ore deposits," in *Mountain magazine*, V (2004), p. 47-50; V. I. Golik V. I. Komashchenko, N. M. Kachurin, "The concept of combining technologies for the development of ore deposits," in *News of Tula State University. Earth sciences*, IV (2015), p. 76-88; V. I. Lyashenko, V. I. Golik, E. N., Kozyrev, "Combined technologies of mining with underground leaching," in *Mountain magazine*, XII (2008), p. 37-40.

<sup>3</sup> V. I. Golik, A. E. Vorobyov, E. N. Kozyrev, "Problems of the impact of the mining complex of the Republic of North Ossetia-Alania on the environment," in *Mountain magazine*, II (2001), p. 40-42; V. I. Golik, Yu. I. Razorenov, S. G. Stradanchenko, Z. M. Khasheva, "Principles and cost-effectiveness of combining ore mining technologies," in *Proceedings of the Tomsk Polytechnic University. Engineering of georesources*, V (2015), no. 7, p. 6-14; V. I. Golik, Z. M. Khasheva, L. P. Shulgaty, "Economical efficiency of utilization of allied mining enterprises waste," in *Journal of the Social Sciences*, V (2015). no. 10 (6), p. 750-754; V. I. Komashchenko, P. V. Vassilyev, S. A. Maslennikov, "A reliable raw material base for the technology of underground mining of KMA deposits," in *News of Tula State University. Earth Sciences*, II (2016), p. 101-114.

concentrate that will ensure its stable position in the market environment.

The management of the flexible development of production processes is based on rational allocation of resources, adaptation of production to the external environment, coordination and regulation of processes, conduct of organizational changes, etc.<sup>4</sup>

The objectivity of evaluating the flexibility of an enterprise is enhanced by the use of alternative management solutions that are brought to a comparable view by the main factors of the mining production functioning.

The factor on quality of development options is characterized by the productivity of the facility and the costs of its operation. So, if to operate with a deposit at a metal content of 3.56% and a production volume of 100 thousand tons / year, there will be enough reserves for 10 years, and with a mine capacity of up to 140 thousand tons per year, it will last only 7.1 years.

Variable indicators that determine the cost of production of a mining enterprise are given in Table 1.

Table 1. Economic indicators of ore extraction

Metals in ore, %	Dilution, %	Losses, %	Extract, %	Metals in concentrate, %	Metal output, kg / t	Cost of ore, rubles / t	The cost of concentrate, rubles / kg
3.65	30	20	85.7	56.2	32	367	11.4
3.55	26	18	84.5	55.8	32.5	358	11.0
3.34	25	15	83.8	54	33	337	10.2
3.09	22	10	78.7	48.5	35.2	312	8.8
2.88	20	10	74	46	33.3	290	8.7

Note: data as of 2002

The results of 5 options should be simulated, providing for an increase in production volumes with a decrease in the metal content. In versions 1 and 2, the existing position is adopted; option 3 suggests an increase in the volume of ore extraction while reducing the metal content; and options 4 and 5 consider the maximum volume of extraction according to the possibilities of the concentrating mill.

The results of the evaluation of the Sadon mine are summarized in Table 2.

Table 2. Evaluation activities of the Sadon lead-zinc plant

Indicators	Calculation formulas	Options				
		1	2	3	4	5

<sup>4</sup> V. I. Golik, Yu. I. Razorenov, V. N. Ignatov, Z. M. Khasheva, "The history of Russian Caucasus ore deposit development," in *Journal of the Social Sciences*, XI (2016), no. 15, p. 3742-3746; V. I. Golik, O. Z. Gabaraev, S. A. Maslennikov, Z. M. Khasheva, L. P. Shulgaty, "The provision of development conversion perspectives into underground one for Russian iron ore deposits development," in *The Social Sciences*, V (2016), no. 11 (18), p. 4348-4351; T. G. Shelkunova, "Evaluation of innovation development of a mining enterprise on the basis of the production function and its sectoral application," in *Proceedings of the universities. North Caucasus region. Tekhnauka*, VIII (2006), p. 188-190.

Extraction, thousand tons / year	$Q_r$	100	120	140	160	180
Increase in production, kt	$Q$	-	20	20	20	20
Metal content, %	$\frac{Q_{\varepsilon 1} \alpha_{cp1} + \sum_{i=2}^n q_i \alpha_{cpi}}{Q_{\varepsilon i} + \sum_{i=2}^n q_i}$	3.65	3.05	2.0	1.4	1.22
Concentrate yield, t	$\gamma_i = 0.01 \sum_{i=1}^n \frac{\alpha_{cp}(1 - \Pi)(1 - R)}{\beta}$	2733	3256	3845	4503	5044
Value of concentrates, rubles / t	$U_{\partial} = \sum_{i=1}^n [0.01 \alpha (1 - P) \varepsilon_o \varepsilon_m U_{mi}]$	352	350	354	363	360
Sales volume, thousand rubles	$P = \sum_{i=1}^n \int_{t_1}^{t_2} \gamma_i(t) \cdot U_i(\gamma_i(t)T, T) dt$	35286	42039	49640	58099	64969

The proposed methodology for determining the minimum cutoff grade is based on the ratio of market prices for metals and costs on their production. Minimum content of conditional zinc:

$$\alpha_{\min} = \frac{100C}{U K_k \varepsilon K_u} - \frac{100 K_n C}{U \varepsilon K_u} - \frac{\alpha_n R}{K_k},$$

Where C - extraction and processing costs, rubles / t; U - the price for metal in concentrate, rubles / t;  $\varepsilon$  - extraction of metal;  $K_n$  - coefficient of losses during extraction; R is the dilution factor;  $K_u$  - coefficient of extraction;  $K_k$  - coefficient of quality;  $\alpha_n$  - the content of conditional zinc in the enclosing rocks.

The minimum industrial content of metals  $\alpha_{\min}$  is determined by the costs of extraction and processing of 1 ton of ore ( $C_{\Delta} + C_{\text{o}}$ ) (Fig. 1).



Fig.1. Metals content change diagram

Минимальное содержание металла в руде	Minimum content of metal in the ore
Себестоимость добычи, т	Cost of production, t

When  $C_A + C_O = 675$  rubles / t

$$\alpha_{\min} = \frac{100 \cdot 675}{20000 \cdot 0.9 \cdot 0.883 \cdot 0.92} - \frac{100 \cdot 0.08 \cdot 675}{20000 \cdot 0.883 \cdot 0.92} - \frac{0.5 \cdot 0.1}{0.9} = 4,326\%$$

When  $C_A + C_O = 467$  rubles/t  $\alpha_{\min} = 2.91\%$ ; when  $C_A + C_O = 368$  rubles / t,  $\alpha_{\min} = 2.3\%$

The calculation algorithm is shown in Fig. 2

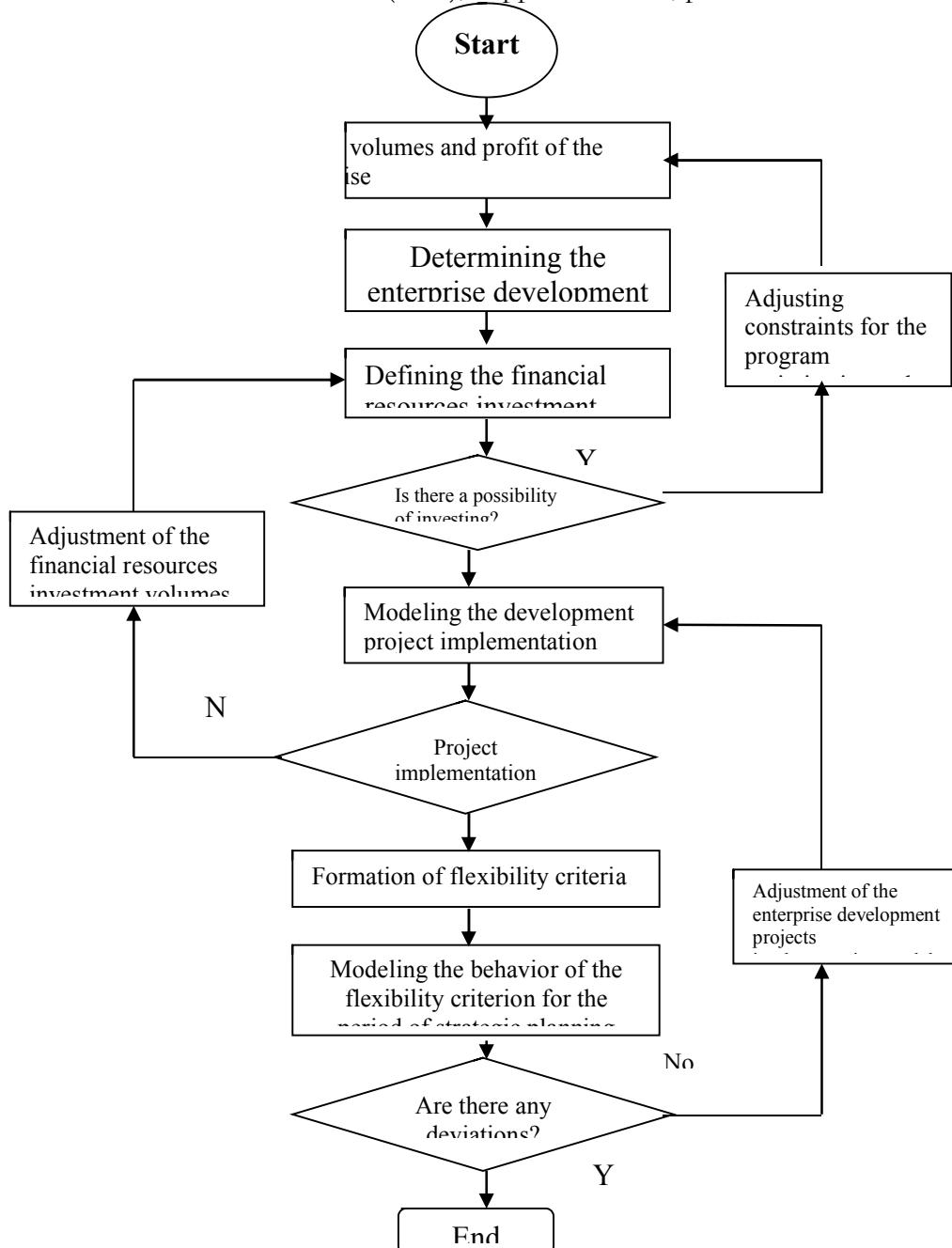


Fig.2. Algorithm for production development calculation

At a constant cost of production and enrichment, the efficiency depends on the quality of the ores. The prime cost of extraction and enrichment is 334 rubles / t, whereas with the extraction coefficient  $K_n = 0.84$  and the quality factor  $K_k = 0.8$ , the minimum metal content ensuring break-even operation:

$$\alpha_{\min} = \frac{384 \cdot 100}{20000 \cdot 0,8 \cdot 0,883 \cdot 0,84} - \frac{384 \cdot 100 \cdot 0,16}{20000 \cdot 0,883 \cdot 0,84} - \frac{0,5 \cdot 0,2}{0,8} = 2,697 \%$$

when  $K_{\text{II}} = 0.88$  and  $K_{\text{K}} = 0.84$ ,  $\alpha_{\min} = 2,689\%$

when  $K_{\text{II}} = 0.92$  and  $K_{\text{K}} = 0.90$ ,  $\alpha_{\min} = 2,382\%$

when  $K_{\text{II}} = 0.96$  and  $K_{\text{K}} = 0.94$ ,  $\alpha_{\min} = 2.286\%$

Coefficients that are taken into account when calculating the integral index of the production functioning flexibility are determined by calculation using the prioritization method and expert estimates:

$$I_{\text{mrf}} = \cdot 1 - (0.86 \cdot 0.1848 + 0.48 \cdot 0.1298 + 0.5 \cdot 0.3099 + 0.886 \cdot 0.2387 + 0.674 \cdot 0.1368) = 0.32$$

To reduce the uncertainty of situations, the method of marginal analysis was used. The margin profit function is used for operative optimization of the production program. The amount of marginal revenue for the volume of 180 thousand tons of ore is:

$$\Delta_m = \Pi + SFC = TR - SVC = 64,969 - 40,303 = 24,666 \text{ thousand rubles.}$$

The best results are provided for the Sadonsky lead and zinc production complex with the production of 180 thousand tons of ore mass, what reduces losses by 8,700 thousand rubles and reduces the risk by 5.4% (Table. 3).

Table 3. Modeling of economic performance indicators

Indicator	Volumes of production, thousand tons, Q					
	100	120	140	160	180	200
Concentrate yield, t	2,733	3,257	3,846	4,503	5,044	5,220
Price of concentrate, thousand rubles / t	12.91	12.91	12.91	12.91	12.91	12.91
Value of ore, rubles / t	352.9	350.3	354.6	363.1	360.9	337.5
Variable costs for concentrate, thousand rubles / t	9,667	8,806	8,611	8,274	7.99	8.457
Variable production costs, rubles / t	264.2	239	236.5	232.8	223.9	220.7
Constant costs, thousand rubles	23,400	23,400	26,000	26,000	26,000	26,000
Income of concentrate, thousand rubles / t	3,243	4,104	4,299	4,636	4.92	4,443
Marginal income for ore, rubles / t	88.66	111.3	118.0	130.2	137.0	116.8
Amount of marginal income, thousand rubles.	8,866	13,358	16,515	20,481	24,667	23,358
Break-even volume of sales, t	7,215	5,702	6,048	5,608	5,284	5,852
Break-even volume of production, thousand tons	263.9	210.2	220.4	199.6	189.7	223
Volume of production, %,	270	175	157	127	105.4	111

thousand rubles	93,145	73,613	78,079	72,399	68,212	7,555
Profit (loss), thousand rubles.	- 14,534	- 10,041	- 9,480	- 5,159	- 1,334	- 2,642
Margin revenue for concentrates, rubles / t	3,244	4,101	4,294	4,545	4,890	4,475
Marginal revenue for ore, rubles / t	88.66	111.3	117.9	130.2	154.1	116.7

In the conditions of the Sadonsky lead and zinc production complex, the increase in production volumes ensures an increase in the output of concentrates, and the break-even volume decreases to 72,000 tons, which is 190,000 tons. Break-even level of fixed costs at a given level of marginal revenue and volumes of production:

$$SFC_{kp} = Q (\Pi - AVC_p) = 180 (360.94 - 223.9) = 24667 \text{ thousand rubles.}$$

In order to compensate for the costs of 26,000 thousand rubles, the enterprise must produce 190 thousand tons of ore and sell 5284 tons of concentrate within a year. Break-even price level is:

$$\Pi_{kp} = \frac{SFC}{Q} + AVC = \frac{26000}{180 + 223,9} = 368,3 \text{ rubles / t;}$$

When manufacturing products for 65,000 ( $180 \times 360.9$ ) thousand rubles and upon the amount of fixed costs of 26,000 thousand rubles, the minimum recoverable value of ores to cover fixed costs must be at least 368 rubles per ton.

The economically justified magnitude of the increase in output is ensured by applying methods of flexible management of production potential with increasing the depth of use of subsurface resources by regulating and adapting the system to internal and external influences.

The results of the study are of interest in the search for ways to develop mining enterprises when overcoming depression.<sup>5</sup>

### Conclusion

Technical and economic indicators of mining production can be improved by increasing the output of marketable products using innovative technologies for mining reserves based on functional changes in marginal factor costs and revenue growth.

The effectiveness of managing the activities of a mining enterprise is enhanced by regulating the extraction of ores with changes in the conditions of

<sup>5</sup> V. I. Golik, V. G. Lukyanov, Z. M. Khasheval, "Substantiation of the possibility and feasibility of using tailings for ore dressing for making hardening mixtures," in *Proceedings of Tomsk Polytechnic University. Engineering georesources*, V (2015), no. 5, p. 6-14; V. I. Golik, Yu. I. Razorenov, S. G. Stradanchenko, Z. M. Khasheva, "Principles and cost-effectiveness of combining ore mining technologies," in *Proceedings of the Tomsk Polytechnic University. Engineering georesources*, V (2015), no. 7, p. 6-14; V. I. Golik, S. G. Stradanchenko S. A. Maslennikov, "Experimental study of waste-free recycling of tailings ferruginous quartzite," in *Advanced Materials*, V (2015), p. 64-68; Z. M. Khasheva L. P. Shulgaty, V. I. Golik, Yu. I. Razorenov, K. G. Karginov, "About the equivalence of ore deposit development indicators," in *International Business Management*, V (2016), no. 20, p. 4868-4872.

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deposit development. The optimum variant of volumes of extraction and production of concentrates is determined with the use of linear approximation and marginal analysis methods.

"Economic Regulation Of The Development Rates Of A Mining Enterprise,"  
*Astra Salvensis*, V (2017), Supplement no.1, p. 351-359

Z. M. KHASHEVA, V. I. GOLIK, L. P. SHULGATY, E.V. ERMISHINA

## **Economic Justification Of Technological Diversification For The Metal Mining And Production Complex**

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**Abstract.** *The article is devoted to the issue of diversification of mining works based on the development of innovative technologies with the aim of increasing the extraction of metals through the involvement of reserves which deemed substandard. It is shown that the tools for diversification of industrial production, including the restructuring of production and diffusion of technologies, operate under the condition that the necessary flexibility of an enterprise is ensured. It is concluded that diversification of the production complex on the basis of innovative technologies is a real opportunity for mining enterprises to overcoming the depression.*

**Keywords:** Diversification, mining works, innovation, technology, ore, metals, reserves, flexibility of functioning.

### **Introduction**

In market conditions, the level of social and economic development of the country's regions is largely determined by the potential and nature of the use of resources. With exhaustion of internal sources of growth in the efficiency of mining production inherent in the economy of the countries with the developed mining industry, the production diversification processes evolve.<sup>1</sup>

Most deposits with traditional development technologies become unprofitable over time, but the progress of mining technologies allows performing forecasts for them on their putting into operation over again if production diversification is based on innovative technologies, the goal of which is to increase the extraction of metals through the activation of previously considered substandard reserves.

The instruments of industrial production diversification, including the restructuring of production and the diffusion of technologies, operate under the condition that the necessary flexibility of the enterprise is ensured.

Aspects of the diversification processes implementation in regional economic systems of post-reform Russia have been developed insufficiently. This deficit is especially characteristic for mining industries of the national regions.<sup>2</sup>

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<sup>1</sup> V. I. Lyashenko, "Environmental protection technologies for the development of complex structures of mineral deposits," in *FSUE "GIPROTSVETMET". The surveyor's messenger*, I (2015), p. 10-15; V. I. Golik V. I. Komashchenko, N. M. Kachurin, "The concept of combining technologies for the development of ore deposits," in *News of Tula State University. Earth sciences*, IV (2015), p. 76-88; V. I. Golik, Yu. I. Razorenov, V. N. Ignatov, Z. M. Khasheva, "The history of Russian Caucasus ore deposit development," in *Journal of the Social Sciences*, XI (2016), no. 15, p. 3742-3746.; A. V. Logachev, V. I. Golik, "To the theory of leaching of gold from substandard primary and secondary raw materials," in *Enrichment of ores*, II (2009), p. 18-20; V. I. Golik, O. S. Bryukhovetskiy, O. Z. Gabaraev, *Technologies for development of uranium ore deposits*, Moscow, RGGU, 2007.

<sup>2</sup> V. I. Golik, K. H. Pagiev, O. Z. Gabaraev, V. I. Golik, V.I. Komashchenko, P. G. Stradanchenko P. A. Maslennikov, "Increase in the completeness of subsoil use through deep utilization of coal beneficiation waste," in *Mountain magazine*, IX (2012), p. 91-95; V. I. Komashchenko P. V., Vassilyev P. A. Maslennikov, "A reliable raw material base for the technology of underground mining of KMA deposits," in *News of Tula State University. Earth Sciences*, II (2016), p. 101-114. Z. M. Khasheva,

"Economic Justification Of Technological Diversification For The Metal Mining And Production Complex," *Astra Salvensis*, V (2017), Supplement no.1, p. 361-367

The rationale for diversifying a region-forming complex as a priority for the development of a regional economic system of a depressive type becomes the goal of research.

Regional economic systems of modern Russia is characterized by financial and investment dependence on the federal center, the polarization of resource support for the territories, as well as the low efficiency of economic processes, which creates a negative synergetic effect and causes depression within regional economic systems.

The precondition for diversification of a production complex is the modernization of production management systems, focused on the use of resource-saving technologies, allowing the use of previously missing sources of raw materials.

The main tool for diversifying the production complex is the use of innovative technologies for the extraction and processing of mineral raw materials from substandard stocks. The flexibility of the reaction of a production complex to changes in the external and internal environments can be provided on the basis of a methodology for managing the level of use of subsurface resources, which ensures the maximum possible yield of a useful product while saving resources.

The novelty of the approach is elaboration of a mechanism for economic development using methods of flexible management of production processes based on diversification of the production complex.

### **Results and their discussion**

In the mining industry, the diversification process evolves upon exhaustion of domestic sources of growth in production efficiency inherent in the economies of the producing countries. The concept of production diversification is transformed into a new category represented by a complex of multifunctional mechanisms, which should be oriented towards a more complete use of resources.

In the strategy of social and economic development, the main tasks of development of mountain regions are the modernization of the agro-industrial complex and the recreational complex. Instead of science-intensive and job-providing mining complex, the direction is chosen that minimizes employment. The mining regions do not have neither a sufficient number of fertile land, nor primarily agricultural traditions, nor agricultural technologies adapted to local conditions.

Analysis of the work of mining enterprises in the conditions of the establishment of market relations showed that the majority of production-related problems are solved incorrectly in relation to resources, including, selective

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V. I. Golik, "The ways of recovery in economy of the depressed mining enterprises of the Russian Caucasus," in *International Business Management*, IX (2015), no. 6, p. 1210-1216; V. I. Golik, V. G. Lukyanov, Z. M. Khasheva, "Substantiation of the possibility and feasibility of using tailings for ore dressing for making hardening mixtures," in *Proceedings of Tomsk Polytechnic University. Engineering georesources*, V (2015), no 5, p. 6-14; V. I. Golik, Z. M. Khasheva, L. P. Shulgaty, "Economic mechanism for conversion of the mining industry in the depressed regions of the South of Russia," in *Scientific bulletin of the Southern Institute of Management*, III (2016), no. 15, p. 27-32.

development of deposits has intensified, what impoverishes metal reserves.

The shortage of understanding of a regional economic system causes underestimation of the role of mining technologies in the use of natural resources. The tools for industrial production diversification in the regional system include the restructuring of production and the diffusion of technologies and work provided that the flexibility of the enterprise's functioning or its capabilities without a radical change in fixed productive assets is used.

The Republic of North Ossetia-Alania is a subject of the Russian Federation.<sup>3</sup> Before the reform, its industry specialized in the production of polymetals, hard alloys, refractory and heat-resistant structural materials. The region has the largest deposits of polymetallic, mercury, antimony, and molybdenum ores, including up to 10 million tons of technogenic deposits of metal-containing tailings (Table 1).

Table 1technogenic deposits on the surface

Deposit	Metals	Content,%	Stocks, tons
Unal tailing pile, stocks of 2 600 000 tons, area of 60 hectares	lead	0.21	5460
	zinc	0.32	8320
	copper	0.10	2600
	iron	6.2	161200
	titanium	0.18	4680
	manganese	0.16	4160
	silver	4.2 g / t	10.92
The Phyagdon tailing pile, stocks of 2 400 000 tons, area of 56 hectares	lead	0.19	4560
	zinc	0.35	8400
	copper	0.12	2880
	iron	6.8	163200
	titanium	0.16	3840
	manganese	0.14	3360
	silver	4.0 g / t	9.6
The metal production tailing pile "Elektrotsink", stocks of 3 140 000 tons, area of 30 hectares	lead	0.6	18840
	zinc	0.9	26400
	copper	1.1	34540
	iron	20.6	646840
	titanium	1.2	37680
	manganese	0.19	5966
	silver	3.5	10.99

In the mining regions of the mountainous type, a negative effect is formed due to the interaction of various risks and threats, as well as the lack of mechanisms for anti-crisis regulation as part of the regional component of

<sup>3</sup> V. I. Golik, A. E. Vorobyov, E. N. Kozyrev, "Problems of the environmental impact from the mining complex of the Republic of North Ossetia-Alania", in *Mountain magazine*, II (2001), p. 40-42; V. I. Golik, Z. M. Khasheva, L. P. Shulgaty, "Economical efficiency of utilization of allied mining enterprises waste," in *Journal of the Social Sciences*, V (2015), no. 6, p. 750-754; V. I. Golik, Y. I. Razorenov, O. N. Polukhin, "Metal extraction from ore beneficiation codas by means of lixiviation in a disintegrator," in *International Journal of Applied Engineering Research*, V(2015), no. 17, p. 38105-38109.

"Economic Justification Of Technological Diversification For The Metal Mining And Production Complex," *Astra Salvensis*, V (2017), Supplement no.1, p. 361-367 industrial policy. This effect is accompanied by depression within the regional economic system.

To describe the elastic zone along the marginal product range, a model for the efficiency of involving metal-bearing waste into operation with an increase in production capacity was proposed.<sup>4</sup> An additional yield of the concentrate is achieved either by increasing the metal content in the ore at a constant volume of production, or by incrementing production volumes with the involvement of off-balance reserves in production.

Management of the full use of subsoil provides the maximum output of metal for these conditions at the lowest cost. The basis for the deterministic analysis method to deal with models is the principle of eliminating factors that affect performance indicators.

There is correlation dependence between the quality, volume and cost of extracted and processed technogenic resources, determined by technological patterns and economic laws.

The effectiveness of management measures in the diversification of mining enterprises is ensured by reduction of current costs to the future period with the use of the savings ratio and taking into account the weight of the analyzed indicators by the aggregate characteristics of the standardized coefficients matrix.

Priorities and actions that determine the investment attractiveness of innovative technologies are selected by the SWOT analysis method taking into account the risk of investment projects.<sup>5</sup>

The directions and results of studies of the conditions for diversifying the production complex are systematized within the framework of Table 2.

Table 2: directions of diversification of the mining complex

Direction of research	Result
Use of technogenic raw materials	
Extraction of balance reserves	Establishing a correlation between dilution, ore losses and ore production volume

<sup>4</sup> V. I. Golik, Yu. I. Razorenov, P. G. Stradanchenko, Z.M. Khasheva, "Principles and cost-effectiveness of combining ore mining technologies," in *Bulletin of Tomsk Polytechnic University. Engineering georesources*, CCCXXVI (2015), no. 7, p. 6-14; V. I. Golik, O. Z. Gabaraev, S. A. Maslennikov, Z. M. Khasheva, L. P. Shulgaty, "The provision of development conversion perspectives into underground one for Russian iron ore deposits development," in *Journal of the Social Sciences*, XI (2016), no. 18, p. 4348-4351; Z. M. Khasheva, L. P. Shulgaty, V. I. Golik, Yu. I. Razorenov, V. N. Ignatov, "Combination prospects for ore deposit development stage," in *International Business Management*, X (2016), no. 20, p. 4726-4730; Z. M. Khasheva, L. P. Shulgaty, V. I. Golik, Yu. I. Razorenov, K. G. Karginov, "About the equivalence of ore deposit development indicators," in *International Business Management*, V (2016), no. 20, p. 4868-4872.

<sup>5</sup> V. I. Golik, A. D. Yakimenko, T. S. Tsidaev, "Sadon deposits: history and development problems," in *Mountain magazine*, X (2004), p. 025-028; V. I. Golik, Kh. Kh. Kozhiev, S. G. Stradanchenko, Z. M. Khasheva, L. P. Shulgaty, "Array management using ore processing tailings," in *International Journal of Engineering and Applied Sciences*, XI (2016), no. 6, p. 1223-1228; V. I. Golik, Yu. I. Razorenov, V. G. Lukyanov, "To the problems of conversion of technologies for the development of metal deposits," in *Proceedings of Tomsk Polytechnic University. Engineering georesources*, CCCXXXVII (2016), no. 12, p. 54-61.

Extraction of balance reserves	Development of an economic-mathematical model for optimizing investment in a project
Productive capacity	Determination of the elasticity coefficient value by metal for diverse grades
Use of flexible development reserves	
Business Management	Evaluation of the effectiveness of management activities by reduction of current costs to the future period
Optimizing the interaction between technological, social and economic aspects	Accounting for the weight of the indicators by the aggregate characteristics of the standardized coefficient matrix
Optimization of ore mining quality	Determination of cutoff grade at a given production volume by alternative technologies
Implementation of innovative production development projects	
The development of the optimal amount of off-balance reserves	Receipt and sale of commodity products extracted from off-balance reserves
The development of the optimal amount of tailings for processing	Receipt and sale of commercial products extracted from tailings processing

The ultimate goal of applying innovative technologies is to extract up to 50% of the initial balance reserves in the deposits and most of the off-balance reserves.

The economic effect of technological diversification within the production complex:

$$\mathcal{E} = \left[ \frac{3\delta}{A\delta} K_R^A K_P^T + \left( \frac{\Delta \mathcal{E}_B + \Delta \mathcal{E}_K}{A_\Phi} \right) - \frac{3_\Phi}{A_\Phi} \right] A \cdot r$$

Where  $\mathcal{E}$  is the economic effect of combining traditional and innovative technologies;  $3_\delta, 3_\Phi$  - cost per unit for the main product which is metal of basic and optimized technology versions, rubles;  $K_R^A, K_P^T$  - the production and time dynamics coefficients;  $\Delta \mathcal{E}_B, \Delta \mathcal{E}_K$  - the reduced operating and capital costs for basic and optimized technology versions, rubles per unit;  $A$  - the annual output of products using optimized technology, units;  $r$  is the risk factor.

The effectiveness of involvement of technogenic ores in their development is determined by comparing alternatives that differ in the size of the reserves.

The equation of balance of values is used to establish the relationship for the index of completeness of deposits reserves extraction:

$$B\mathcal{U}_\delta - \Pi\mathcal{U}_n + B\mathcal{U}_{np.n} + T\mathcal{U}_{TMO} = \mathcal{A}\mathcal{U}_{p.m.},$$

Where  $B$  is the value of balance reserves;  $\Pi$  - loss of ore when stockpiling by various technological systems;  $B$  - the amount of admixed rock to the ore mined;  $\mathcal{A}$  - the amount of extracted ore mass;  $T$  - the amount of technogenic formations included in the repeated stockpiling;  $\mathcal{U}_\delta, \mathcal{U}_n, \mathcal{U}_{np.n}, \mathcal{U}_{p.m.}, \mathcal{U}_{TMO}$  are values of balance reserves, losses, admixed rocks, extracted ore mass and technogenic waste, rubles / t, respectively.

The indicators of the flexibility of a mining enterprise are shown in Table 3.

Table 3ndicators of economic efficiency of the mining enterprise

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Blocks	Indicators of flexible development		Area of operation		
	Basic	Technology	Finance	Economy	Ecology
Basic	volume of production; volume of sales; projected sales volume; planned sales volume.	regularity of pace; number; availability of raw materials; level of technology; product quality; mechanization and automation.	liabilities on loans; own and current assets; loans; value of property; solvency.	the price of the product; costs; value of funds; depreciation of equipment; depreciation rate.	Harmfulness; migration of liquids; migration of gases; land acquisition area.
Relative	meeting the demand for the goods; sales of products; fulfillment of the forecast; loss of ore; implementation of plans.	regularity of pace; education of staff; intensity of stockpiling; power gain; quality control; mechanization and automation.	own and borrowed funds; attraction of loans; depreciation; cost of funds; solvency.	change in prices for products; elasticity of cost value; elasticity of capital productivity; depreciation of equipment; availability of equipment	MPC in the environment; MPE in the water; environmental capacity and resource intensity.

To justify the diversification concept, the underground excavation of ore with the extraction of metals in the factory (traditional method) and the leaching (innovative method) of metal from sub-standard mineral raw materials for the conditions of a particular enterprise should be compared (Table 4).

Table 4. Comparison of alternative technologies

Indicators	unit of measurement	Technologies	
		basic	innovative
Subsoil use: dilution losses	percent	30	0
	percent	20	10
Extraction of metals by mining	percent	100	200
Release concentrates: lead zinc	t / year	7000	10500
	t / year	10000	15500
Price of concentrates: lead zinc	rubles / t	555	555
	rubles / t	360	360
Cost: lead concentrates zinc concentrates annual metal production	thousand rubles.	3900	5800
	thousand rubles.	3600	5600
	thousand rubles.	7500	11400
Productivity for rock mass	thousand m <sup>3</sup> / year	170	340
	thousand m <sup>3</sup>	220	220
Formed tails Additional concentrates: lead zinc	thousand tons	800	-
	t / year	-	440
	t / year	-	680
Cost: concentrates from	thousand rubles.	-	11400

processing			
building materials	thousand rubles.	-	200
other metals (expert estimation)	thousand rubles.	-	400
water treatment for boilers	thousand rubles.	-	200
Total cost of additional products	thousand rubles.	-	12200
Results of the use of technology	thousand rubles / year	7500	19700
Saving on annual volume	thousand rubles / year	-	12200
Saving	percent	-	160

The results of the study are of interest for mining enterprises of a depressive type that diversify their production complex based on innovative technologies to stabilize the economy.

### Conclusion

Diversification of the production complex on the basis of innovative technologies is a real opportunity for mining enterprises to overcome depression.

Diversification of the metal deposits development processes with the use of underground method with increasing the full utilization of resources is more effective than the construction of new mines due to the use of available production assets and reserves.

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## Returning Migrants, Assessment Of First Financing Public Policies In Ecuador

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**Abstract.** *Return migration is a recent phenomenon in Ecuador. It is manifested in the early years of the current century. The return opens up several lines of research that need attention from society, academy and the state. This research analyzes the main mechanisms of public funding support that were offered in the country for returning migrants. It moves through the visions, aspirations of the emerging Ecuadorian immigration policy, the legal, constitutional and the institutional framework created to materialize the new vision of the state on human mobility. In the research process it is possible to construct a profile of the returning economic migrant: his characteristics, the conditions of his return, the potentialities and limitations that present for the enterprise. The main programs of financial support to the migrant sector are analyzed and evaluated, the results of the programs are contrasted with the expectations of Ecuadorian returnees. It is concluded that these programs are inaugural and have two major problems to be solved: continuity and coverage. The final part tries to be a contribution that based on the knowledge of the conditions of the returning people; the identification of program successes and weaknesses; it is proposed guidelines for a new financial support mechanism that could be relevant.*

**Key words:** returning migrant, public funding, financing strategies.

### Introduction

The phenomenon of the return of migrants is one of the least studied aspects within the migratory process in Ecuador. The explanation for that is because the country was a migrant ejector from the 20s. In the middle of the 50s, the United States is consolidated as the main destination, while Venezuela, Colombia, Canada and Australia attract Ecuadorian immigrants in later years. Ecuadorian emigration gains strength since the 1960s, when a large human conglomerate from the provinces of Azuay and Cañar began its diaspora in search of better opportunities in North America, mainly in the United States, in what is known as the first Ecuadorian migration wave. Between 1976 and 1999, the international emigration of Ecuadorians reached a registered figure of 631,505 people; in the last years of the twentieth century, the migratory process changes abruptly. In 1998 and 1999, Ecuador began to experience an unprecedented phenomenon in its history: the second migration wave, a phenomenon that responds to an economic, social and adverse policy, characterized by the consolidation of the neoliberal model and the crisis in the areas of public life of the country.<sup>1</sup>

The immigration stampede that began in the last years of the 20th century reached its peak in 2000, a year that was followed by the banking crisis and in which the migratory balances recorded the highest number of migration in the country: 175,992 people. The migratory phenomenon of this period is distinctive, characterized by the diversification of the migrants' place of origin. In this sense, it

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<sup>1</sup> A. L. Castillo Pavón, *Impacto socioeconómico de la entrega del capital semilla del Programa Fondo Concursable "El Cucayo" a personas migrantes retornadas y a las expectativas de su proyecto de retorno*, Quito, 2011.

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becomes a national process unlike the first wave of migration that was concentrated in the southern region of the country.<sup>2</sup>

The second migration wave can be characterized by three clearly differentiated phenomena: massive migratory flow, the existence of networks and migratory chains and the feminization of emigration with its effects on family reconfiguration; then there is an estimated 2.5 million people, which is in line with estimates based on the number of Ecuadorians registered in consulates around the world in 2007, according to which the number of Ecuadorians in the exterior during that year is around 2.4 million.

Since the year 2009, it appears, for the first time, a negative migratory balance; this means that during these years more compatriots returned from those who left, emerging in that way the phenomenon of the return of Ecuadorian migrants; the phenomenon is new in the country. It does not have more than 10 years, that is why studies are lacking in this regard and limited to master's thesis, doctoral theses, articles and reports of national and international organizations related to human mobility.<sup>3</sup>

The monetary values sent by the emigrants to their families from their country of destination to their country of origin via remittances were highly significant for the Ecuadorian economy. For the period 1976-2014 Ecuador would have received, by remittances, an amount that exceeds 38 thousand millions of dollars, a figure that stands out as revealing if it is related to the total of the national production or with items generated by exports; remittances are the product of the work performed by migrants abroad, the amount sent depends on conditions such as residence time abroad, the age of the migrants, the monthly income received, the type of work, the country where they work.<sup>4</sup>

Faced to this new phenomenon, in the country, since 2006 the Ecuadorian State has made efforts to build specific policies and institutions that allow it, in an integral way, to address the various difficulties of the migratory social fact. Thus, a series of guarantees and rights that benefited Ecuadorians and Ecuadorians abroad were recognized in a paradigmatic way. In this way, from government agencies, agendas and legislation were proposed to encourage the economic and social reintegration of returnees. In this context, it is highlighted four specific programs of financial support to the returnees of the country, which contributed resources for entrepreneurship and business development, which were given through several financial mechanisms: seed capital to start and expand businesses in "Fondo el Cucayo" and the REDIEM Project administered by SENAMI, credit through the

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<sup>2</sup> Fondo Multilateral de Inversiones. *Receptores de Remesas en Ecuador: Una investigacion de Mercado*, Quito, Banco Interamericano de Desarrollo, 2003.

<sup>3</sup> Secretaría Nacional del Migrante, *Plan Nacional De Desarrollo Humano para las Migraciones 2007-2010*, Quito, Secretaría Nacional del Migrante, 2007.

<sup>4</sup> M. I. Moncayo, *El Plan "Bienvenid@s a Casa": Estudio sobre la experiencia del fondo "El Cucayo"*, Madrid, Secretaría Nacional del Migrante, 2011.

cooperative sector, for the creation and improvement of businesses in the Migrant Bank and the Youth Employment and Migration Program.<sup>5</sup>

### **Theoretical framework/methodology**

The core aspects this research is based on are framed on the following theoretical approaches:

The Theory of Migration, taken as a reference in this research, states that the historical and social phenomenon of migration can be identified as a common product on the development of capitalist societies. The valid theoretical-methodological bases taken to investigate the migratory phenomenon start from the existing geographical differences in terms of supply and demand of labor force; in this sense, migration would be contextualized adequately from the consideration of the existence on both, countries with high labor reserves of low wages, and of those with a limited labor reserve of high salaries.<sup>6</sup>

Regarding return migration, several approaches to capital were taken into account. They coincidentally reflect that returnees are carriers of different types of capital when they return to their country of origin. The first one is of the financial type: these savings are the result of the work done abroad that is carried by migrants. This capital is invested in different business activities that invigorate and modernize the economy. The second type of capital is human and consists of those skills, abilities and capacities that the migrant acquires during his or her stay abroad. This capital facilitates the modernization and economic growth of their countries of origin. The third type is the social capital acquired by migrants in their transnational experience. It can be used to develop new international business activities. In addition, financial theory will be the basis for the analysis of the conditions under which public programs to support migrants were implemented, as well as to identify possibilities and new financing strategies. Based on this theory, financing mechanisms such as bootstrapping, development resources, business plan competitions and venture capital funds will be analysed. The study of this and other financing mechanisms will help to outline the construction of proposals for changes in the strategies and conditions of financing and support to the enterprises of the returned migrants.<sup>7</sup>

The present research is descriptive; its instruments of measurement were, mainly, surveys and interviews. In addition, information was collected from secondary sources such as databases, press releases, theses, academic reports. For the diagnosis of the situation of returned migrants and the evaluation of financing

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<sup>5</sup> A. K. Verdugo Morejón, A. K. (2015). Tesis. Programa Fondo Concursable "El Cucayo" impacto socioeconómico en el fenómeno migratorio azuayo. Cuenca, Azuay, Ecuador. <http://dspace.uazuay.edu.ec/handle/datos/4333>, accessed 03.03.2017.

<sup>6</sup> Programa de Canje de Deuda Ecuador-España, *Acuerdo de colaboración entre el programa de canje de deuda Ecuador - España y la Secretaría Nacional del Migrante, SENAMI, para la ejecución del proyecto*. Quito, Secretaría Nacional del Migrante, 2006.

<sup>7</sup> Jara Albán, O. (Septiembre de 2015). Los retornados de la migración ecuatoriana. Obtenido de Magazine Themes: [oscarjara.com/index.php/.../los-retornados-de-la-migracion-ecuatoriana](http://oscarjara.com/index.php/.../los-retornados-de-la-migracion-ecuatoriana), accessed 12.03.2017.

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strategies, 42 surveys were carried out on returnees from six cities: Cuenca, Gualaquiza Cañar, Loja, Quito and Guayaquil. In addition, interviews were conducted with SENAMI authorities and former officials, who were involved in the management of several programs.

On the other hand, information regarding the design of the main migrant support programs was collected, as well as progress reports and closure of these programs which were accessed thanks to SENAMI. The main strategies of public financing in Ecuador for returnees, their coverage, possibilities of access, fulfilment of objectives and pertinence was also analysed in this research.

### **Discussion and results**

After the migratory diasporas, which got to concentrate more than two million and a half compatriots in the United States and Europe, from the year 2009, for the first time ever, negative migratory results emerged.

The total of immigrants who returned during the period 2006-2014 overpass the 120000 compatriots approximately. The Ecuadorians abandoned Ecuador because of the crisis in this country during the 90's, and returned, mainly, due to the crisis presented in the countries they were living in.

The data obtained in this study, indicates that the Ecuadorian migrants who returned are not young; therefore, their age is an obstacle for getting involved in labor tasks. They see in the business venture a possibility of covering their basic material needs when a high percentage of these people are underemployed. They came back with the expectation of being able to work and cooperating with the economy of the country, expecting support from the government to start businesses, which allow them to stay definitely in this country.

An important number of the returned group are waiting for seeing how they current economic situation evolves, and a major number of this population asserts that they would migrate again. Not all of them are entrepreneurs; however, most of them have the aspiration of having a business, which helps them get their own income. They returned with limited economic resources to start a business, and a considerable percentage do not believe that the help from the government gets to materialize.

Not all the immigrants who returned are entrepreneurs, and not all of them accomplished with the characteristics of an ideal entrepreneur; it is, to have a project with innovative elements, to possess the experience in business venture, to count with the budget that the project needs, and to be able to take the risk.

An important part of the immigrant population had the potential for being entrepreneurs. They demonstrated strong intentions to start with a productive activity as a condition for their return. Nevertheless, these potentialities had limitations related to the size, the significance, and the type of business venture.<sup>8</sup>

Immigrants, when returning to Ecuador, came with lots of expectations and with the intention of being part of the economy of the country that motivated them to abandon the country. They had the expectation of starting a business that

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<sup>8</sup> FLACSO, Ecuador: *La migración internacional en cifras 2008*, Quito: FLACSO Ecuador, UNFPA. 2008.

allow them stay permanently, the results and the expressions show the high expectations of the migrant area with respect to begin a business. They believe that there is the need of government support, but they have low expectations about the accomplishment of this offer and support.

Regarding the complexities of the migration phenomenon, from the year 2007, the Ecuadorian government is trying to state politics and institutionalization to respond to this social problem, recognizing a series of rights and guarantees for the Ecuadorian migrants. From the different government entities, a group of politic guidelines, agendas, and a law are formulated to motivate the socio-economic inclusion of this population.

In the Ecuadorian Constitution, the recognition to the migration phenomenon is set up, guaranteeing the right to migrate, opening, in this way, the possibility that the government can generate incentives when these people return. The Constitution counts on normative advances that shape it as a milestone in the acknowledgment of the migrants rights and the possibilities of their reintegration in the economy of the country.

The National Plan for the Good Living accounts among its objectives: “To guarantee the protection and fomenting the socio-economic inclusion of people in human mobility situation,” and “to accompany the processes of the returning of Ecuadorians who decide to come back” (2014).

A transcendent milestone in the Ecuadorian politics was the creation of the National Secretary of the Migrant (SENAMI), which, as pioneer institution, was in charge of defining and executing migratory integral politics of the country, with programs and actions articulated to the National Plan of Development.

In the National Plan of Human Development for Migrations, the fundamental labor that the migrants perform in the economic and social development of our country is recognized. One of its main objectives is to motivate the staying of the Ecuadorians in Ecuador, and to provide with conditions that make possible the Willing Decent and Sustainable Return of the migrant population.

The years after 2007 can be called the inaugural years of a truly migratory Ecuadorian politics that attempted to face the complexity of the migratory reality; in contrast with the previous governments that did not take concrete actions nor had public politics to intervene in the consequences of the migration phenomenon.

From the public politics, the legislation and the new institutionalization, emerges the first concrete strategies to support people in mobility. A part of them is the programs with public budget for the migrant returned sector. The programs of financial support were designed and executed in the SENAMI, shared with the citizens under the figure of financial funds with no return in the cases of Cucayo and REDIEM; and returnable credit in the projects Migrant Bank and Youth Employment and Migration.

The consolidated budget in the four programs, during the period 2006-2014, is about forty nine million dollars, from which, approximately thirty nine millions were assigned for supporting business ventures of returned migrants. The quantity of money is minimum (0.10%), in comparison with the volume of money

and packages that were sent by the migrants. The four evaluated programs were efficient; that is, they made an adequate use of their resources. They accomplished with the indicators and design goals; however, they were not effective, because they did not reach the general objectives related to the improvement of the integral situation of the migrants, the generation and revitalization of production, work generation, and the social economic insertion.

In addition, it is found that the main problem in the programs is its coverage: the four programs supported, during the period 2006-2014, the consecution of approximately 3184 undertakings and generated around 5476 new jobs, cyphers that only cover 4.6% of the returned population to the country. The low coverage responds to budget limitations or difficulties in the proposals to accomplish with the requirements of the application of funds. Another problem found is the continuity. The programs worked well when the National Government provided with the resources. At the close of the analyzed period, similar support programs for returned migrants are not registered.

Regarding the returned migrant undertakings some asserts in the stage of pre-inversion of the programs are recognized, where it was formulated a considerable number of profiles with the advice of business mentors; and in the evaluation processes of profiles or financing proposals, which were made by professional committees.

The weaknesses were presented in the phases of installation and startup of the undertakings, but above all, in the operation phases, where the effort and schemes of technical assistance were sporadic and a little efficient.

These programs have to consider as inaugural, initial efforts for the support of a sector that never had the attention of the Government, and that can be the base for the development of new mechanisms of financial support.

Some migrants started undertakings in the country with the support of the public programs. The majority of ventures belong to compatriots who emigrated during the 90's and returned to the country in the year 2006. A high percentage was created in an individual or familiar way, located in the biggest provinces of the country.

The 80% of the beneficiaries of this program keep the initial business. The 20% closed it because they got a job in dependency relationship or because their business was not profitable. The technical assistance in the operation of these businesses was weak or nonexistent.

Half of the entrepreneurs who keep their business running considered the condition of them as a positive way. Below the initial expectations of the programs, the businesses generated four places of employment on average. Most of the projects funded by the programs were individual or family business. Associated enterprises, which could be the ones generating larger impact linked with economic reintegration did not exceed 3% of the total initiatives financed in the programs.

Very few endeavors exceed ten permanent employees. The Cucayo Fund and the REDIEM Project generated up to five average jobs per entrepreneur; in programs with an international funding, 51% of the enterprises that worked at that time kept working four full time people.

On the other hand, a large number of businesses financed were traditional and competed in a market for the production of existing goods, it means that they operated in a very competitive environment, with a relatively small growth potential; most of these businesses faced relatively slow growth in demand.

Businesses of returned migrants did not generate significant cash flows and the profitability was relatively low. In one of the programs, 67% of the enterprises had an average monthly turnover that did not exceed 3000 dollars. The scarcity of cash led to financial problems.

Proposals that were based on new technologies or with innovative products, which would have allowed to create a new market, were scarce.

The survey found that 46% of respondents manifested they did not know how to start their business, while 62% showed strong resistance to paperwork, 8% accepted not having enough experience to run a business, and 19 % mentioned that they became aware of how to administer it.

The credit of formal financial institutions is not part of the business strategy of most migrants, when 27% of respondents expressed concern about becoming debtors.

The small and medium-scale projects were the predominant ones: the average contribution of the programs for each financed initiative was around \$ 12600, which could be inferred about their size.

The volumes of capital that returned migrants have for the start and start-up of the enterprises are limited. The stated amounts in the surveys are close to \$ 20,000.

The levels of banking of the group of returned migrants to the country are low, when the low participation in the financial system makes difficult to integrate into the possibilities offered in the programs. The data obtained in the survey showed that 70% had never received credit from a financial institution, and 13% did not receive it because they had no financial information or they did not know its existence; another 13% requested credit without being approved, 27% did not want to borrow, and 37% had not applied because of many demanded requirements.

According to the size, ownership and market in which the products were offered, a stereotype of the enterprises of returned migrants to the country could be configured; it refers to the traditional microenterprises and applicable to the exercise of a productive activity, with incipient level of innovation. They were mostly unipersonal or family projects, with low levels of turnover and profitability.

In short, these entrepreneurs were created by necessity and not by chance: small, individual, traditional, low turnover, low innovation, operating in very competitive markets with low growth potential; however, they become the subsistence strategy chosen by an important group of compatriots who returned to the country.

The first drawback that is attempted to solve is the coverage. It is proposed to create a financing fund that will encourage the entrepreneurial intention of migrants as a way to compensate or recognize the contribution that migrants have had in the Ecuadorian economy.

Another problem of importance is the continuity of the interventions, as the programs supported the migrant sector until the resources were exhausted; it is proposed to abandon the non-reimbursable delivery resource strategy and pass.

## Conclusions

The country must recognize the great contribution that migrants have made to the economy; from the beginning of the diaspora to the present, the country received remittances above 38 billion dollars, a figure that exceeds the current amount of external debt and meant 1.3 times the total debt of the country in 2014.

Considering the importance of the volume of remittances in the country's economy, any investment of the State in favor of the migrant sector is justified. A new mechanism of financial support becomes a way of paying the historical debt that Ecuador has with the migrant fellow citizens.

Then, it is relevant to respond to the expectations of the returned compatriots, to fulfill the offers and to land the speeches in concrete actions and mechanisms: to create from the public services and financial solutions that take advantage of the disposition that the Ecuadorian migrants present for the enterprise, to assimilate their potentialities, overcome their limitations and adapt the programs and mechanisms to their particular conditions.

A financial mechanism to support the returned migrant sector must take into account the reality, characteristics, needs, aspirations and expectations, in order to have a relevant design that can be adapted to its conditions. It must be considered that the causes that motivated the return of people, are various, in that way diverse economic conditions coexist for the compatriots who returned to the country.

Initial public funding programs were created without full knowledge of the conditions of returnees, as this was an unprecedented phenomenon in the country. A proposal for improvement must recover or preserve the successes of the inaugural programs and with previous knowledge about the conditions, strengths, expectations, aspirations and obstacles, to overcome the limitations presented before.

The first problem that must be solved is the coverage. It is necessary to create a financing fund that encourages the entrepreneurial intention of migrants as a way to compensate or recognize the contribution that migrants have had in the Ecuadorian economy.

Another relevant drawback is the continuity of the interventions, as the programs supported the migrant sector until the resources were exhausted; it is necessary to abandon the strategy of delivery of non-reimbursable resources and opt for the figure of co-financing with microcredit, which through the recovery would maintain the resources in order to get support in future entrepreneurship cycles.

Access conditions and financial conditions such as fees, amounts, counterparties, risks, guarantees and others should be preferred, so that the proposed new mechanism is relevant.

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Then, on the financing of micro or small enterprises would be promoted, since larger sizes are difficult to implement due to the capital constraints that migrants have to start their businesses. The possibilities of associativity at least initially are limited, as migrants opt for individual projects.

The phenomenon of return migration in the country still presents broad questions, big problems to solve, some conditions to know, several proposals to make, and it requires the attention of researchers, academia and the state.

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A. R. GAPSALAMOV, V. L. VASILYEV, O. N. USTYUZHNA

## **Planning Of Regional Personnel Policy In The Modern Economic Paradigm\***

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**Abstract.** *At present, the methods of planning and forecasting acquire special urgency in the conditions of spontaneous market crises. The SPECIAL practical usefulness of the planning institute is manifested in the personnel policy of the region. In this regard, the purpose of the article is to study the features of planning mechanisms of the personnel reserve of Russian regions and to develop recommendations for their improvement. The authors come to an understanding of the need for state planning of personnel policy within the framework of the market mechanism of economy.*

*The study methodology is based on the principles, approaches and methods of scientific knowledge. The authors have relied on the idea of dialectical development, which is the basis for such principles of historical research as historicism, objectivity and systemic nature.*

*The main goal of the study given is the search for effective methods and tools for planning the personnel supply of the region in the conditions of a modern market economy. As a study result, we revealed the modern problems of the regional personnel policy. The authors developed recommendations on increasing the effectiveness of regional personnel policy, taking into account the interests of private companies, government organizations and the public.*

*Another important aspect of the study given is the planning of regional demand for personnel in relation to the tasks of innovative development of the real sector of the region's economy. Personnel planning should be adequate to the demands of the labor market, both at the current time and in the future. Accordingly, it is necessary to predict the emergence of new labor occupations and vacancies associated with the emergence of new technologies and innovative products.*

**Key words:** planning, personnel policy, personnel reserve, personnel policy mechanisms.

### **Introduction**

The personnel reserve sufficient in terms of quantity and quality is a condition for effective social and economic development of the region. There is a need for state planning of personnel policy and forecasting within the framework of the market mechanism of economy. It is now difficult to create an effective mechanism for economic growth without analyzing the current situation of workplaces, the quality and quantity of workers, personnel and leading personnel.

At present, the labor sources are not the costs of an enterprise, but its capital. To increase the economic efficiency of any enterprise, it is necessary to invest and increase personnel costs, rather than reduce them for it.<sup>1</sup> The full application and development of planned management mechanisms, including those related to staffing, is necessary in a market economy, in the face of considerable uncertainty and risk. The modern economic science is able to offer methods of effective personnel planning at the regional level based on the creation of

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\* Acknowledgement: The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> P. F. Drucker, *Management Tasks in the XXI century*, translated from English, Moscow, Williams, 2001.

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*Astra Sahvensis*, V (2017), Supplement no. 1, p. 379-384

appropriate development institutions.<sup>2</sup> The tasks of personnel planning based on effective institutional changes should be solved taking into account the modern global challenges and the results of innovative technologies development.<sup>3</sup>

The main problem of personnel planning at the regional level is the lack of a close link between the education system and the real sector of economy. The emergence of successful projects aimed at solving this problem makes it possible to improve the efficiency of using the human capacity in the short term.<sup>4</sup> The historical and international experience of the development of planned staffing methods can also suggest possible solutions.<sup>5</sup> However, further research is needed to improve the human resource planning and forecasting that can enhance the competitiveness of the Russian economy on the basis of the preparation of highly demanded, highly professional and promising labor resources, especially for the regions experiencing personnel shortage.

### **Methodological framework**

In the study made, the authors have relied on the idea of dialectical development, which is the basis for such research principles as historicism, objectivity and systemic nature. When characterizing any considered phenomenon and process, we observed the order of its sequential study, taking into account the peculiarities of its development under the influence of various internal and external factors.

Today, the "personnel planning" is understood as a promising, systematic, cost-taking concept of measures in the area of staffing of enterprises and organizations, which should ensure full employment for enterprises of regions and the country as a whole in the long term.

Under the staffing of the region, we mean a set of actions aimed at finding, assessing, monitoring, analyzing and improving economic relations regarding the use of the region's workforce, as well as a set of activities aimed at developing the region's human resources and aligning it with the social and economic profile of a specific territorial market system. Increasing the territory competitiveness depends entirely on the quality and effectiveness of its human resources.

At the present time, a well-thought-out personnel policy becomes one of the main conditions for the effective development of production processes.<sup>6</sup> In

<sup>2</sup> N. Fligstein, "Markets as politics: A political cultural approach to market Institutions," in *American sociological review*, LXI (1996), p. 55-70.

<sup>3</sup> A. G. Fonotov, *Russia: Innovation and Development*, Moscow, 2010.

<sup>4</sup> David Hoey, "How Do We Measure Up? Benchmarking the World Skills Competition," in Rupert Maclean, David Wilson (eds.), *International Handbook of Education for the Changing World of Work: Bridging Academic and Vocational Learning*, vol. 2, London, Springer, 2009, p. 2827-2839.

<sup>5</sup> H. Weinert, D. Pensky, *Mobile robotics in education and student engineering competitions*, Moscow, IEEE Africon. 2011, p. 1-5.

<sup>6</sup> V. L. Vasilev, O. N. Ustyuzhna, E. M. Akhmetshin, "The Development of Education Clusters as a Tool to Enhance Economic Safety," in *The European Proceedings of Social and Behavioural Sciences (Epsbs) – IFTE 2016 – 2nd International Forum on Teacher Education*, Osadchy, E. A., 2016; E. M. Akhmetshin, "The intellectual capital importance and the role of organizations against the backdrop of a crisis," in *Innovation vector. Social Sciences*, X (2015), nr. 6, p. 1013-1020.

many ways, this is due to the acceleration of time between the appearance of new scientific and technical results and, accordingly, new personnel competencies and qualifications. The education system, in turn, often does not have time to adjust to the market needs. We see the way out of this problem in the integration of the issues of regional personnel planning into the overall planning system of the regional economy. At the same time, it is necessary to improve the methods of personnel planning, outline a program of actions to improve the institutions for staffing development in the country and the region.

## **Results**

An important task of planning and forecasting of staffing at the regional level is to flexibly coordinate the actions of state authorities responsible for the sphere of education and production, development institutions and other market participants.

The main role in this process should be played by the Ministry of Education and Science of the Russian Federation. In addition to educational priorities, the Ministry should participate in the development of scientific, innovation and social policies in the region.

In 2013, it was developed and accepted the Strategy for the development of the personnel training system and the development of applied qualifications in the Russian Federation for the period 2013-2020, according to which the strengthening of communication and business resources, the state and educational organizations are planned to ensure the personnel compliance with the requirements of the economy.

The Ministry of Labor and Social Protection of the Russian Federation should become the second participant in the process of personnel planning. Currently, it is working to improve 800 professional standards in the field of personnel training, which is the basis of the national system of qualifications and competencies. The Ministry constantly monitors changes in the personnel needs of the labor market and initiates the development of promising professional standards.

The next federal body that should become a coordinating link in personnel matters and, directly, the labor consumer, should become the sectoral ministries.

One of the development institutions in personnel planning is gradually becoming the Agency for Strategic Initiatives today. This is an autonomous non-profit organization created to promote priority projects and implement measures to improve the business environment in Russia, the development of professional personnel. In recent years, the agency has been paying considerable attention to planning and implementation of projects in the staffing field. First of all, it includes the World Skills Russia movement, dual education, leadership projects:

1. World Skills – it is an international movement whose goal is to enhance the prestige of working professions and to develop vocational education by harmonizing the best practices and professional standards throughout the world through the organization and holding the professional skills competitions in each individual country and the world in general. At present, it has been established the

coordinating center "Young Professionals", which regulates the World Skills movement in Russia. The project covers 500,000 people annually from various regions of the country and the branches of the economy. In addition to the basic national championships in Russia, it was launched the World Skills Hi-tech championships of the through work and engineering professions among more than 100 enterprises of the Russian Federation, as well as the Junior Skills championship of working professions among schoolchildren from 10 to 17 years old and the Future Skills contests for the future promising competences.

2. Dual education is a kind of practice-oriented vocational education, in which the theoretical part of training takes place on the basis of an educational organization, and practical - at the workplace. Currently, 13 regions of the country, 105 educational institutions, 1,005 enterprises, 20,899 students and 5,602 mentors became the pilot sites for this project. The project allows including education in a closer dialogue with production. In addition, the young specialist during his studies is already working at his workplace, which repeatedly reduces the time for its further adaptation. The enterprises have the opportunity to directly influence the content of the educational process, and educational institutions have the opportunity to improve their practical and laboratory facilities.

3. Advanced enterprises in the area of personnel planning include the following ones: United Aircraft Corporation PJSC, United Engine-Building Corporation JSC, Russian Railways OJSC, Roselektronika OJSC, Chelyabinsk Tube Rolling Plant OJSC. These enterprises can serve as an example of effective implementation of dual education in their production facilities, joint improvement and accreditation of educational programs and professional standards.

Currently, the study of the development trends of advanced educational systems is under way at the international level. A group of Russian experts, the executive authorities and the development institutions created an international project – Global Education Futures Forum (GEFF). The goal of this project is to determine the vector for the development of global educational and production ecosystem. The GEFF Expert Council includes 26 leading experts from the USA, Russia, China, Korea and Japan and other countries.

The state and regional personnel policy should comply with the following principles:

1. Compliance with the strategic and breakthrough directions of economic development.
2. Balance in the training of personnel, taking into account the social, economic and political requirements of potential workers.<sup>7</sup>
3. Unity of taking into account the requirements of all levels of the economy: municipal, regional, federal, corporate.

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<sup>7</sup> A. Z. Ibatova, N. V. Ippolitova, S. K. Muchametgaliyeva, A. E. Rodionova, K. N. Yagafarova, L. N. Ikonomikova, "Lifelong professional education in the Russian federation: Personal aspect," in *International Journal of Environmental & Science Education*, XI (2016), nr. 16, p. 9426-9436.

4. Prospective of the formation of personnel policy measures. Personnel training should correspond to the advanced directions of science and technology development<sup>8</sup>.

5. Democratic nature of choosing the directions and programs of education and training, advanced training.

6. Spirituality and morality should become an indispensable condition for the implementation of educational programs in the training system.

7. Legality. The education system and its functioning should comply with the established legislation.

## Discussions

First of all, the Russian economy may face the problem of reducing the able-bodied population and increasing the proportion of the population of retirement age. The problem may be solved by the effective use of migration processes and the establishment of contacts with neighboring regions for the exchange of labor needs.

Secondly, the education system of both higher and secondary professional level trains specialists based on its capabilities. In this case, the needs of enterprises and organizations should be a reference point. The education system should train specialists, which are in demand on the labor market.

Thirdly, it is necessary to take into account the impact of new information technologies. Some professions such as an accountant, cashier or seller can disappear or shrink in the near future. The processes of selling, making payments and registration of trade transactions are already carried out via the Internet in large part. Accordingly, the need for IT specialists will increase.

Fourthly, it is necessary to improve the processes of coordination and regulation of the labor market. The regional authorities should have databases about potential young specialists who are educated in other regions and leading scientific international (Russian) centers. It is necessary to motivate graduates to return to work in their native region.

Fifthly, it is necessary to increase the effectiveness of budget funds spent on the creation of resource centers for training of working specialties. Close interaction between educational institutions and enterprises for which these specialists should be prepared should be strengthened. At the same time, it is necessary to encourage the social support programs for the students at a level not lower than the subsistence level. In this case, the student will be interested in the educational process.

Sixthly, it is necessary to improve the work of higher education institutions in terms of their innovative development. Any modern university should create an infrastructure to support innovation. Only in the conditions of the university's active position on the regional (international) market of innovations, its students

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<sup>8</sup> N. V. Dmitrieva, N. A. Zaitseva, O. S., Kulyamina, A. I. Larionova, S. A. Surova, "Scientific and theoretical aspects of the staff recruitment organization within the concept of "Talent Management", in *Asian Social Science*, XI (2015), no. 3, p. 358-365.

and future specialists will be able to acquire the innovation skills and increase their competitiveness in the regional (international) labor market.

## **Conclusions**

As recommendations based on the study results, the following should be noted:

- to create coordination councils in the area of personnel planning with the participation of all stakeholders, educational institutions and representatives of the private sector, enterprises and organizations of the region;

- to work on the promotion of successful practices in regional personnel planning as World Skills and dual education;

- to create databases on personnel needs, necessary qualifications and competencies on the one hand, and opportunities of the educational system, on the other hand;

- to outline the ways to improve educational and professional standards and to prepare a draft federal targeted program in the area of personnel planning in the Russian regions.

## **Conclusion**

As a conclusion, it should be noted that there are some attempts to improve the control and planning of personnel composition in the economy sectors, the development of the system of vocational education and through personnel training. In particular, a number of accumulated problems can be solved through the organization of close interaction between the employers, the education system and the government authorities. At the same time, there are no programs that can provide the Russian economy with qualified personnel for a long-term perspective, which makes it necessary to find mechanisms and programs aimed at improving the efficiency of personnel planning processes at the country and regional level today.

Forecasting the personnel requirement for the region is a multifactor and multicriteria task. In the context of globalization, the world trends in the development of science and technology, investment indicators, macroeconomic and migration policies influence the movement of labor force in addition to regional conditions. In our opinion, the Institute for Personnel Planning should include certain restrictions based on the financial resources spent on training and the education system at the regional level. A reasonable state labor market coordination policy should change the free, chaotic, chaotic movement of the labor force.

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## New Technologies And Their Impact On The Development Of The Labor Market\*

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**Abstract.** This paper deals with the study of the current scientific discussions on the formation of the "digital economy" and changes in the labor market. A scientific discussion on the impact of digital technology in the work spheres is a deliberate discussion and is conducted by many market participants. The problems of employment and labor, spheres in which digital trends gain more importance are analyzed. Actual changes in the labor market involve the presence of certain risks and opportunities. Risks and opportunities should be analyzed and presented in the form of development trends. The trends of changes can be considered from the standpoint of socio-economic, economic, technological and managerial processes. In this regard, the matrix of the demand for elements of the productivity of human resources has been developed. We carried out classification of labor force in accordance with the elements of productivity. The distribution of the demand for labor resources in the modern labor market is shown. The processes of participation change, occupational safety, social and economic consequences are considered. The complex of systems of and the basic preconditions for the formation of a new format of the labor market are analyzed. Objective of the study is to analyze the impact of the main digital technologies on the labor market, and, accordingly, to identify and describe the stages of the transformation of the labor market, to find possible options for the demand for the elements of productivity of human resources.

**Keywords:** labor market, digital technologies, competitiveness, management system evolution, innovations, technology transfer, professional competencies, labor market balance.

### Introduction

The relevance of the issue of a qualitative transition to a new technological structure remains acute and requires a multifaceted consideration and a comprehensive solution. Technological development, the emergence of alternative digital currencies saves time, increases labor productivity and is a new and effective solution to old problems.<sup>1</sup> The priority of solving problems also changes; complex interdisciplinary studies become increasingly important, considering the person and his environment in a new, transformed form, with new opportunities and limitations. The relevance of the work is also conditioned by the need to develop management technologies to overcome the problems of labor market management in conditions of uncertainty and a systemic crisis associated with the emergence of a new stage in the development of the market system and globalization. Despite the fact that much attention is paid to the labor market, there is still a number of topical issues regarding the formation of "human potential" and "digital capital" of the labor market.

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\* Acknowledgements. The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> N. G. Bagautdinova, G. T. Galieva, Ya. O. Pakhmutov, O. V. Pratchenko, "Methods of Regulation of Processes of Innovation Business Development," in *Mediterranean Journal of Social Sciences*, V (2014), no. 12, p. 75-80.

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Objective of this paper is to analyze the possibilities of the influence of the development of digital technologies on the evolution of the labor market.

## Methods

In our study, we used statistical methods, methods of strategic management, economic analysis of organizations' activity, as well as such general scientific methods as analysis and synthesis, and a systematic approach to studying the external and internal environment of the organization, socio-economic phenomena and processes as a tool.

## Results

As a result of our study, the stages of labor market transformation were identified and the matrix of the demand for human resource productivity elements was compiled (Table 1).

Table 1. Matrix of the demand for human resource productivity elements

Human resource elements	New technologies (IT)	Emotional intelligence	Ability to physical labor
Consciousness resource	Highly demanded	Partially demanded	Non-demanded
Soul resource	Partially demanded	Highly demanded	Non-demanded
Body resource	Non-demanded	Partially demanded	Highly demanded

To make a well-grounded decision on quantitative indicators, it is necessary to introduce such a concept as "digital technology introduction". The use of digital technologies is a necessary condition for increasing the efficiency of the labor market. First of all, they are associated with the growth of computer equipment performance in combination with a decrease in energy consumption. This led to a rapid expansion of the resources available for software systems, greater logical abstraction, flexibility and multi-variant system solutions. We are dealing with the so-called combined growth of the economy as a whole and the development of the labor market in particular. The combined growth of conditions for inter-process interaction is expressed in the trends of simultaneous development, situational autonomy and the evolution of goals. Disadvantages of this form of growth: late integration, nondeterministic interactions and multifaceted anomalies in achieving success. Approaches to the optimization of the benefits during mitigation of the deficiencies took the form of formalizing requirements, modular design methods, extensive system modeling and analysis of data trends. It is expected that the growth of hardware capabilities and complexity of the software will continue, including future trends, upgradable commodity subsystems, computer-generated algorithms, reconfigurable processors and greater autonomy. The growth of technical equipment and the emergence of independent digital currencies are in contrast with the simultaneous display of cultural diversity, various factors supporting a diversity of cultures and placing them at the center of the factors of flexible development and growth. The labor market to the greatest extent reflects

the identified trends, as it includes the evolution of both the means of production and the requirements for the qualification of the workforce.

Most of the studies devoted to new organizational experience and flexible enterprise development now converge on the idea that the economic factor that is most competitive at the present time in the production of value is the dematerialization of economic and organizational processes. Intangible factors (such as knowledge, information, reputation, relationships, and virtual transactions) are competitive and important innovations for future competition and at the same time are the most important criteria for rethinking and understanding the future organization, its areas of competitive development. Based on the foregoing, we will perform a labor force classification in accordance with the performance elements (Table 2).

Table 2. Labor force classification in accordance with the performance elements

100% IT	50% IT	25% IT	Up to 25% IT
“+” The speed of information communication, the ability to reproduce innovation capital.	“+” The balance of IT and emotional intelligence. Social adequacy “Body-consciousness-soul” balance	“+” High proportion of emotional intelligence	“+” Not revealed Possible creative "breakthroughs"
“_” High level of emotional estrangement. Low physical activity. “Life in the network”.	“_” Not revealed	“_” Imbalance in the emotional component	“_” Weak social adaptation

Based on the data in Table 2, the following conclusions are appropriate to be drawn:

- New technologies (IT) optimize physical labor and minimize human-to-human contacts.
- Demand for the continuous development of the workforce in accordance with the development of technology.
  - Maximum “human-computer” contacts.
  - Actualization of a person's need for "emotional contact".
  - Development continues due to the actualized human need for new information.

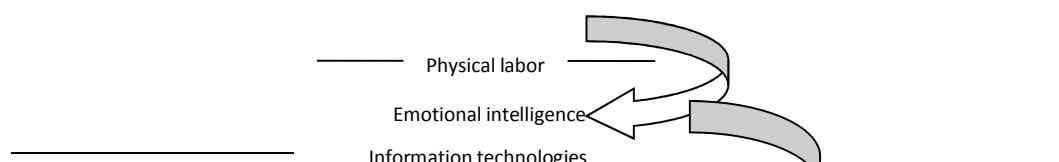
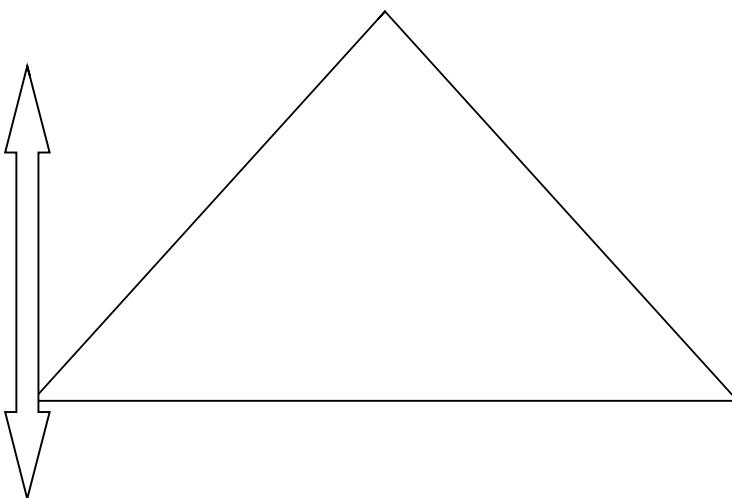
We consider it reasonable to propose the introduction of an index that defines a set of innovative and digital implementations in the labor market. For example, the Diversity & Inclusion index (D&I) allows assessing the performance

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of companies taking into account various factors that determine cultural diversity and opportunities for self-realization of employees, versatility of thinking, style, experience and approaches, since all these factors contribute to the spread of innovation.<sup>2</sup> Indices are compiled on the basis of the study of the main employers of the industry or region. In the context of the transformation of the labor market and digital revolutions, the issues of cultural diversity and self-realization become increasingly important. Diversity and opportunities for self-fulfillment are an important part of the flexible and sustainable development of the market. They take into account the self-realization of the workforce, culturological preconditions, integration with the media, and the financial outcome of the employer. In the long term, it is advisable to use them to analyze long-term growth objectives of companies, as well as a wide range of investment risks.<sup>3</sup> In our opinion, the introduction of such indices objectifies the already formed labor market requirements through a modified form of information processing.

Thus, the labor market is at a new stage of evolution. And, to date, several approaches have already been identified to change its key indicators. <sup>4</sup>We shall consider the relationship between the development of digital business with new forms of labor market development and the emerging stereotypes of its perception.



<sup>2</sup> <http://thomsonreuters.ru>, accessed 12. 03. 2017.

<sup>3</sup> Alla Podgornaya, Svetlana Grudina, Sofya Avdonina, "An Enterprise Flexible Development Model," in *The Proceedings of the World Conference on educational Sciences. (Malta 2 June 2015)*, CIXC (2015), p. 275 – 279; A. I. Podgornaya, S. I. Grudina, S. G. Avdonina, "An Enterprise Flexible Development Model," in *Procedia Economics and Finance Volume, XXIV* (2015), p. 519–522.

<sup>4</sup> Bitkom Research (2016): „Digitale Transformation der Wirtschaft“ <[http://www.bitkomresearch.de/epages/63742557.sf/de\\_DE/?ObjectPath=/Shops/63742557/Products/%22Digitale%20Transformation%22>](http://www.bitkomresearch.de/epages/63742557.sf/de_DE/?ObjectPath=/Shops/63742557/Products/%22Digitale%20Transformation%22>), accessed 12. 04. 2017.

Figure 1. Distribution of the demand for labor resources in the modern labor market.

As we can see from Figure 1, the current conditions lead to changes in the very paradigm of labor market and labor force development. Information technology and emotional intelligence acquire the greatest demand and capitalization. There is a growing demand for factors of personified labor, the expression of which is possible through a new basis: information technology and emotional intelligence. On the contrary, physical labor becomes increasingly automated. It should be noted persons under 35 years old comply with the identified tendencies of labor market transformation to the greatest extent, since they are the carriers and integrators of modern labor market trends, with all its advantages and disadvantages. The population of the largest markets in the world, such as China, Japan, the EU, is getting older, which makes businesses orient in their strategies to the older generation.<sup>5</sup> If employers do not engage in clearly targeted products for a certain generation, then the question of expanding the range of customers becomes relevant.

### **Discussion**

Now we shall consider the way the requirements for professional competencies change. Many technological solutions are based on mathematics and other exact disciplines.<sup>6</sup> However, creativity is no less important: some IT spheres, such as marketing, sales, and even product development, are well suited for people with a humanitarian mindset. For this reason, employers begin to search for talents outside the prevailing preferences (science, technology, engineering, mathematics), seeking to attract people with a penchant for the arts (BDI / Roland Berger ,2015). Currently, it is becoming urgent to create sites combining, for example, the principles of neural networks, targeted analysis, and creative management. Unique specialists with these abilities and skills increasingly become "artisans of digital technologies".

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<sup>5</sup> A. Dobbs et.al. (2013)./ McKinsey Global Institute : „Disruptive Technologies: Advances that will transform life, business, and the global economy”. <<http://www.mckinsey.com/business-functions/business-technology/our-insights/disruptive-technologies>>, accessed 12. 03. 2017.

<sup>6</sup> I. A. Kirshin, M. V. Maleev, O. V. Pachkova, "Assessment of Impact of Domestic and External Demand Factors on Economic Growth in Russia on the Basis of Model of Multiple Regression Analysis," in *International Conference on Applied Economics, ICOAE, XIV* (2014), p. 320–325.

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A key issue in the new system of values is the development of the labor market and demand management technologies.<sup>7</sup> In practice, this means that individual adjustment to the specific needs of a particular employer has a key importance in modern communication.

## **Summary**

Any changes in the labor market involve certain risks and opportunities. The trends of changes can be considered from the standpoint of socio-economic, economic-technological and managerial processes.

We will refer the following processes to the socio-economic trends: globalization, changes of management models in business and the state, the growth of the middle class and changing consumer preferences, and greening of the way of life and production processes.

Economic and technological tendencies include the following processes: the introduction of information and communication technologies, automation, the emergence of new technologies, change of the practice of development, production, management, maintenance of the workplace, and change of the industrial structures.

Trends in the management of the labor market balance: competition takes place both between individual experts and between teams; the role of external stimuli decreases.

## **Conclusion**

Proceeding from the above, it can be concluded that readiness for change is an important factor in the development of the labor market. Even a unique complex of modern technologies and competitive advantages of the workforce will not allow achieving results in the situation of the absence of evolutionary prerequisites. The matrix of the demand for the elements of the productivity of human resources shows the trends in the transformation of the labor force. The productivity of the workforce depends on the speed of information communication and the ability to reproduce innovation capital. The development and implementation of indices that define a set of innovative and digital implementations objectify the already established labor market requirements. Information technology and emotional intelligence acquire the greatest demand and capitalization. Physical labor is increasingly automated. Persons aged 18-35 years are most consistent with the identified trends in the transformation of the labor market. This paper suggests considering the trends of changes from the standpoint of socio-economic, economic-technological and managerial processes. Thus, digital technologies have a transformative impact on the labor market, dictating the requirements, qualifications and directions for the workforce development.

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<sup>7</sup> Bitkom (2014): „Wie Cloud Computing neue Geschäftsmodelle ermöglicht“ Leitfaden. <https://www.bitkom.org/Bitkom/Publikationen/Wie-Cloud-Computing-neu-Geschaeftsmodelle-ermoeglicht.html>, accessed 12. 02. 2017.

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## **Social policy of the state in interrelation with the general economic policy instruments\***

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**Abstract.** *Social policy in the Russian economy is currently being superimposed on the common actions of the state in the regulation of economic processes and the implementation of the overall economic policy of the state. The situation in the Russian economy in turn develops within the framework of the formation and presence of certain objective constraints affecting the effectiveness of social policy implementation. Insufficient financial resources, the crisis situation and the availability of different points of view regarding the future path of development and the effectiveness of the necessary tools used by the state significantly influence the development of a number of negative social consequences, determine both the potential opportunities for implementing social policy and the actual conditions for the implementation of the process of interaction between social and economic politicians. The conditions for the implementation of social policy require taking into account a number of points in the applied tools of economic policy: possible delay in the actions of the state in comparison with current economic processes, taking into account the formed mentality of the population, Pareto efficiency in determining the optimal balance between state actions to stabilize the economic situation and household activities within the framework prevention of a decline in the level of well-being. Indirect factors determining the basic conditions for increasing the effectiveness of social policy of the state form potential opportunities for economic development.*

**Key words:** economy, efficiency, Pareto efficiency, competition, inequality, capitalism, poverty, social policy, society.

### **Introduction**

The implementation of a number of social programs in the Russian economy experiences rather serious problems (within the framework of the implementation of the overall social and economic policy of the state). Solving the problems of unemployment, poverty and inequality, in addition to the opportunities provided by the fiscal, monetary and social policies of the state, requires taking into account the moments of behavioral tendencies in the development of Russian society.<sup>1</sup>

Traditionally, the tools for solving problems in society within the framework of state regulation are related to the economic policy of the state. However, the peculiarities of the Russian mentality impose certain limitations on the possibilities of effective use of instruments of state regulation of the social sphere.<sup>2</sup> Fiscal policy assumes, as part of its effectiveness, the formation in society of a number of institutions aimed at optimizing the achievement of the goals of this policy. In the absence of traditions on payment of taxes, the possibility of corruption, the absence of a scale of progressive taxation, the state cannot

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\* Acknowledgments. The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> L. I. Askhatova A. M. Fatkhiev L. N. Safiullin, A. M. Safiullina, "Competitive Strategies Formation in High Technology Enterprise," in *World Applied Sciences Journal*, XXVII (2013), no. 13, p. 20-23.

<sup>2</sup> L. N. Safiullin, G. N. Ismagilova N. Z. Safiullin N.G. Bagautdinova, "The development of welfare theory in conditions of changes in the quality of goods and services," *World Applied Sciences Journal*, XVIII (2012), p. 144-149.

"Social policy of the state in interrelation with the general economic policy instruments," *Astra Salvensis*, V (2017), Supplement no. 1, p. 391-397 determine its capabilities long-term and sufficiently accurately in terms of the amount of taxes collected. Monetary policy is determined by the policy of the Central Bank and is more operative.<sup>3</sup>

Fiscal and monetary policies are always implemented with some delay in a real economy. To make decisions, the state initially monitors the statistics, then the process of making the most optimal decision takes place and some time is required to implement the already taken decision. However, due to the cyclical development of the economy, one of the main drawbacks is that such state actions (implemented late) may not contribute to the resolution of problems (but strengthen these problems). For example, when a decision on a stimulating fiscal policy is made at the time of the economic downturn, but actions to implement this policy will already be implemented at the time of economic growth (which is quite possible in the context of short-term economic fluctuations). In this case, this stimulating policy will be useless, and even more may lead to increased cyclical. In fact, the actions of the state will help to strengthen the cyclical nature and will be able to provoke the next phase of the economic cycle. For last decades, this phenomenon has been observed quite often in the economic systems of different states.<sup>4</sup>

## Methods

As part of the implementation of the social policy of the state in this case, we should pay attention to the following points.

First, one can talk about the need to adjust social policies. For example, when implementing a policy to restrain inflation, actions that are implemented with delay can intensify the subsequent economic downturn, which can affect the population more painfully than if the restraining policy is not implemented at all. Consequently, in the context of the implementation of a restraining policy, the social component must be strengthened. The restraining policy should be adjusted in such a way that the growth of expenditures on the social sphere should be more significant in the context of restraining inflation than in any other case. Similarly, the social component of a stimulating policy should also be singled out and changed in the direction opposite to the general actions of the state. In this case (in the case of a stimulating policy), we can speak not about absolute values, but about a possible change in the growth rates of a number of regulatory parameters.

In fact, it should be that if the economic policy of the state as a whole is aimed at counteracting the current market situation and smoothing it, then within the economic policy of the state itself (stimulating or deterrent) it is necessary to allocate separately a block of social instruments that will be opposed to the most general economic policy of the state and, possibly, will be unidirectional with those

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<sup>3</sup> A. I. Dylevskaya V. V. Avilov, "On training highly qualified personnel in the light of the new trends of the petrochemical complex of the Russian Federation," in *Bulletin of the Kazan Technological University*, XVI (2013), no. 19.

<sup>4</sup> T. N. Isaeva, L. N. Saifullin, N. G. Bagautdinova, R. N. Shaidullin, "Aspects of a multi-level study of competitive performance of objects and subjects of economic management," in *World Applied Sciences Journal*, XXVII (2013), no. 13, p. 116-119.

elements of the market conjuncture that the state is trying to regulate. In fact, this block of social instruments should be implemented as a mechanism of preventive action to support the standard of living of the population and the solution of social problems in the future interval of time (accordingly, the indicators for monitoring the effectiveness of the implementation of this social block of state instruments, in contrast to the general economic policy pursued). The general rule for combining in this case both economic and social policy should be Pareto efficiency, i.e., the possibility of stabilizing the overall economic situation in the country and preventing the deterioration of the well-being of citizens requiring protection from the state when this stabilization is achieved. In different regions or within the framework of one national economic system, within the framework of the possible social agreements between the state and the population, there may be many Pareto-efficient points, but the optimal balance point in this case should be determined by the ratio of the costs for both economic reforms and implementation of social programs. Equilibrium in the framework of this equality will be the point of optimality that is available to the society at the current time (provided that we consider two main participants of the market – the state and households).<sup>5</sup>

Secondly, in recent decades there has been a clear trend when the population correctly assesses the actions of the state and takes its steps to adjust its behavior. For example, an increase in the money supply (as a result of this possible inflation) involves the actions of the population to pressure the state and businesses to increase their wages. If these actions of the population are sufficiently appreciated and implemented, this can lead to the fact that all additional money supply will really go to increase wages and price growth, i.e., this growth in the money supply will have no stimulating effect on the real economy. In fact, we are faced with a famous phenomenon of ineffectiveness of the state economic policy that is known to the population in advance (making decisions on adjusting their behavior). In our opinion, such inefficiency can touch on not only economic, but also social policy of the state. Namely, the actions of business and state structures in the context of implementation of certain decisions on social policy necessarily face the possibility of these elements of market infrastructure to maximize their usefulness, which reduces the effectiveness of social policy in general. There is no question of really conscious opportunist behavior, but some elements of this opportunistic behavior can be traced quite clearly.

Thirdly, if, within the framework of the state economic policy as a whole it is necessary to create general conditions for the development of the economic system rather than strict limitations on instruments and control, which can actually be considered as a restraining policy in macroeconomic regulation, then the implementation of social policy is the sphere requiring control over the costs incurred in order to eliminate inappropriate expenses and elements of corruption (including the reduction of intermediary links in the implementation of social

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<sup>5</sup> R. M. Kundakchyan, L. F. Zulfakarova, "Econometric modeling of performance indicators of the companies," in *World Applied Sciences Journal*, XXVII (2013), no. 13, p. 1307-1311.

"Social policy of the state in interrelation with the general economic policy instruments," *Astra Salvensis*, V (2017), Supplement no. 1, p. 391-397  
 policy of the state).

### Results and discussion

Thus, it can be considered that the features of achieving effectiveness of social policy are due to all the above-mentioned points, i.e. even if effective tools, goals and control points are determined, the optimality (absolute) within the framework of achieving the goals of social policy is unattainable. All this can be explained precisely by the influence of the human factor that allows the possibility of error, even with an ideal set of tools for solving problems. The willingness to take risks and make wrong decisions is inherent in the psychology of man and practically unrecoverable. In this case, in accordance with the theory of perspective and the theory of mental accounting, it is extremely important to correctly formulate goals and assess requests from the population for solving pressing problems (including employment problems, poverty and inequality). A correctly grounded request (depending on the correctly posed question on the proposed solution to the problem) actually determines the way of solving. In this case, taking into account the behavioral moments in the actions of the management and the population, a fairly clear possibility of manipulation with the aim of obtaining the desired result remains. At the same time, the Western version of control over the society (by controlling the media and deliberately forming the desired public opinion) is more preferable for manipulation, in comparison with the Eastern variant of control over society by the state (through control and direct management of economic resources).

When analyzing the current situation in the distribution of income in the Russian economy, we can now turn to Table 1.

Table 1. Distribution of the population by the average per capita monetary income in %

	2009	2010	2011	2012	2013	2014	2015 <sup>1</sup> )
Total population	100	100	100	100	100	100	100
including per capita monetary incomes per month, rubles:							
up to 5,000.0	12.2	9.4	7.3	5.7	4.2	3.3	2.4
from 5,000.1 to 7,000.0	10.9	9.4	8.1	6.8	5.6	4.8	3.8
from 7,000.1 to 9,000.0	10.8	9.8	8.9	7.9	6.8	6.1	5.1
from 9,000.1 to 12,000.0	14.2	13.6	12.9	12.0	10.8	10.0	8.9
from 12,000.1 to 15,000.0	11.3	11.3	11.3	10.8	10.3	9.9	9.2
from 15,000.1 to 20,000.0	13.4	14.1	14.6	14.6	14.5	14.4	14.0
from 20,000.1 to 25,000.0	8.6	9.5	10.2	10.7	11.2	11.4	11.6
from 25,000.1 to 30,000.0	5.6	6.4	7.1	7.8	8.4	8.8	9.2
from 30,000.1 to 35,000.0	3.7	4.4	5.0	5.7	6.3	6.7	7.2
from 35,000.1 to 40,000.0	2.5	3.1	3.6	4.1	4.7	5.1	5.6

from 40,000.1 to 50,000.0	6.8	3.8	4.5	5.4	6.3	7.0	7.9
from 50,000.1 to 60,000.0	...	5.2	6.5	3.1	3.8	4.2	4.9
over 60,000.0	...	...	...	5.4	7.1	8.3	10.2

<sup>1)</sup> Preliminary data, excluding data for the Republic of Crimea and the city of Sevastopol.

This table of distribution of the population by income shows a quite good picture. There are only a few people with small incomes in percentage terms (2015), while with the increase in income the number of people earning more and more increases. Also, the improvement of the situation is quite clearly traced (comparing 2015 with 2009 and further). Giving such statistics generates a positive perception of the situation in the economy (the table, however, has no line with the percentage of the population having extremely large incomes, which does not give a complete picture of the economic situation).

At the same time, when considering the situation in the economy, it is also necessary to pay attention to Table 2.

Table 2. Distribution of the total amount of accrued wages for 20 percent groups of employees.

	2005	007	009	011	013	2015
Average accrued wage of employees, rubles						
Total	7,816	12,548	18,287	22,334	29,453	33,800
including for 20 percent groups of employees:						
first	1,595	2,794	5,064	5,879	7,949	9,654
second	3,465	5,765	8,871	10,737	14,484	17,230
third	5,526	8,954	13,259	16,132	21,400	25,061
fourth	8,517	13,542	19,588	23,893	31,676	36,335
fifth	19,980	31,687	44,652	55,029	71,755	80,721
Gini ratio (wage concentration ratio)	0.456	0.447	0.418	0.425	0.420	0.413

In this case it is quite clearly visible that the improvement of situation, if any, is slow enough and there is no significant change in the overall economic situation (it would be more obvious to divide the population into smaller groups - not five but ten ten-percent or twenty-five-percent groups).

Finally, Table 3 shows a clear deterioration in the situation.

Table 3. Indicators of the Russian labor market development in 2012-2015.

2012	2012	2013	2013	2014	2014	2015	2015
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The population with cash incomes below the subsistence minimum	15.4 million people	10.70% of the total population	15.5 million people	10.80% of the total population	16.1 million people	11.20% of the total population	19.1 million people	13.30% of the total population
Increase in high-performance jobs	1,849.1 thousand un.	12.70%	1,122.8 thousand un.	6.90%	788.1 thousand un.	4.50%	- 1,671.9 thous and un.	-9.10%

At the same time, the worsening of the situation can be traced even in case of possible forecasting of the development of the situation for the future period of time (within the framework of the potential for the formation of high-performance jobs).

### Conclusions

It is necessary to consider that one of the main directions for the implementation of social policy is to address the issue of supporting the poorest layers of the population. The basic role in this case belongs to a system of cash and in kind benefits formed in the society. Such a system has proved effective in many countries with developed market economies. Given the proven effectiveness of the cash and in-kind benefits system, limited monetary resources in the Russian economy, and the ability to mitigate many of the negative effects of economic development through this system, the latter should be more purposefully used within the framework of Russian social policy. At the same time, in order to increase the effectiveness of this system of benefits, the indicators used to determine the category of population entitled to such targeted assistance should be more clearly specified. It should be borne in mind that the targeted approach in the advanced economies is the basis for implementing social policy, and the main parameters that are subject to verification in determining the need for the population in such assistance can be considered income level, personal property, health status, and marital status.

The indicators used for analysis should be divided into two groups: consideration of the quantitative parameters of the process, and consideration of the qualitative characteristics of the phenomenon under study (including the dynamism of the changes occurring). It is necessary to take into account the difference between the parameters of poverty and inequality. In absolute terms, poverty can be reduced, but inequality in society remains an objective reality, that is, relative poverty is necessarily present in any economic system.

Poverty can in fact be seen as a factor of a restraining economic policy (poverty under the formation of passivity increases the social tension in society). At the same time, subject to the possibilities of manipulation within the framework

of statistical data, there always remains the possibility of significant adjustment of the poverty level (in the context of attempts to consider off-the-books employment and its role in generating income of the population, when the forecast values have a rather weak statistical basis, which reduces the significance of these estimates).

In fact, in this case, when considering the current situation in the Russian economy, statistics provided by the State Statistical Service form two points of view (optimistic and pessimistic). A kind of statistics to be used and presented for consideration will really depend on the goal set in the framework of forming public opinion (in the context of media coverage). If the data in Table 1 are sufficient for the analysis of the situation, then the data in Table 3 are necessary for analyzing the situation in the economy, i.e. the mathematical principle of necessity and sufficiency can be effectively applied in economic analysis.

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## **National Payment System and Financial Security Provision\***

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**Abstract.** *The problem of ensuring the financial security of the state has worsened against the backdrop of the introduction of anti-Russian sanctions in 2014. In this connection, it became necessary to create financial instruments to reduce the impact of "financial" threats and ensure the sustainable functioning of the financial system. Financial security is one of the key factors of economic security, since it is based on ensuring the smooth functioning of the financial system of the country. The financial system, in turn, has an impact on all sectors of the economy through credit-monetary and commodity-money relations and the banking system. The Decree of the President of the Russian Federation of May 13, 2017 "On the Strategy of Economic Security of the Russian Federation for the period until 2030" addresses threats to economic security, including through indicators of the financial sector of the economy, the main tasks related to the sustainable development of the national financial system as an important component of the financial economic security. This paper deals with the national payment system as the factor of development of the state economy and the tool of formation of financial safety, and maintenance of steady functioning of national payment system. In the context of Russia's integration into the global financial system, the effectiveness of the national payment system (NPS) is one of the strategic state tasks.*

**Keywords:** economic security, financial security, state, national payment system, threats, security strategy, national payment card system.

### **Introduction**

In accordance with the Decree of the President of the Russian Federation No. 208 of May 13, 2017 "On the Strategy for Economic Security of the Russian Federation for the Period until 2030", economic security is defined as a state of protection of the national economy against external and internal threats, which ensures the economic sovereignty of the country, unity of its economic environment, and the conditions for the implementation of the strategic national priorities of the Russian Federation.<sup>1</sup>

Financial security is one of the key factors of economic security, since it is based on ensuring the smooth functioning of the financial system of the country. The financial system, in turn, has an impact on all the state sectors through credit-monetary and commodity-money relations and the banking system.

The Decree of the President of the Russian Federation of May 13, 2017 "On the Strategy of Economic Security of the Russian Federation for the period until 2030" addresses threats to economic security, including through indicators of the financial sector of the economy, the main tasks related to the sustainable development of the national financial system as an important component of the financial economic security. One of the factors of this development is the formation and maintenance of a stable functioning of the national payment system.

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\* Acknowledgements: The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> The Decree of the President of the Russian Federation No. 208 of May 13, 2017 "On the Strategy for Economic Security of the Russian Federation for the period until 2030"; <http://www.garant.ru/products/ipo/prime/doc/71572608/#ixzz4nv2oANiH>, accessed 12. 03. 2017.

The paper outlines the problem of using only quantitative indicators to assess financial security without monitoring qualitative criteria and developing preventive measures based on these categories. The paper also indicates the need to revise approaches to financial security as part of economic security. The category of "financial security" should be considered more than just "financial stability". The study provides a rationale for the development of the national payment system to ensure the implementation of the Strategy for Economic Security of the Russian Federation for the period until 2030.

## Methods

The theoretical and methodological basis of the study was the works by foreign and domestic scientists. When solving the tasks of forming a system for ensuring the financial component of economic security, it is advisable to apply: methods of economic analysis, the theory of pattern recognition, the method of expert assessments, methods of economic and mathematical modeling, scientific methods of research and the system of normative acts and regulatory documentation that determines the development strategy of the state.

Approaches to the study of problems of financial economic security reflect the most important characteristics, concepts and represent different types according to the level of consideration and specificity of the relevant economic, political and other conditions, processes and tasks.

This paper considers elements of financial economic security, indicators of financial economic security, and compliance of theoretical approaches to security provision and regulatory documents.

The term "economic security" came into common use roughly in the 1970s. It has spread in the capitalist countries to assess the prevailing international situation using economic methods of ensuring national security.

The works by such scientists as V. Senchagov, S. Glaziev, E. Oleinikov, V. Gaponenko (2013),<sup>2</sup> Z. Margiev, and V. Elizarova served as the material for this paper.

## Results

As a result of the theoretical justification, conclusions were drawn about the compliance of the introduction of the national payment system with the national interests of the state and ensuring of the implementation of the Strategy for Economic Security of the Russian Federation for the period until 2030 in terms of financial indicators, namely reduction of the impact on economic security and its financial component of the threats identified in security strategies; implementation of state policy in the sphere of ensuring economic security outlined in the strategy: sustainable development of the national financial system; fulfillment of the task of

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<sup>2</sup> Vasilievna E. V.(2015). Place and role of financial security in the system of ensuring economic security of Russia// Statistics and economics. 2015. No.2. URL: <http://cyberleninka.ru/article/n/mesto-i-rol-finansovoy-bezopasnosti-v-sisteme-obespecheniya-ekonomiceskoy-bezopasnosti-rossii>, accessed 26. 07. 2017.

the strategy relating to the sustainable development of the national financial system, such as reducing the critical dependence of the national monetary system on the fluctuations of the conjuncture in international financial and commodity markets; minimizing the use of foreign currency in economic activity in the Russian jurisdiction; improving specialized instruments for supporting lending to strategic sectors of the economy, high technology and high-tech industries; developing the infrastructure of the national financial market, the national payment system, the national system of payment cards and the financial message transfer system; and improving the regulation of financial organizations, the development of prudential supervision and stress testing methods .

### **Discussion:**

Earlier, the concept of financial security was put in line with the concept of financial stability of the state. At the same time, the following financial security indicators were singled out (Ignatiev, 2007):

1. level of budget deficit;
2. stability of prices;
3. normalization, stability, "transparency" of financial flows and settlement relationships at all levels of the financial system;
4. stability of the banking system and the national currency;
5. protection level of interests of depositors;
6. gold and foreign exchange reserves of the country;
7. the state and level of development of the financial and securities market;
8. external and internal debt of the country, balance of payments deficit;
9. financial conditions for enhancing investment activities;
10. execution of payment obligations, level of non-payments;
11. unauthorized outflow of financial capital;
12. money turnover velocity and volume, the share of cash payments in the total volume of turnover.

Some indicators, such as the level of budget deficit, price stability, gold and foreign exchange reserves, external and internal debts and the balance of payments deficit, were investigated for the detection of threshold values and establishment of compliance thereto.

Another part of the indicators, such as normalization, stability, "transparency" of financial flows and settlement relationships at all levels of the financial system, the stability of the banking system and the national currency, the degree of protection of the interests of depositors was not considered through measurable indicators, but provided only a description of the conditions and limitations, within which it is necessary to ensure the financial stability of the state. This led to the fact that often decisions to eliminate threats were taken after the emergence of a crisis situation and the impact of threats on financial security (for example, an increase in the amount of deposit insurance, during a crisis). At the same time, the main task of the system of economic and financial security is to anticipate the emergence of threats remained unresolved.

In this regard, it became necessary to revise the approaches to financial

security as part of economic security. The category of "financial security" should be considered more than just "financial stability". For example, financial security can be understood as "... a state of the financial and credit sphere characterized by a balance, a resilience to internal and external negative impacts, the ability of this sphere to ensure the effective functioning of the national economic system and economic growth".<sup>3</sup>

Elizarova V.V. gives a broader description of the current state of financial security. "... The financial security of the state is the state of the national financial system, characterized by a high level of development, stability and competitiveness, providing the necessary basis for the implementation of effective financial policies to ensure national security and protect the most important interests of the individual, society and the state in the financial sphere".

It is also necessary to review the work using indicators that characterize financial security through quality categories and the development of preventive measures based on these categories.

Since 2014, the Russian Federation has been in a difficult economic situation, conditioned by sanctions, which, among other things, were also applied to the financial sector of the economy. The application of sanctions jeopardized the stable functioning of the Russian banking system. One of the sanctions threats was the disconnection of the Russian banking system from international payment systems. This circumstance determined the continuation and acceleration of the work on the creation of the national payment system MIR.

An effective functioning and development of the national payment system (NPS) of Russia is one of the strategic state tasks when entering the world financial system. It was planned that in accordance with the strategy for the development of the national payment system, by the end of 2016, all transactions on payment cards of international systems would be performed only through the Russian platform, and the first domestic payment cards were supposed to be produced by mid-2016.

The ongoing process of developing the National Payment Card System (NPCS), as well as the possibilities of its integration with foreign payment systems, the choice of priority directions for the development of NPS, are largely determined by the institutional support of the RF financial and credit system and depend on a clear definition of the entity and the object of reform, its infrastructure, the composition of the institutional environment, and the sufficiency of legal instruments.

The formation of the Russian platform of the NPCS, built into the financial and credit and banking systems of the Russian Federation, should reflect to a greater or lesser extent the interests of all economic agents. This is necessary to prevent the emergence of such instability and disturbance at the macro level, which, if growing, could lead to a state of financial instability up to the destruction of the system as a whole.

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<sup>3</sup> V.F. Gaponenko, Z. V. Margiev, "Economic and financial security as the most important function of the state in modern conditions," in *Bulletin of Moscow University of the Ministry of Internal Affairs of Russia*. XII (2013), p. 165-169.

The inevitability of the emergence of contradictions in the economic system, which structure is represented by the market exchange of economic activity and its results, and the main role of the state institution in resolving them are due to the fact that it "specializes in such spheres of economic and social development that are either outside the zone of private economic interests of an economic agent, or are inaccessible to it because of insufficient level of financial resources.<sup>4</sup> This is about a state, which formal institutions support the organizing processes in macroeconomics, and the market, which informal institutions realize the principle of self-organization at the micro level of economic integrity.

Taking into account that all the processes of formation of the NPCS are state-regulated, and all macroeconomic agents, including firms and households operating at the micro level, are the end users, it is quite possible to assume the emergence of a number of such contradictions both during the formation of the NPCS and during its introduction in use and further development.

For example, at the first stage of the formation of the NPCS, an operational and payment clearing center (OPCC) has been established to conduct transactions of international payment systems. In parallel, the infrastructure of interaction with banks and the operating system are built. As a result of its implementation, all transactions that are made with the help of Visa and MasterCard will be performed through the NPCS platform. And, if we consider the first stage and functional of the NPCS platform as ensuring the continuity of payment transactions using international payment systems, then this is a direct task of the state as the regulator, with any competitors excluded here.

The next stage involves the issue of its own NPCS payment card, the corresponding payment applications and services. Anyone who wishes can issue this card in the Russian bank and pay it in the territory of the country. Speaking of the NPCS as a payment system with its own cards, it is an emerging market participant who will carry out its activities on competitive terms, that is create products and services to attract the consumer. Directly at this stage the state cannot but feel the influence of the hierarchy of economic subsystems.

The presence of the foreign component in one way or another at different stages of the NPCS formation cannot be disregarded. According to V. Komlev, General Director of National Payment Card System, JSC, "speaking of the operating system itself, it is a Russian development"<sup>5</sup>. This, of course, is a matter of principle, since the NPCS will be an element of economic sovereignty and financial security.

However, if at the first stage the NPCS acts as a center that conducts operations on Visa and MasterCard cards and uses foreign data transfer protocols, formats, etc., then in the future, its own card and payment application, i.e. 100 percent of the Russian product with its protocols and exchange formats, will minimize possible problems that Visa and MasterCard cardholders may face, and

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<sup>4</sup> R. I. Shiriaeva "Directions of transformation of state property," in *Transformation of the role of the state in a mixed economy*, Moscow, Nauka, 2006, p.27.

<sup>5</sup> "Rossiiskaia gazeta", Federal edition, No.6552 (280).

allow withdrawing money from any ATM in the world using the Russian card.

At the third stage, the NPCS enters markets outside the country and integrates into the infrastructures of other payment systems. That is when no one within the NPCS will be able to disconnect cardholders, except, of course, the banks themselves. The independent entry of the national payment system and NPCS cards into the world market is quite a long process. It should be beneficial for foreign banks to accept and issue NPCS cards. At the same time, the ability of Russian cardholders to shop abroad or in foreign online stores may be limited. If in the Russian Federation the NPCS card will be accepted by ATMs and terminals as a Russian payment card of the NPCS, then abroad it must be identified as a card of the international payment system.

Analysis of the operation practice of the Russian NPS and its individual elements shows the imperfection of the lack of a clear architecture of the system. At the same time, on the one hand, there is a mature payment market in Russia built on a foreign payment system, its laws and rules, and on the other hand, there are many problems in the retail settlements of individuals (payment for services, purchases, social payments, etc.). This circumstance can become a significant obstacle for the development of the NPCS project.

The financial administration of the country (the Ministry of Finance of the Russian Federation, the Bank of Russia) is tasked to bring the national payment system and specialized payment systems of various types in line with the existing international standards "to ensure financial security. In this case, there is a need to achieve a consensus between such characteristics of the NPS as economic and financial security, economic efficiency and speed of payments. The choice and justification of the directions for the formation and development of the national payment system in Russia requires taking into account the peculiarities of its economy and the existing institutional environment.

Proceeding from the foregoing, it is possible to single out the main tasks of state regulation of the NPS development in order to ensure financial security:

- formation of the NPS regulation system that applies to all participants in the national payment system;
- establishment of an effective risk management system in the national payment system;
- minimization of the uncertainty of the legal field, which can seriously threaten the integrity of the NPS, especially when it functions in the context of a general crisis or a private malfunction, by creating a legal mechanism for its regulation;
- creation of a strategy for the NPS development, subject to world standards and best practices.

The legislative framework for the operation of the national payment system

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<sup>6</sup> S. M. Ignatiev, (2007). Payment and settlement systems: preface. Is. 1. M.: CBRF; State financial security indicators. URL: <http://economics.studio/finansistam/pokazateli-opredelyayuschie-finansovuyu-89716.html>, accessed 26. 06. 2017.

in Russia must take into account the innovations of banking technologies, the tendency to substitute for payment in cash by non-cash means of payment. However, consumers will accept them only if they are assured of their security and the existence of a mechanism to protect their interests. This is not only about e-commerce, but also about electronic payments made in branches and ATMs. It is necessary to focus on creating legal bases for users of payment services, taking into account the requirements for information security and legal certainty.

The following basic directions of increasing the operation efficiency of the national payment system of Russia can be singled out in order to ensure the financial security of the state:

- development of the legislative and legal framework;
- achievement of compliance of the main parameters of systemically important specialized payment systems to the requirements of the BIS Committee for Payment and Settlement Systems;
- compliance with international standards for clearing and securities settlement systems;
- reliability and efficiency of various retail payment systems, the ability to interact with them in order to offer a wider range of payment instruments and services;
- increase of level of coordination of prudential supervision of the national payment system by the Bank of Russia and other regulators.

To achieve these goals, the Bank of Russia must:

- implement a unified regulation for the operation of the Bank of Russia payment system for all constituent entities of the Russian Federation;
- establish a universal payment system that provides urgent and non-urgent payment services and ensure its interaction with settlement systems in financial markets by implementing the "delivery against payment" method;
- consider the possibility of reimbursement of current costs for the provision of paid settlement services when developing tariff policies.

### **Summary**

The introduction of the national payment system into operation ensures the execution of a number of paragraphs of the decree "On the Strategy for Economic Security of the Russian Federation for the period until 2030":

1. reduction of the impact on economic security and its financial component of such threats identified in the security strategy as: strengthened structural imbalances in the global economy and financial system, increased private and sovereign debt, increased gap between the valuation of real assets and derivatives, measures in relation to key sectors of the economy of the Russian Federation, restricted access to foreign financial resources and modern technologies, financial system of the Russian Federation to global risks (including as a result of the influence of speculative foreign capital), as well as the vulnerability of the information infrastructure of the financial and banking system.

implementation of state policy in the sphere of ensuring economic security

outlined in the strategy: sustainable development of the national financial system.

3. fulfillment of the task of the strategy relating to the sustainable development of the national financial system, such as reducing the critical dependence of the national monetary system on the fluctuations of the conjuncture in international financial and commodity markets; minimizing the use of foreign currency in economic activity in the Russian jurisdiction; improving specialized instruments for supporting lending to strategic sectors of the economy, high technology and high-tech industries; developing the infrastructure of the national financial market, the national payment system, the national system of payment cards and the financial message transfer system; and improving the regulation of financial organizations, the development of prudential supervision and stress testing methods.

### **Conclusion**

Modernization of the national payment system in accordance with the modern trends of the world economy based on the development of institutional and infrastructural cooperation on the criteria of reliability, efficiency and economic security in accordance with the Federal Law "On the National Payment System" and on the principles of compatibility with international participants (Visa and MasterCard) will allow building a full-fledged, modern Russian card payment system that is competitive with other already existing payment systems. In this regard, we can conclude that the introduction of the NPS "MIR" is a timely, important step in ensuring the financial security of the Russian Federation.

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## Communication strategy in the information market media: Regional aspect (on the example Republic of Tatarstan)\*

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**Abstract.** According to the concepts of the information society, modern journalism is evolving in the era of widespread computer networks. In the Russian media system, regional media, responding to the needs of the region, implement their functions through the development of communication strategies that help to maintain a stable position in the media market. This is facilitated by the processes of forming and promoting the media brand, increasing the quality of content and its sustainable demand. The brand as a symbolic capital of media forms the target audience represented by the constant consumers of content.

Effective forms of solving the problems of stabilizing the media market are strategic communication complexes consisting of activities aimed at consumers and competitors, mutually complementing and strengthening each other, ensuring positioning and maintenance of constructive and open relationships with the target audience. They are implemented in the formats of the Internet representative offices of regional media – a communication environment formed as a result of the processes of coordination of a number of separate media communication and information policies for effective and differentiated achievement of target auditor groups, including role-playing people, with the goal of creating a stable media image of the media, based on the long-term communication strategy.

Communication strategies are used to achieve three sets of goals that demonstrate media settings: cognitive, affective and connotative, which are implemented when the patterns are taken into account: the formation of media communication strategies is linked to the media's objectives reflected in the information policy; formation of media communication strategies takes place when solving a set of tasks for creation of a stable media image of the media as the achievement of trust in the form of symbolic media capital on the basis of improving professional skills and organizing a wide access to information and the process of its creation.

The success of regional media depends on the precise definition of the most profitable and promising market segments with target recipients, taking into account the proposals of competitors, the formation of a complex of Internet communications with the use of techniques of influence and content promotion.

**Keywords:** communication strategies, Internet communications, Internet media representatives, regional media, media market.

### Introduction

Modern journalism develops in the era of the information society. This concept, called the concept of "free information communities", was developed by Y. Masuda. He attached great importance to the definition of such a feature of an information free society of this era as the widespread dissemination of computer networks, which is the main organizational unit in such society.<sup>1</sup> A high degree of information freedom is achieved mainly through the inclusion of independent subjects in the communication – communities organized by representatives of different social strata and layers united by the network. The peculiarities of such associations lead to the implementation of the real possibilities of the subjects of

\* Acknowledgements: The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> Y. Masuda, *The information society: as post-industrial society*, Tokyo, Japan - Institute for the Information Society, 1980.

communications, among which are production and consumption of content. The nature of communication between communities is informational, that is, done through networks, and this allows working together, creating cooperative forms of activity and demonstrating joint achievements.

Network communities exist in the space of discourse, which, according to J. Habermas, is an ideal form of verbal communication, since it is reflexive, not based on colonization of people's life worlds, and does not influence "the given way of arguments used in interpreting the phenomena of social life".<sup>2</sup> The dispersal and complexity of connections makes network communities open – any participant strives and can move to another and participate in communication in several communities simultaneously. Such a meridian-parallel form of interaction simultaneously virtualizes and gives reality to the emerging communications.

Regional media, widely represented by a variety of communication strategies, have been actively developing in the Russian media system. They are aimed at serving local interests, which makes them similar to the American community media – local (locally oriented) media. As K. Howley determines, the emergence of such media should be associated with deep dissatisfaction with the forms and content of the mainstream media and the orientation toward strengthening ties within the community and its cohesion.<sup>3</sup> Regional Russian media, like the American community media, is a kind of cultural mediainvention; under their influence the media structures, forms and media practices are transformed.<sup>4</sup>

Being an important element of the Russian media system, the regional media, responding to the needs of the region, implement their functions through the development of communication strategies, which allows them to maintain a stable position in the media market. Their influence on the economy and politics of the region is great; therefore, studies of the communicative practices of such media are relevant.

## Methods

To analyze the features of the media communication strategies of the Republic of Tatarstan, the following methods were used:

- a systematic approach for considering a set of methods and technologies for the operation of Internet representative offices, as well as their goals and functions as elements of a unified system of media communications;

- a functional and structural analysis for identifying the multidimensionality and diversity of the system of tools for the impact of Internet media representatives;

- a typologization method for building typology of Internet media representatives.

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<sup>2</sup> J. Habermas *Between Facts and Norms*, Cambridge, Polity Press, 1996.

<sup>3</sup> K. Howley, *Community media. People, Places and Communication technologies (Text)*, Cambridge, Cambridge University Press, 2005.

<sup>4</sup> K. Howley, *Understanding Community Media (Text)*, London, SAGE Publications, Inc. 2010.

The functionals of the largest media of the Republic of Tatarstan, published in Kazan, Naberezhnye Chelny, Almetyevsk, Bugulma, Yelabuga, and Nizhnekamsk, were analyzed to determine the specifics of communication strategies in the Russian information market. Five media were identified as typical, that are interesting in the context of the implementation of communication strategies: the e-business newspaper "Business-Online" as the top media of the republic, the online version of the republican newspaper "Respublika Tatarstan", the city newspapers "Vecherniaia Kazan" and "Kazanskie Vedomosti", and the electronic magazine "Inde". In total, more than 1500 media texts and updates in the Internet space of these publications for 2016 - the first half of 2017 were analyzed.

## Results

Any media, if it counts on success, enters, first of all, the electronic market on the Internet. Our study showed that in the republican media segment of Russia, all media have their online representative offices, which in 87% of cases are more independent than the "solid" forms of media and considered the main communication tools in promoting the produced content.

The following reasons explaining this situation were determined:

- 1) Constantly increasing number of the competing publications in the regional information market;
- 2) Wide introduction and use of new technologies (Internet information) by all market actors – from content producers, i.e. competitors to consumers, i.e. audience;
- 3) The desire to increase the target audience in the prevalence of personalization of the delivery of information;
- 4) The desire to retain and improve work with the real audience, using new communication channels. Among these channels are social platforms that refer to citizen journalism, which C. Radsch defines as an alternative activist form of news gathering and dissemination, functioning outside the mainstream media and using similar journalistic practices, but based on alternative sources of legitimacy.<sup>5</sup>

Thus, according to analysts and participants of communication processes on the national information market, the basis for the successful functioning of the media is to take into account the problems and needs of potential buyers in a competitive environment.<sup>6</sup>

This type of market behavior is called market-oriented, and for most regional media now it becomes the only possible one. At the same time, media is in constant search for the best and more effective ways to meet the audience's content needs and solve their consumer problems.<sup>7</sup>

<sup>5</sup> C. Radsch, C. 2013. "The Revolutions will be Blogged: Cyberactivism and the 4th Estate in Egypt (Text)", *Core to Commonplace: The evolution of Egypt's blogosphere* // Arab Media & Society (September, 2008). URL: <http://www.arabmediasociety.com/?article=692>, accessed 05. 09. 2017.

<sup>6</sup> F. Arfin, *Financial Public Relations*, London, 1994.

<sup>7</sup> D. L. Wilcox, L. W. Nolte, *Public Relations Writing and Media Techniques*, New York, 1995.

The other side of this activity is the formation and promotion of the media brand, which allows increasing the quality of content and its steady demand. For example, A. Usmanov believes that the media should form a commitment to the brand of the publication that produces reliable, verified information, recommended by the reference for this user group.<sup>8</sup>

Such a commitment to the brand can be considered a kind of symbolic capital of the media, which makes the brand recognizable and meaningful for the audience. The theory of symbolic capital was developed by Pierre Bourdieu, believing that the very concept of symbolic capital can be represented as the capital of trust, connections, reputation, good name, and honor. If the audience recognizes the brand, then we can assume that the publication has characteristics of significance, enjoys confidence and has chances for economic success.<sup>9</sup> Creation of a symbolic capital is also a task, solved by communication means.

It was found out that the effective forms of solving the outlined problems becomes the strategic communication complexes consisting of activities aimed at consumers and competitors, mutually complementing and strengthening each other, ensuring positioning and maintenance of constructive and open relationships with the target audience. They are implemented in the formats of *the Internet representative offices of regional media – a communication environment formed as a result of the processes of coordination of a number of separate media communication and information policies for effective and differentiated achievement of target auditor groups, including role-playing people (affecting the perception of content and regulating this process), with the goal of creating a stable media image of the media, based on the long-term communication strategy*.

Three groups of purposes of application of communication technologies in the media system of the Republic of Tatarstan have been identified, which demonstrate the media objectives in the media market of the republic (Table 1).

Table1. Targets of using communication technologies in Internet media representative offices of the Republic of Tatarstan

Group of targets/ Internet representative office	Internet representative office as a communication strategy of				
	Business electronic newspaper "Business-online" (www.business-gazeta.ru)	Socio-political commercial newspaper "Vecherniaia Kazan" (www.vk.ru)	Socio-political city newspaper "Kazanskie Vedomosti" (www.kazved.ru)	Republican socio-political newspaper "Respublika Tatarstan" (www.rt-online)	Electronic journal "Inde" (www.inde.io)

<sup>8</sup> A. Smanov 2017. Audience mobilization. URL: <http://www.unkniga.ru/vistavkikonferents/4513-kontent-v-internete-era-mobilnogo-potrebleniya.html>, accessed 05. 07. 2017.

<sup>9</sup> P. Bourdieu, *Practical meaning (Text)*, St. Petersburg, Aleteia, 2001.

Cognitive goals – focus on conscious perception	<p>Raising awareness of the audience</p> <p>Improving the efficiency of news</p> <p>Attracting the attention of the target audience to events and information opportunities</p> <p>Inclusion of the audience in the process of content creation</p> <p>Raising awareness of the audience about social media projects</p>	<p>Raising awareness of the audience</p> <p>Improving the efficiency of news</p> <p>Attracting the attention of the target audience to events and information opportunities</p>	<p>Raising awareness of the audience</p> <p>Improving the efficiency of news</p>	<p>Raising awareness of the audience</p> <p>Improving the efficiency of news</p>	<p>Raising awareness of the audience</p> <p>Attracting the attention of the target audience to events and information opportunities</p> <p>Inclusion of the audience in the process of content creation</p>
Affective goals – orientation to emotional perception	<p>Improving the image of the publication</p> <p>Correcting the image of competitors</p> <p>Correcting (changing) the image of the publication – rebranding, change of style and package</p> <p>Increased confidence in the social competence of the publication</p> <p>Open dialogue based on interactivity with the public and audience</p>	<p>Open dialogue based on interactivity with the public and audience</p> <p>Increased confidence in the social competence of the publication</p>	<p>Open dialogue based on interactivity with the public and audience</p> <p>Correcting (changing) the image of the publication – rebranding, change of style and package</p> <p>Increased confidence in the social competence of the publication</p> <p>Improving the image of the publication</p>	<p>Open dialogue based on interactivity with the public and audience</p> <p>Increased confidence in the social competence of the publication</p> <p>Improving the image of the publication</p>	<p>Correcting the image of competitors</p> <p>Correcting (changing) the image of the publication – rebranding, change of style and package</p> <p>Improving the image of the publication</p>

Connotative goals – orientation to behavior	Adjusting the behavior of public representatives and solving acute social problems Media-to-government opposition Creating an image of independent media Raising awareness of socially-oriented programs / projects Sustainable feedback / interactivity	Adjusting the behavior of public representatives and solving acute social problems Media-to-authorities opposition Creating an image of independent media	Adjusting the behavior of public representatives and solving acute social problems Complementary policy towards the authorities Sustainable feedback / interactivity	Adjusting the behavior of public representatives and solving acute social problems Complementary policy towards the authorities Sustainable feedback / interactivity	Creating an image of independent media Sustainable feedback / interactivity Raising awareness of socially-oriented programs / projects
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The laws of the formation and implementation of media communication strategies represented in the activities of Internet representative offices of regional media are:

1. Formation of media communication strategies is connected with the media's targets, reflected in its information policy and categories of links: media – authorities; media – audience, media – founder (owner), and media – society. For complementary media, communication strategies are aimed primarily at adjusting the behavior of members of the public and solving acute social problems
2. Formation of media communication strategies takes place when solving a set of tasks for creation of a stable media image of the media as the achievement of trust in the form of symbolic media capital on the basis of improving professional skills and organizing a wide access to information and the process of its creation.

## Discussion

Noting the changing strategies of the enterprises' behavior on modern markets under the influence of information technologies, Michael Porter stressed that these technologies change not only the communication policy of the

enterprise, but also influence its activity in general.<sup>10</sup> For regional media production, the emphasis is also shifted from the explicit prevalence of marketing policy instruments – the sale of content to the development and implementation of new content marketing tools, based on communication tools.<sup>11</sup>

It especially becomes important on the segmented market of buyers, which has replaced the market of seller's dominance.

The phenomenon of extra-high competition leads to the fact that the Internet media representations create information products that bear the signs of convergence. All the researched online representative offices tend to convergent products. Traditionally, convergence is defined as a process that brings to one market goods and services previously considered to belong to different markets. A.N. Mnatsakanian points out the primacy of non-linear processes of acceleration and updating of information flows "also subject to convergence, integration, and synergetic influence".<sup>12</sup>

Proceeding from this, any product that is convergent contains the signs of various media products, united by the communication environment of the Internet, which increases the communication impact. The consumer not only acquires various content in different formats, but also has the opportunity to combine them into one convenient for perception content, creating it independently in accordance with his interests and needs. At the same time, the convergent product allows us to show the professional skills of content creators and evoke the understanding and trust of the target audience.

### **Summary**

As a result of the study, the specifics of the implementation of communication strategies in the online representations of regional media were identified, including:

1. Direct contacts with the audience without any intermediaries, which allows forming the direct contact groups with the effect of keeping attention on the basis of disintermediation with the help of direct impact mechanisms.<sup>13</sup> All media have stable communities in social networks.

2. The functioning of Internet media representative offices and their involvement in the region's media system at different levels leads to the emergence of new types of intermediaries, such as: a) Web-based organizations created to gather, compile and disseminate various information (information intermediaries, which should also include date-blogs); b) communities created both in the structure of Internet representative offices and outside them on the initiative "from above" - the administration of the Internet representation, or "from below" - the media

<sup>10</sup> M. Porter, *International competition. Competitive advantages of countries*, Moscow, Alpina Publisher, 2016.

<sup>11</sup> R. William, *Media Math: Basic Techniques of Media Evolution*, Chicago, Illinois, NTC Publishing Group, 1994.

<sup>12</sup> A. N. Mnatsakanian, 2017. "The interaction of traditional media and the Internet on the example of the development of convergent media in Russia since the early 2000s." URL: [mfgssng.org/local/images/mfgs/ashot\\_mnatsakanjan](http://mfgssng.org/local/images/mfgs/ashot_mnatsakanjan), accessed 05. 07. 2017.

<sup>13</sup> T. P. Danko, *Electronic marketing*, Moscow, INFRA-M, 2003, p. 34.

audience for the situational resolution of emerging consumer problems – clarification, mediation in information, its production, generalization, etc.; c) information media agents - journalists, bloggers and civil journalists, who are interested in both information consumers and the media themselves, as they promote the dissemination of information on the image-based basis, maintaining interest in the publication.

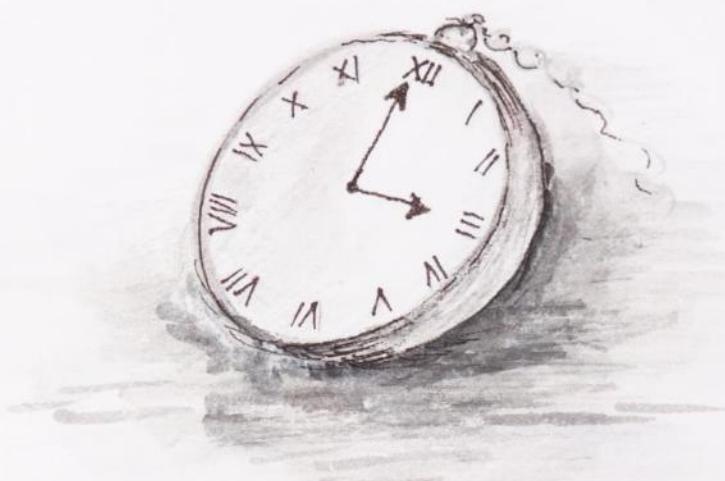
3. Active use of media in the context of online representation of PR tools, among which are two special types: traditional - creation of information reasons and organization of special public events, and innovative - building interactive communities (chats, communities), conducting online conferences, interactive press events, and creating multimedia projects.

4. Attaching to the Internet representative office the character of the content production center on the one hand and, on the other hand, the communication center when solving corporate tasks of media interaction with the target audience.

### **Conclusion**

The conducted study showed that the success of regional media in the modern media market increasingly depends on how accurately the most profitable and promising market segments with target recipients will be determined, to what extent the offers of competitors will be taken into account, a set of marketing activities will be formed and a complex of Internet communications with the use of a variety of techniques of influence and promotion of content will be developed on its basis.

## *Ecology and Ingineering*





## **Development Of An Automobile Thermoelectric Generator Design For Buses And Trucks: An Economical Study For Decreasing The Costs\***

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**Abstract.** *In order to improve the performance of trucks and buses during winter and prolong the life of engines, the authors proposed a thermal electric generator that generates and uses the heat of the diesel combustion products of an independent heater for a passenger compartment of a bus or a truck and generates electrical energy capable to provide its own consumption completely. The difference from other developments is the absence of a liquid circuit and, as the consequence, low requirements for tightness. The feature of the proposed TEG is the use of air as a cold heat carrier for the combustion in TEG combustion chamber, and the combustion products of diesel fuel as a hot heat carrier.*

*Having carried out the engineering calculation for the maximum capacity of an autonomous interior heater, the geometric dimensions of the central channel were set, which made 40x40 mm, and a three-dimensional model of the layout solution was developed. In this paper, the authors developed the design of a thermal-electric generator (TEG). Besides, full-size calculation domains were constructed and numerical modeling of TEG operation was performed for various operating modes of an air heater. The values of the temperature fields on the external and internal surfaces of TEG were obtained and the heat fluxes were determined transferred from cold and hot heat carriers.*

**Keywords:** Economical Study, Decreasing the costs, Thermal-electric generator, TEG, heat transfer, modeling, flow structure, engineering, turbulence flow, simulation.

### **Introduction**

In severe winter conditions of the northern countries, such as Norway, Iceland, Canada, Russia, Finland, an autonomous pre-heater is used for an efficient engine start-up, and during stand-by periods an independent heater of a passenger compartment is used. Recently, they were an unacceptable luxury for many truck and bus lovers. Today KAMAZ-5490 truck-mounted tractors have an independent heater in a base set. Besides, an independent compartment heater and a starting heater can be purchased separately and installed in any other truck or a bus.

Every cold start of an engine on gasoline fuel is equivalent to several hundred kilometers of distance. The danger increases in proportion to an engine power. Scandinavian experts estimated that the launch of a cold carburetor engine makes 300 km. of mileage approximately. This indicator for a powerful diesel engine makes about 700 km in the opinion of Russian experts. Sometimes one cold start is enough to disable a powerful diesel

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engine. Using a starting heater, you can easily start an engine in extremely low temperatures easily. During parking it is recommended to warm the salon using an autonomous heater. Its main advantages are the ability to save an engine life and diesel fuel.

The main disadvantage of starting heaters and autonomous interior heaters is that they work when a car engine is switched off, which means that they receive power from a battery. With the daily use of a device, a short route, when you drive in urban conditions with a lot of traffic jams, a battery just does not have time to restore the necessary charge. With a daily route of 10 - 15 kilometers, it can be discharged to zero in a couple of weeks. To prevent this, we have developed the TEG in this paper that can provide its own consumption of a starting heater or an autonomous heater.

In recent years, a large number of works have been devoted to the problem of heat recovery of waste gases using a TEG <sup>1</sup> and thermal-electric

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<sup>1</sup> A. A: Angeline, J. Jayakumar, L. G. Asirvatham, I. J. Marshal, S. Wongwises, "Power generation enhancement with hybrid thermoelectric generator using biomass waste heat energy," in *Experimental Thermal and Fluid Science*, LXXXV(2017), p. 1-12; M. E. Demir, I. Dincer, "Performance assessment of a thermoelectric generator applied to exhaust waste heat recovery," in *Applied Thermal Engineering*, CXX (2017), p. 694-707; W. He, S. Wang, L. Yue, "High net power output analysis with changes in exhaust temperature in a thermoelectric generator system," in *Applied Energy*, CIVC (2017), p. 259-267; T. Y. Kim, A. A. Negash, G. Cho, "Experimental study of energy utilization effectiveness of thermoelectric generator on diesel engine," in *Energy*, CXXVIII (2017), p. 531-539; A. R. M. Siddique, S. Mahmud, B. V. Heyst, "A review of the state of the science on wearable thermoelectric power generators (TEGs) and their existing challenges," in *Renewable and Sustainable Energy Reviews*, LXXIII (2017), p. 730-744; W. Li, J. Peng, W. Xiao, H. Wang, J. Zeng, J. Xie, Q. Huang, K. Mao, L. Zhang, "The temperature distribution and electrical performance of fluid heat exchanger-based thermoelectric generator," in *Applied Thermal Engineering*, CXVIII (2017), p. 742-747; D. Champier, "Thermoelectric generators: A review of applications," in *Energy Conversion and Management*, CXL (2017), p. 167-181; T. Y. Kim, A. Negash, G. Cho, "Experimental and numerical study of waste heat recovery characteristics of direct contact thermoelectric generator," in *Energy Conversion and Management*, CXL (2017), p. 273-280; T. Jiang, C. Q. Su, Y. D. Deng, Y. P. Wang, "Integration of Research for an Exhaust Thermoelectric Generator and the Outer Flow Field of a Car," in *Journal of Electronic Materials*, VII (2017), no. 5, p. 2921-2928; Y. D. Deng, T. Hu, C.Q. Su, X. H. Yuan, "Fuel Economy Improvement by Utilizing Thermoelectric Generator in Heavy-Duty Vehicle," in *Journal of Electronic Materials*, IVL (2017), no. 5, p. 3227-3234; C. G. Yu, S. J. Zheng, Y. D. Deng, Su C.Q., Y. P. Wang, "Performance Analysis of the Automotive TEG with Respect to the Geometry of the Modules," in *Journal of Electronic Materials*, IVL (2017), no. 5, p. 2886-2893; C.Q. Su, D. C. Zhu, Y. D. Deng, Y. P. Wang, X. Liu, "Effect of Cooling Units on the Performance of an Automotive Exhaust-Based Thermoelectric Generator," in *Journal of Electronic Materials*, IVL (2017), no. 5, p. 2822-2831; A. E. Rissee, H. P. Nee, O. Erlandsson, K. Brinkfeldt, A. Contet, F. Frobenius Ing, G. Gaiser, A. Saramat, T. Skare, S., Nee, J. Dellrud, "Design of a Thermoelectric Generator for Waste Heat Recovery Application on a Drivable Heavy Duty Vehicle," in *SAE International Journal of Commercial Vehicles*, X (2017), no. 1, p. 26-44; T. Ming, W. Yang, X. Huang, Y. Wu, X. Li, J. Liu, "Analytical and numerical

generators have been used in automotive technology for heat energy recovery, for example, for the heat recovery of exhaust system elements. Active studies of characteristics and design solutions for cars and stationary installations are carried out in the US universities (General Motors Global Research & Development) and in other countries. The territory of the Republic of Tatarstan has a large machine-building cluster represented by several automakers: PJSC "KAMAZ", Ford Sollers and others who can become the users of this work. Over the past few years, leading automotive manufacturers have already developed and tested the thermal-electric generators for passenger cars. At the moment, there is a great need for the developments on this topic for the truck manufacturer PJSC "KAMAZ".

### Materials and methods

In this paper, we will consider the connection of a thermal-electric generator to an independent heater of a cabin operating in different modes, whereas a starting heater operates in the same mode. The connection diagram of TEG to an independent heater of a passenger compartment is shown on Fig. 1. The advantage of this connection scheme is the absence of costs on a fan own drive for the circulation of heat carriers. Besides, the fuel utilization factor is increased.

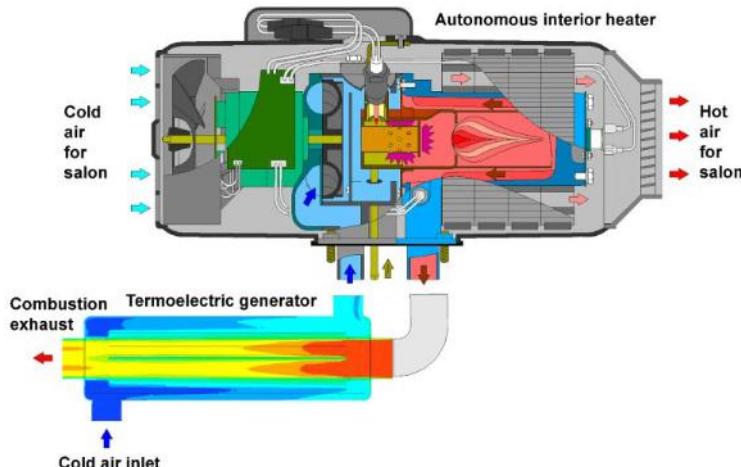


Fig. 1. TEG connection scheme.

Let's take an autonomous heater PLANAR-8DM-24 produced by "Teplostar" as the main power supply facility using TEG, which is installed

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investigation on a new compact thermoelectric generator," in *Energy Conversion and Management*, CXXXII (2017), p. 261-271.

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on the main truck KAMAZ 5490. This heater has the following characteristics:<sup>2</sup>

Table 1.

Characteristic name	Minimum value	Maximum value
Heating capacity, kW	2	7,5
Diesel fuel consumption, l/h	0,25	0,9
Power consumption, W	15	100

Having carried out the engineering calculation for the maximum operating mode, the main dimensions of TEG cross-sections are set from the side of the combustion products 40x40 mm, the speed of 3.5 m/s, the heat transfer coefficient  $41 \frac{\text{Bt}}{\text{m}^2 \cdot \text{K}}$  and from the cold air side, the cross-section dimension of 40x40 mm, the speed of 2.3 m/s and heat transfer coefficient  $14 \frac{\text{Bt}}{\text{m}^2 \cdot \text{K}}$ . It was revealed that the bottleneck for a constant operation mode provision of a thermal-electric generator is an air channel of cold air, in which the application of finning is necessary.

In order to provide the required amount of electricity generation, it is planned to use the thermal-electric module TEP1-142T300, produced serially, with the surface of 40x40 mm, which produces 5 watts of electrical energy and operates at the temperatures up to 300°C.

Using the experience of the works carried out at the department of Heat Engineering and Power Engineering<sup>3</sup> and to ensure the compactness and to limit the outside temperature on TEG surface, the layout was developed shown on Fig. 2 where combustion products flow through the

<sup>2</sup> T. Ma, X. Lu, J. Pandit, S. V. Ekkad, S. T. Huxtable, S. Deshpande,, Q. W. Wang, "Numerical study on thermoelectric–hydraulic performance of a thermoelectric power generator with a plate-fin heat exchanger with longitudinal vortex generators," in *Applied Energy*, CLXXXV (2017), p. 1343-1354.

<sup>3</sup> T. Ma, X. Lu, J. Pandit, S. V. Ekkad, S. T. Huxtable, S. Deshpande, Q. W. Wang, "Numerical study on thermoelectric–hydraulic performance of a thermoelectric power generator with a plate-fin heat exchanger with longitudinal vortex generators," p. 1343-1354; S. A. Isaev, P. A. Baranov, A. G. Sudakov, A. M. Ermakov, "Modeling the increase in aerodynamic efficiency for a thick (37.5% chord) airfoil with slot suction in vortex cells with allowance for the compressibility effect," in *Technical Physics Letters*, IXL (2015), no. 1, p. 76-79; A. Shchelchkov, "Thermohydraulic characteristics of discretely rough tubes for the transitional flow regime," in *Heat Transfer Research*, III (2016), no. 6, p. 545-557; I. A. Popov, A. V. Shchelchkov, Y. F. Gortyshov, N. T. A. Al-Harbavi, "Cooling systems for electronic devices based on the ribbed heat pipe," in *Russian Aeronautics*, LVIII (2015), no. 3, p. 309-314; S. A. Isaev, A. V. Schelchkov, A. I. Leontiev, P. A. B. Baranov, M. E. Gulcova, "Numerical simulation of the turbulent air flow in the narrow channel with a heated wall and a spherical dimple placed on it for vortex heat transfer enhancement depending on the dimple depth," in *International Journal of Heat and Mass Transfer*, IVC (2016), p 426-448; I. Malganova, A. Ermakov, "Numerical simulation of heat transfer and hydrodynamics ring and V-shaped heat exchange intensifiers," in *International Journal of Pharmacy and Technology*, VIII (2016), nr. 4, p. 24300-24308.

central square contour, and cold air flows through the outer contour. The core has the dimensions of 45x45 mm and the length of 260 mm, due to which 5 thermal-electric modules are located on each side. There are 20 thermal-electric modules to generate 100 watts of electrical energy at the maximum operating mode of the heater. The size of the outer casing makes 72x72 mm without the consideration of nozzles. The connectors for the connection to an independent heater of a passenger compartment are selected from compatibility conditions and its diameter makes 30 mm in air and 38 mm in combustion products.

In this work, numerical modeling is used as the first research stage, where the possibility of temperature mode maintaining will be determined in accordance with the developed constructive layout solution, using numerical simulation methods for hydrodynamics and heat transfer in the academic version of Ansys CFX (KNITU-KAI).

The finite element grid for the design domains of combustion products, cold air, a central support plate, the thermal-electric modules and air cooling radiators is shown on Fig. 3. The total number of elements is 3.5 million units. BSL model was used for the calculation according to a set task.<sup>4</sup>

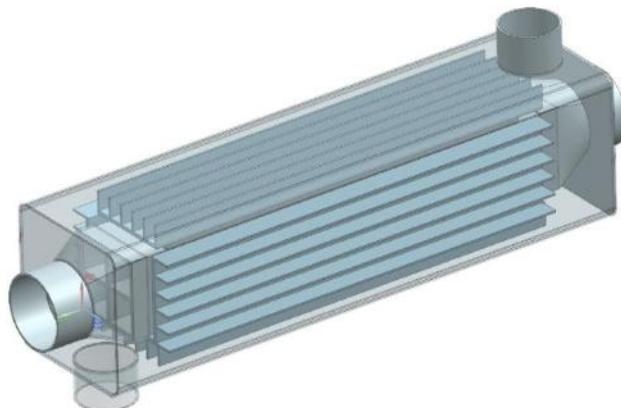


Fig. 2. Constructional layout solution of TEG.

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<sup>4</sup> I. Malganova, E. Andrey, "Investigations of heat transfer and hydrodynamics in the drop-shaped heat exchange intensifiers for use in the aerospace industry," in *International Journal of Pharmacy and Technology*, VII (2016) no. 4, p. 24589-24597.

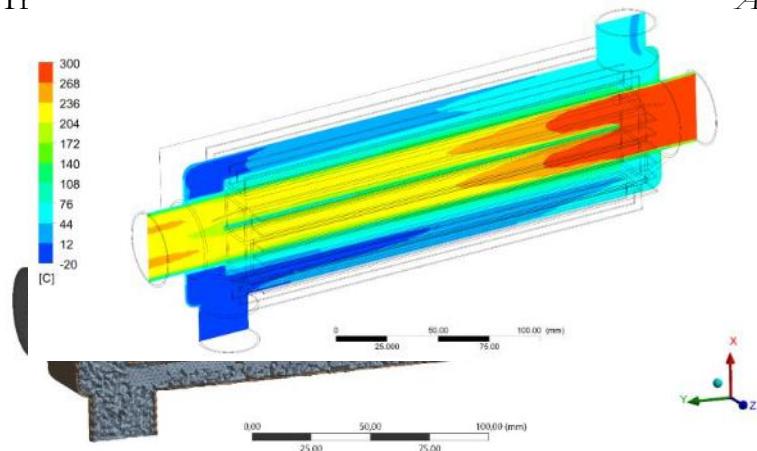


Fig. 3. Finite-element grid for computational TEG domains

10 prismatic sublayers, simulating a laminar sublayer are created for the domain of combustion products and cold air.

## Results

The velocity field in the longitudinal section and the structure of cold air flow are shown on Fig. 4. and Fig. 5. The speed of cold air flow in the longitudinal section corresponds to the engineering calculation of 2.5 m/s on average, but numerical calculation showed that the air at the outlet has a significantly higher speed due to the fact that it was heated up to 77 °C. For combustion products, the speed also corresponds to the engineering calculation and makes 3.5 m/s. The combustion products are also cooled to 71 °C. Fig. 5

The pressure loss along the combustion product path at the maximum operating mode of a heater makes 8.8 Pa, and along the cold air path it makes 42 Pa, the total losses that are additionally created to an independent heater make 50.8 Pa, which corresponds to an additional load of 0.148 W on a heater fan electric motor.

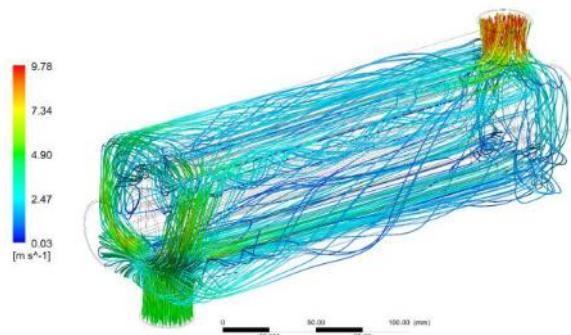
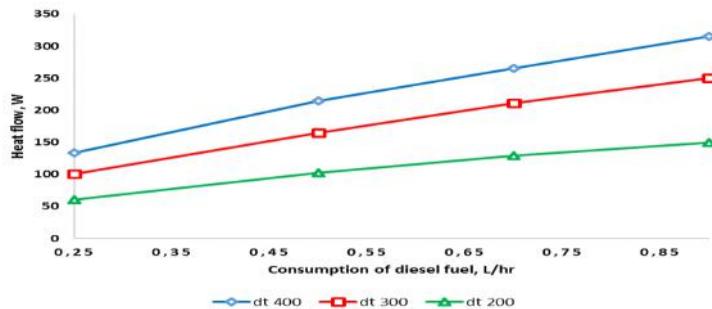


Fig. 4. Cold air flow structure.

Fig. 5. The temperature in the longitudinal section of TEG

The calculations of TEG heat flux for various temperature differences at the inlet and the outlet of an independent heater were also carried out. Fig. 6.



This arrangement of TEG allows to work both at maximum modes and at minimum modes, ensuring the maintenance of temperature modes under specified conditions for the operation of thermal-electric modules.

### Conclusion

TEG have such unique qualities as high reliability, ease of operation, the absence of moving parts, noiselessness and durability. The main problem of thermal-electric generator application in automotive engineering is the provision of temperature operating modes for TEG and the placement of a large number of Peltier elements in a small volume of heat recovery unit. Within the framework of this work, a layout solution for the compact placement of 20 thermal-electric modules has been developed and numerical studies of heat transfer and hydrodynamic dynamics have been carried out to determine the efficiency of TEG and to provide the generation of the necessary electric energy for an autonomous heater. Also, the generation efficiency dependencies on the operating modes of an independent heater and the temperature of the gases at a heater outlet were obtained.

### Discussion

The results of the work can be applied to improve the performance of trucks and buses, compensating for current losses during the operation of a compartment heater or an independent heater. It is planned to carry out experimental works, the joint operations of an autonomous heater and a thermal-electric generator with the obtaining of real characteristics for the production of electric current. In the case of less power generation, it will be possible to extend TEG and add another series of thermal-electric modules to bring the characteristics to a design level.

"Development Of An Automobile Thermoelectric Generator Design For Buses And Trucks: An Economical Study For Decreasing The Costs," *Astra Salvensis*, V (2017), Supplement no. 1, p. 417-423

Mohammad OMRANI, Reza ZAREI

## **The mediating role of information and communication technology (ICT) in the relationship between organizational structure and organizational agility**

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**Abstract.** *The purpose of this study was to examine the mediatory role of ICT in the relationship between organizational structure and organizational agility. The method was descriptive with correlational design. The population was all workers of the Methanol Company of Deir. Since the population was limited, sampling was redundant and the whole population was selected as a sample by census. The research tools were measurement scale of ICT by Azadmehr, Robins' organizational structure questionnaire, and Sharifi-Zhang's Agility Questionnaire. Their validity and reliability were confirmed. Mean and simple variance and regression analyses were used for data analysis. The results of the study showed that organizational structure has a direct and significant relationship with ICT. Organizational structure has a direct relationship with agility. ICT has a direct relationship with organizational agility. Moreover, a significant linear relationship can be deduced between the predictor variable (organizational structure) and the criterion variable (ICT), and organizational structure can significantly and directly predict (the use of) ICT.*

**Keywords:** mediating role, organizational agility, organizational structure, ICT.

### **Introduction**

Nowadays, agility can quickly respond to changes and can be an effective factor in the success and survival of large factories and companies. ICT is one of the most powerful tools for empowering to achieve agility and communication between organizational structures. Interpretative structural development is aimed at reaching agility through the use of ICT capabilities. Identification of the indices of reaching agility through ICT, the managers' willingness and commitment, organizational atmosphere and the alignment of strategic planning with ICT plans is an effective factor in achieving agility and communication between organizational structure through ICT (Mohammadi & Amiri, 2012). Khosravipour and Amirnejad (2014)<sup>1</sup> conducted a study entitled "The effect of ICT on organizational agility in public universities of Khuzestan (Case Study: Shahid Chamran University of Ahwaz). The results showed no significant differences between the opinions of faculty members with academic degree, age, and service history regarding organizational agility. There was a relationship between internal and external factors affecting information technology with organizational agility, and external factors had more effect on organizational agility.

Bistoun (2013)<sup>2</sup> conducted a study entitled "Studying the relationship between information technology and organizational structure in the Ministry of Sports and Youth of the Islamic Republic of Iran. The results showed a significant

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<sup>1</sup> E. Khosravipour, Gh. Amirnezhad, "Influence of ICT on Organizational Agility in Public Universities of Khuzestan Province (Case Study: Shahid Chamran University of Ahwaz)," in *Social Development Quarterly*, VIII (2014), no. 4, p. 93.

<sup>2</sup> A. Bisotun, M. Jalali Farahani, A. Mehrabi Koushki, "Examining the Relationship between Information Technology and Organizational Structure in the Ministry of Sport and Youth of the Islamic Republic of Iran," in *Journal of Sport Management*, , V (2013), no. 3, p. 174 -161.

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relationship between information technology and organizational structure in the Ministry of Sports and Youth. There is a positive and significant relationship between information technology complexity, formalization, and concentration in the Ministry of Sports and Youth.

Bloom et al. (2010)<sup>3</sup> examined the effects of ICT on organizational structure showing that these technologies have different effects on each level of the organization. Better access to information leads to guidance of decisions towards lower levels of the organization and thus to decentralization and reduction of hierarchy.

Chang (2007)<sup>4</sup> conducted a study entitled "The use of information technology and organizational structure." The results showed that the use of information technology directly relates to the interaction between team performances; and when the organizational structure is decentralized and the formality is low, the interaction between team performances is highly desirable.

Over the past two decades, the industrial environment in Iran has faced unprecedented and unpredictable fast changes in technology, market conditions and customer needs. This has made manufacturing organizations face issues such as rapid and unpredictable changes: increasing competition due to technological innovation and turbulent environments. To face these changes, as an inevitable necessity of activity and competition in the global economy, agility is a matter that has entangled the minds of the managers of manufacturing organizations in Iran. Thus, Iranian organizations must be aware of the enablers of agility and learn the path through which agility can be achieved.<sup>5</sup> Giving the necessity of simultaneous achievement of productivity and flexibility in manufacturing organizations to face the customer's changes and enrichment as well as effective role of information technology in this regard, with the aim of helping manufacturing companies, this research intends to present an interpretive structural model of the factors affecting achievement of agility through information technology. Interpretive structural modeling is an interactive learning process that examines the relationship between the concepts of a problem and creates a comprehensive structure of a complex set of concepts, and besides determining the priority of the effects of elements on one another, determines the direction and intensity of the relationship between the elements of a complex set in the hierarchical structure by interpreting the views of a group of experts .

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<sup>3</sup> N. Bloom, R. Sadun, J. Reenen, *Americans Do I.T. Better: US Multinationals and the Productivity Miracle*, New York, 2010.

<sup>4</sup> J. Ch. Chang, "Information technology organization structure and new product development". The mediating effect of cross – functional team interaction, engineering management," *IEEE, transaction*, LIV (2007), p. 687-698.

<sup>5</sup> B. Shahabi, A. Rajabzadeh, "Investigating the Organizational Agility Dimensions in Government Organizations with the Information Technology Approach. Second International Conference on Information and Communication Technologies Management," March, Iran, 2005..

Today, competition for organizational agility and service quality improvement is known as a strategic issue for organizations operating in the service sector. Organizations that achieve a higher level of service quality provide higher levels of customer satisfaction as an introduction to achieve competitive advantage. ICT is as a commodity that can be bought, sold and transmitted, and has a certain life cycle.

The agility of companies along besides other management theories is critical to the success of companies in the turbulent market environment (Safford et al., 2008). Rapid technological developments, increasing risks, globalization and privatization expectations are of the environmental features that current business organizations are facing. To succeed in this environment, agility creates a competitive edge that can be preserved with innovation and quality. The agility approach put forward, developed in less than a decade, and is a conscious and comprehensive response to the changing needs of competitive markets and gain success from opportunities.

Thus, the purpose of the present study is to identify the intermediary role of ICT in the relationship between interfaces in the relationship between organizational structure and agility through information technology in manufacturing factories and their relationship in an integrated model.

### **Research hypotheses**

#### **The main hypothesis**

ICT plays an intermediary role between organizational structure and organizational agility.

#### **Sub-hypotheses**

1. The organizational structure can predict ICT.
2. The organizational structure can predict organizational agility.
3. ICT can predict organizational agility.

#### **Methodology**

The present research was applied in terms of purpose, and correlational regarding methodology. The population of this study was all employees with a Bachelor's degree and higher working in Kaveh Methanol Factory in Deir in 2017. The sample size was 130 subjects (23 women and 107 men) from among the employees and workers of Kaveh Methanol Factory. The present study used census sampling method due to the limited population and the whole population was selected as the sample. The study used three questionnaires: ICT by Azadmehr with 20 items that measure three aspects of familiarity with the computer, the Internet, and computer software with Cronbach Alpha of 0.95. B. Robins' organizational structure questionnaire (2008) with 24 items: questions 1 to 8 are related to complexity of organizational structure, 9 to 14 are related to formality, and 15 to 24 are related to structural centralization. The overall Robins' organizational structure score is obtained from Robins' three-factor aggregate scores and its Cronbach alpha was 70%. C: Sharifi-Zhang's Agility Questionnaire (2000) has 28 items and five

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components, with Cronbach's alpha of 0.92, which measures the organizational agility scale.

### Inferential results

Hypothesis 1: Organizational structure of employees can significantly predict (the uses of) information technology and their relationship.

Simple regression analysis was used to test this hypothesis, whose results are shown in [Table 1].

Table 1: Results of regression analysis of ICT according to organizational structure

Criterion variable	Predicting variable	Beta	t	p	R <sup>2</sup>	R	F	df	p
ICT	Organizational structure	0.194	20.23	0.28	0.038	0.194	4.97	1.127	0.28

**Hypothesis 2: Organizational structure of employees can significantly predict their organizational agility.**

Simple regression analysis was used to test this hypothesis, whose results are shown in [Table 2].

Table 2: Organizational agility regression analysis according to organizational structure

Criterion variable	Predicting variable	Beta	t	p	R <sup>2</sup>	R	F	df	p
Organizational agility	Organizational structure	0.306	3.63	0.000	0.094	0.306	13.15	1.127	0.000

**Hypothesis 3: (the rate of use) of ICT by the staff can significantly predict their organizational agility.**

Simple regression analysis was used to test this hypothesis, whose results are shown in [Table 3].

Table 3: Organizational agility regression analysis according to ICT

Criterion variable	Predicting variable	Beta	t	p	R <sup>2</sup>	R	F	df	p
Organizational agility	ICT	0.353	4.25	0.00	0.125	0.353	18.08	1.127	0.000

**The main hypothesis:** (the rate of use) of ICT can play an intermediary role between organizational structure and organizational agility.

Path analysis using hierarchical regression method was used through Baron and Kenny method to test the intermediary role of ICT between organizational structure and organizational agility. [Table 4and 5] indicate the results of multiple

regressions in a hierarchical way to test the intermediary role of ICT in the relationship between organizational structure and organizational agility [Figure 1].

Table 4: Multiple hierarchical regression results for testing the intermediary role of ICT

Step	Variables	Beta	t	p	R <sup>2</sup>	R	F	df	p
First	Organizational Structure	0.306	3.627	0.000	0.094	0.306	13.15	1.127	0.000
Second	Organizational Structure	0.247	3.012	0.003	0.183	0.428	14.15	2.126	0.000
	ICT	0.305	3.717	0.000					

Table 5: The direct and indirect effects of ICT in the relationship between organizational structure and organizational agility

Variables	Direct effect	Indirect effect	Total effect
ICT	0.305	-----	0.305
Organizational Structure	0.247	0.059	0.306

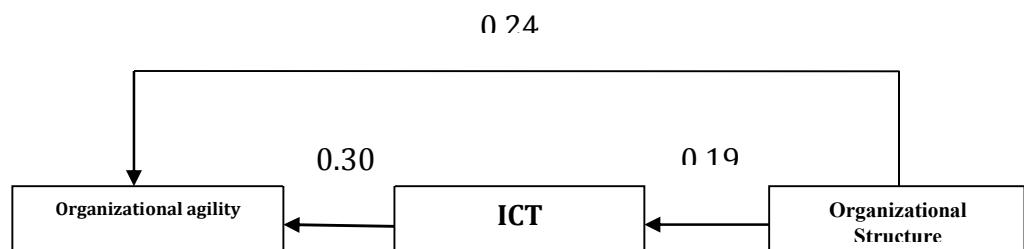


Figure 1: The assumed intermediation model of mediation of ICT in the relationship between organizational structure and organizational agility

### Discussion and Conclusion of Research Hypotheses

**Hypothesis 1: Organizational structure of employees can significantly predict (the uses of) information technology and their relationship.**

Simple regression analysis was used to test this hypothesis. The results of variance analysis test show a significant linear relationship between predictive variable (organizational structure) and criterion variable (ICT), and organizational structure can significantly and directly predict (the use of) ICT.

This finding is consistent with the findings of Bistoun (2013)<sup>6</sup>, Damanzpour (2007),<sup>7</sup> Mohammadi et al (2009), Bezweek and Egbu (2010)<sup>8</sup> and Bloom et al.

<sup>6</sup> A. Bisotun, M. Jalali Farahani, A. Mehrabi Koushki, "Examining the Relationship between Information Technology and Organizational Structure in the Ministry of Sport and Youth of the Islamic Republic of Iran,", p- 174 -161.

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(2010) denoting that the effects of ICT on the organizational structure is significant and technologies have different effects on each level of the organization.

In explaining this finding, one can state that information technology is the key to the use of knowledge in the 21st century. The use of ICT today is a guarantor of the survival and continuity of the activities of manufacturing companies and without the use of them, not only it is not possible to use new methods, but also the ability to compete with other companies is not made possible. Thus, the organization must be planned to provide sufficient information to the managers of the industrial workshops. In this study, the effect of ICT relationships and organizational structure not only include a high degree of respect between manufacturing companies and stakeholders such as customers, suppliers of raw materials, and raw materials and employees, but also the excellence of communication and coordination and negotiation by the two sides of the relationship, along with the exchange of knowledge, are about the capabilities of ICT and business needs. Thus, according to the results of the organizational structure of the employees that they can significantly predict the (the use of) their ICT is confirmed.

### **Hypothesis 2: Organizational structure of employees can significantly predict their organizational agility.**

Simple regression analysis was used to test this hypothesis. The results of variance analysis showed a significant linear relationship between predictive variable (organizational structure) and the criterion variable (organizational agility) and organizational structure can significantly and directly predict organizational agility.

The results of this hypothesis show that the square of coefficient of the organizational structure between the predictive variable and the organizational agility variable was 0.094, which means that about 9% of the variance of employees' organizational agility is predicted by their organizational structure. This finding is consistent with the results of Babaian and Rezaei (2014) Farzaneh et al. (2011)<sup>7</sup> stating that the important factors influencing organizational structure is organizational structure. In explaining this, it is said that the design of an appropriate organizational structure can lead to the benefits of agility by focusing on employees and innovation and creativity resulting from their effective collaboration with each other, and thus enable industrial companies to develop

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<sup>7</sup> Fariboz Damanzpour, "Organizational complexity and innovation," in *Management science*, VIIIL (2007), no. 5, p. 693-716.

<sup>8</sup> S. Bezweek, C. Egbu, "The Impact of Information Technology to Facilitate Communication Collaboration in Libyan Public Organisations, in: 'CIB World Congress 2010', school of built environment, the university of salford, Salford, Greater Manchester, UK. Conference details," in *CIB World Congress, Building A Better World, 10-13 May, The Lowry*, Salford Quays, United Kingdom, 2010.

<sup>9</sup> A. Babaian, E., Rezaei, "Analysis of the Relationship between Organizational Structure of NAJA and Organizational Agility in Providing Law Enforcement Services (Case Study: Police University)," in *Quarterly Journal of Police Management Studies*, 2014, p. 7-28.

features such as flexibility, high response speeds in the face of environmental changes and responsiveness and appropriate response to predictable and unpredictable changes.

**Hypothesis 3: the rate of use of ICT by the staff can significantly predict their organizational agility.**

Simple regression analysis was used to test this hypothesis. The results of variance analysis showed a significant linear relationship between predictive variable (ICT) and criterion variable (organizational agility), and (the use of) ICT can significantly and directly predict organizational agility. This finding is consistent with the findings of Khosravipour and Amirnejad (2014) and Ghanbari et al. (2014)<sup>10</sup> stating the direct effects of knowledge management process on organizational agility. The results of Bashuh and Shekastehband (2013) showed that architectural, infrastructure, human resources and communication resources aspects are the dimensions of the capability of ICT, and senses, responsiveness and learning dimensions of organizational agility constituents that have a significant relationship between the capabilities of information technology agility is organized by the organization.

In explaining this hypothesis, one can state that as managers and staff experts are more positive about using ICT and communication, they are more determined to use this ICT, and as they are more determined in their decision to use this technology, they will use ICT more. It encourages employees of the organization to use this technology and ultimately increases the organization's agility and performance. Creating communication is another valuable source of ICT communication. Promoting understanding of the elements and factors of ICT in the manufacturing industry chain, increasing and reinforcing mutual trust among members, coordinating common goals, paying attention to sustainable development in manufacturing companies, successful communication among stakeholders are of the corporate technical and business programs.

Agility can also lead to an increase in the quantity and quality of services, reduction in the cost of adverse reactions to change preventing waste of resources, increase in the competitiveness of producers, and increase efficiency and effectiveness. ICT reduces production costs, increases staff revenues, and reduces the various skills needed to communicate with the market. According to this study, ICT leads to power to anticipate the agility of manufacturing companies for expanding response options when unpredictable events occur. Thus, as the results obtained, the use of ICT by the staff can significantly predict their organizational agility.

**The main hypothesis: the use of ICT can play an intermediary role between organizational structure and organizational agility.**

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<sup>10</sup> S. Ghanbari, M. R. Ardalan, F. S. Nasiri Valik Bani, "Evaluation of the Process Effect and Infrastructure of Knowledge Management on Organizational Agility," in *Public Management Research*, VII (2014), no. 23, p. 27-52.

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Path analysis using hierarchical regression method was used through Baron and Kenny method to test the intermediary role of ICT between organizational structure and organizational agility. The results of multiple regression analysis using hierarchical method to test the intermediary role in the relationship between organizational structure and organizational agility were statistically significant at one percent level. The results of hierarchical regression analysis show that ICT plays an intermediary role between organizational structure and organizational agility.

As the results show, one of the most important reasons for the differentiation of companies is the use of ICT by them in the agility of an organization and organizational structure. According to the results, the use of ICT can play an intermediary role between organizational structure and organizational agility.

In explaining this, one can say that the use of ICT with learning and computer use training, Internet familiarity and familiarity with computer software affects the agility and organizational structure and ensures success and effectiveness of industrial workshops. Agility can implement the structure of change technology, which leads to making important and timely decisions in manufacturing companies that increase the tolerance of errors in the production process, which is considered a merit.

Organizational agility enhances predicting environmental risk and flexibility in manufacturing companies, which ensures future stability and security. In fact, one can claim that agility in manufacturing industrial companies can quickly respond to market opportunities and threats. Thus, agility can quickly make great changes fast and solve problems more effectively. Thus, it can be said that the use of ICT has a mediating role on agility and can implement multilateral education that is in fact an optimal efficiency. ICT is a significant predictor of the organizational structure of Kaveh Methanol Company. Accordingly, one can claim that the higher the prevalence of ICT in industrial workshops is, the more organizational structure with better control and better performance of employees is done to the highest degree. Thus, the need to pay attention to organizational structure is due to the effect that organizational structure has on all dimensions of the manufacturing companies.

By creating knowledge-based diagnosis, complexity, formalization and concentration, organizational structure can drive manufacturing companies forward or stop them. Thus, considering the above mentioned factors, studying organizational structure is necessary for the causes of the success and failure. Private companies and organizations, as open systems, look for high-efficiency economic development. In this case, survival in the environment and desirable efficiency require a kind of coordination within the organization. Accordingly, for having desirable efficiency, organizations need organizational structure and agility. The last and most important finding shows that ICT plays an intermediary role between organizational structure and organizational agility.

### **Practical suggestions**

1- As the results of the first hypothesis approve of the relationship between organizational structure and ICT, the managers of Kaveh Methanol Company are suggested provide the necessary facilities for strengthening ICT and thus make favorable changes in the organizational structure.

2- As in the results of the second hypothesis, a relationship was found between agility and organizational structure, it is suggested that the managers of various organizations, especially Kaveh Methanol Company, are suggested to follow organizational agility through changes in the organizational structure by holding scientific meetings experts by inviting experts of management as well as the formation of special in-service workshops.

3. As the results of the third hypothesis showed a clear relationship between ICT and agility, it is suggested using appropriate techniques for communication technology transfer equip the methanol production technology with the world-class technology and training the people appropriately.

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SAFIULLIN

## **The Main Factors Of Transformation Of The Strategies Of International Oil Companies\***

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**Abstract.** *The world of oil and gas industry has a short but eventful history. The development of this branch of the economy was accompanied by a constant transformation of the oil companies' strategies. Today, the degree of efficiency of the oil companies' activities has an impact on the entire global economy. The importance of the oil and gas industry in the world economy, the development of geopolitical processes determined the influence of many external factors on this sector of the world economy. Under the influence of these factors, oil and gas companies' strategies are transformed. A significant change in the geopolitical situation in the world and in oil prices have become the main reasons for the significant transformation of the competitive strategies of the world's largest oil and gas companies. The change in the nature of the strategies of oil and gas corporations will have an impact on all other branches of the economy. In this connection, it is necessary to study the factors, which influence the nature of the competitive strategies of oil and gas companies in the world, under modern conditions. The article highlights the fundamental factors, determining the nature and content of competitive strategies of oil companies in the world. The main factors of transformation strategies of oil companies in modern conditions were defined. The factors, influencing oil prices, were considered. The contents of geopolitical influence on the transformation strategies of the oil companies were revealed. The prospects of transformation strategies due to the system-wide crisis of the world economy were defined.*

**Keywords:** strategy, oil companies, corporations, oil corporations, transformation.

### **Introduction**

The developmental history of the world market of hydrocarbons is short, in comparison with other commodity markets, but very rich. It dates back to the end of the 19th century. <sup>1</sup>During this time in the oil and gas industry there were many events, determining its modern structure: the transformation of private industries into the largest international corporations; qualitative change in legislation, regulating mineral resource management and land use in all countries; interference of states and

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Ministry of Higher Education and Scientific Research - Republic of Iraq/  
Department of Missions and Cultural Relations.

<sup>1</sup> V. Yu. *Oil of Russia. Past, present and future*. Moscow, Creative economy, 2011; D. Ergin, *Extraction. World history of the struggle for oil, money and power*, 2<sup>nd</sup> edition, Moscow, Publishing House "DeNovo", 2011; S. R. Tsokiev, *The strategies of interaction between oil and gas companies of China and Russia on the African continent: Ph.D. thesis in Econ. Sciences: 08.00.14*, Moscow, 2016; N. N. Tskhadaya, *The strategy of managing the competitive advantage of a diversified industrial company of the oil and gas complex: Ph.D. thesis in Econ. Sciences: 08.00.05*, Moscow, 2010; S. Marsh, *Anglo-American Relations and Cold War Oil: Crisis in Iran*, Palgrave, Macmillan, 2003.

supranational organizations in the development of the oil and gas industry; significant fluctuations in prices for hydrocarbons, which have become one of the main indicators of the world economy, etc. The transformation of competitive strategies of the largest international corporations took place during the course of development, modification of the factors of the external and internal environment of the world oil and gas industry.

During the development of the world oil and gas industry, the largest corporations of this industry have developed many methods and ways of competition activities, based on the development of various strategies: resource, investment, territorial differentiation strategies, product differentiation strategies, etc. It is not an exaggeration to say, that the oil industry forms the basis of the world economy, it is its critically important element, and the effectiveness of most national economies and whole regions of the world are dependent on the effective implementation of oil and gas companies' strategies.

The nature and content of the strategies of oil and gas companies in the world are determined by a number of factors, the main ones of which are the following:

- state policy, regarding the development of the oil and gas complex of particular countries;
- the investment potential of companies, manifested mainly in financial and investment resources and the experience in implementing investment activities;
- the territorial ranges of the companies' activities;
- the level of technological development of companies;
- product differentiation of the companies, etc.

### **Materials and methods**

The transformation of the strategies of the largest international oil companies is still taking place today. The nature of the transformation and its features are directly influenced by several major factors of the external environment of the oil and gas market. It should be noted, that many researchers are beginning to be interested in the problems of transformation of the oil and gas industry and the strategies of oil-producing companies.<sup>2</sup>

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<sup>22</sup> R. Yu. Ahrieva, *Foreign economic strategies of Russian oil and gas companies: Ph.D. thesis in Econ. Sciences: 08.00.14*, Moscow, 2014; E. S. Efimenko, *The strategies of Russian oil and gas companies in the natural gas market of NEA countries: China, the Republic of Korea and Japan: Ph.D. thesis in Econ. Sciences: 08.00.14*, St. Petersburg, 2009; E. S. Makhankov, *Improvement of global strategies for the development of Russian vertically-integrated oil companies: Ph.D. thesis in Econ. Sciences: 08.00.14*, Moscow, 2016; L. L. Razumnova, *Transformation of the world oil market in the conditions of financial globalization: Ph.D. thesis in Econ. Sciences: 08.00.14*, Moscow, 2010; "Rosneft" announces the successful completion of the project with Saras S.p.A. Rosneft. [Electronic resource] Access mode: <https://www.rosneft.ru/press/releases/item/185349/>, accessed 29. 03. 2017; S. R.

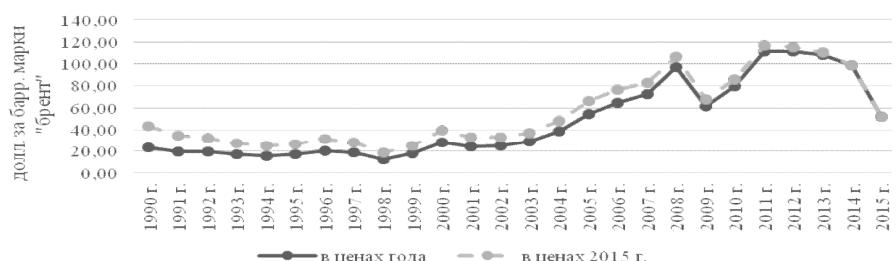
Nevertheless, environmental factors continue to change, that requires their study to identify priorities for the transformation of strategies of international oil companies.

The first and one of the most important factors, determining the modification of the strategies of the largest oil-producing companies, are the prices for hydrocarbons. The value of hydrocarbon prices, directly determining the profitability of companies, affects virtually all aspects of the activities of oil-producing corporations, including strategic ones.

The fall in oil prices in recent years is one of the longest and the deepest in the modern history of the development of the oil and gas complex (Figure 1).

This state of oil prices is influenced by many factors:

- geopolitical (related to the confrontation of the largest energy states);
- economic (connected with the activities of the world's largest monopolies);
- technological (changes in the production technologies, implementation of technologies for shale oil production), etc.



Долларов за баррель марки «брент»	Dollars per barrel of "Brent crude"
В ценах года	In the prices of the year
В ценах 2015 г.	In the prices of 2015

Figure 1. Prices for Brent crude oil in 1990 - 2015, USD/ barrel

Source: according to Statistical Review of World Energy [Electronic resource] / BP. Access mode: <http://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html>. Acess date: 02.03.2017.

Without going into all the reasons for drop in oil prices, we note only the nature of the impact of this factor on the transformation of the development strategies of oil companies. Thus, the decline in oil prices

Tsokiev, *The strategies of interaction between oil and gas companies of China and Russia on the African continent: Ph.D. thesis in Econ. Sciences: 08.00.14*, Moscow, 2016.

necessitates the fall in the profitability of oil companies that, in turn, reduces the cost of quotations of their shares on the stock exchanges and, ultimately, leads to decrease in their investment potential. The decrease in the investment potential forces to adjust the development strategies of oil companies at all stages of the organization of the oil and gas industry:

- reduction of investments in the implementation of geological exploration works and drilling operations;
- optimization of costs for the development of innovative methods of oil production;
- reduction of investments in the development of transport infrastructure, including international projects;
- reduction of quantitative characteristics of investment strategies in the development of the sales network and the sale of petroleum products.

## Results

Accountancy data of the largest oil producers in the world and in Russia (Rosneft, Gazprom Neft, Lukoil, etc.), as well as the statements of specialists, point to the reduction in the costs of implementation of investment strategies. For example, the head of the international energy agency F. Birol noted at the end of 2016, that "a period of great volatility in oil prices is coming, which will lead to a decrease in investment in the industry for the third year in a row".<sup>3</sup> At the same time, the third year in a row, the reduction in investments in the oil industry happens for the first time.

Another important factor, determining the transformation of the strategies of international oil companies is the geopolitical factor. Regional crises and military conflicts force the largest oil companies to change their long-term strategies. Especially it should be noted the impact of sanctions of Western countries on the Russian oil industry. Russian oil companies play a key role in the global energy market. In this regard, the impact of sanctions and the consequent changes in the strategies of companies development, significantly changes the world "map of strategies" of oil companies.

Western countries imposed sanctions on all major Russian organizations, limiting their access to innovative technologies for oil production, credit resources of Western banks, advanced equipment, etc. The economic constraints, affecting the Russian oil and gas sector undoubtedly influenced the transformation of the strategies of the largest Russian companies. Due to the imposed sanctions, the following strategic priorities are the main:

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<sup>3</sup> IEA predicted a decline in the oil sector investment in 2017/ RBC. [Electronic resource] Access mode: <http://www.rbc.ru/rbcfreenews/58367ceb9a79474db10d93db>, accessed 19.03.2017.

- reduction of investments or freezing of deposits, requiring high-tech equipment;
- revision of the territorial directions of strategic development, in favor of politically more "loyal" regions of the world (Iraq, China, etc.);
- search for borrowed resources and strategic partners in foreign countries.

### **Discussion**

In the conditions of foreign sanctions imposing, there is also a review of the structure of suppliers of Russian oil and gas companies from foreign to domestic. For example, S. Arkhipov, the head of the department of technology partnerships and import substitution of Gazprom Neft, says that: "The imposition of sanctions has hit not only us, the final consumers of goods, but also foreign producers: many foreign companies are forced to put a restrain upon their activities in Russia. In this regard, some niches appear in the market, which domestic suppliers occupy. In the practice of Gazprom Neft there are already a number of positive examples, and it should be separately highlighted the experience of cooperation with the "Trubnaya Metallurgicheskaya Kompaniya": with its help, we completely abandoned the import supplies of casing pipes for Marine ice-resistant stationary platform "Prirazlomnaya."

Some Russian corporations exit the international projects under the influence of negative political environment and social sentiment, due to the sanctions. For example, the company "Lukoil" was forced to sell its assets in the Baltics and other countries in 2015. As the company's president V. Alikperov noted: "There are a number of countries, where we are experiencing difficulties. Among them, Ukraine, where we were forced to sell our assets, although they were among the best. We sold assets in Estonia. Today we put up for sale our assets in Lithuania and Latvia, where there are quite serious anti-Russian sentiments, so the board of directors decided to withdraw from these countries."

### **Deductions**

Similar decisions were made by the company "Rosneft", which, due to lack of financial resources, failed to bring its share to the controlling stake in the Italian company "Saras". Subsidiary of the company Rosneft JV Projects S.A. (Luxembourg) sold 12% of the authorized capital of Saras S.p.A for a total of 174.6 million euro. The sale became a part of the program of balancing the portfolio of Rosneft's assets, due to the inability to implement the initial agreements to increase the company's share to the controlling one, taking into account the sanction restrictions .

Another factor, that has already affected all the world's largest oil producers, was the system-wide crisis of the world economy and, mainly, the

slowdown in the growth rate of China's economy. China is one of the largest oil consumers in the world and its net importer (Table 1).

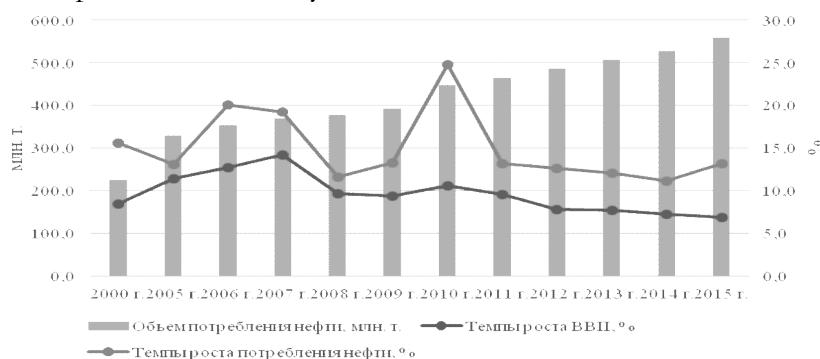
The largest oil and gas corporations in the United States, the Middle East, and Russia develop their strategies, laying in them the growth rates of China's economy, as well as the volumes of oil and oil products consumption in it.

Table 1. Dynamics of oil consumption by the largest countries in 2002 - 2015.

	2002	2005	2010	2011	2012	2013	2014	2015
USA	19,76	20,80	19,18	18,88	18,49	18,96	19,11	19,40
Russia	2,64	2,79	3,13	3,42	3,45	3,49	3,56	3,45
China	5,16	6,80	8,94	9,50	10,18	10,48	10,85	11,18
India	2,33	2,55	3,31	3,46	3,62	3,66	3,78	3,97
Japan	5,29	5,30	4,43	4,44	4,70	4,56	4,35	4,22

Source: According to World Bank data.

As can be seen in Figure 2, the growth rate of China's economy, declining to 6.9% in 2015, and to 6.7% in 2006, affects the growth rate of oil consumption in the country.



Объем потребления нефти, мln. т.	Oil consumption, mln. t.
Темпы роста ВВП, %	GDP growth rate, %
Темпы роста потребления нефти, %	Growth rate of oil consumption, %

Figure 2. Growth rates of GDP and oil consumption in China in 2000 - 2015, %

Source: Statistical Review of World Energy/ BP [Electronic resource] Access mode: <http://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html>. Access date: 02.03.2017; GDP growth (annual %)/ The World Bank. [Electronic resource] Access mode: <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG>. Access date: 29.03.2017.

The transformation of strategies of international oil companies under the influence of the "Chinese" factor occurs due to the reduction of investment costs for the development of joint projects in the country, the revision of plans for obtaining cash flows and their distribution in priority areas.

### **Conclusion**

Among other factors, influencing the transformation of corporate strategies of the largest oil and gas companies, the following factors can be identified:

- change in the structure of oil consumption by the countries and industries;
- prospects for the development of alternative energy sources and tightening of environmental legislation;
- change in the structure of production and the competitive "map" of the world oil market, with the entrance of American companies to it;
- implementation of new technologies for oil production and processing.

All these factors will influence the strategic development of the world oil industry in the medium term (3-5 years). The influence of these factors significantly transforms the strategies of the world's oil-producing companies. All these factors have tremendous sway with the issues of investment development, formation and implementation of investment strategies of oil-producing companies.

"The Main Factors Of Transformation Of The Strategies Of International Oil Companies," *Astra Salvensis*, V (2017), Supplement no. 1, p. 435-441

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## Problems And Development Of Railway Sector Services In The Republic Of Kazakhstan

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**Abstract.** *Problems arising in the railway sector service and its development is one of the main trends in the Republic of Kazakhstan. It's of great importance to develop the railway sector service in the new development stage of Kazakhstani economy. The railway sector service problems and its development dynamics in the Republic of Kazakhstan are analysed in the article. Recommendations which were directed to the increase in railway sector service efficiency and its impact on management process are offered in the article.*

**Keywords:** railway, innovation, investment, management process, financial assessment.

### Introduction

The railway service takes an important role in the transport sector of the Republic of Kazakhstan. The President of the Republic of Kazakhstan N.A. Nazarbayev signed the strategically momentous document about transport sector service and the main trend of it is the development of railway service. N.A. Nazarbayev also has stressed the importance of the railway service development in his new Address «New decade – new economic development – new opportunities of Kazakhstan». This new programme is aimed at necessity of country's further

First stage – adaptation to the new economic conditions due to the collapse of the USSR in 1991-1996

development on the innovative direction. Therefore, it is necessary to define the strategy and policy of the railway service sector as a whole, for this we have to investigate the research works on innovative researches about railway service in Kazakhstan. It's also of great importance to define the problems affecting the railway service sector. It can be seen in the analysis of development process. Scientifically substantiated recommendations were offered in the article by the process of assessment for factors affecting the railway service sector.

### Analysis of recent research and publications

The President of the Joint Stock Company «Kazakhstan Railway» National Company» of the Republic of Kazakhstan A. Mamin in his annual report has published full information about the experimental problems of the railway sector

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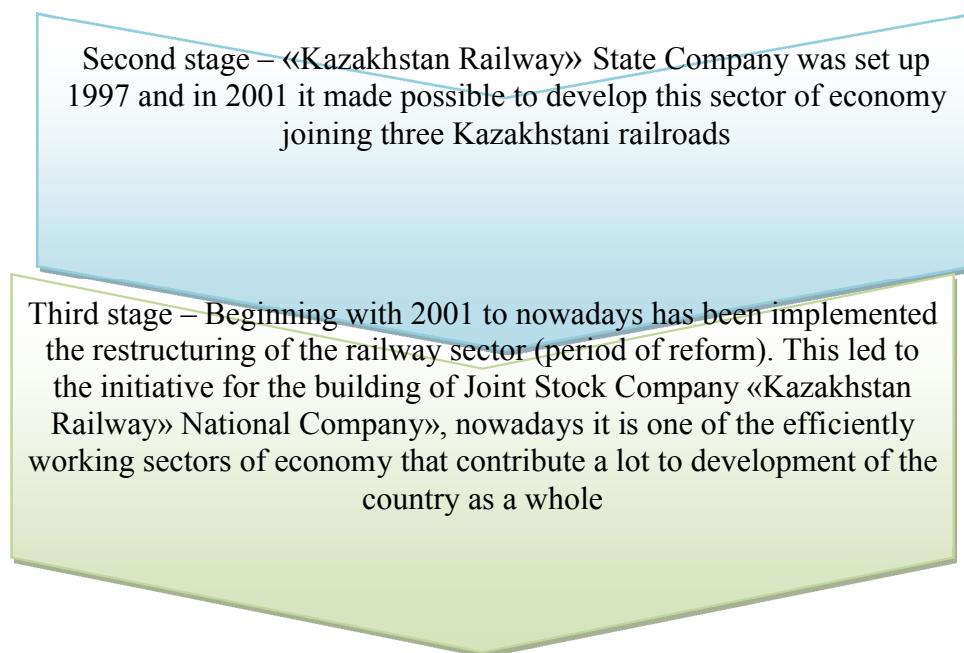
service in the official site of the Company .<sup>1</sup> The scientist V.V. Mozharova in her textbook «Transportation in Kazakhstan: current situation, problems and prospects of development» (Almaty: Kazahtani Institute for Strategic Studies by the President of RK, 2011), considered both the topical issues of the railway service sector in the Republic of Kazakhstan and the foreign experiment .<sup>2</sup> But modern railway service sector, its problems and methodological, organizational and economic aspects require yearly investigation and development.

### **The aim of the research**

is to analyse problems of the railway sector service in the Republic of Kazakhstan, to review them through experience and their economic mechanisms, to assess its development level and to offer scientifically substantiated recommendations on their improvement.

### **Main results of the research**

In order to upgrow the railway sector service year to year, 58 development strategies have been adopted in the Republic of Kazakhstan and there have been taken all measures to implement these strategies. We consider the stages of railway sector service development, we divide them conditionally into three. It's shown in the Figure - 1.<sup>3</sup>



<sup>1</sup> Site of «NC «JS Kazakhstan Temir Zholy»; [www.railways.kz](http://www.railways.kz), accessed 12. 03. 2017.

<sup>2</sup> V. Mozharova, *Transportation in Kazakhstan: current situation, problems and prospects of development* [Транспорт в Казахстане: современная ситуация, проблемы и перспективы развития], Astana, Kazakhstan Institute for Strategic Studies under the President of RK., 2011, p. 142.

<sup>3</sup> N. K. Isingarin, *Actual problems of railway transport in Kazakhstan in 2008*, Almaty, 2008, p. 363.

Figure 1. Development stages of the railway sector in the Republic of Kazakhstan

Source: made by the author

The main trends for the railway sector in the Republic of Kazakhstan are: formation of the modern railway service infrastructure, its perfection and implementation of its modernization, creation of the conditions for strengthening of railways capacity, updating of the moving stock with most advanced technology or repair them, provision of innovative technologies. In 2010 was adopted the Strategic Development Programme on railway sector diversification for 2020 by the decision of the Joint Stock Company «Kazakhstan Railway» National Company». Main tasks of this Programme are to strengthen the managerial decisions in the railway service and to increase capital investment for this sector of economy.<sup>4</sup>

In the framework of the Programme «Kazakhstan -2050» it was decided to launch an express train between the cities Astana and Almaty.<sup>5</sup>

In order to ensure the service of the new direction line, it was planned to build the new railway line of 1600 square km and 50 objects of industrial purpose till 2015 and to electrify 2700 square km of the railway line in use.<sup>6</sup>

Having analyzed all above given, we can say that innovative developing strategies for the railway service in the Republic of Kazakhstan are being implemented intensively. It's because the railway sector carries out measures for capital investment provision of innovative planning in this sphere of economy.

If we consider the problems concerning the railway sphere, they are:<sup>7</sup>

- railway sector's rolling stock, the specific analysis of information on it is given in the chart below.<sup>8</sup>

Chart -1 Railway sector's rolling stock in the Republic of Kazakhstan

Fixed assets in the railway sector	2003	2009	2013	2014	2015	deviations
Locomotives – all	1 770	1 684	1	1	1	-89,0 95,30%

<sup>4</sup> On the State Program for the Development and Integration of the Infrastructure of the Transport System of the Republic of Kazakhstan to 2020 and the Supplement to the Decree of the President of the Republic of Kazakhstan of March 19, 2010 No. 957 "On Approving the List of State Programs".

<sup>5</sup> *Ministry of Transport and Communications of the Republic of Kazakhstan. Current status and development prospects of the transport and communication complex of the Republic of Kazakhstan*, Astana, 2013, p. 5.

<sup>6</sup> On introducing amendments and additions to the Resolution of the Government of the Republic of Kazakhstan dated September 30, 2010 No. 1006 "On Approval of the Program for the Development of Transport Infrastructure in the Republic of Kazakhstan for 2010-2014";Program for the Restructuring of Railway Transport of the Republic of Kazakhstan for 2004-2006. / Resolution of the Government of the Republic of Kazakhstan. 2004. - №145. P.38.

<sup>7</sup> S. E. Joldybaeva "The role of transport in the development of the national economy," in *KazNU newsletter*, V (2012), no 5, p. 46–55.

<sup>8</sup> Statistical Agency RK. 2003-2012 year. electronic resource:<http://stat.gov.kz>, accessed 12. 03. 2016.

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kinds			896,5	892,5	803,5		
among them:							
engines	53	-	-	-	-		
electric locomotives	591	579	563	577	549,5	-27,5	95,23%
locomotives of special system			1	1	1		
	1 126	1 106	333,5	315,5	254,0	-61,5	95,32%
Engine mechanics – all kinds	282	292	327	315	307	-8,0	97,46%
coaches (carriage)	2 559	2 307	2 217	2 214	2 590	376,0	116,98%
wagons	135	60	29	29	28	-1,0	96,55%
goods van: among them covered wagons	70 366	60 605	65 803	60 940	59 025	915,0	96,86%
among them covered wagons	14 113	8 946	9 801	9 051	8 806	245,0	97,29%
low-sided cars	23 720	26 724	32 329	30 982	30 797	185,0	99,40%
flat wagons	10 045	6 560	3 725	3 360	3 000	360,0	89,29%
vessels (tank wagons)	10 281	7 524	6 492	5 769	5 657	112,0	98,06%
other wagons	12 207	10 851	13 453	11 775	10 762	013,0	91,40%
cattle trucks and company wagons						1	
	18 360	39 637	63 477	71 351	73 177	826,0	102,56%

As we can see from the information given in the Chart - 1, there is a steady decrease in the indicators of railway sector's technological infrastructure for the whole period. The main reason of it is physical depreciation of fixed assets that were deducted, because all fixed assets were bought in early 1991. They have been used for almost 26 years. We can see the depreciation level of fixed assets from the following Figure – 2 .<sup>9</sup>

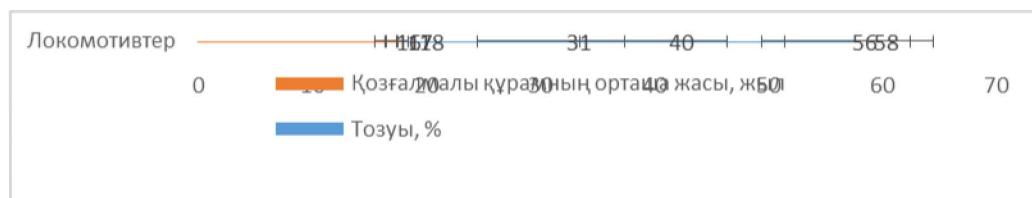


Figure 2. Depreciation level of fixed assets for the railway sector in the Republic of Kazakhstan  
Source: made by the author

<sup>9</sup> S. A. Alpispaev, *Innovative development of the railway complex of the Republic of Kazakhstan: potential, mechanism and strategic priorities*. - doctor diss., Almaty, 2006.

According to the information for 2015, on average nearly 50% fixed assets subject to the expiration of the period of use. It's of great importance to change them quickly or overhaul. Locomotive wear decreased to 56%, and in 2008 this indicator showed 63%. What about freight wagons, their wear and tear decreased from 50% to 31%, and railroad coaches' wear declined from 52% to 40%. But nowadays all these indicators are increasing, because 135 locomotives, 3154 freight wagons, 288 railroad coaches were repaired and it was complete overhauling of most of the equipment in 2013.<sup>10</sup>

A condition of the railroad line, lack of high-speed rail lines in the Republic of Kazakhstan doesn't afford an opportunity to develop the railway sector in our country. This is shown in the Picture – 3.

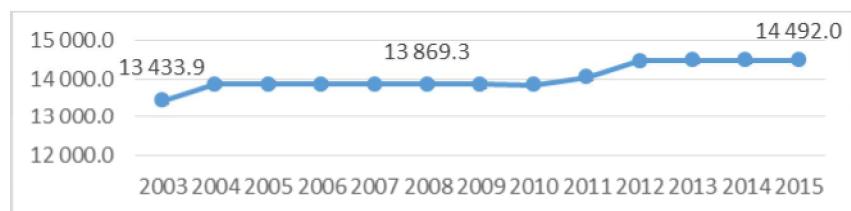


Figure 3. Length of railroad line in the Republic of Kazakhstan  
Source: made by the author

As the diagram shows, the railroad line gets longer. This gives us a big opportunity for long-distance transport. That's why, the railway sector of the Republic of Kazakhstan can provide freight and cargo transportation for 43%. For the day the average speed of Kazakhstani railway lines makes 70 km per hour and this shows that we stand behind other countries in the term of speed. If Kazakhstan increases the speed of railway rolling stock for 120 km per hour, the cargo transportation by railroad will be doubled automatically. Availability of railway lines responding to fast goods trains and express passenger trains can make it possible for our country to pass from developing countries into the rank of developed countries. This means, that the high speed of railway sector service can influence Kazakhstan not just economically but also politically. In this situation, according to the specialists opinion, it's better to build fast trains between two big cities Astana and Almaty, because there is a big difference between the prices for railway service and airline tickets.

The biggest problem in the modern railway services sector is pricing policy, that's to say high prices for the transport. If we compare Kazakhstani railroad system with the developed countries' system, we can see a low competitiveness of our country. According to the data of the World Bank, in Belarus the export cost of one cargo container is \$1, 8 thousand and in Russia - \$1, 85 thousand, as for Kazakhstan it makes \$3 thousand. This means, in comparison with Belarus and Russia to dispatch one cargo container makes for Kazakhstan for 1,5 times

<sup>10</sup> Ponarama journal: *Development of transport infrastructure*, 2012, p. 2; S. A. Kosenko, *Railway: book*, Almaty, KazCCA, 2013, p. 178; M. S. Izteleuova, *Transport logistics: book*, Almaty, 2011, p. 293.

expensive. The World Bank has given for Kazakhstan 183<sup>d</sup> place taking into account the situation in the rating «Running Business - 2015» by the indicator «international trade».

It's planned in 2017 to increase commodity turnover between Asian and European countries for \$1 trillion, and to increase income of transit cargo in Kazakhstan from \$500 million to \$2 billion. It's also planned to build transport and logistics line including the cities Almaty, Astana, Karagandy, Shymkent, Aktobe and railway stations Dostyk, Korgas and Aktau. According to the strategic plan, the growth in transport complex is planned for 2015: in passengers' transportation - for 1,5 times, in cargo transportation - for 2 times, the use of population of their vehicles - for 1,5 times, use of airlines - 6 times; speed of cargo transportation - for 15-20%, the main international transport corridors – for 20-30%.

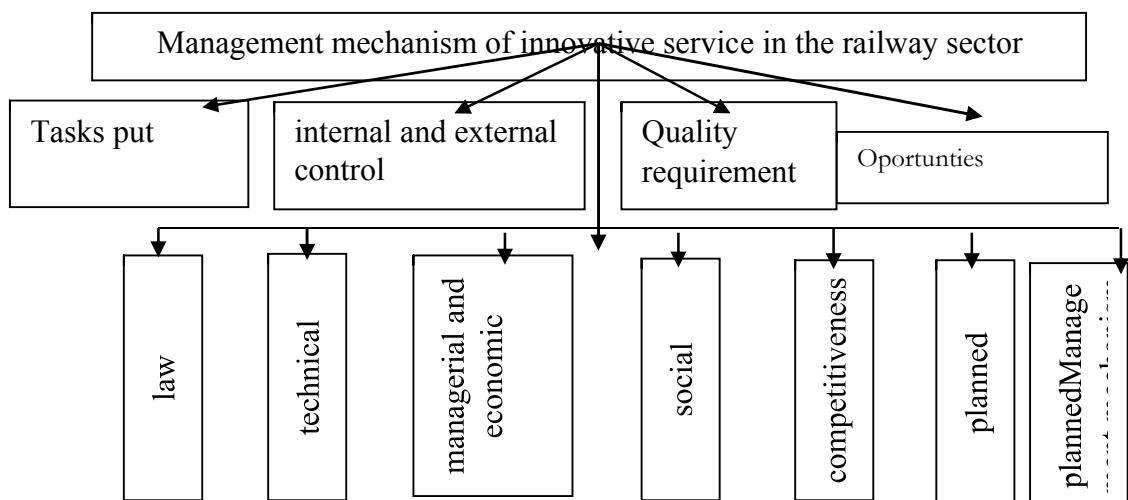
### Conclusion

In order to have quality service in railway sector and to develop it constantly, it's necessary to investigate thoroughly the trends in railway diversification. The reason for this is that many companies have observed cases where the capital invested does not meet the expectations. It's necessary to provide a cost-effective way of railway service diversification in the current financial conditions. This directs us to earn money despite the crisis. It's also worth to say that in a competitive world to make the railway service be in demand it's necessary to innovate the sector service, to supply new techniques and technologies and diversify them.

Among them are:

- to create conditions for strengthening of railways capacity;
- to update the moving stock with most advanced technology or repair them;
- to provide innovative technologies and increase the number of trained staff.

To do this, the organizational ability of experts must be properly used.



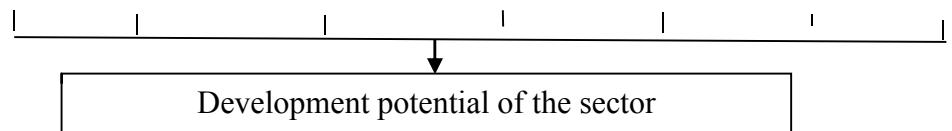


Figure 4. Management mechanisms in the railway sector  
Source: made by the author

The regulation of the negative effects of railway services sector on the environment and limiting them requires control of vehicles and provision of ecological bodies with up-to-date equipments (gas analyzers, exhaust gas meters, absence or presence of heavy metals). In order to achieve economical results it is also helpful to use the measures diversifying the railway sector, such as development of new technologies, their use, energy-saving measures, complex informatisation, available pricing policy etc.). Terms of diversification requires a great deal of financial, organizational and financial resources. We have noted that there is a peculiarity of the diversification of the industry. In the high-risk situations, attraction of investments is of great importance, which is the main driving force in the diversification of the railway. Therefore, the best way to improve the profitability of the industry is the strategic direction and it requires timely implementation. In this regard, it is necessary to solve the problems related to the railway security system, increasing the length of the railway line, to raise its technical level, to form a single line in the country and improve the organization of international rail corridors.

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Erik RACHIM, Muhammad BASRI, Fakhri KAHAR

## The Empowerment Of Farmer Community In Barammase Village, Takalar Regency, Indonesia

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**Abstract.** This study aims to analyze the relationship between the process of empowering farmers and farmer empowerment levels through farmer groups in Bammase Village, Takalar Regency, and the relationship between personal and environmental factors and a process of empowering farmers in farmer groups in Bammase Village Takalar Regency. The Method used in this study was survey. It was using quantitative approach. Sampling in each group was taken non-proportionally, meaning that only some members of farmer groups in two farmer groups would be interviewed thus the number of respondents could represent a total number of group members. All member of farmer group A would be taken as respondents by the number of 28, while on farmer group B only 28 respondents from the total amount, so that the total number were 56 respondents. The result of the study shows that process of empowerment contributes minimum impacts on empowerment levels. Empowerments executed by extension workers are only on providing seeds support and agricultural production tools also then how to cultivate the farm. It is in contrast with farmer empowerment levels due to high experience of farming by farmers.

**Keywords:** Empowerment, Farmer Community, Farmer Empowerment, Farming.

### Introduction

Indonesia is a prosperous agricultural country thus no surprise then if most of Indonesian citizen livelihood as farmer. The amount of natural wealth in Indonesia is not guaranteed that farmers are also empowered. Most of the farmers are living powerless both socially and economically. Based on BPS figure in March 2013 showed that a number of a poor citizen as farmers in the villages reached 81,56 percent. Other factors that show farmers are powerless in general is the development of human resources. By seeing Human Development Index (HDI) added to national journal on March 20, 2013, Indonesian's HDI is increasing from 124 to 121 out of all 187 countries<sup>1</sup> However, it is still lower and needs more concern from Indonesian's government. One of the evidence from Indonesian's government on HDI is farmer empowerment. Empowerment is the result of a process of empowerment activities that we call the goal of community empowerment. Empowerment is defined as a society that is economically capable, able to access the benefits of facilities and has cultural and political capabilities.<sup>2</sup>

Empowerment is aimed at people who are less empowered. Society itself is a group of people who interact continuously to achieve prosperity. One of the government's efforts in realizing the welfare of farmers is by empowering farmers. Farmer empowerment is defined as an approach to give opportunity, power,

<sup>1</sup> I. Dimyati. 2013. Prestasi Indeks Pembangunan Manusia. Jurnal Nasional. [Internet]. [Diunduh 2014 Sep 29]. Tersedia pada: <http://www.jurnas.com/halaman/11/2013-03-20/237259>, accessed on 03. 03. 2017.

<sup>2</sup> E. Suharto, "Membangun Masyarakat Memberdayakan Rakyat Kajian Strategis," in *Pembangunan Kesejahteraan Sosial dan Pekerjaan Sosial*. Bandung (ID), PT, Refika Aditama, 2005.

"The Empowerment Of Farmer Community In Barammase Village, Takalar Regency, Indonesia," *Astra Salvensis*, V (2017), Supplement no. 1, p. 451-458 strength, and capability so that farmers can identify and analyze their own needs and be able to solve their problems by optimizing their resources and potentials.<sup>3</sup>

Farmer empowerment is more effective to be executed through farmer groups. According to Ministerial Decree Number 82 ,2013 on farmer groups and farmer groups combined shows that farmer groups' classification is divided into four categories, those are: beginner, advanced, intermediate, and primary. These forth categories show the farmer's ability based on the class degree. Means empowerment levels over empowerment activities will give impact on ability degree of farmer group members.

Based on Takalar Local Government data, the ability level of farmer groups in Takalar Regency shows that as much as 32 groups or 1,27 percent of farmer groups are succeeding to reach primary class, as much as 322 groups or 12,80 percent reach intermediate class, as much as 1 234 groups or 49.06 percent reach advance class, then finally as much as 297 groups or 11,81 percent reach beginner class. The data proves farmer groups of Takalar Regency's qualities are low thus in order to increase their qualities they need to have an empowerment steps through learning to improve their quality of life.

Farmer empowerment is an activity which involves participation and leadership from empowered farmer groups. A leader with good performance of leadership will be able to control all the members to actively participate in farmer empowerment. It is clearly stated in Ministerial Decree Number 82, 2013 that "farmer empowerment can be executed through training and counseling by farmer group approaching" Farmer groups are community of farmers/breeders/ planters established based on similarity of interests; similarity of social environment, economy, dan resources; similarity of commodity; and familiarity to increase and develop members' business (Ministry of Agricultural).Farmer groups also defined as an institutional organization in farmers level to organize farmers in farming.<sup>4</sup>

Farmer empowerment is greatly-impact activities on HDI enhancement (Human Development Index). On increasing the development of human especially farmer group members can be defined as the real action to reach a better life. The development from extension workers is expected to give a positive impact on farmer empowerment level to life more independently, well-continued, and increasing much better life. In addition, empowerment through farmer groups is needed to be studied deeper as far as how is the relationship between empowerment steps towards farmer groups empowerment levels created?

The ability classifications are divided into four categories, those are beginner, advance, intermediate, and primary. The higher levels of ability, the

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<sup>3</sup> I. Soetomo, *Pembangunan Masyarakat 'Merangkai Sebuah Kerangka'*, Yogyakarta (ID), Pustaka Pelajar, 2012; S. Widjajanti, "Model Pemberdayaan Masyarakat," in *Jurnal Ekonomi Pembangunan*. [Internet]. [Diunduh 2013 Des 3], XII (2011), no. 1, Fakultas Ekonomi Universitas Semarang (ID). Tersedia pada: <http://publikasiilmiah.ums.ac.id/bitstream/handle/-Kesi1.pdf>, accessed 12. 03. 2017.

<sup>4</sup> Hermanto dan Swastika Dewi KS. 2011. Farmers'Groups Empowerment as an Initial Step to Farmers'Welfare Improvement. *Jurnal Analisis Kebijakan Pertanian*. [Internet]. [Diunduh 2014 Feb 13]; Vol 9(4): Pusat Sosial Ekonomi dan Kebijakan Pertanian Bogor (ID). Tersedia pada: <http://pse.litbang.deptan.go.id/ind/pdffiles/ART9-4e.pdf>, accessed 12. 03. 2017.

higher rate of success from farmer groups empowerment. Along with the higher level of empowerment from farmer group members, there are several factors that influence the success rate of farmer group member's empowerment. Besides leadership, there are two factors that influence the rate of farmer group members, that are personal and environmental factors. Therefore, how far is the relationship between personal and environmental factors and farmer groups empowerment?

This study aims to analyze the relationship between the process of empowering farmers and farmer empowerment levels through farmer groups in Bammase Village, Takalar Regency, and the relationship between personal and environmental factors and a process of empowering farmers in farmer groups in Bammase Village Takalar Regency.

This study is expected to give numerous of benefits, to all academics, all decision makers, and all people in farmer groups empowerment. To decision makers, this study is expected as reference to asses whether some group of farmer are worth supported based on all member agreement, not based on some group willingness.

### **Research Method**

The Method used in this study was survey. The research method was quantitative approach supported by qualitative data. Quantitative method is obtained through a questionnaire to get the information from respondents, while qualitative data is obtained by deep interview. The quantitative approach was expected to answer the relationship between leadership and influence factors and the success of people empowerment through farmer groups. *Qualitative* research is explanatory research using deeper interview to the interviewees which expresses the explanation of leadership. This study was taken in the Bammase Village Takalar Regency.

The data sources were respondents and interviewees. The analysis units in this study were farmer group members. The respondents were interviewed based on prepared questionnaire since their answers reflected what they had got in previous empowerment programs. Respondents selection were based on (*cluster random sampling*). Cluster random sampling was used based on analysis units or research units already compiled in a list.<sup>5</sup> Sampling in each group was taken non-proportionally, meaning that only some members of farmer groups in two farmer groups would be interviewed, thus the number of respondents could represent a total number of group members. All members on farmer group A would be taken as respondents with a number of 28, while on farmer group B there were also 28 people from the whole members of farmer groups, thus the total amount were 56 people.

The data collected in this study were primary and secondary data. Primary data was obtained on the field by observation, questionnaire, also deep interview directly to respondents and interviewees. Primary data was obtained from written documents of Takalar Regency Local Government, farmer group A and B.

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<sup>5</sup> M. Singarimbun, S. Effend, *Metode Penelitian Survai*, Jakarta(ID), LP3S, 1989-

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The analysis unit in this study was an individual. Data analysis techniques in this study were quantitative and qualitative data analysis. Qualitative data obtained in the study whether primary or secondary would be processed by using three phases of data analysis at the same time: reduction, presentation, and drawing a conclusion.<sup>6</sup> First, reducing data which had to be taken to sharpen, classify, lead, and eliminate unnecessary data and organized existed data. Second, reduced data would be presented in descriptive or matrix describing relationship between leadership and farmer empowerment effectiveness, therefore, it was expected to answer designated research problems. Third, conclusion that was concluding through verification. Verification was performed before the researcher drew final conclusion, meaning that the process of conclusion of this study involved researcher and interviewees at the same time.

Obtained data was processed using *SPSS for Windows* version 20.0. and *Microsoft Excel 2007*. Data Analysis was using comparison analysis and Rank Spearman Chi-Square Correlation Test. *Comparison was executed to know the successful difference between two different farmer groups.* Rank Spearman Correlation Test was used to know whether there was or was no relationship between two ordinal variables and did not decide normal distributed data prerequisite. Rank Spearman was used to test the correlation that connects leadership to empowerment process.

## **Result and discussion**

### **The Empowerment Process of Accompaniment Farmer Group Members**

Accompaniment is an effort to nurture the groups stay active and develop in good way. Accompaniment techniques are executed by agricultural extension workers. On farmer group A, the intensity level or accompaniment frequency reaches very high number. This condition is caused by farmer group A which concern on soy farming and maize seeding means the farmers still need nurture process of soy farming. In addition, 40 accompaniments are executed intensively since soy farming will participate in West Java contest. However, extension workers also pay attention to members who concern in crops, rice, and corn. In contrast with farmer group B, agricultural extension workers only concern on sweet potatoes, nuts, and rice.

Accompaniment intensity is executed very often twice in a month by coming to group B. Though, since the previous extension worker has passed away then accompaniment is no longer held. In fact, accompaniment to group B is still running until recent days with new extension worker, but not as often as previous extension worker. Therefore, it does not make farmer group B down since there always a counseling by the students of Bogor Agricultural Institute (IPB) and furthermore agriculture as farmers' primary livelihood.

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<sup>6</sup> F. Sitorus, *Penelitian Kualitatif "Suatu Perkenalan". Kelompok dokumentasi Ilmu-Ilmu sosial untuk Laboratorium Sosiologi, Antropologi dan Kependidikan Jurusan Ilmu Sosial Dan Ekonomi Pertanian, Fakultas, Pertanian IPB*, 1998.

Accompaniment is held by doing a workshop to farmers which are included to farmer group members. The accompaniment techniques are executed by two ways, workshop class, and field practice experience. This method is executed by companion both in farmer group A or farmer group B.

### Participation levels

Participation is an active involvement from former group members in empowerment activities. A form of farmer participation in two groups is classified as highly participation. Furthermore, participation level of group A members with group B is different, it can be seen in Table 1.

Table 1 Farmers Distribution based on participation level and group in 2017

Participation Levels	Farmer Group A		Farmer Group B		Combined	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Low	1	3,57	4	14,29	4	8,93
Medium	10	35,71	11	39,28	21	37,50
High	17	60,72	13	46,43	30	53,57
Total	28	100		100	56	100

Source: Result of The Study 2017

Participation on farmer group A is higher than farmer group B. This is due to a social condition in the environment of the two different groups. On group A, togetherness is priority for group members also they are helped by sense of belonging to each other. Whereas in group B, most of the members have strong relatives ties to each other. The fraternal bond on group B is more prioritized thus members who are not farmer groups are excluded from group and ultimately rarely to join group activities.

### Empowerment of farmer groups members

Empowerment level of farmer group members is measured by farmers' ability and independence in entrepreneurship. These two aspects are measured through three aspects of behavior, knowledge levels, inclination attitude, and skill levels. In general, farmers who are empowered by farmer groups tend to have a high rate of empowerment. This is proven by knowledge levels of farmers on risk management, capital, and high marketing, then a positive attitude to innovation and farming sustainability, also good skill levels in farming. In general level of empowerment is examined high, therefore specifically level of empowerment on farmer group A and B has a difference that can be seen in Table 2.

Table 2. Farmers Distribution based on empowerment level and group in 2017

Empowerment Levels	Farmer Group A		Farmer Group B		Combined	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Low	0	0,00	0	0,00	0	0,00

Medium	2	7,14	22	78,57	24	42,86
High	26	92,86	6	21,43	32	57,14
Total	28	100		100	56	100

Source: Result of The Study 2017

Table 2 shows that empowerment levels of farmers in group A are higher than group B. This is executed by higher education levels that allow farmer obtain and absorb the information and learning skill much better both from accompaniment and environment. Knowledge levels in managing farming business risk, capital, and marketing are highly rated by people who understand better about farming business risk and its relation to capital and marketing. There are some farmers who borrow a capital from Bank, unions, and Micro Finance Institution in their area. The capital lending is executed when there is no way to be able to cover the shortage of capital for business. However, it is not only used for agriculture but also used as part of the capital stalls, milling, and shops. Capital usage is not only for agriculture since they are aware that farming is not always profitable. A marketing by farmers in group A is also more profitable for people. Rice marketing, farmers sell directly to their neighbors who have rice shop in the market, maize seeding are also sold directly to other farmer groups or other farmers in need, as well as tilapia nursery is also directly sold to soy farmers so that the sales result will not harm farmers.

Farmer's empowerment level in farmer group B is more on the medium level. This due to they are not capable to overcome capital problems yet, although they have high knowledge levels. Farmers often borrow money or capital to the middleman whose result will later be sold back at a lower selling price than designated selling price by the government. In addition, farmers also have not been able to create innovation to the commodities they have plant to obtain more profitable farming result. Marketing is executed only to the middlemen and farmers groups who are also middlemen by farmers.

### **The relationship between farmer empowerment process with the farmer empowerment levels**

Empowerment process does not show a concrete relationship with empowerment levels. It is seen from table 3 that indicates empowerment level includes accompaniment and participation level also do not show a concrete relationship with empowerment levels. It means the hypothesis that states "There exists a concrete relationship between empowerment process (accompaniment, participation level) with empowerment levels" is not proven.

Table 3. Reinforcement Coefficient between empowerment process and farmer empowerment.

Empowerment Process ( <i>Rho Spearman</i> )	Empowerment Levels	
	Correlation Coefficient	Sig (2-tailed)
Accompaniment	.162	.234
Participation Levels	.212	.177
Empowerment Process	.153	.260

Source: Result of The Study 2017

Accompaniment done by extension workers is not executed to each farmer but in groups, due to assistance is done in groups so that sometimes the companion does not know a maximum potential of each individual, especially the potential for farming. Farmers 'participation in joining workshop is limited on how to farm and as a connector between farmers and the government in access to obtain seeds and agricultural production tools so that the level of empowerment that includes knowledge, attitude, and skills in farmers' independence to get capital and farming management remains untouched. Farmer empowerment level in group A and group B is arranged on Table 4. looks different.

Table 4. Reinforcement Coefficient between empowerment process and farmer empowerment.

Empowerment Process ( <i>Rho Spearman</i> )	Farmer Group A		Farmer Group B	
	<i>Empowerment Levels</i>		<i>Empowerment Levels</i>	
	<i>Correlation Coefficient</i>	<i>Sig (2-tailed)</i>	<i>Correlation Coefficient</i>	<i>Sig (2-tailed)</i>
Accompaniment	.238	.144	.061	.759
Participation Levels	.432 *	.022	-.035	.858

Information: \*. Significant Correlation on levels 0,05 (2-tailed)

Source: Result of The Study 2017

Table 4. indicates on farmer group A does not show a concrete relationship between accompaniment and empowerment levels, while participation level shows a positive concrete relationship to empowerment levels. The higher farmers' participation in workshop activities the higher farmer empowerment levels. Accompaniment executed by extension workers provides benefits to farmers themselves in terms of getting seeds, production tools, helping to improve production marketing group A in forms of *Tempe*, maize seed, soy seeding for enlargement, and tofu. In addition, farmer empowerment levels seen from levels of knowledge, levels of attitude, and levels of skills is also because farmer group A members have their own calculations in using capital for farming and predicting risks. Farmers in group A, in general, have their non-agricultural business thus they can reduce the risks in agriculture field.

The relationship between accompaniment and participation levels is not showing a concrete relationship on farmer group B. This means the highest participation followed by members against empowerment activities is not providing a concrete impact on farmers' life. Farmers in group B have been accustomed to cooperate with middleman of payment system which is lighter than borrow to Rural Agribusiness Development (PUAP).

## Conclusion

According to study process that has been executed, it can be concluded empowerment process provide a little impact on empowerment levels. Empowerments executed by extension workers are only on providing seeds support and agricultural production tools also then how to cultivate the farm. In contrast with farmer empowerment levels are due to high experience of farming by farmers. Personal factors including age, education level, and farming experience can

"The Empowerment Of Farmer Community In Barammase Village, Takalar Regency, Indonesia," *Astra Salvensis*, V (2017), Supplement no. 1, p. 451-458 have an impact on the high level of farmers participating in farmer empowerment process. The high number of farmers at productive age and high farmers' level of education of makes farmers to be aware of the importance of participating in the workshop the activities provided by extension workers. In contrast, the high experience of farmers' farming experience was not accompanied by participation levels in following empowerment process.

Environmental factors in both groups did not affect empowerment process conducted on farmers. Environmental factors include access to the land, availability of inputs, ease of marketing results, and farming development potential is not a benchmark that must be owned by farmers in following empowerment activities. This means that empowerment activities for farmers are still carried out whether the environment supports or does not support agricultural activities since environmental factors more emphasis on the ability of each farmer in accessing land, providing production facilities, marketing results, and develop the potential. However, seeing clearly that farmers' ability in marketing their agricultural products is still dependent on middlemen.

Based on the result of the study, there are several things can be used as feedback or suggestions as follows: 1.We recommend the accompaniment is executed not only for groups but also for individual farmers in order to see concretely what is needed; 2.Accompanion should be done more intensively for a month or according to the time agreed upon and in accordance with the needs of farmers thus a participation in the following workshop is not based on given *rewards* from government or empowerment; 3.leaders should be more transparent with members associated with support received to prevent negative perception of farmer group members; 4.High Dependence on middlemen makes farmers' condition remains unchangeable before and after incorporated in the group, especially for poor farmers who rely on their agricultural land very much.

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## Semantics Of Numeral «Ике» (Two) In Tatar Proverbs\*

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**Abstract.** Tatar language, like many other languages of the world, has a rich fund of phraseological units and most of this fund is represented by phraseological units, where one of the components of figurative expression is the numerals. Often in a number of phraseological units, the numeral loses its numerical value and acquires a different semantics. Currently, phraseology is the most actively studied section of linguistics. The phraseological units with a numerical component, the semantics and the role of numerals in proverbs are of great interest. The conducted studies of numerals prove that their study is of interest for various fields of science such as mathematics, linguistics, ethnology, culturology and others. In this paper, the proverbs of Tatar language are considered with the component-numerative "ike" (two) and conditional semantic groups are formed, proceeding from the value of used numerals in the presented phraseological units. After the analysis, we identified such semantic groups as "Frequency and distance", "Oath and curse", "Warning and caution", "Regression and problems", "Opposites", "Progress and ease", "Speed", "Repeatability", "Symbols" and "Appeals". This work also gives the translations of Tatar proverbs into Russian, and the variations of exemplary phraseological units.

**Key words:** linguistics, semantics, proverbs, Tatar language.

### Introduction

Currently, phraseology is one of the actively researched sections of linguistics.<sup>1</sup> The phraseological units with a number component are of particular interest. It is often assumed that the numerals indicate only the amount of objects, but cognitive scientists refute this opinion. The works of such foreign scientists as<sup>2</sup> state that numerals express a certain amount, and they can still be considered in a wider context, that is, the presented quantitative value does not always have a certain amount, and can be considered as more or less than the specified amount. Moreover, N.D. Arutiunova in her work "Number Problems" speaks the following about the semantics and the functions of numbers: "Numbers also serve to refer to objects in space. The relationship between numbers and an objective world is constantly fluctuating: poets combine figures and their numerical values with images and meanings, players and athletes associate numbers with the points occupied by a place and a gain amount, traders and buyers keep accounts of goods and their value. All kinds of calculations are present in all other types of human activity, approaching to an objective world, and then moving away from it".<sup>3</sup>

### Methods

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<sup>1</sup> R. Muratova, "Numerological phraseological units in the Turkic language (linguistic-culturological aspect)," in *Bulletin of the Adyge State University. Ser. Philology and Art History*, CLII (2015), no. 1, p. 71-77.

<sup>2</sup> L. Horn, «*A natural history of negation*», Chicago, IL, University of Chicago Press, 1989; S. Levinson, S., *Presumptive meanings*, Cambridge, MA: MIT Press, 2000; S. Levinson, «*Pragmatics*», Cambridge, Cambridge University Press, 1983.

<sup>3</sup> N. Arutyunova, "Number problem". Logical analysis of the language," in *Quantitative aspect of the language*, 2005, p. 5-21.

The material for this work writing were the works of Tatar linguists "Татарча-русча фразеологик сүзлек" by F. S. Safiullin,<sup>4</sup> "Татар теленең фразеологик сүзлеге. Ике томда" by N. S. Isanbat, "Татар теленең фразеологик әйтелмәләр сүзлеге" by G. Kh. Akhatov.

Using the continuous sampling method of the abovementioned works, the phraseological units were selected with the component-numerative "two" (ike). During the writing of this article, a comparative analysis of the Tatar proverbial sayings with their translation into Russian was also used.

## Results

In this article, they considered the proverbial sayings of the Tatar language with the numerative two. Based on the semantics of the numerative two in the phraseological units under study, an attempt was made to combine them into conditional groups. Let's list the groups that we selected. Numerical two in the following meanings: exaggeration of the word, talk little, distance, the speed and the frequency of doing something. Therefore, this group of proverbial sayings can be called "Frequency and distance". A lot of phraseological units with a number two in the meaning of an oath, a curse. Most of these proverbs are related to religious themes. There are many phraseological units, where the number two is used in the meaning of warning about danger, the warning of someone from something. The proverbs quoted in this semantic group were combined into the group called "Warning and caution".

In many phraseological units, the numeral two indicates regression, stagnation, as well as the increase of problems and concerns. The proverbs, where the numeral "Ike" (two) conveys the above negative values, were united in the group, which was given the name "Regression and problems". In the following phraseological units, the number two is used in the meaning of opposition, an attempt to combine two incompatible opposites, and also to destroy (for example, an act, a character, etc.) something good that has been done with something bad. Based on such meanings, this group of phraseological units is called "Opposites". There is a fairly large number of phraseological units with a numeral two, when this numeral conveys progress, great success, speed and easy life. For example, the following proverbial sayings show success, which is achieved without the use of any additional effort. Such examples of proverbial sayings are combined in the semantic group "Progress and Lightness". In the next group of phraseological units, the numeral two shows the speed of some action. Such proverbial sayings were combined into a group, which was named "Speed". There is also the group of proverbial sayings that show the repeatability of an action. We have combined such proverbs with the same name and with the assigned meaning to the group. The proverbial utterances of Tatar language, collected in the works by N.S. Isanbet and F.S. Safiullina<sup>5</sup> have also those in which the numeral two serves as a kind of a symbol. Therefore, we named this group "Symbols". Among the expressions with

<sup>4</sup> F. Safiullina, *Pocket Tatar-Russian and Russian-Tatar Dictionary*, Kazan, Tarikh, 2007.

<sup>5</sup> *Ibidem*.

the numerative two considered by us there were also affable addresses. Such phraseological units were merged into the group of "Addresses".

## Discussion

Let's consider the examples of the first semantic group:

- 1) Аныкы илнекеннән ике илле артык булыр
- 2) Бер-ике (авыз) суз әйту
- 3) Ике авыз суз
- 4) Бер караңғыдан икенче караңғыга (чаклы)
- 5) Ике адым (лык) жир.<sup>6</sup>

The abovementioned example 1 can be translated as: "He has a hundred times more than the others" and it is used in the situations where someone exaggerates events and facts, sometimes even lies. The second example is translated as follows: "To say two or three words," that is to say very little and almost nothing. The same meaning has our third example, which can be translated as follows: "Two words". The next fourth phraseological unit is translated as follows: "From one darkness to another one (in the meaning "to work")", where the numeral two shows the time interval and is used in the meaning of working hard. The fifth example demonstrates a short distance. Our example is translated as follows: "In two steps", that is, an implied object is close to the speaker.

Let us examine the examples of the second group:

- 1) Ахирәттә ике кулым яканда булсын
- 2) Ике кузем кояшны курмәсен
- 3) Ике күзәң тиң чыксын<sup>7</sup>

The first example can be translated into Russian as follows: "Let my hands be on your collar in the afterlife." This proverbial saying is used when someone can not repay the debt for a long time. It means that if you did not return your debt in this world, then you would not be able to avoid responsibility before God in the afterlife, that is, there is justice in the afterlife. The second example is translated as follows: "Let my eyes won't see the sun any longer" and is used when someone tries to prove his rightness. If he lies, he would have to remain blind forever after his words. In order to prove that he is right, he is ready to take risks and lose his sight. The last example "Let both of your eyes be blinded" is used in the cases when someone is being cursed. As N. Isanbet wrote in his work "This expression is considered one of the most powerful curses"

The phraseological units of the semantic group "Warning and caution":

- 1) Баш ике булса гына .
- 2) Баш ике түгел<sup>8</sup>
- 3) Башы икедер моның

<sup>6</sup> Н. Исәнбәт, «Татар теленең фразеологик үзлеге. Ике томда. I том», Казан, Татарстан китап нәшрияте, 1989, р. б.

<sup>7</sup> Ibidem. р. б.

<sup>8</sup> Г. Әхәтов, «Татар теленең фразеологик әйтәләмәләр үзлеге», Казан, Татарстан китап нәшрияты, 1982, р. б.

The first example is "If only you have two heads" and the second one - "You are not immortal" are used in colloquial speech and when a speaker does not want to participate himself or when he wants to save from dangerous and wrong cases. The last example of this semantic group can be translated in Russian as "Probably, he/she has two heads". This proverb, as well as the two ones considered earlier, conveys the meaning of "danger presence and the desire to warn someone of trouble". It is noteworthy that all three phraseological units have such a part of a body as "bash" (a head) which acts as the risk price.

Let's consider the examples of the following group:

- 1) Бер адым алга, ике адым артка .
- 2) Бер артка ике камыт

The first example is translated as: "A step forward, two steps back." This proverb is used during some stagnation in business or regress. Also, this expression can be used, when already small successes in business can be destroyed or nullified as the result of some mistake, and it makes a goal achievement or a case completion more difficult. The second example "To put two collars on one horse" shows some burden increase. Other tasks are added to the existing duties and difficulties, which leads to a twofold increase of the burden.

Let's consider the examples illustrating the proverbial sayings of the group "Opposites":

- 1) Бер казанга ике тәкә башы
- 2) Бер карасаң – алтын, икенче карасаң – чуртым дигәндәйрәк
- 3) Берне сөйли, икенчене эшли
- 4) Берсе берне, берсе икенчене түкй

The first example is translated as follows: "One boiler has two ram heads", which means an attempt to unite two opposites, which are not compatible фсегфадан. The second proverbial saying can be translated as follows: "On the one hand - gold, and a penny on the other" and this expression is used when someone is deprived of all the successes that he had because of his bad character. The third example quoted by us, was translated as follows: "He tells one, but he does something completely different". It is used when we speak of people whose actions and words do not coincide, that is, about liars. The fourth proverbial saying is translated as follows: "One says one thing, another says another," that is, two different contradictory words mean the same situation at the same time.

Let's analyze the examples of the following group:

- 1) Бер атканда, ике күян  
*To take off two birds with one stone.*
- 2) Бер атканда күш күян *One shot for two hares.*  
*To bit two birds with one stone.*
- 3) Бер бәрудә ике күян  
*One stroke for two birds.*
- 4) Беръюлы ике күян тоту  
*To catch two rabbits at once.*
- 6) Ике көймәнен қойрыгын тоту,

*To sit on two boats at once (literally: to catch).*

The mentioned examples show that you can achieve two goals at once by doing a one-time action. It is noteworthy that a bird/a hare in such proverbial sayings act "a hit goal" among all animals - a hare is a group of phraseological units where a "bird" serves as a "goal". In some expressions, in order to show the importance of success, such words as paired, doubled and double are used instead of the numeral two. Also there are phraseological units, where one of water vehicle types as "кеймә" (a boat) acts as a "goal". The proof of this is the last example in this group of phraseological units.

The examples of the semantic group «Speed»:

1) Бер аятың анда, икенчесе монда булсын *Be back in no time*

2) Ике атлайсын бер атлап

*Having taken one step instead of two ones*

3) Ике кабып бер йоту

*To take a sip, putting twice in a mouth*

4) Ике атлап, бер сикерү,

*Double step and jump once.*

In the first and the second examples, the numeral two indicates the speed of an action, namely the speed of this or that action performance. An action takes place in the blink of an eye within the phraseological units presented by this group. The given third example has two meanings: firstly, this phraseological unit is used when it refers to a person who works quickly; Secondly, it is used when someone eats quickly. He eats so fast that it swallows without chewing. The last example of phraseological unit means "to arrive to a destination point quickly".

Let's consider the following examples:

1) Ике адымның беренде)

2) Ике азызның беренде

3) Ике дә бер или Ике дә, берде

4) Ике сүзнең беренде,

The first example is "Every two steps" and the second one "Every two words (literally: mouth)". The third one is translated as "Every two words" and is used when someone constantly repeats something. In the phraseological units cited as examples, the frequency of the mention in a speaker's speech shows the sense of the speaker's affection or expresses his/her longing. And the third example, which is translated as follows: "Two and one" is used when someone constantly repeats something annoyingly, in contrast to the first two examples.

Let's consider the examples of the semantic group "Symbols":

1) Ике аяклы ишәк

2) Ике битле ком икмәк

3) Ике әтәч

4) Ике башлы каракони

The first example, which is translated as "Bipedal ass" is used to characterize an unconscionable, stupid person. The second example "Two-faced sandy bread" is used when we talk about a hypocritical person, and also about liars.

When two people live all the time arguing with each other, then we use the third example cited by us, which can be translated as "Two Cocks". The fourth expression can be translated as "Two-headed black bird" and it is used when they talk about the symbol of Russian Empire, and also there is another meaning that points to imperialism.

Let's give some examples of the latter group. In such expressions, a dear person is compared with the organ of vision, for example, the eyeball, a pupil, and so on. Let's consider the following examples:

- 1) Ике күз алмам  
*My two eyeballs.*
- 2) Ике күзем карасы  
*The pupils of my eyes (about the dearest person).*

### **Conclusions**

The analysis of the proverbial sayings with the component "ike" (two), determined such conditional semantic groups as "Frequency and distance", "Oath and curse", "Warning and caution", "Regression and problems", "Opposites", "Progress and lightness", "Speed", "Repeatability", "Symbols", "Appeals".

### **Summary**

Thus, they analyzed 285 phraseological units with the numeral two. The result of our analysis is their division into 10 conditional groups based on the value of the numeral two in these proverbial sayings. Having considered the proverbial utterances of the Tatar language, collected in two volume dictionary of phraseological units by N.S. Isanbet, F.S. Safiullina and G.Kh. Akhatov, we saw both positive and negative semantics of the numeral two. There is also a small group of phraseological units, where the numeral two serves as a symbol or a friendly appeal to close people.

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## Zero Suffixation On Synchrony And Diachrony\*

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**Abstract.** *The appearance of zero suffixation formations in the language system was the reflection of laws and regularities that formed the basis for the development of the Indo-European word-building system and which allow zero suffixation to remain one of the productive ways for vocabulary increase at the present stage of language development. The study contributes to the development of the doctrine about the so-called "zero categories" in the language, determines the specificity of zero suffixation words as a special case for the provision of word building and grammatical meanings without a material expression. The main methods of research: the method of linguistic description, word-formation and grammatical analysis, linguistic forecasting, the theoretical analysis of literature and the compilation of best practices, empirical methods: observation, ascertaining experiment conversation. The methodological basis of the study were the works by I.A. Boduen de Courtenay, F.F. Fortunatov, V.M. Markov, G.A. Nikolaev and the works of foreign scientists. The main results of the study: the correspondence of the zero-suffixation formations of the ancient word-building model of the Indo-European languages was revealed, the material expressed prototypes of zero morphemes were shown, the expansion of zero suffixation as the way of word development into other types of word formation was considered, the specific features of the zero-suffixation formations, their difference from derivatives with materially expressed formants were emphasized, confixed and transfixes forms were considered, including a zero "suffix" element. According to the results of the conducted research, the authors concluded that zero suffixation is one of the productive ways of word development throughout the history of the Russian language from the period of the Slavonic unity to its present state. The main layer of zero-suffixation formations was formed in Russian language by XVII-XVIII centuries, however, zero suffixation continues to be an active way of word development in colloquial speech and social dialects, spreading its influence on the truncation. Russian language formations with intermittent morphemes, including the zero suffix element, - confixes and transfixes are developed productively. The study of an essence, a place and a role of zero-suffixation in the word-formation system of both synthetic and analytical languages emphasizes the relevance and the importance of this word-formation phenomenon study in the diachronic and synchronic aspects for all Indo-European languages.*

**Keywords:** linguistics, word formation, zero affixation, zero morpheme, conversion, historical linguistics.

### Introduction

**1. 1.** Zero means of value expression are inherent in every level of the language system, including word formation. The appearance of zero suffixation formations in the language system was the reflection of laws and regularities that formed the basis for the development of the Indo-European word-building system and which allow zero suffixation to remain one of the productive ways of the language vocabulary at the present stage of its development. The relevance of the study lies in the fact that it contributes to the development of the so-called doctrine of "zero categories" in the language, determines the specificity of zero suffixation formations as a special case of the realization of derivational and grammatical meaning provision without material expression, emphasizes the importance of

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\* Acknowledgements: The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

modern language process study historical conditioning based on diachronic and synchronic methods of the study, including the formations of zero suffixation.

**1.2.** The analysis of the scientific literature showed that the formation of zero suffixation is studied primarily from the synchronic point of view<sup>1</sup>. The main attention is drawn to the quantitative analysis of such formations in the words of the nominal parts of speech. The issue of zero-suffixation formation prototypes, the history of word-formation types of zero suffixation, the development of inverse correlation in the sphere of zero-suffixation formations were not studied almost. In general, the diachronic aspect of the problem is not presented fully and requires an in-depth and a detailed study. The methodological basis of the study were the works by<sup>2</sup> and the works of foreign scholars<sup>3</sup>.

**1.3.** The study was carried out in the context of the ongoing discussion about the theory of zero morphemes and explicit terminology synonymy: zero derivation, conversion, transposition, etc. In domestic linguistics, the opposite in essence terms, non-suffix (zero affix) method and zero suffixation are identified, while the term "non-suffix" does not recognize the existence of a derivational morpheme, and the term "zero suffixation" affirms its presence. It is characteristic that, despite the difference in the methods of grammatical and word-formation values expression in synthetic and analytical languages, the discussions about the zero structural element cover the same range of problems: 1) which term from the above ones is preferable? 2) which lexeme is generating one in the word-building chain with a zero suffix element? 3) what is the system of derivational values of zero suffixation formations? 4) what is the history of word-formation types of zero-suffixation formations?

## Materials And Methods

**2.1.** The purpose of our research is to examine the peculiarities of zero-suffixation formations in Russian language from the historical point of view and taking into account the data of the modern Russian language, to reveal the main tendencies and patterns of zero suffixation development, to underline the uniqueness and the specificity of zero suffixation as one of the special cases for the implementation of "zero categories" in a language.

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<sup>1</sup> R. Andrew, "Hippisley Indexed Stems and Russian Word Formation: Network Morphology Account of Russian Personal Nouns," in *Linguistics Faculty Publications*, 1998; T. G. Bochina, Yapparova V.N. Jing Jing, "Stylistic Devices of Contrast in Poetry of Alexander Pushkin and Evgeny Baratynsky," in *Journal of Language and Literature*, VII (2016), no. 1; D. Rakhimova Z. Ysupova, T. Korneyeva, "Olympiad in Russian Language as a form of bilingual student linguistic development," in *Journal of Language and Literature*, VII (2016), no. 3; E. Habibullina, "Substandard Derivations as Objects of System Analysis: Derivational Homonyms," in *XLinguae European Scientific Language Journal January*, VIII (2015), no. 1; Z. F. Yusupova, "Literary Text as a Unit of Culture in the Classes of Russian as a Second Language," in *Asian Social Science*, XI (2015), no. 6.

<sup>2</sup> T. G. Bochina, A. N. Miftakhova A. Z. Malikov, "Internet as a resource of socio-linguistic researches," in *Social Sciences*, V (2015), no. 10 (5); F. F. Fortunatov, *Selected works*, 1<sup>st</sup> volume, Moscow, Uchpedgiz, 1956.

<sup>3</sup> P. Štekaner, *English Word-Formation: a history of research (1960-1995)*, Tübingen, Narr, 2000.

**2.2.** The following study methods were used: the method of linguistic description, word-formation and grammatical analysis, linguistic forecasting, the theoretical analysis of literature and compilation of best practices, empirical methods: observation, ascertaining experiment conversation.

**2.3.** They studied domestic and foreign research papers on word formation, academic grammars, the dictionaries of Russian language (XVIII-XXI centuries), symposia materials (International Scientific Symposium "Russian Grammar 4.0", III International Scientific Symposium "Slavic Languages and Cultures in modern world", congresses (the Vth International Congress of Russian language researchers "Russian Language: historical fates and present times" (Moscow, 2014), etc.), international conferences on linguistics and on the teaching issues of Russian language at schools.

## Results

We found the following after the study.

**3.1.** Zero suffixation is a comparatively late word-formation phenomenon. It appeared in the Slavonic language on the basis of "suffix production of nouns through thematic suffixes ִ, ֶ, ַ, ָ, ֹ (> ִ, ֶ, ַ)" .<sup>4</sup> The processes of final consonant drop and the monophthongization of diphthongs caused the re-decomposition of the base and the transformation of the former suffixes into endings. The ancient suffixal names, rethought later in derivatives with zero morphemes, had a root, suffixal and inflectional morphemes in their structure: beg (\* beg-os), chod (\* chod-os).<sup>5</sup> Thus, the zero morpheme had materially expressed prototypes from diachronic point of view.

**3.2.** Zero suffixation as a new way of word development spreads its influence on other entities gradually and "subordinates" them to itself. From a historical point of view, a number of formations lose their derivative nature and, as the result of reverse motivation process, it is rethought as the formations of zero suffixation (gud, vizg, war, govor, gnev, klad, sud, etc.). The change of correlation in similar words occurred as the of a verb strengthening in the system of Indo-European languages: the names of actions began to be motivated by a verb, regardless of their etymological relations . They begin to interpret such borrowings as post, dreyf, zamok, etc. as zero-suffixation formations.

**3.3.** The process of motivation loss and the changes in word-formation relations is typical for the word-building model of Indo-European languages, regardless of a root nominal or verbal nature \* klă-ti (verb) → \* klă-dos (noun) → \* klă-d-ti> \* klăd- ti> \* klăs-ti (verb) → \* klăs-tos (noun) → \* klăst-iti (verb) (Otkupshchikov, 2005). The result of the original relations loss of related entities is the possibility of new word-formation links development or the development of an inverse correlation, which is especially significant for zero-suffixation formations

<sup>4</sup> N.M. Shansky, *Essays on the Russian word-formation*, Moscow, 1968.

<sup>5</sup> G. A. Nikolayev, *Russian and Slavic word formation*, Kazan, 2011.

As a type, this word-formation has a very great antiquity, "rooted in the distant ages of a noun and a verb category production".<sup>6</sup>

**3.4.** The following typical values of zero suffixation formations are presented in Russian: a) an abstract action (perelet), b) an actor (zadira), c) the result of an action (prolom), d) an action tool (lom), e) an object of action (korm), g) the time of action (voshod), a place of action (sad), etc. Similar word-formation meanings, characteristic of English new formations of the 20th century, are noted by Ingo Plag: locative 'put (in)to X' jail, instrumental 'use X' hammer, resultative 'make into X' bundle, causative 'make (more) X' yellow and the like.<sup>7</sup>

**3.5.** A number of scientific works has the theses that from the second half of the 17th century, the formation of nouns from verbal stem by the means of the zero suffix is gradually reduced in Russian, and in modern literary language the structural model - the formation of a noun from a verb by the means of zero suffix - is absent.<sup>8</sup> L. A. Bulakhovsky does not give the examples of the verbal suffixal formations that appeared in the first half of the XIXth century.<sup>9</sup> However, we believe that it is unreasonable to talk about the disappearance of this model from the language. "Dictionary-reference book on the materials of the press and literature of the 1990-ies"<sup>10</sup> records a considerable number of verbal and adjective like formations of zero suffixation in modern Russian language, which confirms the productivity of these formations in living colloquial speech and social dialects.

**3.6.** Zero word-building morpheme differs significantly from materially expressed morphemes. The materially expressed affix is an external sign of the word-formation motivation and it indicates the direction of motivation, and with zero affixation the presence of the zero affix follows from the motivation relationship, and "the establishment of motivation direction is the primary task of analysis".<sup>11</sup> Zero word-building and form-building morphemes are distinguished on the basis of the paradigmatic principle (begat' > begotnya, beg). The basic zero-word-forming morpheme in Russian is only a suffix, the zero suffix element is represented in intermittent morphemes: confix and transfix. Zero suffixation occurs only in nominal parts of speech: nouns (shepot), adjectives (zolotoy), in the words of state category (zhalost'), and in modern Russian word-formation system

<sup>6</sup> A. V. Desnitskaya, "On the question of the correlation of nominal and verbal bases in Indo-European languages," in *Scientific notes LSU, Series of Philological Sciences*, vol. 14. Leningrad, 1949.

<sup>7</sup> I. Plag, Word-formation in English. Cambridge University Press Series 'Cambridge Textbooks in Linguistics', 2002 [Electronic resource]. - Access mode: <http://www2.uni-siegen.de/~engspra/plag-in-press.pdf>, accessed 12. 03. 2017.

<sup>8</sup> A. G. Cherkasova, "From the history of the formation of nouns with a zero suffix (On the material of the works of the epistolary genre of the second half of the 17th century)," in *Studies on the grammar of the Russian language. Scientific notes of the Leningrad State University, series of philological sciences*, LXVIII (1963).

<sup>9</sup> L. A. Bulakhovsky, *Russian literary language of the first half of the XIX century. Phonetics. Morphology. Stress. Syntax*, Moscow, 1954.

<sup>10</sup> \*\*\*, *New words and meanings: a dictionary-reference on the materials of the press and literature of the 90s of the XX century*, St. Petersburg, Russian Academy of Sciences., 2014.

<sup>11</sup> V. V. Lopatin, "Zero affixation in the system of Russian word formation," in *Questions of linguistics*, I (1966).

zero suffixation is characteristic only of nouns (dozvon). Most of zero-suffixation formations are "the most archaic layer in Russian vocabulary, inheriting the early word-forming connections of nouns and verbs".<sup>12</sup>

**3.7.** In modern Russian language, the effect of zero suffixation on the so-called truncation and the gradual submission to it is observed. By truncation we mean "zero" truncation, in contrast to the process of base truncation during the formation of words (hod-i-t' - hod'-ba). The truncation "to zero" is widely represented in the youth jargon and is interpreted ambiguously in scientific works. In "Russian grammar" (1980) the word "zam" from "zamestitel'", "buter" from "buterbrod", "fanat" from "fanatic", etc. are referred to a stylistically modified type of abbreviation. Similar formations are also considered as "the optional and initially stylistically limited formations from full words or phrases of the corresponding complete (untruncated) words".<sup>13</sup> The formations of zero suffixation and truncation have many similarities in common. Both ways of word formation in modern Russian are stylistically marked. There are synonymous formations capable of conveying a word formation meaning with a materially expressed means: hodit' - hod-Ø, hod'-ba, hozhd-nye and "nark" from "narkoman", the same as "narkom", "narkosha", "narkusha". In both cases, there is the possibility of a generic parallelism: protok - protoka, abitur - abitura. Zero suffixation and truncation are represented in the nominal parts of speech. Despite the existing differences, the formations of zero-suffixation and truncation formations are close to word-forming phenomena in many ways (much closer than truncation and abbreviation). And taking into account the influence of zero suffixation on other word-building relationships and their "subordination" to themselves, it is possible to assume that this way of word-formation extends its influence to truncation.

**3.8.** Confixal and transfixal formations, including a zero "suffix" element are developed actively in Russian language. Under the confix, we mean "a single two-element word-forming morpheme", which in the process of word-production "complicates the producing basis in pre- and postposition at the same time"<sup>14</sup>: ulov, zabeg, neposeda, ottepel', bezgolosy, napereboy, etc. Confixation was not originally inherent in Russian word-building system, confixive derivatives were formed either by the suffixation of prepositional-case forms, or by the calquing of Greek structures. A transfix is a single two-element word-forming morpheme that connects the foundations of a complex word<sup>15</sup>: zverolov, zvukopis', kraeved, pchelovod, benzovoz, zvezdolet, secundomer, etc. The study of formation and functioning history of confixed and transfixal formations with zero "suffix" elements is significant for the expansion and the deepening of information on the development of zero derivation in the word-formation system of Russian language.

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<sup>12</sup> A. Meillet, *Common Slavic language*, Moscow, 2000.

<sup>13</sup> E. V. Marinova, "Truncated Substances in Modern Russian Speech: "Your" and "Another's", " in *Language in Motion. Moscow*, 2007.

<sup>14</sup> G. A. Nikolayev, *Russian Historical Word Formation: Theoretical Problems*, Moscow, 2010.

<sup>15</sup> *Ibidem*,

### **Discussion**

According to the results of the conducted research, the authors came to the conclusion that zero suffixation is one of the productive ways of word development throughout the history of Russian language from the period of the Slavic community to its present state. Despite the fact that the main layer of such formations was formed in the Russian language by XVII-th-XVIII-th centuries, zero suffixation continues to be an active way of word development in colloquial speech, social dialects and poetic language, competing with truncation (abbreviation) and subordinating it to oneself. Intermittent morphemes with a zero suffix element are developed productively in Russian.

### **Conclusion**

Continuing discussions about the essence, the place and the role of zero suffixation in the word-formation system of both synthetic and analytical languages underscore the relevance and the importance of this word-formation phenomenon study in the diachronic and synchronic aspects for all Indo-European languages.

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## Microstructure Image Processing With Automatic Analyzer Tools

Imageexpertpro 3\*

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**Abstract.** This article is devoted to the study of cast iron microstructure and its analysis, as well as to the measurement of various parameters for an image as a whole and the individual objects of the structure using computer-based research methods.

Automatic image analyzers (ALA) were very popular in 70-ies of the last century. This is conditioned to the fact that such products contribute to significant reduction of time costs and process complexity during the processing and the calculation of an analyzed image characteristics.<sup>1</sup>

Modern ALA contain tools, the principle of which is not always clear to a user. In this regard, it is important to study the functions of such tools in order to use them during operation as effectively as possible.<sup>2</sup> In particular, this work will consider the tools of the directed action "Binarization", "Spectral filter - stat. differentiation" and "Qualitative filters". ALA Image ExpertPro-3. The choice of the software product is dictated by its availability also in the laboratory of NCHI(f) K(P)FU department.

The relevance of the work is conditioned by the need to obtain effective tools and techniques for different material structure analysis, including cast iron.

**Key words:** digital image processing, automatic image analyzer, cast iron, graphite, filter, quantitative analysis.

### Introduction

The increasing requirements for quality, the increase of mechanical and operational properties of products in engineering require the development of new effective methods for microstructure control during the production of products, since it is the material structure that determines their properties.<sup>3</sup>

Graphite inclusions, namely their size-topological parameters (size, shape, distribution, quantity) make a significant effect on the properties of cast iron. The definition of these characteristics is governed by GOST 3443-87 and consists in the comparative analysis of real microstructures with reference ones, which in its turn is highly subjective and depends on the qualification of an operator. Besides, the method is characterized by low repeatability, despite the simplicity and low laboriousness. This kind of analysis may call into question the objectivity of the study results. In this regard, it is very important to study the functions of modern AIAs as much as possible to obtain undeniable and adequate data.

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\* Acknowledgements: The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> K. G. Janssens, *Computational Materials Engineering. An Introduction to Microstructure Evolution*, Amsterdam, Boston, Heidelberg, London, Elsevier, 2007; T. Skaland, "Inoculation material improves graphite formation in ductile iron," in *Modern Casting*, XII (2001), p. 43-45; D. M. Stefanescu, "Modeling of Cast Iron Solidification -The Defining Moments," in *Metallurgical and Materials Transactions*, XXXXVIII (2007), no. 7, p. 1433-1447.

<sup>2</sup> A. A. Zukov, "New viewpoints and technologies in field of austempering of Fe-Alloys," in *Materials Science and Technology*, XIII (1997), no. 5, p. 401-407.

<sup>3</sup> V. G. Panteleev, "Mmetrological provision for image analyzers," in *Measurement Techniques*, LI, no. 1, p. 107-112.

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There is also a need to update GOST 3443-78 due to the appearance of a large number of different types of structures, which limits its use.

Proceeding from the foregoing, it follows that the task of control technique development concerning the structural constituents of materials, in particular the parameters of the graphite phase, based on modern geometric principles, is a relevant one.<sup>4</sup> This work is the part of the project concerning the study of graphite inclusion types and the compilation of their classifications.

Among the most popular AIA one can determine the following ones: SIAMS 700<sup>TM</sup>, ImageExpert<sup>TM</sup> Pro 3, Thixomet, etc. In our case, the microstructure was studied using the ImageExpert<sup>TM</sup> Pro 3 analyzer, the advantage of which is a user-friendly interface in Russian and a fairly low cost of the product.

In the process of research, NEXSYS software product was used to solve the problems of quantitative image analysis in science and industry - ImageExpertPro 3. The analyzer is an integration of modern image processing technologies created on the basis of powerful mathematical methods.<sup>5</sup>

### **Materials and methods**

The object of the study is cast iron with vermicular graphite.

The quantitative analysis tool is an automatic image analyzer NEXSYS ImageExpertPro 3.

Before the direct processing of microstructure images, the work was performed on sample preparation.

During the preparation of samples the following operations were performed:

- the cutting of samples using the cutting machine metkon METACUT 251;
- the grinding and the polishing of samples using the grinding-polishing machine BUEHLER MetaServ 250;
- the observation of the microstructure with the microscope MEIJI TECHNO CO., LTD of IM7000 series with 100 time magnification and its photographing using Thixomet software.

### **Results and discussion**

1. The tool "binarization-preset".

In order to work with this tool, one sample of CGI was used.

Digital processing begins with the conversion of an original color image into gray. Then we start to use the digital processing tool "Binarization", which is traditionally a necessary operation to prepare the images for numerical analysis, and we choose the option of manual level selection when at a live active image change -

<sup>4</sup> K. V. Makarenko, "Identification of graphite inclusions in cast iron," in *Foundry*, IV (2009), p. 2-6; K. V. Makarenko, 2009. "Simulation of cast iron crystallization process with nodular graphite," in *Metallurgy and heat treatment of metals*, XI (2009), p. 16-20.

<sup>5</sup> \*\*\*, GOST 3443-87. 1987. *Castings of cast iron with various forms of graphite. Structure determination methods.* (Entered since 01.07.88), Moscow; The publishing house of standards, 1987.

the "preset" option. Seven levels were studied (131, 136, 141, 146, 151, 156, 161) in the study.

Table 1 shows the fragments of original and processed images, which show that the image objects become thicker as the binarization level increases.

Table 1. Influence of the level of binarization on the objects of the system

Binarization level	0	131	136	141
Image of the fragment				
Binarization level	146	151	156	161
Image of the fragment				

The image processing with the "Binarization-preset" tool was performed directly by a user, the remaining steps were performed in an automatic mode: morphological filtering - "Pore removal", "Separation", "Deletion of boundary objects".

The calculation results for each image were generated by the program using "Auto Report" function. It contains the parameters that a user can choose in the settings. The program allows you to display both the average values and details for each structure object.

Table 2 shows the values of gray iron vermicular graphite parameters, depending on a given level of binarization.

Table 2. Influence of the level of binarization on the parameters of graphite inclusions

No	Binarization level	P <sub>F</sub> (spherical)	Extension	Area	Number of measurements
1	131	0,818	2,07	66,878	5313
2	136	0,798	2,09	84,776	4950
3	141	0,787	2,08	102,967	4780
4	146	0,771	2,09	126,867	4408
5	151	0,759	2,08	155,537	4072

6	156	0,760	2,02	185,243	3940
7	161	0,808	1,82	147,718	4912

Figure 1 shows the graphical plot of the averaged parameters concerning gray iron graphite inclusions (Pf (sphere), elongation, area) dependence on a given binarization level (136,141,146,151,156,161).

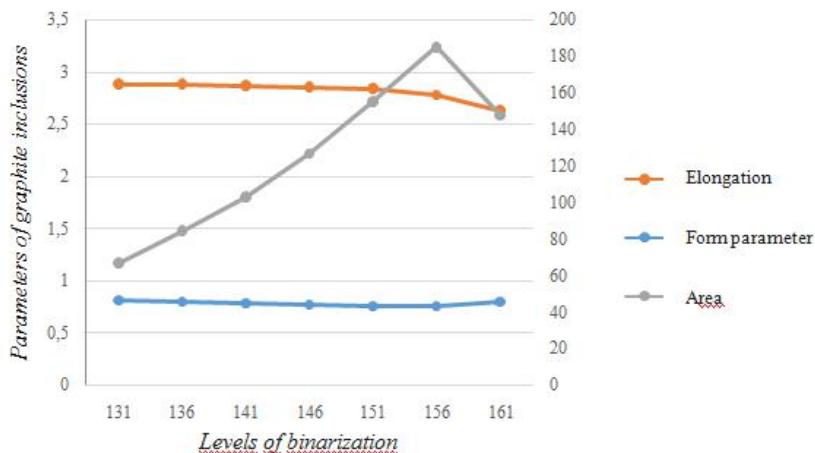


Figure 1. Diagram of graphite inclusions parameters dependences from a given binarization level

### The tool "spectral filters - stat. Differentiation"

In order to study this tool three samples of CGI were selected. Figures 2-7 show the fragments of the image before the processing by "statistical differentiation" filter and after it.

Table 3 shows information about the parameters of the processed images.



Figure 2. Transferring the image to gray

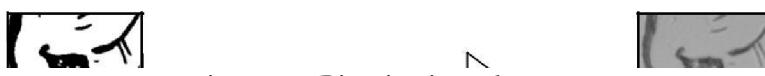


Figure 3. «Binarization - by Lagrange»

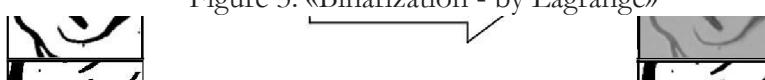


Figure 4. «Morphological filters - removal of pores»

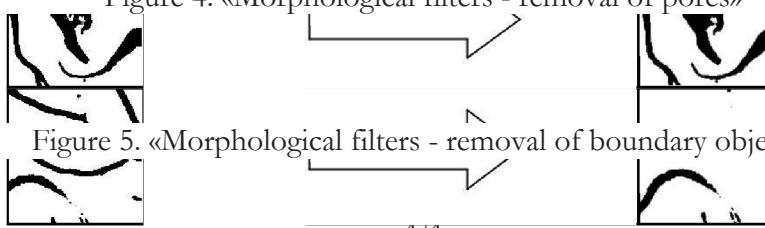


Figure 5. «Morphological filters - removal of boundary objects»

Figure 6. «Morphological filters – separation»

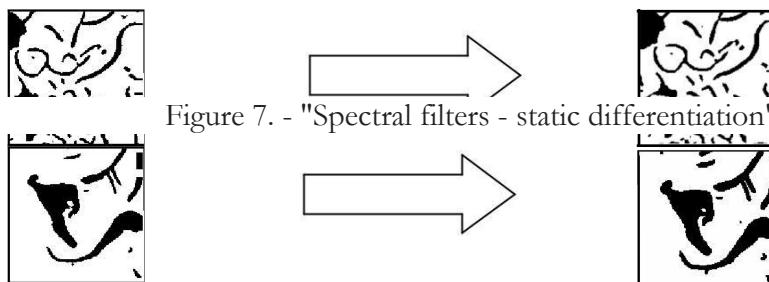


Figure 7. - "Spectral filters - static differentiation"

Analyzing the parameters of the images before the filter application and after it is seen that the value of the total area decreases, but the number of objects and the shape (sphere) parameter increases.

Table 3. Image parameters before and after processing

Parameter	Value					
	Picture 1		Picture 2		Picture 3	
Stat. differentiation	Before	After	Before	After	Before	After
Total Area of objects, Pixel <sup>2</sup>	599554,125	335341,5	497263,375	311975,375	634482,5	330558
Difference 44%		Difference 37%		Difference 48%		
Form parameter (spherical)	0,723	0,801	0,708	0,830	0,760	0,823
Total objects	2182	3837	1473	2934	4072	6350

For the clarity of the obtained changes, the fragments of an individual object are shown in all three images (Figures 8-10). Table 4 shows the characteristics of the object.

Applying the selection of the objects under study with the color different from the basic one, we get the following:



Figure 8. Image 1 «Spectral filters are stat. differentiation»

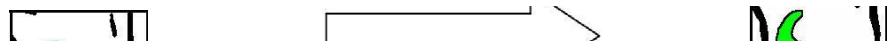


Figure 9. Image 2 «Spectral filters are stat. differentiation»

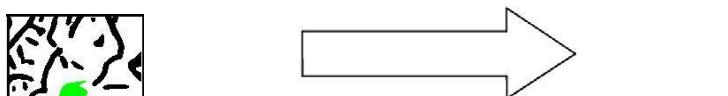


Figure 10. Image 3 «Spectral filters are stat. differentiation»

Having studied the presented fragments, you can see that the contours of the object become more distinct and decorated.

Table 4. Parameters of objects before and after application of the filter

Parameter	Value					
	Picture 1		Picture 2		Picture 3	
Stat. differentiation	Before	After	Before	After	Before	After
Total Area of objects, Pixel <sup>2</sup>	3851,875	3302,5	2830,625	2391,250	690,375	554,875
	Difference 14%		Difference 15%		Difference 20%	
Form parameter (spherical)	0,482	0,468	0,521	0,497	0,787	0,846
Extension	1,96	1,97	2,29	2,35	1,40	1,24

### Qualitative Filters

Qualitative filters include high-frequency, low-frequency, threshold, median and peak tone filters. The filters "High-frequency", "Low-frequency" and "Median", by the means of which we conduct the study of the shape parameter,

contribute to the smoothing of interference and level stabilization. The filters "Threshold" and "Peak tone" are the analogues of the "Diffusion" methods.

Two groups of digital instruments can be distinguished in qualitative filters, which are similar to each other by the principle of action. The first group includes high-frequency, low-frequency and threshold filters, and the second one includes a median and a peak tone filter.

Let us consider the first group of filters in detail.

The principle of these tools operation is to isolate the boundaries of an object. Despite the similarity of these filters operation, they have significant differences:

- the use of low-frequency and threshold filters leads to the blurring of the boundaries, which is not observed in high-frequency ones;
- the threshold filter is characterized by the fact that the thickness of the selected blurred boundary is 2 times less than a low-frequency one.

The principle of the action on these filters objects are shown by Figure 2.

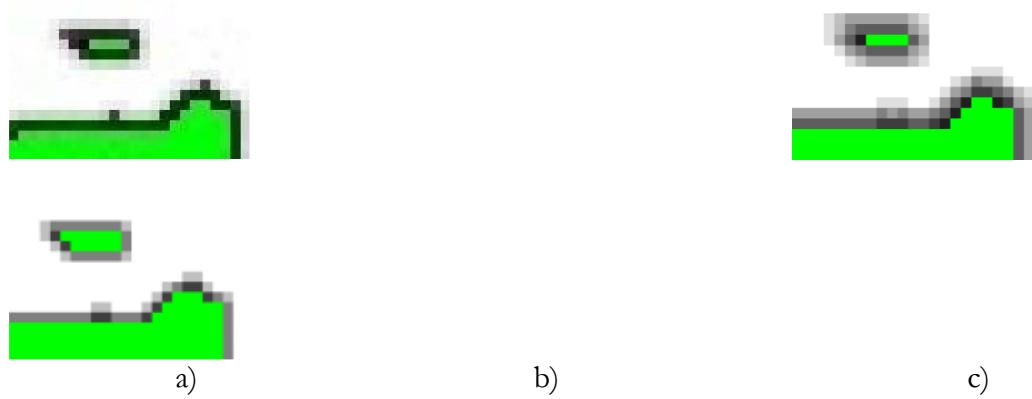


Figure 10. Operating principle Qualitative Filters: a) high-frequency; b) low frequency;  
c) threshold

The action principle of the second group of quality filters is the smoothing of object boundaries, the removal of small irregularities and the approximation of graphite shape to a spherical one.

Table 5 presents the averaged characteristics of the objects for the structure under study.

Table 5. Average characteristics of the objects of the structure under study

No	Quality filters	P <sub>F</sub> (spherical)	Extension	Area	Number of measurements
1	High-frequency	0,792	2,23	549,250	4379
2	Low-frequency	0,792	2,23	549,250	4379
3	Threshold	0,806	2,15	613,250	1933
4	Median with a radius of 2	0,831	2,04	685,500	1235

5	Median with a radius of 3	0,835	2,00	677,750	1190
6	Peak tone with radius 1	0,826	2,03	677,50	1356
7	Peak tone with radius 2	0,828	2,06	674,625	1279

Figure 11 shows the dependence of a shape parameter on the used tool as the bar graph.

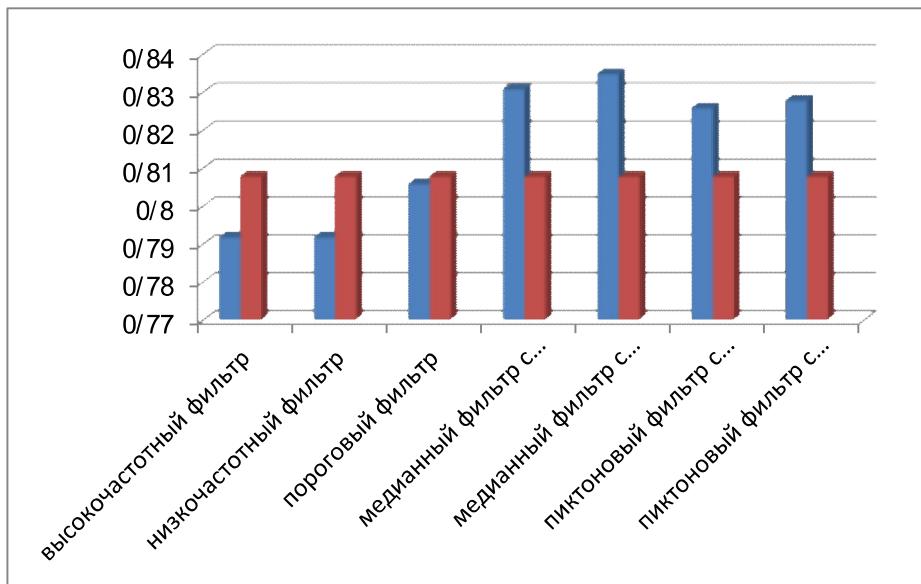


Figure 11. Effect of quality filters on the shape parameter of graphite exclusions

высокочастотный фильтр - High frequency filter / низкочастотный фильтр - Low frequency filter / пороговый фильтр - Threshold filter / медианный фильтр с радиусом 2 - Median filter with the radius of 2 / медианный фильтр с радиусом 3 - Median filter with the radius of 3 / пиктоновый фильтр с радиусом 1 - Peak tone filter with radius 1 / пиктоновый фильтр с радиусом 2 - Peak tone filter with radius 2

## Conclusions

### 1. Conclusion on the operation with the tool "binarization-preset":

- the value of Pf (sphere) varies within  $\pm 1.4 \div 6.5\%$  depending on the level;
- the elongation of objects varies within  $\pm 0,5 \div 3,0\%$  depending on the level;
- the area of objects varies within  $\pm 19 \div 23\%$  depending on the level.

In addition to the abovementioned parameters, you can also note such an indicator as the number of measurements (objects). Their number changes at each chosen level due to the change in the area of objects. This leads to the merging of nearby objects and the formation of larger elements.

The change in the area of individual elements makes a significant effect on the average value of the area of the whole system as the outgrown boundary objects are connected to the objects located closer to the center. And when the morphological filter "the removal of boundary objects" is used they are removed much more, which is clearly shown on Figure 2.

*2. Conclusion on the work with the tool "spectral filters - statistical differentiation":*

After the analysis of the fragments concerning individual objects and their parameters we make the following conclusions:

- after the application of "stat. differentiation" along the object perimeter, the contour appears, the line thickness of which is redistributed between a painted object and an unpainted substrate. The program calculates the area of the object only inside the contour, which is why it decreases.

- the value of a shape parameter (spheres) also increases or decreases due to the appearance of the contour which changes the length and width of the object relative to each other and inversely proportional to elongation.

- the number of objects increases due to the fact that this filter separates them at the pixel level. The name of this filter speaks for itself: differentiation is the division, from Latin differenti.

*1. Conclusion on the work with the tool "Qualitative filters":*

- high-frequency filter: PF (spheres) is decreased by 2%; Elongation is increased by 7.2%; The area is reduced by 19%; The number of measurements is increased by 2498 units;

- low-frequency filter PF (spheres) is reduced by 2%; Elongation is increased by 7.2%; The area is reduced by 19%; The number of measurements is increased by 2498 units;

- the threshold filter Pf (spheres) is reduced by 0.2%; Elongation is increased by 3.4%; The area is reduced by 10%; The number of measurements is increased by 52 units;

- median filter

• with the radius of 2 Pf (spheres) is increased by 2.9%; Elongation is decreased by 1.9%; The area is increased by 0.55%; The number of measurements is reduced by 646 units;

• with the radius of 3 Pf (spheres) is increased by 3.3%; Elongation is decreased by 3.8%; The area is reduced by 0.59%; The number of measurements is reduced by 691 units;

- peak tone filter

• with the radius of 1 Pf (sphere) is increased by 2.2%; Elongation is decreased by 2.4%; The area is reduced by 0.62%; The number of measurements is reduced by 525 units;

• with the radius of 2 Pf (spheres) is increased by 2.5%; Elongation is decreased by 0.9%; The area is reduced by 1%; The number of measurements is reduced by 602 units.

## Summary

"Microstructure Image Processing With Automatic Analyzer Tools Imageexpertpro 3," *Astra Salvensis*, V (2017), Supplement no. 1, p. 471-480

Research work in this trend demonstrates to us both the advantages and the disadvantages of such software systems. Despite the simplification of the calculation procedure, the process of an image preparation for analysis is still imperfect and often also depends on an operator's skill.

The uniqueness of automatic image analyzers in a large number of methods and tools to solve various tasks. However, the principle of filter operation is not always clear in ImageExpertPro-3, since there are no generally available methods for their use.

In particular, during the course of the work, they found that it is not reasonable to use spectral filter package in order to study the parameters of graphite inclusions in the structure of cast iron.

Despite the shortcomings, automatic image analyzers simplify the work and reduce labor intensity greatly.

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## Design Of Primers For Identification Of Honey Bee Viruses In Multiplex-PCR\*

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**Abstract.** This paper is devoted to the design of primer oligonucleotide sequences for their use in the genetic identification of Sacbrood virus, Chronic bee paralysis virus, Black queen cell virus and Deformed wing virus using multiplex-PCR. As a result of the bioinformatic analysis, the design of the oligonucleotide primers was performed; the designed primers had similar annealing temperatures (55 °C), which makes it possible to indicate each of the viruses under the same PCR conditions. Most of the known strains and isolates of these viruses are amplified with this complex of oligonucleotide primers. Nucleotide sequences of designed primers and a universal positive control allow for the genetic identification of each of the biopathogens under the same PCR conditions at a multiplex format.

**Keywords:** *Apis mellifera* L., Sacbrood virus, Chronic bee paralysis virus, Black queen cell virus, Deformed wing virus.

### Introduction

One of the most acute problems in the effective breeding of honey bees (*Apis mellifera* L.) is their viral diseases.<sup>1</sup> About 20 of more than 7,000 currently known viruses are isolated from bees. The size of virions in bee viruses varies from 17 to 450 nm, the shape is diverse: filamentary, polyhedral, ellipsoidal, and spherical.

Bees, like other representatives of the animal world, are susceptible to viral diseases, leading to disruption of the life of the bee family, and sometimes to its death. The danger of viruses is due to their long existence in the host without clinical symptoms, rapid spread both in the bee family and outside it, the presence of ectoparasites and the ability to cause under certain conditions a significant economic damage to beekeeping. The intensity of the spread of viral diseases can be influenced by environmental and geographic conditions,<sup>2</sup> pollution of the

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<sup>2</sup> E. M. Khanbekova, L. E. Rubtsova, Yu. Yu. Babinet al., "Viruses and parasites of *Apis mellifera caucasica* Gorb. as related to losses of honeybee colonies in Big Kaukas Mountings in Azerbaijan under different environmental conditions and location," in *Sel'skokhozyaistvennaya biologiya*, VI(2013), p. 43-54; M. N. Mukminov, O. V. Nikitin, E. W. Ndayishimiye, E. A. Shuralev, "Assessing the prospects for beekeeping development in Southern Province of Zambia," in *Veterinariya*, X (2015), p. 49-52; E. V. Ndayishimiye O. V. Nikitin, M. N. Mukminov, E. A. Shuralev, "Assess the suitability of the Copperbelt province of Zambia for the beekeeping management according to the level of

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environment by pollutants,<sup>3</sup> the presence of ticks and mites as vectors of causative agents of infectious diseases of bees.<sup>4</sup> Viruses spread very quickly across the territory and cover vast areas, like the spread of European viruses in Asian countries<sup>5</sup>), which may also be related to the damage of wild bees<sup>6</sup>. Viruses are a cause of the "collapse" of bee colonies, which is characterized by the rapid disappearance of adult individuals while maintaining the brood, sufficient feed and against a background of low tick parasitism. The increased multiplication of viruses increases their virulence, which leads to an increase in mortality among insects, and in some cases to the collapse of the whole bee family. Different mechanisms of virus-host interaction affect virus dynamics, virus-virus interactions, superinfections (13).

The most relevant viruses affecting the bees to this day are Sacbrood virus (SBV), Chronic bee paralysis virus (CBPV), Black queen cell virus (BQCV), Deformed wing virus (DWV) and some others.<sup>7</sup>

To effectively combat the virus diseases of bees, timely and accurate diagnosis is necessary. Previously, the diagnosis of "viral disease" was raised mainly in the presence of typical symptoms. Later, it was established that different strains of the same virus under the influence of various environmental factors can manifest themselves with different symptoms. The method of diagnosis by symptoms proved to be unreliable, especially since many apiaries can simultaneously have several different viruses. Thus, laboratory studies have become the main way to diagnose viral infections.<sup>8</sup>

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polymetallic pollution," in *Russian Journal «Problems on Veterinary Sanitation, Hygiene and Ecology»*, III (2015), no. 15, p. 80-84.

<sup>3</sup> F. Bilalov, L. Skrebneva, O. Nikitin et al., Seasonal variation in heavy-metal accumulation in honey bees as an indicator of environmental pollution," in *Res J Pharm Biol Chem Sci*, VI (2015), no. 4, p. 215-221; I. Cavigli K. F. Daughenbaugh, M. Martin et al., "Pathogen prevalence and abundance in honey bee colonies involved in almond pollination," in *Apidologie*, III (2016), p. 251-266.

<sup>4</sup> S. Bernardi, E. Venturino, "Viral epidemiology of the adult *Apis mellifera* infested by the *Varroa destructor* mite," in *Helijon*, II (2016), no. 5, e00101; A. Giacobino A. I. Molineri A. Pacini et al., "*Varroa destructor* and viruses association in honey bee colonies under different climatic conditions," in *Environ Microbiol Rep*, VIII(2016), no. 3, p. 407-412.

<sup>5</sup> K. Tsevegmid, P. Neumann, O. Yañez, "The honey bee pathosphere of Mongolia: European viruses in Central Asia," in *PLoS One*, XI (2016), no. 3, e0151164.

<sup>6</sup> A. G. Dolezal, S. D. Hendrix, N. A. Scavo et al., "Honey bee viruses in wild bees: viral prevalence, loads, and experimental inoculation," in *PLoS One*, XI (2016), e0166190; N. Forfert, M. E. Natsopoulou, R. J. Paxton R. F. Moritz, "Viral prevalence increases with regional colony abundance in honey bee drones (*Apis mellifera* L)," in *Infect Genet Evol.*, VII (2016), p. 549-554; A. Tehel, M. J. Brown, R. J. Paxton, "Impact of managed honey bee viruses on wild bees," in *Curr Opin Virol.*, XIX (2016), p. 16-22.

<sup>7</sup> A. V. Sprygin, Yu Yu. Babin, E. M. Khanbekova L. E. Rubtsova, "Varroa destructor and a threat of viral infections of the honeybee (*Apis mellifera* L)," in *Sel'skokhozyaistvennaya biologiya*, LI (2016), no. 2, p. 156-171; V. E. Volykhina, "Deformed wing virus in *Apis mellifera* L.: prevalence, morphology, and pathogenicity," in *Sel'skokhozyaistvennaya biologiya*, L (2015), no. 4, p. 409-419.

<sup>8</sup> M. I. Gulukin, A. N. Sotnikov, M. A. Luchko et al., "Clinical and laboratory diagnosis contagious diseases of the brood of bees," in *Veterinariya*, IV (2016), p. 25-27.

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The maximum specificity among various diagnostic methods is the genodiagnosis of viral diseases.<sup>9</sup> When detecting specific markers of particular pathogens, the polymerase chain reaction (PCR) shows maximum efficiency, which allows detecting the virus already at the initial stage of the infectious process development. Good results were obtained in the development of SBV rapid diagnostics by in-situ hybridization.<sup>10</sup> The diagnosis of each of the viral diseases of interest to us requires analysis of the genomes of different types and isolates of viruses, as well as of other biopathogens<sup>11</sup>, as well as determination of maximally homogeneous sites and verification of the probability of possible cross reactions.

Objective of this study: the design of oligonucleotide sequences of primers for their further use for the indication and identification of the causative agents of viral diseases of bees by the multiplex-PCR method.

### **Material and methods.**

During the design of primers and probes, the resources of the National Center for Biotechnology Information (NCBI), the Basic Local Alignment Search Tool (BLAST) (<https://blast.ncbi.nlm.nih.gov/Blast.cgi>) and the VectorNTI 9.1.0. program (Invitrogen Corporation) were used. The following problems were posed: the minimum number of dimers and secondary structures; the same annealing temperature of the primers; the minimum number of guanine and cytosine at the 3' end of each of the primers; only absolute complementarity to primers and probes with the desired sequence is required for positive control, with the ability to synthesize PCR-product of about 100 nucleotide pairs in length; and the probe for PCR should not contain guanine at the 5' end.

For the purpose of application in multiplex-PCR, the task was to design a unique positive control containing complementary nucleotide sequence to all oligonucleotide primers of the desired viruses.

When working with a sub-set of bees, sample preparation was carried out, including such steps as grinding, homogenization and extraction. For effective grinding and homogenization, bee samples were placed in a disposable polyethylene bag 40×40 mm, 2 ml of a 0.9% NaCl solution was added and, after incubation for 10 minutes at room temperature, frozen at -70 °C. The frozen sample was ground with a pestle in a sterile ceramic mortar, then 200 µl of homogeneous biomass was taken out by a dispenser. Total 60 ready samples were obtained for further work.

<sup>9</sup> A. E. Kalashnikov, I. V. Maslenikov, L. M. Kolbina, I. G. Udina, "Genetic differentiation of populations of honey bee (*Apis mellifera* L.) and distribution of RNA-containing viruses at the background of epizootia of *Varroa destructor* on the territory of Udmurtia", in *Sel'skokhozyaistvennaya biologiya*, IV (2013), p. 88-92.

<sup>10</sup> C. Park, H. S. Kang, J. Jeong et al., "In-situ hybridization for the detection of Sacbrood virus in infected larvae of the honey bee (*Apis cerana*)," in *J Comp Pathol*, CLIV (2016) no. 2-3, p. 258-262.

<sup>11</sup> E. W. Ndayishimiye, N. I. Khammadov, K. A. Osyanin et al., "Bioinformatic analysis of oligonucleotides for molecular genetic indication of honey-bee aspergillosis and ascosporesis pathogens," in *Veterinarny Vrach*, II (2015), p. 3-9.

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Isolation of nucleic acids was carried out by the method of magnetic sorption with a set of reagents "MAGNO-sorb" version 100-200 ("AmpliSens" Federal Budget Institution of Science "Central Research Institute of Epidemiology", Rospotrebnadzor) according to the manufacturer's instructions.

In order to exclude the influence of the DNA of the bee and other organisms that got into the sample, the PCR was tested with reagents for the results to detect the RNA-containing viruses we studied, eliminating the reverse transcription stage. Real-time PCR for DNA was performed using RT-PCR kit (Syntol, Moscow, Russia). The final volume of 15  $\mu$ l PCR mixture contained: 1.5  $\mu$ l of 25 mM MgCl<sub>2</sub> solution; 0.5  $\mu$ l of 10 pM of each primer solution; 1.5  $\mu$ l of 2.5 mM dNTP solution; 1.5  $\mu$ l of 10x buffer EvaGreen+ for PCR; 0.5  $\mu$ l of Taq polymerase; 5  $\mu$ l of DNA extract and 3.5  $\mu$ l of deionized water. PCR was carried out in real time on amplification platform C1000 with an optical module CFX96 (BioRad). The PCR program was as follows: (I) denaturation at 95°C for 2 min; (II) 40 cycles: 10 sec at 95°C, 30 sec at 55°C. The fluorescence was captured on the 55°C segment in each PCR cycle in the FAM channel.

In order to exclude the presence of the desired viruses in the bee samples, PCR was tested with reverse transcription. Real-time PCR for RNA was performed using RT-PCR kit (Syntol, Moscow, Russia) and MMLV reverse transcriptase (Evrogen, Moscow, Russia). The final volume of 15  $\mu$ l PCR mixture contained: 1.5  $\mu$ l of 25 mM MgCl<sub>2</sub> solution; 0.5  $\mu$ l of 10 pM of each primer solution; 1.5  $\mu$ l of 2.5 mM dNTP solution; 1.5  $\mu$ l of 10x buffer EvaGreen+ for PCR; 0.5  $\mu$ l of Taq polymerase; 0.2  $\mu$ l of MMLV; 5  $\mu$ l of DNA extract and 3.5  $\mu$ l of deionized water. PCR was carried out in real time on amplification platform C1000 with an optical reaction module CFX96 (BioRad). The PCR program was as follows: (I) reverse transcription at 37°C for 30 min; (II) denaturation at 95°C for 2 min; (III) 40 cycles: 10 sec at 95°C, 30 sec at 55°C. The fluorescence was captured on the 55°C segment in each PCR cycle in the FAM channel.

## Results

**Oligonucleotide primer design.** During the design of primers and probes, the intercalating probe was selected only for SBV, but for CBPV, BQCV and DWV, the EvaGreen dye was used (Table 1). For the broader functionality of the application of selected specific loci, a forward (F) and reverse (R) primers and probe (P) design was developed that allows PCR to be carried out at a single annealing temperature of the primers for the viral pathogens studied.

Table 1. Primers for PCR indication of bee viral disease pathogens

Name	5` → 3` sequence	Annealing temperature	Amplicon length
SBVF	agaacgtccactacacccaaatg	54.8°C	96 bp
SBVR	atagttccctctgtggcttaattgaca	55.1°C	
CBPVF	atctacggaaatttatggtgaaa	54.9°C	85 bp
CBPVR	gataggctttagcacaaaaatccagt	55.3°C	
BQCVF	catgagaagaacccgagaagaaactc	54.6°C	84 bp
BQCVR	ggagggctcacattatgttt	55.5°C	

DWVF	gcatgggtgaaggaaatgtctgt	55.3°C	90 bp
DWVR	cgcacacactctcgatgtactc	54.8°C	

Thus, for the indication and identification of the SBV, CBPV, BQCV and DWV genomes, the combinations of oligonucleotide primers with an optimum annealing temperature of  $55.0 \pm 0.5$  °C were created.

### Designed Primer Specificity Analysis

The design of oligonucleotide primers for PCR is always associated with the risk of nonspecific amplification with a DNA heterogeneous to the studied pathogen. To exclude such probability, the nucleotide sequences of both each of the constructed primers, and a complex of forward and reverse primers were compared for the presence of similar sequences of the genetic code. The sequences analyzed were compared with all available sequences of all macro- and microorganisms. To exclude from the list the identified organisms of a certain virus, we used specialized search parameters, namely excluding from search the nucleotide sequences of certain viruses.

The SBV virus, as well as the other viruses studied in this work, is RNA-containing, and errors in the specificity of the produced indication of the given virus can be associated with the homogeneous nucleotide sequence of RNA of heterogeneous organisms. The nucleotide sequence of the reverse primer (SBVR) does not significantly resemble the genetic code of heterogeneous organisms. All direct primer homologies (SBVF) in the RNA sequence of heterogeneous organisms (7 species) having a homology of 68% do not affect the PCR results due to the lack of similar homology in the reverse primer and probe.

During the analysis of the direct primer (CBPVF) for the indication of CBPV, a homogeneous sequence was found in a number of DNA containing non-viral organisms with a specific genome coverage less than 90%. The reverse primer analysis (CBPVR) showed similar results for sequence homology, all organisms detected are DNA-containing and do not synthesize RNA with the sequence we used.

During the analysis of forward and reverse primers (BQCVF and BQCVR) for a BQCV indication, a homogeneous sequence was found for a number of organisms (homology less than 90%). The most significant homologies in the nucleotide sequence that can be noticed were identified in *Sus scrofa* DNA (forward and reverse primer homology), *Propithecus coquereli* mRNA (reverse primer homology), *Otolemur garnettii* mRNA (reverse primer homology), *HIV-1* RNA (reverse primer homology), *Apis cerana* mRNA (forward primer homology), and *Kryptolebia smarmoratus* mRNA (forward primer homology). Homology with both primers is found only in the genome *Sus scrofa* in the form of DNA.

The last analyzed complex of oligonucleotide primers are primers for the indication and identification of DWV. During the analysis of forward and reverse primers (DWVF and DWVR), a homogeneous sequence was found (with a degree of homogeneity of less than 86%) in a number of organisms. The most interesting were nucleotide sequences of RNA. A homologous to the direct primer

composition of nucleic acids is found in the following organisms (the percentage of homology is shown in parentheses): *Acropora digitifera* (86%), *Dictyostelium fasciculatum* (81%), *Aegilops tauschii* (81%), *Poecilia reticulata* (81%), *Bombus terrestris* (77%), *Felis catus* (77%), *Ailuropoda melanoleuca* (77%), *Papio anubis* (77%), *Rhinopithecus bieti* (77%), *Gossypium arboreum* (77%), *Oryza sativa* (77%), *Kwoniella pini* (77%), *Cyprinus carpio* (77%), *Sugiyamaella lignohabitans* (77%).

Organisms characterized by a high degree of homology to DWVF do not have a similar homology to the composition of nucleic acids with DWVR, except for: *Felis catus* (66%), *Ailuropoda melanoleuca* (66%) and *Cyprinus carpio* (70%). However, for the successful amplification of nucleic acids of these biological species with the primers developed by us, there are a number of obstacles. As for *Cyprinus carpio*, in addition to the fact that this species does not have contact with the bee, there are other obstacles to the amplification of its RNA with the primers developed: low homology of the nucleotide sequences and homology of the forward and reverse primers are presented to different genes. *Ailuropoda melanoleuca* also has no contact with the bees of our zone, moreover, RNA indication is possible only when analyzing directly biological animal samples, in addition, the homogeneity of the forward and reverse primers is presented to different genes of *Ailuropoda melanoleuca*, which makes amplification, in this case, impossible. *Felis catus* are widely distributed and theoretically may contact with hives, however, as in the case of *Cyprinus carpio* and *Ailuropoda melanoleuca*, the homology of the forward and reverse primers belongs to different genes, and the isolation of *Felis catus* RNA is possible only from biological samples (RNA is a very unstable molecule and is rapidly destroyed outside the host cell).

Analyzing the nucleotide sequence of all primers (combination of forward and reverse ones), a significant degree of homology is not found, which cannot lead to an effective accumulation of amplification products. This fact indicates the success of the primer design stage.

### **Creating A Universal Positive Control Sample**

As a result of PCR, the following amplicons are synthesized for the viruses we identify (according to the first DNA chain):

- for SBV:

*agaacgtccactacaccgaaatgtccagtgtgagggggacgaaatctggaaatgttagacggcagtgcaattaaagaccacacaaaggaaactat*

- for CBPV:

*atctacggaaatttatggggaaattctgaaaataattgggattttctgaatcattactggatttttgtataagaccgtgc*

- for BQCV:

*gggggctacttatcttatgttaaatcgtaagccacaaatttttaaagtgtcatgagttttctcggtttctcatg*

- for DWV:

*gcatgggtaaaggaaatgtctgtattttggatgtccaaattcagaatgtcgatggcatgtcaagagatatacgagagatgtttgg*

As a positive control of the reaction, it is not necessary to use the entire amplicon sequence, but sufficient to start and end the sequence that are complementary to the nucleotide sequence of the oligonucleotide primers. Linear application of sequences complementary to primers will create a too short portion of the target DNA. To increase the length of the amplified fragment, we applied a

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combination of positive sequences of different viruses. Thus, one positive control initiates the synthesis of a DNA chain of sufficient size, immediately for all viruses; the sequence of such a control sample is presented below.

As a positive control of amplification of the analyzed viruses, insertion of the developed nucleotide sequence into the vector "pAL2-T" was made; the plasmid map is shown in Figure 1.

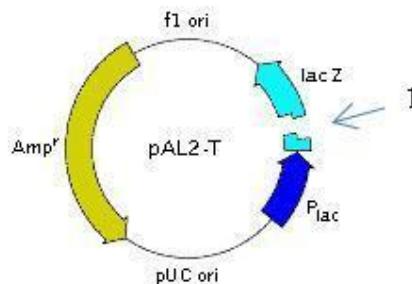


Fig. 1. pAL2-T plasmide map

1 – the universal nucleotide sequence inserted into the plasmid genome in the region of the  $\beta$ -galactosidase enzyme-encoding gene.

An insert to the selected vector was made in the form of a universal sequence that encodes all the amplifiable parts of the viruses of interest to us at once. The nucleotide sequence had the following nucleotide composition 5' → 3':

atctacggaaatttatggtgaaagaacgtccactacaccgaaatgcatgggtgaaggaatgtctgtcatgaga  
agaaccgagaagaaactcactggattttgtgcataagacctatctgtcaattaagaccacagaaggaaactatgagtacatc  
gagagagtgtttgcgaagcaatagataaagtgagccctcc

Therefore, this approach allows managing the correctness of the PCR setting with any of the analyzed bee viruses, and in the presence of the EvaGreen dye, the amplification is detected in real time. The length of the amplified fragment in the detection of each of the viruses is  $120 \pm 5$  b.p.

### Polymerase Chain Reaction Optimization

The practical implementation of the calculated PCR reaction may be often accompanied by some difficulties, associated with small differences in the calculated and real annealing temperature of the primers. To determine the optimum temperature range for annealing the primers, a reaction was carried out with a temperature 53.5–56.0°C (Fig. 2). The optimum annealing temperature for primers for the identification of the genomes of all detectable viruses of bees was 55.0°C. Amplification occurs also at other annealing temperatures of primers ( $\pm 1^\circ\text{C}$ ), but the most efficient accumulation of amplification products occurs at a temperature equal to the preliminary calculations.

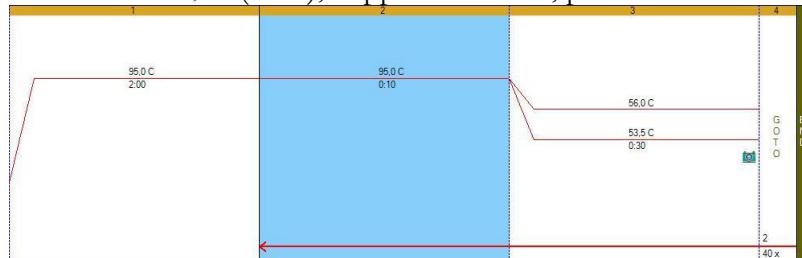


Fig. 2. PCR temperature range

Each series of cells of the amplifiers has its own temperature during the annealing of primers; the lower row of cells (H) has temperature of 53.5°C, the other cells are heated more as they move away from the "H" series toward the "A" series, where the annealing temperature of the primers has a maximum value (56.0°C).

To check the possible cross-reactions with the DNA of the bee, or the bacteria and fungi present on the body of the bee, PCR was set with the isolated nucleic acid preparation without reverse transcription (negative reaction). An artificial circular DNA molecule served as a positive control, with modification in the form of an insert of our amplified sequence. The results of amplification of bees DNA and artificial ring-shaped DNA molecule of SBV, CBPV, BQCV and DWV viruses by real-time PCR method showed that amplification occurs only with positive control DNA (Fig. 3).

The reverse transcription PCR showed similar results, which indicates the absence of RNA in the samples with a nucleotide sequence complementary to the primers used.

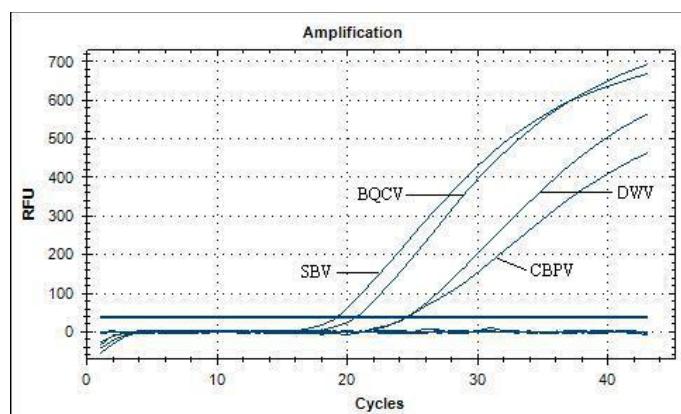


Fig. 3. Graph of the kinetic curve of fluorescence using the real-time PCR method for the detection of nucleic acids of Sacbrood virus (SBV), Chronic bee paralysis virus (CBPV), Black queen cell virus (BQCV), and Deformed wing virus (DWV).

Values above the set horizontal line correspond to positive results, below the line – to negative.

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### **Conclusion**

In the course of the research work the following conclusions were drawn:

1. Design and synthesis of primers were performed for Sacbrood virus, Chronic bee paralysis virus, Black queen cell virus and Deformed wing virus, which nucleotide sequence permits the simultaneous analysis of 4 virus targets in a single sample using a multiplex-PCR.

2. Most known strains and isolates of the said viruses are amplified with the designed complex of oligonucleotide primers, without any possible amplification of cross-reactions identified, which indicates their high specificity.

3. The designed universal positive control allows us to evaluate the reaction conditions during amplification of any of the viruses under investigation, which makes it suitable for multiplex-PCR.

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## **Investigation of arylated arsenic compounds as cardiac stimulants\***

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**Abstract.** The paper summarizes the literature data on the biological activity of organoarsenic derivatives, describes compounds with useful biological properties necessary for their use in medicines, and presents the results of the study of arylated arsenic compounds as stimulants of cardiac activity. A stable view of the high toxicity of organoarsenic compounds interfered with their practical use. Existing data on the biological properties of organoarsenic compounds do not give a complete and unambiguous idea of the possibilities of their application. In this connection, this paper was aimed at generalizing the available data on the biological activity of organoarsenic derivatives and obtaining compounds with practically useful properties suitable for their use in medicine. The biological significance of arsenic in the body is determined by its participation in the metabolism. He plays an important role in the enzymatic reactions of tissue respiration. In the light of these concepts, its therapeutic significance is regarded. The action of arsenic was considered as a result of its influence on the vessels through the sympathetic nervous system. With therapeutic doses of arsenic, this is expressed in the expansion of blood vessels and contributes to the improvement of trophism. Administration of high doses results in stagnation of blood, inflammation and even necrosis of the walls of the capillaries.

**Keywords:** arylated arsenic compounds, microelement, valence, heartbeat amplitude, toxicity.

### **Introduction**

A historically formed idea of the high toxicity of organoarsenic compounds has hindered their systematic study for the purpose of application in various branches of the national economy. The information available in the literature on the biological properties of organoarsenic compounds is not fully complete and very contradictory. In connection with this, the objective of this work was to generalize the literature data on the biological activity of organoarsenic derivatives and to search for new compounds that possess useful biological properties necessary for their use as medical drugs.

Arsenic is contained in the human body in small quantities and refers to microelements. According to the works <sup>1</sup>, the maximum concentration of this microelement is concentrated in the brain tissue, muscles and organs with a developed muscle layer, such as a heart, larynx, uterus, bladder and tongue.

The biological significance of arsenic in the body is determined by its participation in the metabolism. He plays an important role in the enzymatic reactions of tissue respiration. In the light of these concepts, its therapeutic significance is regarded. High concentrations of arsenic cause deep metabolic disorders in the body, which lead to cell death.

The action of arsenic on the organism was explained by the continuous "excitation" of oxygen exchange arising from the transformation of arsenious acid into arsenic acid and again into arsenious acid in the tissues. It was believed that a

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\* Acknowledgements: The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> D. I. Zakutinskii, *Biological evaluation of drugs for the prevention and treatment of radiation sickness*, Moscow, Medgiz, 1960, p. 151.

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small dose of arsenic activates only a small amount of oxygen and as a moderate stimulus causes increased supply and growth of tissues, while its moderate doses, excessively acting on oxidative processes, create conditions for the fatty degeneration of tissues.

It was found that arsenic, depending on the value of valence, affects the reaction of tissue metabolism unequally. Arsenite As (III) blocks sulphydryl groups; it is a potent inhibitor of lipoic acid, which is necessary in the cycle of tricarboxylic acids.

Arsenate As (V) is a classical agent that dissociates oxidative phosphorylation at the substrate level. Being competitive with phosphate, arsenate can dramatically reduce the production of ATP in glycolysis processes. It was also found to be effective as an agent that dissociates the oxidative phosphorylation associated with the transfer of electrons in the mitochondrial respiratory chain.

As a therapeutic agent, arsenic and some of its compounds have been known since ancient times. Organic compounds of arsenic have historically been the first of a number of organoelement compounds, which have found their practical application as physiologically active substances, mainly in medicine.<sup>2</sup>

Most of the chemotherapeutic drugs from arsenicorganic representatives are accounted for by the arsenic acid derivatives of  $p\text{-NH}_2\text{C}_6\text{H}_4\text{AsO}_3\text{H}_2$ , which is synthesized by heating aniline with arsenic acid up to 190-200°C.<sup>3</sup>

The studies (Koshland , Ochoa , Fujita,1970; Babin , Isakova , Levskaya, 1966)<sup>4</sup> have shown that aromatic compounds of arsenic have an appreciable dependence of their chemotherapeutic activity on the nature of the substituents contained in the aromatic ring. Therefore, many early works represent attempts to find the right combination of substituents associated with an atom of arsenic and a benzene ring, with minimal toxicity to the human body.

## Methods

The heart of the frog *Rana ridibunda* was isolated by Straub's method <sup>5</sup>by sequential removal of the brain and destruction of the spinal cord to immobilize the animal and expose the heart. The right common arterial trunk and the left arch of the aorta were bandaged; an incision was made in the wall of the left arch of the aorta and a cannula containing Ringer's solution was injected. After the cannula entered the ventricle, the ligature was tied, the blood from the cannula was

<sup>2</sup> G. A. Melentieva, *Pharmaceutical chemistry. Medicine*, Vol. 1, Moscow, 1967, p. 68, p. 350-359; John Thayer John, "Organometallic Compounds and Living Organisms," in *J.Organometal.Chem.*, LXXVI (1974), no. 3, p. 265-295; L. P. Walls, J. P. Ellis, J. B. West, "The Cemotherapy of Trypanosomiasis," in *Progress in Medical Chemistry*, 3<sup>rd</sup> volume, London, Butterworths, 1963, p. 52-88.

<sup>3</sup> G. P. Pershin, E. I. Gvozdev, *Textbook of pharmacology*, Moscow, Medgiz, 1961, p. 403; N. P. Vashkulat, "Arsenic-containing compounds, their toxic characteristics," in *Hygiene and Sanitation*, VI (1972), p. 93-105.

<sup>4</sup> B. V. Babin, L. I. Isakova, G. S. Levskaya, "Herbicidal activity of some aryl-, alkyl- and arylalkyl-arsenic acids," in *Chemistry in agriculture*, IV (1966), no. 12, p. 923-925; M. E. Koshland, P. Ochoa, N. J. Fujita, "Amino Acia Pifferences between Highly Cross-Reactive Antibodies", in *Biochemistry*, IX (1970), p. 1880-1886.

<sup>5</sup> S. I. Galperin, *Human and animal physiology*, Moscow, Vysshiaia Shkola, 1970, p. 653.

removed with a pipette and re-filled with Ringer's solution. The aortic arch was cut and the cannula and the heart were strengthened in the clamp of the tripod. The top of the ventricle was connected with a thread to a recording device, the lever of which touches the smoked sheet of the kymograph.

The initial record of heart function (cardiogram) was conducted with Ringer's solution injected into the cannula, which was then replaced with a solution of the test sample of the corresponding organoarsenic compound. The recording was carried out until the disappearance of cardiac contractions, after which the solution of the test sample was removed with a pipette from the cannula, and the heart was washed several times with Ringer's solution. As the first cardiac contractions appeared, a cardiogram was recorded.

We obtained the organoarsenic compounds used for this study as described below.

Preparation of p-chlorophenylarsonic acid (3). 250 g of anhydrous sodium carbonate were dissolved in 0.5 liters of water by boiling. This solution was added with 6 g of copper sulfate and 125 g of arsenic anhydride gradually with stirring; boiled for 0.5 hour. In parallel, a solution of aryl diazonium chloride was prepared. For this, a well-mixed solution of 128 g of p-chloroaniline with 200 ml of concentrated hydrochloric acid was poured slowly for a period of 30-40 minutes with a precooled to 0°C solution of 72.5 g of sodium nitrite in 250 ml of water, cooled down to 0°C. A cooled solution of diazonium chloride was added with stirring for one hour to a suspension of sodium ortho-arsenite, pre-cooled to 9°C. The temperature of the reaction mixture was maintained below +5°C. The foaming of the reaction mass was suppressed by ether or benzene. After the addition of the diazonium chloride solution was complete, the reaction mixture was stirred for one hour, filtered and evaporated to a volume of 0.75 L. From the resulting solution the acid was precipitated by adding concentrated hydrochloric acid in portions. The resulting precipitate was filtered off and washed with cold water. The acid was purified by water recrystallization. The yield was 165.5 g (70%). The substance was identified based on elemental analysis and IR spectra data recorded on a UR-10 spectrometer in vaseline oil between KBr plates.

A similar procedure applied for obtaining phenylarsonic acid (1) and p-anisylarsonic acid (2).

Simultaneously with Ringer's physiological solution, we administered one drop of an alcoholic solution of the test substance of different concentrations in the heart of the frog *rana ridibunda* on a trial basis. Recording of contractions of the cardiac muscle was performed on a kymograph. In this case, the action of the organo-arsenic compound on the amplitude and frequency of cardiac contractions was taken into account (10).

## Results

Due to their high activity, dextrorotatory antipodes of many organic compounds play a huge role in biochemical processes occurring in living organisms. In this connection, it was of considerable interest for us to study the physiological effect of the dextrorotatory isomer of ethylphenyl-para-

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carboxyphenyl arsine (a ready-made preparation was used) on the activity of the frog heart muscle, which is very sensitive to homeostatic changes.

The experimental data show that solutions of ethylphenyl-para-carboxyphenyl arsine, corresponding to a concentration of 10% or higher, severely inhibit muscle activity. The amplitude of the heart muscle contraction frequency falls rapidly, reaches zero, and the heart stops. The heart is not reactivated even after careful washing with Ringer's physiological solution.

The administration of ethylphenyl-para-carboxyphenyl arsine at a concentration of 0.5% also causes cardiac arrest, but unlike the first experiment, after washing with fresh saline, in most cases it is reactivated, although the amplitude and heart rate do not reach the initial values.

A solution of 0.25% ethylphenyl-para-carboxyphenyl arsine lesser affects the work of the heart. The amplitude of contractions of the cardiac muscle drops to zero slowly, only 2 minutes after the administration of the drug. As a result of washing with Ringer's solution, the heart restarts working in all cases.

Solutions of this drug at a concentration of 0.1 to 0.05% do not cause a sharp inhibition of the activity of the heart muscle. The magnitude of the amplitude and the frequency of its contractions does not decrease earlier than 2-2.5 minutes after the administration of the substance. After washing with saline solution, the heart activity is almost completely recovered. The concentration of the substance from 0.003% and below does not cause a change in the heart rate, and the magnitude of the amplitude easily returns to its original state.

## Discussion

Based on the results of this experiment, we subsequently studied the physiological effect of less toxic arsenic derivatives – arylarsonic acids (1, 2, 3) – on the activity of the isolated frog heart. For the experiments, eight different concentrations of solutions of organoarsenic drugs were used, which are lettered on the cardiograms as follows:

- 0.0001% - A
- 0.0005% - B
- 0.001% - C
- 0.005% - D
- 0.01% - E
- 0.05% - F
- 0.1% - G
- 1.0% - H

Ten experiments were performed with each substance and 80 observations were obtained. The experiment was started with a solution of the lowest concentration.

After the administration of samples of phenylarsonic acid at concentrations corresponding to the first six values (A-F), the amplitude of the heart beats increases, and in case of the last two (G-H) – increases sharply (Fig. 1).

This chart shows the general picture of the action of phenylarsonic acid. Vertically, the inotropic effect is indicated as a percentage, depending on the

concentration of the solution used; the initial amplitude is taken for 100%. Arrows indicate the moments of administration and removal of substances. All samples of solutions of phenylarsonic acid used in the experiments initially cause an increase in the effect of cardiac contractions, which after a few minutes is replaced by their suppression until a complete stop. After removal of phenylarsonic acid and washing the heart of the frog with Ringer's solution, a gradual recovery of the amplitude is observed, which, however, does not reach the initial amplitude even for 4-7 minutes.

At the lowest concentration of a solution of phenylarsonic acid equal to 0.0001%, the amplitude of contractions increases by 1.6 mm after 8 seconds, then gradually decreases, and after 3.5 minutes the heartbeats disappear. They recovered within 1.5 minutes, and the amplitude reached its initial values only in 7 or more minutes (Fig. 2).

Similar results were obtained by testing subsequent samples of phenylarsonic acid at a concentration of 0.0005%, 0.001%, and 0.005% (Fig. 1.2).

The results of the experiments shown in Figures 1, 2 show that depending on the concentration of the solution, the increase in the amplitude of the heartbeats occurs in different ways. The most positive inotropic effect is observed in experiment "E", at a concentration of phenylarsonic acid 0.01%.

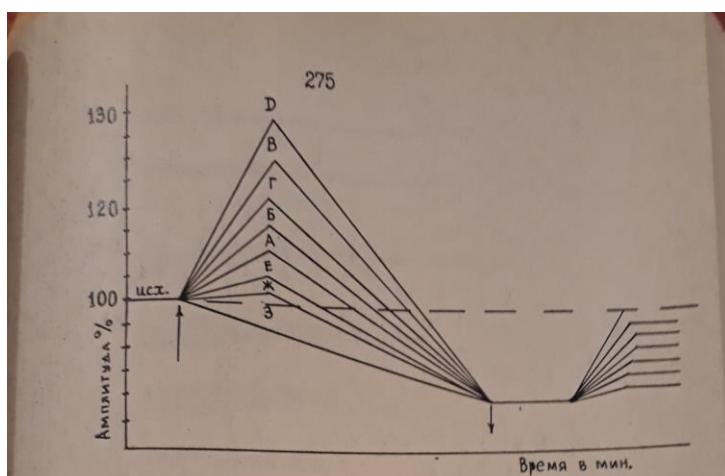


Figure 1. The change in the amplitude of the heart beat based on the concentration of phenylarsonic acid.

Interesting results were obtained by the action of high concentrations of phenylarsonic acid. For example, at a concentration of 0.05% for two seconds there is a rapid, three-times-faster increase in amplitude than in previous experiments, then, after 37 seconds, the height of the cardiogram drops sharply, and asystole occurs. While using the low acid concentrations, cardiac contractions disappear after 3.5 minutes. The recovery of cardiac activity also takes about 2 minutes, but a uniform amplitude, close to the original, is established in 3 minutes, i.e. 2 times faster.

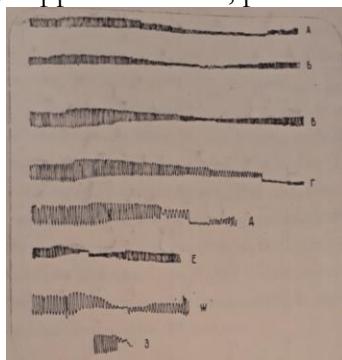


Figure 2. The effect of phenylarsonic acid on the amplitude of cardiac contractions.

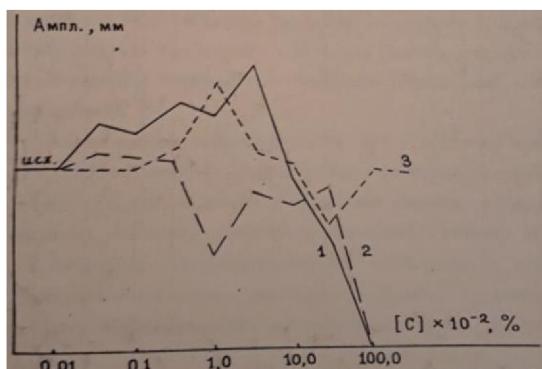


Figure 3. The effect of phenylarsonic (1), p-anisylarsonic (2), p-chlorophenylarsonic (3) acids on the amplitude of cardiac contractions.

If the action of phenylarsonic acid at concentrations A - 0.0001%, B - 0.001%, D - 0.005%, E - 0.01%, F - 0.05%, leads to a steady increase in the amplitude of the heartbeat, then the administration of 0.1% solution of phenylarsonic acid causes an immediate decrease in cardiogram, without a positive control effect phase, and after 10-15 seconds, asystole occurs. For the recovery of cardiac contractions after a change of perfusate, an average of about 3 minutes is required. With the action of 1% solution of phenylarsonic acid, cardiac contractions and the systole phase stop almost immediately. Cardiac activity cannot be recovered after this procedure (Figure 1.2). The dependence of the amplitude of cardiac contractions on various concentrations of phenylarsonic acid is shown in Figure 3 (Curve 1).

The next preparation we studied is para-anisylarsonic acid. It differs from phenylarsonic acid only in that it contains a methoxyl group linked to a benzene ring.

The effect of low concentrations (A-0.0001%, B-0.0005%, B-0.001%) of p-anisylarsonic acid on the frog heart leads to an increase in the amplitude of the heart beats by an average of only 1 mm during the first minute. All subsequent higher concentrations of this acid lead to a decrease in the amplitude of the heartbeats during the first minute.

Unlike others, 0.005% solution of p-anisylarsonic acid (2) more sharply reduces the amplitude of cardiac contractions - on average by 5 mm within one

minute. The first seven concentrations of the drug are characterized by a decrease in the cardiogram, starting from the second minute. After stopping the heartbeat in these experiments, the acid solution was replaced with Ringer's solution, so that the recovery of cardiac activity occurred within one minute.

The results of the experiments show that, as in the case of phenylarsonic acid, 1% solution of this drug has the strongest effect on the isolated frog heart, which causes the cardiac arrest for 20-25 seconds, and the recovery of the cardiogram requires 4 to 7 minutes. The dependence of the amplitude of cardiac contractions on various concentrations of p-anisylarsonic acid is shown in Fig. 3, curve 2.

By replacing the methoxy group located in the benzene ring with chlorine, we expected an intensification of the inhibitory effect on the function of the isolated heart.

The experiments show that the first two lowest concentrations (A-0.0001%, B-0.0005%) of a solution of para-chlorophenylarsonic acid (3) do not change the amplitude of the heartbeats within one minute. Only starting from the second minute of the drug action, the amplitude of the heart beats decreases. The subsequent three concentrations of p-chlorophenylarsonic acid (C-0.001%, D-0.005%, E-0.01%) correspond to an increase in the contraction effect.

A more pronounced positive inotropic effect is shown by a 0.005% drug solution. The last three samples of the acid solution of a high concentration (F-0.05%, G-0.01%, H-1.0%) lead to a decrease in the amplitude of cardiac contractions from the very first minute. From the second minute, as a rule, all samples of the drug reduce the amplitude of the contractions of the heart, causing even its complete stop (Figure 3, curve 3).

### **Summary**

The results of the experiments indicate that phenylarsonic acid has a two-phase effect on the strength of the heartbeats: it initially causes a positive inotropic effect, and then depresses the inotropic function until complete asystole. The duration of these phases, as well as the period of recovery of cardiac activity to its initial values, depend on the concentration of the solutions used. Para-anisylarsonic acid, in its effect on the isolated heart of a frog, is similar to the phenylarsoic acid; p-chlorophenylarsonic acid does not have a stimulation phase in its action on the myocardium and, therefore, does not cause myocardial inotropy.

The frog myocardium has no coronary vessels, therefore, these reactions cannot be caused by vascular effects. It can also be assumed that arsenic drugs initially excite the sympathetic apparatus of the heart, and then parasympathetic. This indicates a two-phase effect of the studied organoarsenic compounds on the heart.

### **Conclusion**

Due to the adaptation of some pathogenic viruses to the drugs used for their control, there is a constant search for new, more effective means.

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### **Gogol And The East\***

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**Abstract.** *The article gives a new understanding of the forms of the presence of the “eastern text” in the artistic consciousness of N.V. Gogol, a Russian writer of the 19th century. The authors believe that some images of Gogol’s works (in particular, the figure of Chichikov from “Dead Souls”) can potentially be read in a nontraditional context, namely through the prism of Far Eastern cultural mentality. Naturally, there is an established canon of interpretation of N.V. Gogol’s works. The authors of the article do not set forth their goal to overturn, abandon the adopted interpretations - only to supplement, correct, clarify, having in view the updated methodology of literary studies. It is based on the cornerstone of the thesis that the meaning-generating model of Russian classical literature has not exhausted itself, and thus, any measured judgment about it is of a complementary nature. The proposed model of interpretation correlates with the statement of M.M. Bakhtin, the most prominent Russian philologist of the 20th century, about the importance of attracting the contexts that are far from understanding of a particular aesthetic phenomenon in terms of ethno-culture and history. The conception of “big time”, developed by M.M. Bakhtin, remains relevant. Hence, there follows the necessity to reveal its rich content potential with consideration of not only Western discourse or Russian national distinctness but also traditional Eastern knowledge. One should take into account the fact that the “eastern element” can be added to the structure of the theoretical and literary quest; Russian and European literary criticism is passing to date through a crisis of methods. In general non-science terms, this kind of experience exists. It is known that the synergetic paradigm of scientific knowledge is best described by the constants of the Buddhist-Taoist picture of the world. Modern psychological science often uses the potential of Buddhist psychotechnics. The current literary criticism needs a multivariation interpretation of the classics (of course, with the support of solid, systemic arguments, in order to avoid a meaningless play with existed meanings). In this, on the one hand, there is evinced an attempt to awake a new reader’s interest, or, at any rate, to support the attention formed in him in the rich heritage of the past. On the other hand, multivariation realizes that inner semantic potential that is carried by any genius work and Gogol masterpieces, in particular.*

**Key words:** Russian literature, N.V. Gogol, the East, methodology, text, interpretation.

### **Introduction**

The theme “Gogol and the East” has already been the subject of literary attention, although the works in terms of numbers are few. This attention can be characterized according to two main trends: the research methodologies and what East in the concrete case was implied, for no one will argue with the fact that the East within itself in spite of all its typology of common features is of varying value. As regards the first trend, it was most often represented by a traditional historical and cultural approach, supplemented by well-studied biographical factual account. The second one confined the East on preeminence to the world of Islam, taking Christianity out of conventional context, since, according to the accepted opinion,

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\* Acknowledgements: The work is performed according to the Russian Government Program of Competitive of Kazan Federal University.

Orthodoxy, for which N.V. Gogol had affection, to a certain extent is devoid of exoticism, being a phenomenon of the traditional Russian national nature.

The scholars emphasized the subjective character of the Eastern perception by Gogol, believing that this state of affairs was facilitated not only by the specific nature of the author's worldview, but also by socio-ideological conditions. In the era of the 18th - early 19th centuries, the educated elite of Russian society, following the European, took a great interest in the East. It is no accident that in 1810 S.S. Uvarov, the future Minister of Education, brought forward a project for the establishment of the Asian Academy in St. Petersburg, and in 1818 the famous Asian Museum was set up, in which rare manuscripts were kept in Arabic, Persian and Turkish. There is good reason to believe that it was he who, under advise of V.A. Zhukovsky and A.S. Pushkin, appointed N.V. Gogol as an associate professor in the department of general history of St. Petersburg University, thanks to which the writer gave a course of lectures, including a Muslim material. In Gogol's works it was noted that his assessment of Islam was extremely contradictory.<sup>1</sup> Comparing the essay "Al-Mamun" from "Arabesques" with "Selected Places from Correspondence With Friends", A.B. Kudelin came to the conclusion that "some of the fundamental views that have been thoroughly developed in "Selected Places" have matured substantially from Gogol already by the autumn of 1834 ... before the writing of his main works of art".<sup>2</sup> And further: "This significant fact should be taken into account when evaluating Gogol's works on the whole" (The same place, p. 432). In addition, there are oriental indication in literary works by N.V. Gogol: in the "Terrible Revenge" - the father of Katerina, who returned from the Turkish captivity as a "morose sorcerer", in the "Portrait" - the eastern face and clothes of the moneylender, in "Taras Bulba" - the Tatar khans and Turkish janissaries, in "Nevsky Prospekt" – "a Persian", the owner of the shawl store, in "Nose" - Prince Khosrov-Mirza, an echo of the visit of Persian diplomats to the Russian capital on account of the murder of A.S. Griboyedov.<sup>3</sup>

But it is worth asking the question: is it possible to catch the "traces" of Far Eastern thought in Gogol's writing? Will this not seem too strained and unusual, moreover - roughly violating the canon of the reader's recipe, having been formed more than one decade? Russian classics, honest opponents will say, is a phenomenon so comprehensive and profound that if there is a will, any sense can be found in it. The essence of the raised problem is, therefore, reduced to understanding to what extend, this potential meaning is relevant to the consciousness of the writer of genius. Will not it look like an empty appendage, a non-committal, meaningless game? Where is the base of evidence that could, like a

<sup>1</sup> M. V. Medovarov, *Gogol About Islamic Civilization* // URL: [http://www.idmedina.ru/books/materials/turkology/1/histori\\_medovarov.htm](http://www.idmedina.ru/books/materials/turkology/1/histori_medovarov.htm), accessed 30. 04. 2017.

<sup>2</sup> A. B. Kudelin, "Towards the Characterization of Historical Views of Gogol: from "Arabesques" to "The Selected Places from the Letters with Friends", in *Arabic Literature: Poetics, Stylistics, Typology, Interrelations*, Moscow, Languages of Slavonic Culture, 2003, p. 414–432.

<sup>3</sup> T. F. Arzhanykh, "in "Antithesis of the East and the West in N. V. Gogol's Works and Letters," in *Proceedings of Universities. Series "Humanities"*, VI (2015), p. 44–47.

hidden, underwater part of the iceberg, serve as a powerful and irrefutable argument in defense of a new idea?

In the present article, we will try to prove the legitimacy of the theoretical-literary approach, which allows one to see the Far Eastern “trace” in Gogol’s consciousness and demonstrate realization of this approach using the example of Chichikov’s character from the poem “Dead Souls”.

## Methods

The main method of research is a complex approach, combining multiple techniques. The two most valuable of them are: 1) structural-semantic and 2) literary-hermeneutic.

The essence of the first method is to take into account the whole palette of intratextual relations. The text within its boundaries is conceived as a system of informative signs, a hierarchical unit, a special model of reality. Concerning the second method, it is based on the art of interpretation of meanings. The fundamental aspect of hermeneutics is the process of someone’s understanding. At the same time, understanding is not reduced to rational sphere and logical operations. It allows the participation of intuitive aspects of consciousness, the “grasping” of the object of cognition as a whole with the subsequent rationalization of the “grasped”. In every text there is a set of meanings, explicit and implicit, conscious and unconscious. The meaning of the utterance is not only the meaning intended in it, but also the meaning that an interpreter manages to elicit from it. Hence, there is a big part of the dialogical factor in hermeneutics. One must understand dialogue as the openness of creative consciousness, the gift of a living response, which “inspires to savour every word.”<sup>4</sup>

We also point out that the article views the principal results of modern comparative studies, see Afanasev,<sup>5</sup> as well as the study of classical works in the context of an ideological conflict.<sup>6</sup>

## Results

We will explain immediately that we do not set the goal of overthrowing the canon of reception. We just proceed from the fact that the existing methodology of studying literary topics has a Western philosophical and aesthetic basis. Indeed, the terminological and technical terminology habitual to our hearing

<sup>4</sup> R. Bart, «*S/Z*» Moscow, Editorial URSS, 2001.

<sup>5</sup> A. S. Afanasev, A. M. Sayapova, "Space as semantic beginning in E.A. Boratynsky's early poetics," in *Journal of Language and Literature*, VII (2016), no. 3, p. 163–166; K. A. Ozerova, R. F. Bekmetov, "On the conflict of public opinion: interpretation of literary classics," in *Journal of Organizational Culture, Communications and Conflict*, VI (2016), no. 2, p. 218–222; M. I. Ibragimov, E. F. Nagumanova A. Z. Khabibullina, O. Y. Amurskaya, "Dialogue and communication in interliterary process (the study of Russian – Tatar literary interconnections of the first of the XX century)," in *Journal of Language and Literature*, VI (2015), no. 3, Issue 1, p. 137–139; E. A. Smirnova E. F. Nagumanova A. Z. Khabibullina, "The role of the reader in interliterary communication," in *Journal of Organizational Culture, Communications and Conflict*, XX (2016), Special Issue, p. 198–201.

<sup>6</sup> A. S. Dmitrieva, R. F. Bekmetov, "Russian Literary Classics and the Conflict of Ideologies," in *Philology and Culture*, I (2017), no. 47, p. 162–168.

goes back to the ancient intellectual environment, which, in terms of classifying definitions, enshrined the experience of the Mediterranean literary tradition. Nothing arises, perhaps, differences that in the thesaurus-field of "Poetics" by Aristotle the reflections of purposes of Greek literature taken in a certain historical period were found, and then due to various circumstances it, this field, universalized, became general. At the same time, it would be reckless to identify "national" with "universal". Undoubtedly, N.S. Trubetskoy is right to argue that "European culture is not a culture of humanity";<sup>7</sup> being "the product of a certain ethnic group", it is the result of "egocentric psychology" (Ibid., p. 36). In this case, such a purely psychological trait is unconsciously projected into the field of scientific (in particular, humanitarian) cognition. N.S. Trubetskoy rightly wrote that "science itself has not yet completely liberated itself from it" (Ibid., P. 36), "but this is necessary for the sake of objectivity" (Ibid., P. 42). Hence, the need to counterbalance the Western methodological system and the Eastern - not to refuse or replace (this simplest procedure is unproductive), but to neatly balance, preserving the balance of dynamic relations. In other words, from our point of view, it is necessary to include the "eastern element" (the reflex categories of Eastern philosophy and poetics) into the structure of the theoretical and literary quest.

It is only fair to say that there are examples of such introduction at the epistemological level. So, T.P. Grigorieva believes that the synergistic paradigm of science is best described by the constants of the Buddhist-Taoist picture of the world. Synergetics, in her opinion, differs from classical science in that it neutralizes its main thesis about the anthropological component of cognitive activity. "By opposing the human subject to the rest of the world, - she notes, - science has violated the law of the Whole, ontological Justice. Synergetics is based not on the will of man, his ideas, but on the will of the universe. In its terms, science goes to the position which in the Buddhist-Taoic East is called the Middle Path" .<sup>8</sup> What synergetics calls the law of self-organization, "Tao Te Ching" - following the Path. One can add to it the fact that modern psychological science in its highest achievements uses the potential of Buddhist psychotechnics. The material of Indo-Buddhist psychotechnics is not an exotic museum rarity; it is referred to as an working model of thought; the need to understand it induced A.M. Pyatigorsky and M.K. Mamardashvili to the study of "Wajdjanavada", and it had not only a Buddhological, but also a philosophical value.

The introduction of the "eastern element" into the Russian methodology should proceed milder, without difficulties, since Russian culture, notwithstanding the originality of individual properties, is synthetic; the West and the East are almost equally present in it. In this regard, one cannot but agree with I. S. Braginsky, who insisted that the isolation of "eastern" and "western" constructions is "a means of more lucid exposition".<sup>9</sup> The essence of the "West-East synthesis"

<sup>7</sup> N. S. Trubetskoy, *Heritage of Chingiskhan*, Moscow, Agraph, 2000.

<sup>8</sup> T. P. Grigorieva, "Synergetics and the East," in *Issues of Philosophy*, 1997, p. 90-102.

<sup>9</sup> I. S. Braginsky, *Issues of Oriental Studies. Topical Issues of the Oriental Literary Studies*, Moscow, Nauka, GRVL, 1974.

is not reduced to searching for interweaving “oriental motifs” (this practice is prevalent, and in this case the East is rather as an object than a subject of a dialogue). In the texts of “Western-Eastern synthesis it is impossible to separate the East from the West, since there is no yawning chasm between them”. It is “an organic fusion of two cultural traditions”, - concludes he. The same line comprises an earlier statement of M. M. Bakhtin about the importance of attracting distant contexts for understanding the semantic modulations of a particular artifact. In one of the preparatory drafts of the early 1970s, he wrote: “From the boundless world of literature, science ... of the nineteenth century singled out only a small world ... The East was almost not represented in this world at all. The world of culture and literature ... is as vast as the universe ... We impoverish the past and do not enrich ourselves. We are suffocating in captivity of narrow and uniform interpretations”.<sup>10</sup>

With this in view, let us try to portray with a few strokes the figure of Chichikov from “Dead Souls”, leaving a matrix of Far-Eastern culture in a pure ideal form on the Russian text. Chichikov is an ambivalent character. He, being active, opposed to the realm of lethargic sleep, realizes the goals that are blasphemous from the point of view of the moral and religious code. These antinomies coexist in him, determined by social circumstances: not deprived of talents, Chichikov is forced to exist in the conditions offered by the environment; if it is impossible for him to change conditions, then it is necessary to change himself, having found a convenient mask for achieving the desired, - that's the essence of the quintessence of Chichikov. Certainly, you can condemn the character from the abstract positions; if you see it in a web of endless situational connections and take note of the fact that the character does not have strong support from outside, so he is forced to rely on himself in everything, then the moralizing tone of the assessments will not be extreme, uncompromising. In the traditional Chinese model, this facet of antinomy expresses an anthology of polar “yin” and “yang”: two semi-curved halves are attracted to each other, but on the “yin” (“dark”, “female”) half - the solar “yang” point, and on the “yang” (“light”, “male”) - the lunar “yin”. They are mutually permeable: “yin” contains the potency of “yang”, and vice versa. T.P. Grigorieva interprets this system in the following way (and we are in full agreement with her): “white will turn black, black will turn white”, unlike the European one – “white or black” and the Indian – “white is black”, that is ... their difference is illusional (for the whole world of samsara is illusory, this is its substantive property R.B.)”.

At the same time, one can observe that Chichikov has a way with creative communication, undoubtedly, developed and polished by the technique of elusive conversation. So, he converses with each landlord “in one language”, deftly choosing the right, adequate psychological key. This specificity is explained by the artistry of Chichikov, his flexibility, the ability to grasp and highlight the images of the possible. Certainly, life experience which gives a great food to classify people according to certain categories plays a role of no small importance; besides – as applied to the landlords and officials, the point is about one (“low”) type of

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<sup>10</sup> M. M. Bakhtin, *Aesthetics of Literature*, Moscow, Iskusstvo, 1979.

characters. At the same time, Chichikov's artistry, imposed by the environment, has an aesthetic and existential background, about which on different account wrote M. K. Mamardashvili: "The most beautiful sight in a man is when he at the breaking point of what he can do at all; and since the breaking point is not known in advance, one needs to venture and go".<sup>11</sup> This background is described through such concepts of Chinese philosophy as "energy" and "emptiness".

N.V. Gogol reflected on "emptiness", and, judging by his notes of 1846, concerning the first volume of "Dead Souls", he put the idea of purposelessness of being into the word "emptiness". "Emptiness" is a distortion of what is given from above by God and refers to the realm of Sleep. But in relation to the dynamic character, the transmitter of energy, "emptiness" acquires more positive connotations. "Immersive" dialogue with the landlord can be carried on by those who has a genuine interest in him, or pretends that he exists, creates an "optical illusion". In order, in turn, to contemplate the outline of the path for interest, a person must turn down the ready content in himself, or fullness; he must open admission for "emptiness" to enter, which in this case is not a simple mathematical "zero", but the potency of the new. Chichikov knows how to bring "fullness" and "emptiness" in himself into correlation. He is open, not constrained by this content in advance and is filled with the nature of the situation, just as a drop of water flows into a glass and acquires its shape; the boundary between the subject and the object is obliterated. His deception is "soft power", it keeps on weighted transitions, without angles and shifts. He does what Jung-tzu said in one of the Taoist parables about the butcher: the bull must be cut so that it does not feel anything. It is indicative that only Nozdryov of all landowners was able to hide the scheme of the guest; Chichikov gave himself away. This happened because, unlike other landlords, Nozdrev is not filled with anything, he is empty absolutely, and this multiplies his "energy", makes it easy, maneuverable; it rapidly absorbs the "emptiness", which is gently balanced with the "content". Chichikov is defeated, he has to leave the city of NN. However, the character finds the smooth measure, the new "void", which allows him to start anew, as if nothing happened.

## Discussion

It may seem that the proposed treatment of Gogol's figure is a play, an original experiment. We are certain, however, that the general methodological account: 1) always relevant classical literature needs to be reconceptualized in a new contextual reading and 2) any interpreting idea is truly realized in complementarity. Classical literature needs polemics per se, everlasting dispute about it.

## Conclusions

Thus, in this article we tried to study the Gogol's character in Eastern philosophical and aesthetic context. The Orient in our case is not only an object of cognition but conceptual tools, metalanguage, by means of which one can

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<sup>11</sup> M. K. Mamardashvili, *Full Course of Lectures. The Philosophy of Europe. Psychological Topology of Path*, Moscow, AST, 2016.

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represent the technique of forming literary reality in details. It enriches literary Russian philology with new senses, and oriental studies expands the scope of its application.

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## Theoretikal Justification Of Geometrical Dimensions, Grade Angle, And

### Quantity Of Screw Lines During Cylinder Liner Metallization\*

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**Abstract.** During the development of the repair methods for CL recovery, it is necessary to try not only to restore the units, but also to increase their service life. For this, it is required to provide an extensive use of strengthening and restorative technology promising methods, accompanying the increase of wear resistance and fatigue strength of the units, the reduction of time spent on repair works and the repeated use of the units (1). The examples of promising technologies used for CL repair to restore and harden the units can be the metallization of CL with non-ferrous metal. Metallization includes the cutting of counter-helical lines and their subsequent sealing, the cleaning of the inside after the sealing, the grinding of its inner part, honing, checking, preserving and packing.

In order to address these issues, the paper discusses the theoretical basis for the inclination of helical lines, linear dimensions, the area and the number of helical lines for a sleeve metallization. The result of theoretical research is the determination that the creation of metal - copper layer in the inner part of a liner with the layer of  $2 \dots 3 \mu\text{m}$  is achieved by the cutting of directed helical lines towards each other with a pitch of 17 mm in its inner part, and the slope of the line to the diametric plane of CL = 3,2%, with the depth and the width  $b = 1.5 \text{ mm}$ . A metallized sleeve with a non-ferrous metal sheet allows to reduce the linear wear of the inner part of the sleeve by 3.1 times.

**Keywords:** a screw line slope, cylinder liner (CL), contact area, metallization, counterbody, wear, screw lines, insert.

## Introduction

The main shortcomings of ICE CL, arising during long-term operation are the following ones: cracks, the wear of an outer part, the breakage of a shoulder, the wear of landing belts, the wear of an inner (working) part (Fig. 1).

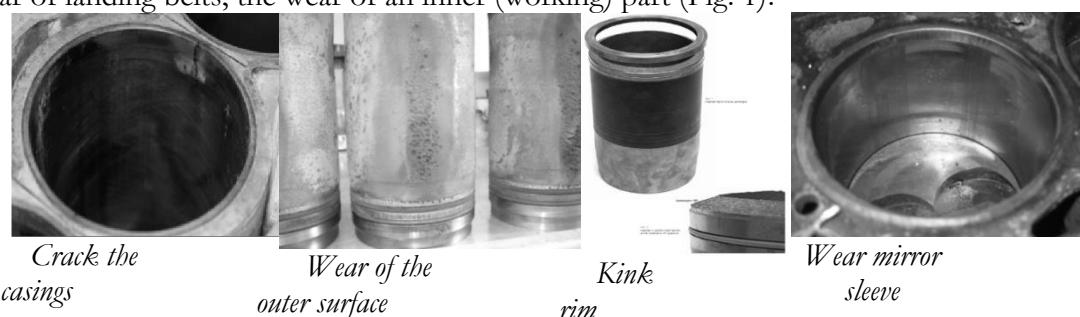


Figure 1 – the Main defects of cylinder liners

The reduction of CL wear and tear is achieved due to the metallization of rubbing surfaces. The methods of metallization are better systematized by

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technological methods of coating, more precisely, by the methods that make the basis of these means. Consequently, it is possible to determine three main groups among the popular methods of metallization (Figure 2).<sup>1</sup>

1) mechanical methods of metallization, when the layer to be coated is created in advance and only then it is fixed on the surface to be coated;

2) physical methods: a metal is turned into a liquid or a vapor state first, embedded on the surface to be coated, where they are turned in a compact strong metal once again, creating a coating;

3) chemical methods: a metal is formed due to a chemical process and, depositing on a surface to be coated, it creates a metallic coating.

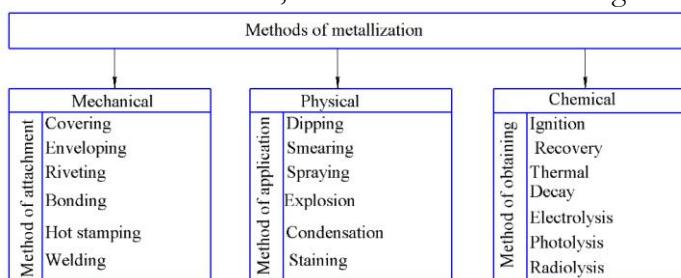


Figure 2 – Taxonomy of ways of plating

### Methods

The implementation of CL metallization surface methods is quite a difficult task now. The most appropriate thing is not to cover an entire part with a non-ferrous metal, but the use of metal impregnations. For this purpose, grooves, layers, slots, inserts and other elements made of material with other physical-mechanical properties (most often in a plane not parallel to the plane of friction and the path of the parts) can be made in a workpiece body (Figure 3).<sup>2</sup>

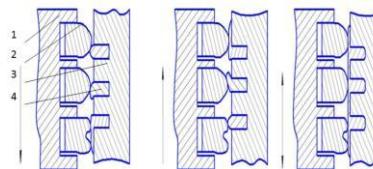


Figure 3 - Scheme of formation of the film on the surface of the cylinder liner: 1-piston; 2-piston ring; 3-the cylinder liner; 4-insert

<sup>1</sup> <http://chemlib.ru/>, Internet resources, accessed 12. 03. 2017.

<sup>2</sup> A. S. Nurutdinov, 2013. "X-ray fluorescence analysis of metallised sleeve of the cylinder liners engine," in *Materials of the III international research and practice conference Vol. II «Science, Technology and Higher Education» 16 October 2013*, Westwood, Canada. p. 465-468; A. S. Nurutdinov, "Metallization of a working surface of a sleeve of cylinders," in *Materials IX of the international scientific and practical conference "Modern Scientific Achievements-2013"*. On January 27 - on February 05, 2013, LXXIV (2013), p. 3-6; I. R. Salakhutdinov, *The increase of cylinder liner wear resistance of gasoline engines by the bimetallization of a working friction surface: monograph*, Ulyanovsk, UGSHA named after P.A. Stolypin, 2012; I. R. Salakhutdinov, "The increase of wear resistance for the cylinder liners of gasoline engines by the metallization of a working surface of friction," in *Bulletin of the Ulyanovsk State Agricultural Academy. Ulyanovsk*, II (2012), no. 18, p. 101-106.

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However, then the issue arises about the way of screw line location on the inner part of a CL. To do this, it is necessary to justify the linear parameters of a CL with screw lines.

One of the parameters of wear reduction is expressed by the ratio of screw line area with a non-ferrous metal to CL area, and it is also important to take into account the slope of a helical line. After the analysis of various sources, it was found that with linear displacement of the contacting parts, the wear process is linked with the angle of a counterbody attack relative to the surface. Therefore, it is necessary to consider the removal of metal from a helical line and its distribution on a sleeve inner part. The need to consider this issue is conditioned by the fact that the angle of a helical line inclination determines the transformation way of a helical line material - elastically or plastically.

With the reciprocating course of the contacting surfaces, their wear is related to the angle of attack (penetration) of one surface (counterbody) into the other. Therefore, the type of a helical line material deformation (elastically or plastically) and its displacement will depend on a helical line slope to the movement direction of compression and oil-removal rings. Considering this, it is possible to formulate friction coefficient by the following formula:<sup>3</sup>

$$f = \frac{\tau_c}{HB} + \operatorname{tg} \alpha, \quad (1)$$

where  $\tau_c$  is the average shear resistance;  $\alpha$  - the angle of the actual area of contact with the frictional force line, HB - a helical line material hardness.

The actual deformation of the material increase, when an embedded surface slides, will be proportional to the coefficient of friction and the tangent of a helix slope:

$$\varepsilon = c \cdot f \cdot \operatorname{tg} \alpha, \quad (2)$$

where  $c$  is the coefficient of a helical line shape.

Substituting the value of the friction coefficient in (2) we obtain the following:

$$\varepsilon = c \left( \left( \frac{R}{h} \right)^{\frac{3}{7}} \frac{3\tau_c}{P_c^{\frac{1}{7}} E^{\frac{6}{7}}} + \beta \right) \operatorname{tg} \alpha. \quad (3)$$

With a linear voltage characterizing the operation of CPG, the strain value corresponds to the yield point of the material, that is, when the critical value is reached, the deformation transforms from elastic to plastic one. This will lead to the violation of a contact surface coating mode by a screw line metal. Therefore, the provision of coating mode for an inner part of CL with non-ferrous metal requires the following term performance  $\varepsilon \leq \sigma_T$ .

That is:

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<sup>3</sup> J. F. Archard, W. Hirst, 1956. "The Wear of Metals under Unlubricated Conditions," in *«Proc. R. Soc. MCCVI* (1956), no. 236, p. 397 – 410; D. V. Konvisarov, *Friction and wear of metals*, Moscow, Mashgiz, 1947; S. Shingubara, "Fabrication of nanomaterials using porous alumina templates", in *Journal of Nanoparticle Research*, V (2013), p. 17–30.

$$\varepsilon = c \left( \left( \frac{R}{h} \right)^{\frac{3}{7}} \frac{3\tau_c}{P_c^{\frac{1}{7}} E^{\frac{6}{7}}} + \beta \right) \operatorname{tg} \alpha \leq \sigma_r. \quad (4)$$

When the compression and oil-bearing rings come into contact with a screw line, the contact pressure will be determined as follows (7-9):

$$P_K = 0,918 \sqrt[3]{\frac{P_c E_1}{S_{nk} (1 - \mu_1^2)}}, \quad (5)$$

where  $S_{nk}$  is the contact area of a piston ring with a screw line,  $\text{mm}^2$ .

The deformation of a helical line material compression:

$$\varepsilon_c = 1,04 \sqrt[3]{\frac{P_K (1 - \mu_1^2)}{S_{nk} E_1}}. \quad (6)$$

Neglecting  $\mu_1$ , as the value less than 1, we get following:

$$\varepsilon_c = 2,4 S_{nk} \left( \frac{P_K}{E_1} \right)^2. \quad (7)$$

Then the angle of a helix inclination will be determined as follows:

(8)

$$\operatorname{tg} \alpha = \frac{\varepsilon}{c \left( \left( \frac{R}{h} \right)^{\frac{3}{7}} \frac{3\tau_c}{P_c^{\frac{1}{7}} E^{\frac{6}{7}}} + \beta \right)}.$$

Consequently, according to formula (8), the smaller the strain of metal stretching and the pressure in contact, the smaller the angle of inclination.

It should be noted that the angle of inclination of a helical line will be limited to the linear parameters of a liner and the magnitude of a piston stroke.

Knowing a slope of a helical line, we calculate the linear parameters of a helical line and the volume of a desired metal to increase wear resistance (Fig. 4).

A helix pitch ( $h$ ) is determined in the following way:

$$h = \operatorname{tg} \alpha \pi D,$$

(9)

where  $D$  is CL diameter,  $\text{mm}$ .

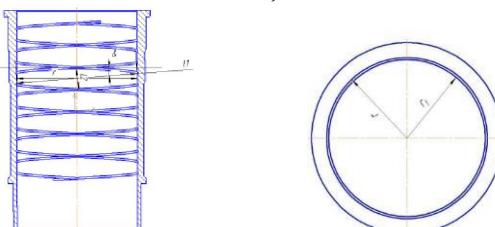


Figure 4 - Scheme of the calculation of the geometric dimensions of the helix

The volume of a screw line filled with copper

$$V_B = nlba,$$

(10)

where  $n$  is the number of a line turns,  $l$  is the length of one turn, mm;  $a$  and  $b$  - the width and depth of a helix, respectively, mm.

Proceeding from the condition of CL entire rubbing part coating with metal, and observing the requirements of a positive mechanical gradient, we shall determine the volume of metal in helical lines. It is possible to perform only if the depth of piston rings insertion does not exceed the thickness of a liner surface coating by a helical line metal. Therefore, knowing the height of a liner surface roughness, we will determine the volume of metal necessary to cover the rubbing part of a sleeve.

$$V_m = \pi (r^2 - r_1^2) L, \quad (11)$$

where  $r$  is a liner radius, mm,  $r_1$  is the radius of a liner filling with metal, mm;  $L$  is the stroke of a piston, mm.

At that the performance of the following condition is necessary

$$r^2 - r_1^2 \leq h_{\max}, \quad (12)$$

where  $h_{\max}$  is the maximum height of CL surface unevenness, mm.

In order to calculate the number of helical lines in a CL and refine their geometric parameters, it is necessary to calculate the amount of metal removed from one line by compression and oil-removal rings.

The volume of the metal to be removed:

$$V_c = h S_B, \quad (13)$$

where  $h$  is the insertion depth of a piston ring into a metal screw line, mm.

It should be noted that in the natural conditions of CPG, the depth of piston ring insertion into a metal insert will be decreased with each reciprocating cycle, and will reach zero value when the friction surface is leveled (a uniform coating of a sleeve surface with a non-ferrous metal layer). When a non-ferrous metal layer is worn (the wear of a metal film) on a liner friction surface, the difference in the height of a metal layer in an insertion zone and a liner friction surface will arise, which will increase the depth of penetration and the removal of an insert metal next layer, with its subsequent "spread" on the contacting friction part of a CL. Consequently, the cycle is reproduced, which ensures the metallization of a cylinder liner friction surface.

Knowing the volume of the non-ferrous metal  $V_c$  layer removed from the screw line by a piston ring, let's calculate the number of screw lines:

$$N = \frac{V_m}{V_c}. \quad (14)$$

In terms of a plastic contact, an external friction is possible only with an insignificant introduction of contacting surfaces, therefore the width of a copper groove should not exceed the thickness of a piston ring which makes 2 mm. And, proceeding from the technological method of screw line production and cutting tool parameters, we obtain the width of a helical line  $b = 1.5$  mm. Considering that

the CL of UMZ engine consists of three repair sizes, repeated through 0.5 mm, the depth of a helical line makes 1.5 mm.

## Results

The following was established after the calculations. The angle of helical line inclination to the surface of a CL was  $\alpha = 3.2^\circ$ . The insertion area is  $S_B = 444.6$  mm<sup>2</sup>. The amount of non-ferrous metal needed to coat the friction part of the CL to ensure a positive mechanical gradient makes  $V_m = 1.033$  mm<sup>2</sup>. The pitch of the helix line is  $h = 17$  mm. The number of helix lines is  $n = 2$ . The ratio of helix line area filled with copper to the inner part of CL friction makes 8.3%.<sup>4</sup>

When a CL is operated with modified physical-mechanical properties, the friction parts are realized in the following way. The rings, moving along an inner part of a CL, displace the part of the non-ferrous metal from the helical lines by plastic deformation and "spread" it over the entire inner part of the CL between N.M.T. and V.M.T. All this takes place continuously during the entire operation of the engine. Thus, a protective layer is formed on the inner part of the CL, which helps to reduce the coefficient of friction of the compression and oil-bearing rings on the inner wall of the CL.

The method of CL manufacture with other physical and mechanical properties contains the following main operations: the cutting of counter helical lines and their subsequent sealing, the cleaning of an inner part after the sealing, the grinding of the inner part, its honing, check, preservation and packing (Figure 5).<sup>5</sup>

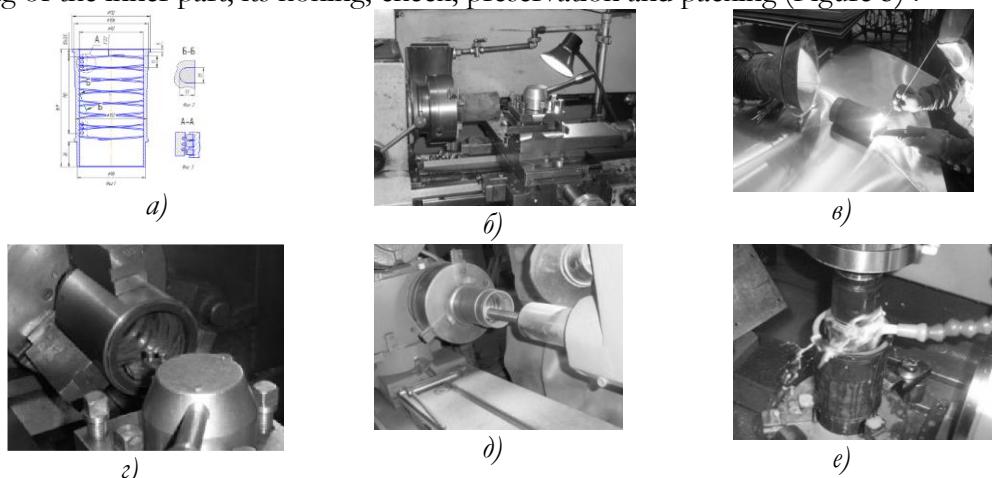


Figure 5 - process of manufacturing metallic copper cylinder liners: a) cylinder liner with opposing screw grooves; b) cutting of screw grooves; C) welding

<sup>4</sup> M. I. Subayev, 2016."A constructive version of a metallized cylinder liner with screw grooves," in *Proceedings of the All-Russian NPK "Agrarian Potential in the Food Supply System: Theory and Practice"* June 21-22, Ulyanovsk. 2016, p. 182-187.

<sup>5</sup> M. I. Subayev, "Theoretical substantiation of helical groove geometric parameters for the metallization of cylinder liners," in *Materials of the VIIth International Scientific and Practical Conference "Agrarian Science and Education at the Present Stage of Development: Experience, Problems and Ways of their Solution"* February 4-5, 2016, Ulyanovsk, 2016, p. 215 221.

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 grooves of the copper; d) cleaning of inside surface; e) grinding the inner surface; e)  
 honing the inner surface of the

Consequently, the CL area with a metallized surface making no less than 8.3%, will ensure the development of an antifriction layer 2 ... 3  $\mu\text{m}$  thick on an entire working part of CL friction and will reduce its wear.

According to the results of the obtained linear parameters of helical lines filled with copper, let's determine the linear wear of a standard and a metallized CL:

$$I_h^T = \frac{0,247 \cdot 0,5 \cdot 222,3 \cdot 1,3^{\frac{1}{3}} \cdot 1,8^{\frac{1}{3}} (1,6 \cdot 10^5 + 1,6 \cdot 10^5)^{\frac{2}{3}} [2 \cdot 110 (1 - 0,22^2)]^{\frac{2}{3}} 0,2^{\frac{2}{3}}}{1 \cdot 1461732,8 (1,6 \cdot 10^5 \cdot 1,6 \cdot 10^5)^{\frac{2}{3}} 110} = 1,5 \cdot 10^{-9} \text{ MM/MM.}$$

$$I_h^B = \frac{0,247 \cdot 0,2 \cdot 222,3 \cdot 1,3^{\frac{1}{3}} \cdot 0,8^{\frac{1}{3}} (1,2 \cdot 10^5 + 1,6 \cdot 10^5)^{\frac{2}{3}} [2 \cdot 110 (1 - 0,32^2)]^{\frac{2}{3}} 0,2^{\frac{2}{3}}}{1 \cdot 1461732,8 (1,2 \cdot 10^5 \cdot 1,6 \cdot 10^5)^{\frac{2}{3}} 110} = 4,9 \cdot 10^{-10} \text{ MM/MM.}$$

### Conclusions

The performed calculations show that the linear wear of a metallized CL is 3.1 times less than that a standard CL.

### Summary

Consequently, the performed calculations allow us to conclude that the metallization of CL surface by helix lines filled with copper will reduce the wear of CL rubbing part.

"Theoretikal Justification Of Geometrical Dimensions, Grade Angle, And Quantity Of Screw Lines During Cylinder Liner Metallization," *Astra Salvensis*, V (2017),  
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## Protector Role Of Stevioside Under The Influence Of Heavy Metals On The Proliferation Of Sprouts Of Wheat Root Cells\*

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**Abstract.** *Diterpenoids is a large family of natural compounds, which in their chemical structure represent the coalescence of carbohydrate cycles, have a different hemometry, and show a polymorphous biological activity. Such compounds include a tetracyclic dipeptide – steviol, which is an agglomerate of glycosides derived from the extract of the herb *Stervia Rebaudiana Bertoni*. One of the glycosides of this herb is stevioside. This paper deals with the study of the proliferative activity of root cells under the action of the diterpene glycoside – stevioside in the absence of the stress factors and under the action of heavy metals. According to the obtained results, stevioside increases the mitotic activity of the root cell of wheat sprouts by 29%. All the studied heavy metals (Cd, Cu and Zn) inhibited to various extent the proliferation of the root cells at a high concentration (1 mM), while at a low concentration (10  $\mu$ M) only a cadmium-containing sample showed a reliable difference with the control. Pretreatment with stevioside reduced the negative effect of heavy metals on the mitotic cell activity, which indicates the protective role of stevioside in the influence of pollutants on the plants.*

**Keywords:** *Triticum aestivum* L., stevioside, heavy metals, mitotic index, phases of mitosis.

### Introduction

The use of growth-regulating and anti-stress preparations contributes to a significant reduction in the use of chemical plant protection products against diseases and pests. Combined application of fungicides together with the above compounds makes it possible to reduce the consumption rates of the first, and allows obtaining environmentally safe and cheaper products.<sup>1</sup>

The literature contains information that growth regulators contribute to a decrease in both genetic and functional disorders of cell division caused by prolonged action of pesticides [Gorovaia, 1988].<sup>2</sup> Due to an anti-stress effect, growth regulators increase plant resistance to hypo- and hyperthermia, excess and lack of water, frost, salinity and toxic effects of heavy metals (HM).<sup>3</sup>

\* Acknowledgements: The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> O. A. Shapoval, "Formation a winter wheat yield treated with growth regulators," in *Fertility*, III (2004), p. 16.

<sup>2</sup> A. I. Gorovaia, "The role of physiologically active humus-based substances in increasing the resistance of plants to the action of pesticides," in *Scientific reports of the higher school. Biological sciences*, VII (1988), p. 5-16.

<sup>3</sup> S. M. Gallego, "Unravelling cadmium toxicity and tolerance in plants: Insight into regulatory mechanisms," in *Environ. Exp. Bot.*, LXXXIII (2012), p. 33-46; F. M. Shakirova, *Nonspecific resistance of plants to stress factors and its regulation*, Ufa, Gilem, 2001, p. 159; O. A. Timofeeva, "Steviol diterpenoid derivatives regulate growth and increase frost resistance of winter wheat," in *Reports of the Academy of Sciences*, CCCCCXXXV (2010), no. 2, p. 282-285. V. V. Vakulenko, "Natural regulator of plant growth – Silk," in *Ecologization of agricultural production in the North Caucasus region. Anapa*, 1995, p. 126-128.

It is known that the most intensive division of cells occurs in the root and shoot apex, and the formation of all organs of the plant is primarily associated with the functioning of the meristem cells. Analysis of the activity of cell division of root meristem in different plant species (*Allium cepa*, *Hordeum vulgaris*, *Pisum sativum*, etc.) showed that in the presence of HM in high concentrations, the intensity of cell divisions slows down, the number of cells in all phases of mitosis decreases, the duration of individual phases and the whole mitotic cycle increases. Elevated concentrations of HM can cause in the meristematic cells of the roots various cytogenetic disorders: strong spiralization of chromosomes in all phases of cell division, unequal disjunction of chromosomes to the poles of the cell or complete absence of disjunction, and the appearance of tetraploid cells. The change in the effect of pollutants on cultivated plants with the use of various preparations has been shown in a number of works.<sup>4</sup>

Studies of the physiological activity of stevioside carried out in our laboratory showed that stevioside increases frost resistance and stimulates growth activity of roots and leaves of winter wheat seedlings, and also significantly reduces the toxic effect of HM on plant growth and the activity of lectin-related cell walls<sup>5</sup>, which indicates the positive effect of diterpene glycoside on the growth of wheat plants under the toxic effect of pollutants.

Objective of this study was to reveal the protective effect of stevioside on the mitotic activity of winter wheat sprouts under heavy-metal-induced stress.

### Materials and methods

The object of the study was 5-day-old sprouts of winter wheat (*Triticum aestivum* L.), variety Kazanskaia 560.

Stevioside was isolated from the plant raw materials of *Steviebrediana Berthonii* in A.E. Arbuzov Institute of Organic and Physical Chemistry.

Wheat seeds were sterilized with 2% KMnO<sub>4</sub> solution for 15 minutes, then washed with tap water. For the experiments, the seeds were aged for 3 hours in a stevioside solution at a concentration of 10<sup>-8</sup> M, and then were placed on a screen in cuvettes and grown using tap water. Plants grew at 230C and 12-hour photoperiod for 3 days. On day 3, the plants were transplanted in metal solutions: Cd, Cu and Zn at concentrations of 1 mM and 10  $\mu$ M. The sprouts were growing in the pollutant solutions for another 2 days. Control variant of plants was grown using water. The mitotic index and the duration of mitosis phases were determined by Pausheva method.<sup>6</sup>

Cell organelles were fixed with Clarke's fixative (acetic alcohol). The material was then washed in 3 shifts of 96% ethyl alcohol to remove the acetic acid.

<sup>4</sup> A. S. Lukatkin, "Contribution of oxidative stress to the development of cold damage in leaves of heat-loving plants," in *Physiology of Plants*, IL (2003), p. 697-702.

<sup>5</sup> Iu.. Iu. Nevmerzhitskaia, "Stevioside increases the resistance of winter wheat to the action of low temperatures and heavy metals," in *Reports of the Academy of Sciences*, CCCCLII (2013), p. 346-349.

<sup>6</sup> Z. P. Pausheva, *Workshop on plant cytology*, Moscow, Agropromizdat, 1988, p. 217.

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After washing, the preparation was stained using aceto-orcein. The stained material was transferred to slides in a drop of lactic acid and covered with a cover slip. Further, the preparation was studied with a light microscope (Cael Zeiss, Jena, Germany) at x 600 magnification. For each variant of the experiment, minimum 3,000 cells were analyzed.

The indicator of mitotic activity is the mitotic index. This is the ratio of dividing cells to the total number of all cells, expressed as a percentage.

To determine the relative duration of any of the phases of mitosis when counting the total number of cells, their number in the prophase, metaphase, anaphase, and telophase is considered. This constitutes the initial material for finding the relative duration of a certain phase. It is determined as the ratio of the frequency of cells in the corresponding stage of mitosis to the total number of dividing cells and is also expressed as a percentage.

The relative duration of any phase of mitosis is:

$$P_{mit} = N_{mit} / (P + M + A + T) * 100 \%, \text{ where}$$

$P_{mit}$  – duration of any mitotic phase;

$N_{mit}$  – the number of cells in the corresponding phase of mitosis;

$P$  – the number of prophase cells;

$M$  – the number of metaphase cells;

$A$  – the number of anaphase cells;

$T$  – the number of telophase cells;

## Results AND DISCUSSION

Stevioside chemically is a diterpene glycoside, which aglycon is steviol with a tetracyclic structure related to many physiologically active compounds. Diterpenoids are a huge family of natural compounds having a diverse geometry of joined hydrocarbon cycles. They show the most diverse biological activity. Among these compounds, it is particularly worth noting the derivatives of kauren, which include the stevioside aglycon – steviol. There is practically no information on the mechanisms of action of stevioside on plants in the literature.

According to the results of our studies, the proliferative activity of wheat roots treated with stevioside ( $10^{-8}$ M) increased by 29% compared to the control (Table 1), which is consistent with the previous data on that stevioside ( $10^{-8}$ M) activates growth of roots and leaves of wheat sprouts.<sup>7</sup>

Table 1 – mitotic index of root seedlings of winter wheat under the influence of stevioside and heavy metals.

	$H_2O$	stevioside ( $10^{-8}$ M)
control	$5.2 \pm 0.20$	$6.7 \pm 0.30$
Cd (1mM)	$2.0 \pm 0.10$	$3.1 \pm 0.20$
Cd (10 $\mu$ M)	$3.8 \pm 0.20$	$4.5 \pm 0.30$

<sup>7</sup> J. E. Brandle, "Steviol glycoside biosynthesis," in *Phytochem*, LXVIII (2007), p. 1855-1863.

Cu (1mM)	1.9 ± 0.10	3.1 ± 0.20
Cu (10µM)	4.7 ± 0.20	6.2 ± 0.30
Zn (1mM)	3.6 ± 0.18	5.3 ± 0.30
Zn (10µM)	4.9 ± 0.24	5.0 ± 0.20

Previously, it was suggested that steviol may act as a precursor of gibberellic acid due to the gibberellin-typical cis-articulation of B and C tetracyclic hydrocarbon rings. However, it was shown that the fungus *Gibberella fujikuroi* does not convert steviol into gibberellic acid, but metabolizes it into a gibberellin-like compound.<sup>8</sup> It is known that gibberellins cause elongation of the plant stem, and this effect is based on the activation of cell division, enhancement of their extension, or both. On the other hand, gibberellins have little effect on the growth of root cells.<sup>9</sup> According to the conducted studies, steviol derivatives do not possess the entire spectrum of biological activity of gibberellins.<sup>10</sup>

At the same time, under the influence of diterpene glycoside, the number of cells in metaphase decreased by 12% and the number of cells in anaphase increased by 14% (Fig. 1).

It was established that the meristematic tissues of plants are the most sensitive and actively reacting to external influences and constantly forming new cells.

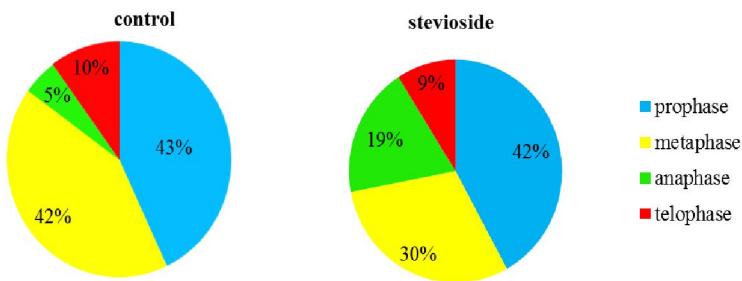


Figure 1 - The duration of mitosis phases in the roots of winter wheat seedlings under the influence of stevioside ( $10^{-8}$  M).

The duration of the mitotic cycles of plants depends on the species characteristics of the plant, its age, various environmental factors (temperature, aeration, moistening, lighting, etc.), and can also differ in plants of the same

<sup>8</sup> J. E. Brandle, "Steviol glycoside biosynthesis," in *Phytochem*, LXVIII (2007), p. 1855-1863.

<sup>9</sup> S. S. Medvedev, *Biology of plant development. In 2 volumes*, Volume 1 – "The fundamentals of the biology of plant development. Phytohormones," Sankt Petersburg, Publishing house of St. Petersburg State University, 2011, p. 252.

<sup>10</sup> O. A. Timofeeva, "Effect of cartilin on oryzalin-induced changes in lectin activity during low-temperature hardening of plants," in *Physiology of Plants*, LV (2008), p. 333-337.

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species, for example, in different species of peas.<sup>11</sup> Influencing the cells and analyzing the growth processes, we can obtain information about the causes of enhancement or inhibition of growth.

In our experiments, pollutants led to a decrease in the proliferative activity of the roots. Thus, cadmium inhibited cell division in both concentrations (1 mM and 10  $\mu$ M), copper and zinc – only at a concentration of 1 mM (Table 1).

It is widely known that inhibition of growth is one of the main and easily observed in plants manifestations of HM toxicity.<sup>12</sup> This effect is due to the influence of HM on the process of cell division and stretching.<sup>13</sup> Among the main negative effects on the division process is a decrease in the intensity of cell divisions, a decrease in the number of cells in all phases of mitosis, an increase in the duration of individual phases and the entire mitotic cycle.<sup>14</sup> In addition, high concentrations of HM in meristematic root cells lead to cytogenetic disorders, such as, for example, spiralization of chromosomes, their unequal disjunction to cell poles or complete absence of disjunction, and the appearance of tetraploid cells. In the presence of HM, the DNA strand breaks, chromosomal aberrations, and disturbances in the regulation of gene expression were observed.<sup>15</sup>

Stevioside ( $10^{-8}$  M) in all variants reduced the toxic effect of HM on the proliferative activity of wheat roots, and the combined action of stevioside ( $10^{-8}$  M) and copper and zinc at a concentration of 10  $\mu$ M resulted in the same mitotic activity as observed in the variant with stevioside only ( $10^{-8}$  M).

In our experiments, under the influence of cadmium both at a high (1 mM) and low (10  $\mu$ M) concentration there was a decrease in the number of cells in prophase and metaphase, but anaphase increased (Figure 2). It is known that blocks at the prophase stage are observed when DNA synthesis is disturbed.<sup>16</sup> The stopping of division at the metaphase stage indicates damage to the apparatus of division of the mitotic apparatus of the cell: centrioles, fission spindles and kinetochores, which can lead either to death or to polyploidization of the cell. Delays in cell division at the anaphase and telophase stage indicate a violation of cytokinesis, triggering a number of changes leading to an abnormal course of mitosis in a series of subsequent generations of cells.

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<sup>11</sup> Alov I.A. 1972. *Cytophysiology and pathology of mitosis* / I.A. Alov. - M.: Medicine, p. 264. - ISBN978-5-458-38430-8.

<sup>12</sup> V. M. Chekurov, *Effect of natural biostimulators*, Moscow, 2001, p. 292.

<sup>13</sup> G. Shi, "Cadmium tolerance and accumulation in eight potential energy crops [Text]," in *Biotechnol. Adv.*, XXVII (2009), p. 555–561.

<sup>14</sup> C. Jonak, "Heavy metal stress. Activation of distinct mitogen-activated protein kinase pathways by copper and cadmium," in *Plant Physiol.*, CXXXVI (2004), p. 3276–3283.

<sup>15</sup> S. A. Mouron, "A comparative investigation of DNA strand breaks, sister chromatid exchanges and K-ras gene mutations induced by cadmium salts in cultured human cells [Text]," in *Mutat. Res.*, DLXVIII (2004), no. 1, p. 221–231.

<sup>16</sup> F. Villiers, "Investigating the plant response to cadmium exposure by proteomic and metabolomic approaches [Text]," in *Proteomics*, XI(2011), p. 1650–1663.

"Protector Role Of Stevioside Under The Influence Of Heavy Metals On The Proliferation Of Sprouts Of Wheat Root Cells," *Astra Salvensis*, V (2017),  
 Supplement no. 1, p. 513-519

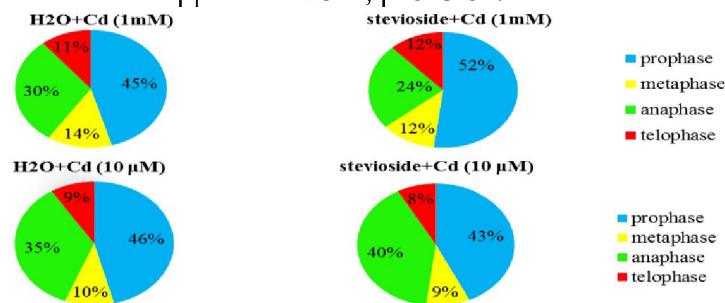


Figure 2 - The duration of mitosis phases in the roots of winter wheat seedlings under the influence of stevioside ( $10^{-8}\text{M}$ ) and Cd (1 mM and  $10 \mu\text{M}$ ).

The presowing treatment of wheat seeds with stevioside ( $10^{-8}\text{ M}$ ) further strengthened the effect of cadmium on the reduction of the prophase and the lengthening of anaphase (Figure 2).

Modification of the effect of HM on cultivated plants using various growth regulators has been shown in a number of works [7, 8]. It is known that growth regulators can have a protective effect on plants under HM contamination. But on the other hand, the use of biologically active compounds under the influence of HM can lead to an increase in the accumulation and/or toxic effects of metals on plants.

Copper at concentrations of 1 mM and  $10 \mu\text{M}$  significantly shortened metaphase and extended anaphase (Figure 3), as compared to control plants. Stevioside enhanced the effect of copper at both concentrations: anaphase increased more and the number of cells in metaphase and telophase decreased (the variant with Cu, 1 mM) until the metaphase and telophase disappeared completely (the variant with Cu  $10 \mu\text{M}$ ).

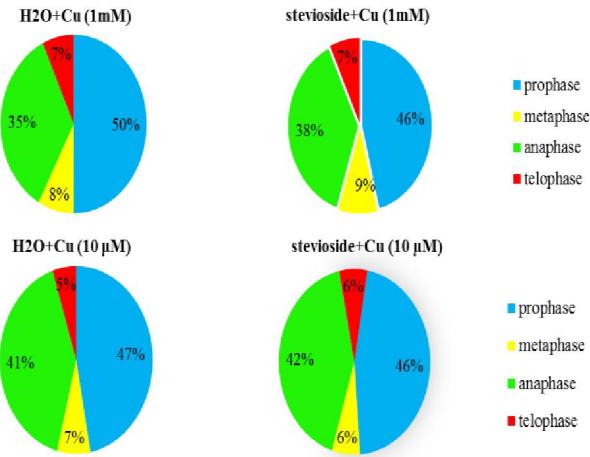


Figure 3 - The duration of mitosis phases in the roots of winter wheat seedlings under the influence of stevioside ( $10^{-8}$ M) and Cu (1 mM and 10  $\mu$ M).

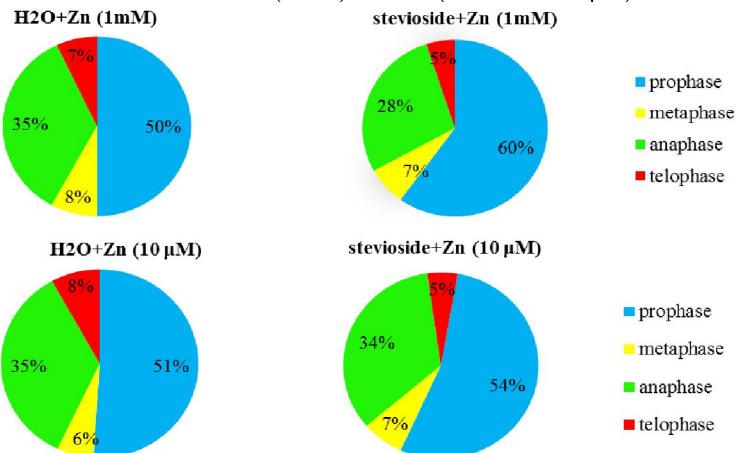


Figure 4 - The duration of mitosis phases in the roots of winter wheat seedlings under the influence of stevioside ( $10^{-8}$ M) and Zn (1 mM and 10  $\mu$ M).

Plant cultivation with a high concentration of zinc solution resulted in changes similar to those that caused copper and cadmium: a significant decrease in cells occurred in prophase, metaphase and telophase, and a significant lengthening

of anaphase. A low concentration of zinc ( $10 \mu\text{M}$ ) caused an increase in prophase (Figure 4).

Pre-treatment with stevioside ( $10^{-8} \text{ M}$ ) changed the effect of zinc ( $10 \mu\text{M}$ ) on the distribution of cells in prophase and anaphase: stevioside reduced the effect of zinc at a high concentration on the duration of mitosis phases, but significantly extended the metaphase against the background of low zinc concentration.

### **Conclusion**

Thus, the inhibitory properties of HM manifested themselves in the delay of cell division in the anaphase stage. Presowing treatment with stevioside reduced the negative effect of HM on the mitotic activity of the roots of winter wheat sprouts, which indicates its protective effect on the processes of cell division under pollutant-induced stress.

### **Summary**

Enhanced mitotic activity of the roots of seedlings under the action of stevioside indicates its involvement in the regulation of plant growth processes, which makes this preparation promising for use in crop production, and reducing the negative effect of heavy metals on plants makes it possible to use stevioside as an anti-stress drug.

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## Food security at the regional level\*

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**Abstract.** *As a rule, in the periods of positive dynamics of economic development, the attitudes toward non-interference of the state in economic processes were dominant and when the next phase came, the recession of production, especially with signs of stagflation, they were replaced by diametrically opposed views that proved the need for active state intervention in the processes of sustainable reproduction of the economy. All over the world, states influence the agro-food production complex, and agricultural products and food market. However, the ways and tools of such influence depend on the goals to be achieved through such regulation.*

*World experience in the development of market economy proves that as a result of specific features, agriculture and the food market are not self-regulating systems. This is due primarily to the conservatism and inertia of agriculture as a production system, as well as low elasticity of demand for agricultural products and high elasticity of prices for it. The failure of the market mechanism to direct the development of economic entities of different industries and regions to one common goal calls for state intervention in all spheres of the economy the most important of which is agriculture.*

**Key words:** food security system, self-sufficiency factor, food security.

### Introduction

It is advisable to consider the state policy on the formation of food security as a complex of economic, administrative and legal strangleholds for the activities of the agro-industrial complex and the food market, the condition of the social sphere and the environment.

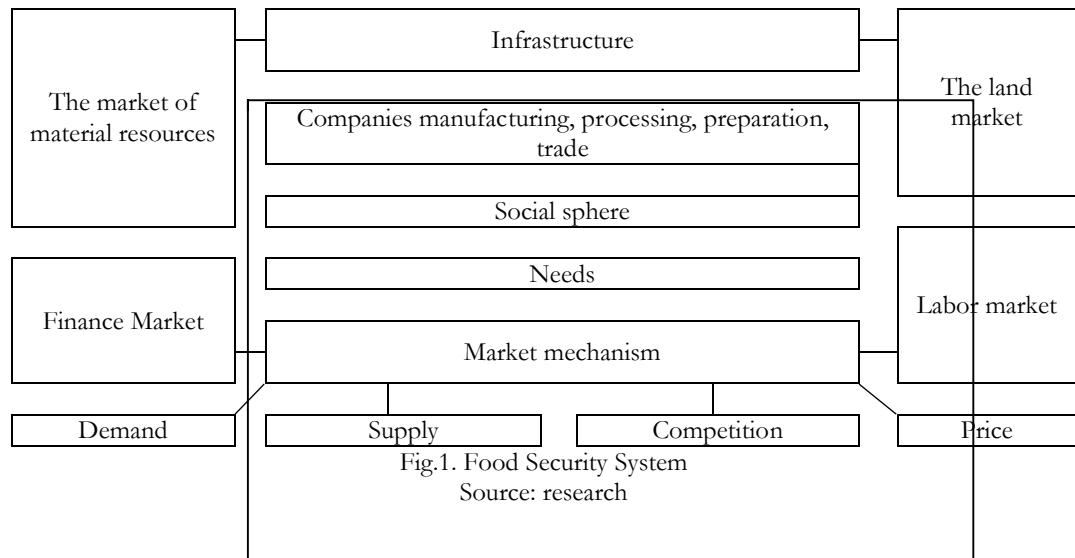
Most measures and mechanisms of food security policy should be implemented at the state level, since it is practically impossible to provide food security without centralization and coordination of actions of all participants. The implementation of such a complex process involves a combination of state agrarian, economic and social policies. The activities of the state and society in the formation of food security should be based on an objective comprehensive analysis and forecasting of the situation in the supply of food resources, and their consumption. Interaction between the main elements of the country's food security system is shown in Figure 1.

The food security system is determined by state laws, decrees, and orders of the President. On their basis, the government implements a number of powers, including the implementation of a unified state policy in the field of food security formation, and develops and realizes appropriate state target programs.<sup>1</sup>

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\* Acknowledgements: This work was performed in accordance with the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> A. R. Battalova I. A. Abdulin, "Socioeconomic processes in the CIS countries," in *Mediterranean Journal of Social Sciences*, V (2014), no. 24, p. 331-335.



Formation of a market environment in the food sector changes the nature of the administrative impact on the enterprise by state authorities; and it is increasingly being carried out in an indirect form. Instead of the functions of direct administrative management, the state resolutely switched to regulating economic levers creating the necessary legal and regulatory framework.<sup>2</sup> Economic instruments of state regulation include instruments that help to create conditions for the development of market processes in the right direction. Economic instruments work in the plane of fiscal and fiscal policy, as well as price regulation.

The legal basis of administrative and economic methods of regulation is represented by various forms of legal regulation: laws, decrees of the President, and also orders of local self-government bodies. The food problem is actualized in the absence of a clear legislative definition of a food security concept; it generates uncertainty in the actions of the state administrative apparatus and leads to mistakes in the formation of economic development programs for the country as a whole and its regions.

When creating food security, it is necessary to ensure a joint, purposeful and coordinated action of legislative and executive structures at all levels, to create an appropriate legal and regulatory framework, and to develop an effective organizational and economic mechanism.<sup>3</sup>

The state is obliged to use its regulatory functions to expand the capacity of the food market by eliminating shortcomings in the domestic market, by preventing the emergence of external influences, by strict control over emergence

<sup>2</sup> A. R. Battalova R. M. Kundakchyan, "The problem of food security in Russia," in *Mediterranean Journal of Social Sciences*, VI(2015), no. 3, p. 773-776.

<sup>3</sup> I. S. Bulnina, L. I. Askhatova, I. A. Kabasheva I. A. Rudaleva "Public and private partnership as a mechanism of government and business cooperation," in *Mediterranean Journal of Social Sciences*, VI (2015), no. 153, p. 453-455.

of natural or other monopolies, and by providing consumers with reliable information about the quantity and quality of food products. Applying regulatory functions, the state and its bodies should study in detail the possibility and effectiveness of applying various methods of regulating influence in each specific case.<sup>4</sup>

A multifaceted nature of the food security problem dictates the need to find ways and mechanisms for ensuring it. In developed countries, there are usually two main approaches to ensure food security: the first is priority support for agricultural producers and guaranteed maximum self-sufficiency for all basic types of food. The second is the same support for both producers and consumers of food.<sup>5</sup>

To ensure food security, it is necessary to take into account the correlation between the own and imported production, the development of processing industries, procurement and trade establishments, the establishment of affordable food prices for the bulk of the population, and the like. Therefore, in fact, ensuring food security covers the entire agro-industrial complex of the country. As production resources are formed in the sphere of agro-industrial production, accordingly, the agro-industrial complex acts as a guarantor of social and economic stability of the society, economic security and independence of the state.

### Methods of research

The self-sufficiency coefficient should be used ( $K_s$ ) to assess the level of food sovereignty (self-sufficiency) of a region for individual types of agricultural products. To calculate this indicator, there are needed data on actual production volumes for the main types of agricultural products in the region for the reporting period ( $q$ ), and also information on the population of the region ( $n$ ). It will be necessary to determine how much food is needed for the region in accordance with established rational consumption norms ( $q_p$ ).<sup>6</sup>

### Results

In order to analyze the level of regional food sovereignty, it is necessary to compare the actual level of production of certain agricultural products in the region with the necessary amount of food calculated in accordance with rational norms of food consumption.

In this case, the formula for calculating the self-sufficiency ratio is as follows:

$$K_s = q / n * q_p, \quad (1)$$

Where:  $K_s$  - The self-sufficiency coefficient;

$q$  - The actual food production volume in the region;  
 $n$  - the population of the region;

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<sup>4</sup> *Ibidem.*

<sup>5</sup> E. A. Hanushek, "Schooling, Labor Force Quality, and the Growth of Nations," in *American Economic Review*. XC (2000), p. 1184–1208.

<sup>6</sup> L.F. Garifova, R. M. Kundakchyan, O. V. Pratchenko, "Integrated assessment of the impact of socio-ecological-economic factors on the quality of life of the population of the region," in *Mediterranean Journal of Social Sciences*, V (2014), p. 117-121.

$Q_p$  - necessary volumes of food production in accordance with rational consumption norms.

As a result of the calculations,  $K_s$  can have a different value depending on which the indicator value can be attributed to a low, acceptable, or optimal level:  $K_s \leq 0.5$  - low self-sufficiency level;  $0.5 < K_s \leq 0.9$  - allowable self-sufficiency level;  $0.9 < K_s \leq 1$  - optimum self-sufficiency level.

In accordance with rational norms of consumption of food products that meet modern requirements for healthy nutrition, the population for a year should consume: 95-105 kg of bread products; 95- 100 kg of potatoes; 120-140 kg of vegetables; 90-100 kg of fruit; 70-75 kg of meat and meat products; 320-340 kg of milk and dairy products; 18-22 kg of fish; 24-28 kg of sugar. The calculation of the actual consumption of food is carried out according to the formula:

$$K_{ac} = q_a / q_r \quad (2)$$

Where  $K_{ac}$  is a coefficient characterizing the actual level of food consumption relative to rational consumption norms;

$q_a$  - actual consumption of food for a certain period of time;

$q_r$  - rational consumption norms.

Based on the calculation of the actual food consumption coefficients for different types of food, it will be necessary to determine the average value of the indicator. The actual food consumption by the population of the region ( $K_{ac}$ ) can take the following values:  $K_{ac} \leq 0.5$  - low;  $0.5 < K_{ac} \leq 0.95$  - allowable;  $0.95 < K_{ac} = 1$  is the optimal one.

The economic accessibility of food for the population depends on the level of prices for food products and real incomes of consumers. It is proposed to use several indicators to estimate the level of economic accessibility of food for the population of the region:

- 1)  $K_p$  - poverty rate, it shows the share of the region population with incomes below the established subsistence minimum;
- 2)  $K_c$  - consumption coefficient which characterizes the share of food expenditure in the structure of household expenditure on final consumption;
- 3)  $K_g$  is the Gini coefficient.

Special calculations will not be required in this case, since these indicators are calculated by federal and territorial organizations of state statistics. Nevertheless, it is necessary to determine in which parameters a certain indicator will be used for a given region.<sup>7</sup> We propose to establish the following values of indicators for assessing the food security of a region, which are presented in Table 1.

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<sup>7</sup> L. N. Safiullin, G. N. Ismagilova N. Z. Safiullin N. G. Bagautdinova, "The de-velopment of welfare theory in conditions of changes in the quality of goods and services (2012)", in *World Applied Sciences Journal*, XVIII (2012), Special Issue of Economics, p. 144-149.

Table 1.The system of indicators and criteria of regional food security

Criterion	Index	Value of index
1.The food sovereignty level (self-sufficiency) of the region	$K_s$ (self) $= Q / n * qp$	$K_s \leq 0.5$ - low; $0.5 < K_s \leq 0.9$ - possible; $0.9 < K_s \leq 1$ - optimal
2. The physiological needs satisfaction level for the population in basic food	$K_{pn}$ (physiological needs) $= Q_{fact} / q_{norm}$	$K_{pn} \leq 0.5$ - low; $0.5 < K_{pn} \leq 0.95$ - possible; $0.95 < K_{pn} \leq 1$ - optimal
3. The level of economic access to food: - the proportion of the population with incomes below the subsistence minimum; - the share of expenditure on food consumption in the structure of household consumption on final consumption; - the inequality degree of the population distribution by income level	$K_p$ (poverty)  $K_c$ (consumption)  $K_g$ (Gini)	$K_p > 0.4$ - high; $0.2 < K_p \leq 0.4$ - possible; $K_p \leq 0.2$ - optimal  $K_c > 0.5$ (or $> 50\%$ ) - high; $0.25 < K_c \leq 0.5$ - possible; $K_c < 0.25$ - optimal  $K_g > 0.5$ - high; $0.3 \leq K_g < 0.5$ - possible; $K_g < 0.3$ - optimal

If the value of the indicator is within the optimal range, then we set an estimate for this indicator - 2 points. In the event that the value of the indicator is within acceptable limits, an estimate of 1 point is issued. For low or high values of the indicator, the score will correspond to 0 points. It is convenient to present data for assessing the food security of the region as a complex table 2.<sup>8</sup>

Table 2.The region food security assessment

Criterion	Index	Value of index
The food sovereignty level (self-sufficiency) of the region	$K_{fs}$	0-2
The satisfaction level of physiological needs of the population in food	$K_{pn}$	0-2
The economical accessibility of food: The share of population with incomes which is below the subsistence level. The share of food expenditure in the structure household expenditure on final consumption The inequality degree of the population distribution by income level	$K_p$ (poverty)  $K_c$ (consumption)  $K_g$ (Gini)	0-2 0-2 0-2

<sup>8</sup> O. A. Ignateva, I. I. Abdullin, "Problem of the informative making vagueness of economic environment as feature of national market," in *Procedia Economics and Finance*, XXIV (2015), p. 345-349.

Subtotal	10
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As a result, a cumulative assessment of regional food security will be obtained, which can satisfy the following criteria, which are presented in Table 3.<sup>9</sup>

Table 3. Food security criterion

Number of points	The regional food security level
9-10 points	Optimal high
5-8 points	Average, possible
Less than 5 points	Low

Unlike the existing methods, this technique will allow carrying out an analysis of food security at the regional level of the economy fairly quickly on the basis of an analysis for the complex of economic and physical food accessibility indicators, and self-sufficiency of the region by the main types of food products. The obtained data can be used by regional authorities when planning and developing regional economic and agro-food policy.

### Conclusions

To achieve a high level of food security, government regulation measures need to be carried out in two ways. Firstly, it is necessary to create real conditions for increasing the volume of food production and expanding the food market to a level that will provide the population with food, regardless of effective demand. Secondly, it is extremely necessary to pursue an active social policy with a view to gradually increasing the effective demand of the population to a level that ensures the rational nutrition of the average citizen of the state.

### Resume

The current state of food security requires its isolation within the framework of the state's economic policy as an independent problem the solution of which calls for elaboration of a strategy for the development of the food security system and its parameters. Conceptual approaches to the definition of goals, objectives, principles, directions and stages of its implementation should be formed. The national food security strategy should cover the issues of increasing food production, improving the quality and competitiveness of food and agricultural products, sustainable rural social development, and improvement of the living standards of the population. The solution of this problem is possible only on the basis of reforming the agrarian sphere in the state regulation of agro-industrial production. The scope of regulation depends on the level of economic and social development of the economy, the balance of supply and demand in agricultural markets.

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<sup>9</sup> I. A. Kabasheva, I. A. Rudaleva, I. S. Bulnina, L. I. Askhatova, "Organizational factors affecting employee innovative behavior," in *Mediterranean Journal of Social Sciences*, VI (2015), no. 153, p. 435-439.

Ekaterina Evgenyevna MIKHEEVA, Alfiya Albertovna ZINOVYEVA

## **Tourist Product “One Tank Trip” As A Factor Of Increasing The Competitiveness Of Small Touristic Towns In Russia\***

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**Abstract.** *The article briefly describes the issue of Russian small towns' competitive growth by including them into travel itineraries in the areas of inland and inbound tourism. An article covers the basic concepts and methods related to attractiveness growth of small touristic towns in Russian Federation by means of weekend tours intensification in the areas of inland and inbound tourism. Also the article describes the methods and the possibilities of the use of small touristic cities cultural and historical potential of for the purposes of tourism. Increase of tourist attractiveness of small touristic towns is proposed to achieve by bringing out on the tourist market of Russia the automobile weekend tour One Tank Trip. Also in an article was made an approximate calculation of innovative tourist product One Tank Trip per person when organizing a trip to the small touristic city Elabuga in the Republic of Tatarstan, described by authors. As the result, authors came to a conclusion about viability of development and promotion of tourist product One Tank Trip for the purposes of the increase of small touristic cities competitiveness.*

**Key words:** competitiveness of small touristic cities, tourist product, automobile weekend tour.

### **Introduction**

Tourism is one of the most important areas of activities in modern economy. It aims to meet the needs of people, to increase living standards and competitiveness level of infrastructure and suprastructure of hospitality industry in tourist region. And unlike many other branches of the economy, tourism industry not only does not lead to depletion of natural resources, but contributes to increasing the attractiveness of the tourist area as a whole. Also, being an export-oriented field, tourism shows a sufficiently high stability in comparison with other branches in the conditions of an unstable situation in the world economy.

At the present time from the point of view of tourist attraction Russia causes sustainable interest among foreign citizens. Latest reviews of statistics on inbound tourism shows that slow but sure increase of interests of foreign residents arriving in Russian Federation with tourist purposes in the total number of foreigners arriving in Russia is under way. More than 22 million of international travelers visited Russia in 2016, which is 10% more than in 2015.<sup>1</sup> Considerable proportion of international travelers visits such popular tourist destinations as Moscow, St. Petersburg, the Golden Ring of Russia, etc. Also taking into account certain political, economic and social factors in the last three years the number of Russian tourists abroad has significantly decreased. This fact has positive impact on the attractiveness of the domestic tourist product. The number of domestic tourists in 2016 in Russia has grown up to 55 million people. However, the same tendency as in inbound tourism is observed here. Main objects of domestic travel

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\* Acknowledgements: The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> N. K. Gabdrakhmanov, V. A. Rubtzov, R. A. Ulengov, (2016). "The historic city of the Tatarstan Republic as the basis for regional tourism cluster," in *Journal of Organizational Culture, Communications and Conflict*, XX (2016), no. 2, p. 46-52.

are large cities (Moscow, St. Petersburg, Sochi, Kazan) and resort zones (Krasnodar Krai and coast of Crimea). The Krasnodar Krai, the Moscow Region and Crimea became the leaders of domestic travel in 2016 among the regions of Russia. In 2016 15.8 million tourists visited Kuban, 12.5 million tourists visited the Moscow Region, and 5.6 million tourists visited Crimea. In 2016 17.5 million tourists visited Moscow (including 4.55 million foreign travelers); 6.9 million tourists visited St. Petersburg (including 2.88 million foreign travelers), which is 6% more arrivals than in 2015; 6.5 million tourists visited Sochi; 2.5 million tourists visited Kazan, which is 16% more arrivals than in 2015.<sup>2</sup>

Therefore, on this basis, we come to the conclusion of necessity to develop inbound and outbound tourism in other regions of the country, and in particular by increasing the attractiveness (tourism competitiveness) of small touristic cities in Russia.

### **Methods**

To our opinion one of the most successful methods of competitive growth in small touristic cities in Russia in the line of inbound and domestic tourism is implementation of so-called weekend tours. According to the World Tourism Organization (UNWTO) statistics the largest share is occupied by weekend tourism (2-3 days), they are followed by small packaged tours (6-7 days), significantly smaller share is taken by 8-12-day tours.<sup>3</sup> All the rest, longer tours fall out of the statistics due to the insignificance of its specific gravity in the total mass.

Weekend tours are two- or three-day vacations with different aims. Undeniable advantage of such vacation is shortness. While short trips are relatively inexpensive and allow the tourist to change the scenery, get new experiences, while immersing it in the unique atmosphere of another city or country. Furthermore, weekend tours are universal: you can go on holiday with family, friends and even colleagues. The most common city breaks today are "week-end tours" that includes usually one working day – Friday. The most popular weekend tours destinations are small touristic cities that give tourists an opportunity in short space of time to visit and see fairly large number of places of interest in chosen tourist area for relatively low financial costs.

Use of tourist and recreational potential of small tourist cities in the tourism industry:

- allows quickly increase the level of national income when primary income of the tourism industry trickle down to the regional trade, agricultural industry and production sector;<sup>4</sup>

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<sup>2</sup> <http://turstat.com/travelrussia2016>, accessed 12. 03. 2017.

<sup>3</sup> <http://statistics.unwto.org/>, accessed 12. 03. 2017.

<sup>4</sup> N. D. Kovačević, L. Kovačević, U. Stankov, V. Dragićević, A. Miletić, "Applying destination competitiveness model to strategic tourism development of small destinations: The case of South Banat district," in *Journal of Destination Marketing & Management*, 2017.

- promotes the accumulation of values and qualitative improvement of destination's infrastructure due to the manufacturing of new products for the region;<sup>5</sup>

- insure citizen's employment in touristic sector and gives proliferation of skilled personnel by virtue of creation of employment at tourist enterprises of any type – suppliers of tourism services;<sup>6</sup>

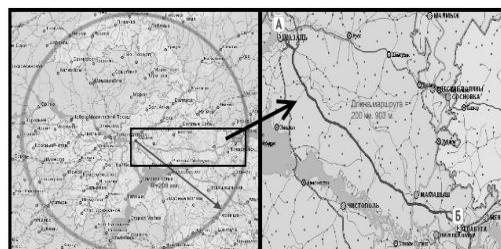
- smoothes economic spatial polarization in regions with underdeveloped industry due to the development of the tourism industry including the intercountry context because tourism allows to redistribute income of countries with agricultural and industrial manufacturing;<sup>7</sup>

- levels the balance of payments with all its constituent parts, that is, the balance of expenditures of tourists who left the tourist region is contrasted with the income received from incoming tourists.<sup>8</sup>

Inasmuch as the interest to the cultural and cognitive tourism and nature-oriented tourism in the world is growing steadily, small touristic cities in Russia have a lot of things to offer to Russian and foreign tourists in this field. It is the author's opinion that the most promising direction for development weekend tours is car trips to small touristic cities in Russian Federation. For this purpose authors created innovative tourist product for automobile weekend tours to the small touristic cities in Russia "One Tank Trip".

### Results and discussion

Let's calculate the possible cost of a tourist product "One Tank Trip" in a specific context. As a weekend tour destination let's choose small touristic city in Republic of Tatarstan – Elabuga.<sup>9</sup> This small touristic city was chosen as an example because the trip to Elabuga and back was estimated for one full tank of gas (see pic. 1).



Picture 1. Radial off "One Tank transport accessibility".

<sup>5</sup> A. A. Zinovyeva, "The Development of Regional Management by Smoothing of Spatial Polarization," in *Asian Social Science*, XI (2015), no. 11, p. 252-256.

<sup>6</sup> Lidia Andrade Frederic Dimanche, "Destination competitiveness and tourism development in Russia: Issues and challenges," in *Tourism Management*, LXII (2017), p. 360-376.

<sup>7</sup> M. R. Mira, A. Moura, Z. Breda, "Destination competitiveness and competitiveness indicators: Illustration of the Portuguese reality," in *Téknica*, XIV (2016), no. 2, p. 90-103.

<sup>8</sup> A. A. Zinovyeva, E. E. Mikheeva, "The Principles and Indicators of Competitive Development of Tourism in the Region," in *Kazan Economic Vestnik*, I (2017), no. 27, p. 11-18.

<sup>9</sup> A. A. Gilmanova, "Competitiveness and positioning of municipalities in the Republic of Tatarstan," in *Mediterranean Journal of Social Sciences*, VI (2015), no. 3, p. 761 - 765.

GIVEN:

1. The route of the weekend tour: Kazan – Elabuga – Kazan:

where, extension of route – 400 km,

duration of tour – 2 days (Saturday – Sunday).

2. Passenger car– sedan.

where, capacity of vehicle – 4passangers,

petrol capacity – 40 l,

average fuel consumption – 10 lfor 100 km.

**Cost of "One Tank Trip" tour** consists of the following components: transportation, accommodation, catering, and expensesfor tour guide services and visits to the museums in Elabuga.

*Transportation.* Standard petrol capacity – 40 liters. Average price for one liter of oil in Republic of Tatarstanas per October 2017 is RUB 36.90. Total cost of travel will be RUB 1476. Taking into account maximum capacity of the car – 4 passengers, cost of travel for one passenger will be RUB 369.

*Accommodation.* One night in hotel in Elabuga with breakfast. Cost of accommodation in a double room in Hayat hotel is RUB 3100 for two; cost of accommodation in a double room in Shishkin Hotel is RUB 2000 for two; cost of accommodation in a double room in Klub Miami hotel is RUB 2200 for two. For our calculation we will take average price for accommodation for one person, which is RUB 1100 (<https://www.booking.com/searchresults.ru.html?city=-3040347> – Elabuga. Booking.com).

*Catering.* Average cost of lunch in restaurants in Elabuga is RUB 140 per lunch and RUB 500 per dinner. Allowingfor the fact that breakfasts are included into the cost of accommodation, tourists have to have eat 3 times (two lunches and one dinner). Total cost of catering in this case will be RUB 780.

*Visiting museums.* There are 12 museums in Elabuga, visit fee in which wavers from RUB 100 to RUB 150. Total cost of visit of six most popular museums in Elabuga will be RUB 800 per person.

Table 1.Totalcostof "One Tank Trip" tour per one tourist

Position	Cost per one person (RUB)
Transportation	369
Accommodation	1100
Catering	780
Museum feed	800
<b>TOTAL</b>	<b>3049</b>

Now it can be seen that, total cost of weekend tour "One Tank Trip" on Saturday and Sunday will be RUB 3049 per person. It is important to note that the cost indicated by us is not final and in the process of implementing this tourist product, it could be changed, in both the direction of increase, and the side of reducing its value. Final price of the trip will depend from interests, needs and financial ability of tourists.

### **Summary**

At the moment, travel business is dynamic and profitable industry with high potential. Russia has colossal tourist and recreational resources and cultural and historical potential for the development of different types of tourism. Significant role in this potential plays Russian small touristic cities. Development of tourism industry in Russia as well as through the development of small touristic cities, unconditionally should get one of the central parts in whole system of state planning because income from this field allow to include it to the list of priority areas of economic, social and cultural and historical development. The use of the tourist product automobile weekend tour “One Tank Trip” developed by the authors in tourism industry in Russian Federation will allow to increase competitiveness (increase tourism attractiveness) of small touristic cities in the regions. In addition, it will significantly simplify the search of information for tourists on tourist routs and destinations; it will allow not only modernize and optimize existing tourist routs but to create new innovative routs across small touristic cities in Russia. The proposed tourist product unconditionally will give positive push to the development of tourism industry on regional level along the lines of inbound and domestic tourism; also, it will attract additional investments to the economy of small touristic cities and country settlements. Considerable meaning this project has prior to the FIFA World Championship in 2018, it will allow visitors of Russia to get acquainted with the points of interests not only in the main tourist centers of the country, in cities where the stages of the Championship will pass, but also with neighboring regions.

### **Conclusions**

As the result, authors came to a conclusion about viability of development and promotion of tourist product “One Tank Trip”. The essence of this is following: created by authors innovative tourist product will allow to increase attractiveness and competitiveness of small touristic cities in Russia; also, it is easy to find tourist destinations in “transportation availability” area; to determine the estimated cost of travel; to get short information on cultural and historical object and other tourist and recreational resources attractive for travelers.

"Tourist Product "One Tank Trip" As A Factor Of Increasing The Competitiveness Of Small Touristic Towns In Russia," *Astra Salvensis*, V (2017), Supplement no. 1, p. 527-531

Valentina A. NIKOLAEVA, Natalia L. FESYANOVA, Olga N. GORYACHEVA

## **The Urban Environment Of Italy In Prose of W. D. Howells\***

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**Abstract.** *The Italian experiences of an American writer of the late nineteenth century, William Dean Howells (1837-1920) reflected in travelogues provide researchers of literature the opportunity to study the genesis of his work in the paradigm of the culture of the United States. Accompanying him throughout life, they were the aesthetic basis for literary work of Howells. The influence of Italian works of art and literature can be seen in the choice of the individual style of the writer. Of special interest is the influence of the process of the creative development of American writer on his attitude to changing environment in the capital and the provincial towns of Italy.*

*The topicality of this work is associated with the peculiarities of artistic interpretations of the different cultural environment through the author's perception of reality. The mental concept of "another" life, the recognition of the specificity of the «foreign country» often take place in the process of reading the literary works of different genres. In prose of W. D. Howells the perception of the city is connected with the author's point of view on the depicted object, so the leading method in the study was the biographical. This is the first time in the Russian literature of XXI century that the travelogues by W. D. Howells are analyzed, the main motives of the narration are identified, the archetypal images, expressed in literary form, are determined. Fiction affects the formation of the cultural image of the city, the perception of its environment, plunging into the epicenter of the described lives of citizens. The practical significance of the research of the cultural phenomenon of the city is to identify the specific features, forms and techniques creating its image, enclosed in the space-time continuum of the works of W. D. Howells.*

**Key words:** urban environment, image of the city, travelogues, American prose, Italian motifs, the dialogue of cultures.

### **Introduction**

Exploring the cultural aspects of the city formation and the urban environment, expressed in the literary form, it is possible to detect differences in the mentality and communication studies of the representatives of different ethnic communities. The object of research is the urban environment of Italian art as a cultural phenomenon in the works of William Dean Howells. The subject of the research refers to the Italian motifs in the works of William Dean Howells.

In the cultural study works on resolving the problems of the influence of the urban environment on a person in general and on a traveler in particular, it is specially emphasized the need to understanding and acceptance of the mentality of the citizens. L. N. Abalkina notes that "We perceive "foreign" country, "foreign" city, "someone else" mentality and national identity of the characters mainly through fiction, travel essays, travelogues. They also reflect national peculiarities and mentality of the autho".<sup>1</sup>

The work of R. Y. Porozov "Cultural and educational potential of urban space"<sup>2</sup> is dedicated to the perception of the city as a semiotic system. It reveals the

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\* Acknowledgements: The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

<sup>1</sup> N. N., "City as culturological phenomenon in Russian, American and Western European literature," in *Ivanovo*, 2014, p. 54.

<sup>2</sup> R. U. Porozov, *Cultural and educational potential of urban space*, Chelyabinsk, 2009, p. 104.

"The Urban Environment Of Italy In Prose of W. D. Howells," *Astra Salvensis*, V (2017), Supplement no. 1, p. 533-540

educational potential of the city, which is characterized as a socio-cultural phenomenon. The importance of studying the city as a text is noted in the article "Cultural studies of the city and cultural tourism: the specification of space" by O. Kirillova.<sup>3</sup> A landmark event in the understanding of the role of the urban landscape was the conference "The City and urbanism" (MSU, 2010) which was attended by linguists and culture experts of Russia and the USA. A significant contribution to the topic of studying the cities was made by foreign researchers: Jean Baudrier, Henry Miller, and Peter Ackroyd.

An artistic interpretation of the "other" culture in travelogues of American writer of the late nineteenth century William Dean Howells helps to see the hidden motives of the narration, to define the archetypal images of the author's perception of reality.

### **Materials and research methods**

In the works of W. D. Howells, the perception of the city is associated with the mood, the outlook, the author's point of view on the depicted object, so the leading method in the study was the biographical. The author's position, expressed in prose, helps to understand the difference in perception of the same event by the representatives of different cultural systems: American and Italian. The additional methods of research were comparative, typological, and cultural. In the travelogues by W. D. Howells you can follow the dialogue of cultures, suggesting the presence of tolerance, understanding of national identity.

The genre of travel notes can be found in ancient literature. Travelogue - art and documentary genre, painted by philosophical reflections and the character of the traveler, we can see at Laurence Sterne's "Sentimental journey" (1768) and N. Karamzin's "Letters of a Russian traveler" (1791-1794). The personal attitude to what has been seen and recognized in another country is expressed in their writings. Through the comparison of the customs of their compatriots with the customs of the other countries, the authors of travel writing were able to express their individual attitude to the described world.

### **Results and discussion**

W. D. Howells connected the perception of the city with a mood, a worldview that allows the researchers of his prose to discover the author's point of view on the depicted object. The biographical context helps to understand the difference in perception of the same events. By analyzing the travelogues of W. D. Howells, you can follow the dialogue of cultures, suggesting the presence of tolerance, understanding of national identity.

Identification of the leading archetypes and, as a consequence, the archetypal images will help you to determine the end-to-end model, passing through all of the works. Using the technique of the chronotop you can combine the events and people into one spatial and temporal point. The prose by W. D.

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<sup>3</sup> O. E. Kirillova, "Cultural, city and kultturizm: concretization of space," in *Parallel*, LX (2010), no. 3 (38), p. 26-33.

Howells provides opportunities for cross-cultural communication, helping the dialogue between cultures, strengthening trust between different ethnic groups.

W. D. Howells like many compatriots of his circle and time went abroad not once. He was in Europe for many times, visited England, Switzerland, Spain, lived in Italy. This allowed the writer to introduce into his fiction the details of the life of other countries, to pass a special national flavor. In his travel essays W. D. Howells narrated about Italy: "Venetian life" (1867), "Italian Journeys", "Tuscan Cities", the narration in which is united with the motive of the road. For Howells the travel books were "a kind of workshop, where the artist learned how to convert a concrete fact in the phenomenon of art".<sup>4</sup>

The book "Venetian life" is referred to the first Howells's travel essays. The author has written in the preface to the book: "Believing that such value as my book may have is in fidelity to what I actually saw and knew of Venice, I have not attempted to follow speculatively the grand and happy events of last summer in their effects upon her life".<sup>5</sup> In the 1861-1865 years W. D. Howells was the American Consul in Venice, so this work tells of the years spent by the writer in Italy as Ambassador. Having the opportunity to compare his personal observations with common in the humdrum environment information about Italian cities, Howells stated with displeasure that much is a hoax and does not reflect the real picture of the Italian world: "... the carnival, with all the old merry-making life of the city, is now utterly obsolete, and, in this way, the conventional, masquerading, pleasure-loving Venice is become as gross a fiction as if, like that other conventional Venice of which I have but spoken, it had never existed. There is no greater social dullness and sadness, on land or sea, than in contemporary Venice".<sup>6</sup> The talent of the writer is manifested in the ability to see the peculiarity of Italian national life in the most banal situations of everyday rituals. This unique city with a magical atmosphere and rich historical and cultural heritage brought contradictory feelings and emotions about the American, W. D. Howells. He believed that the civilization of a country is directly linked with the cultural values that dominate in society. Venice is presented as an ambivalent image: it is a dead and destructive place, especially in winter, and at the same time it is the Paradise sacred space, which revives in the spring and creates the illusion of detachment from the earth, the real world: "Venice in winter is the dreariest and gloomiest place in the world, so in spring it is the fullest of joy and light".<sup>7</sup> In his novel W. D. Howells is rather categorical about the Italians, accusing them of fraud, hypocrisy, commercialization and trade with works of art. Gradually, however, the perception of the city and citizens changes to the best aspect: the author is surprised and delighted with the urban environment, immerses in the scenery of the carnival of Venice, being full of bright colors of the Italian city.

<sup>4</sup> E. A. Stetsenko, *William Dean Howells*, in *The literature of the USA*, 4<sup>th</sup> edition, Moscow, Ed. Institute of World Literature Russian Academy of Sciences, 2003, p. 375-440.

<sup>5</sup> Howells W. D. (December 2004). *The Lady of The Aroostook*. The Project Gutenberg EBook (Online). Available: [http://www.gutenberg.org/files/7797/7797-h/7797-h.htm#link2H\\_4\\_0023](http://www.gutenberg.org/files/7797/7797-h/7797-h.htm#link2H_4_0023), accessed 12. 03. 2017.

<sup>6</sup> *Ibidem*.

<sup>7</sup> *Ibidem*.

Travel essays "Italian Journeys" (1867), contain short impressions about the trips to various cities: Rome, Padua, Ferrara, Bologna, Genoa, Naples, Pompeii, Herculaneum, Capri, Pisa, Vicenza, Verona, Parma, Mantua. W.D. Howells, comparing the Italian cities, characters of the citizens and their attitude to the sights, fixes with an experienced sight of a traveler all the nuances: *"The long Toledo, on which the magnificence of modern Naples is threaded, is the most brilliant and joyous street in the world; but I think there is less of the quaintness of Italian civilization to be seen in its vivacious crowds than anywhere else in Italy. One easily understands how, with its superb length and straightness, and its fine, respectable, commonplace-looking houses, it should be the pride of a people fond of show; but after Venice and Genoa it has no picturesque charm; nay, even busy Milan seems less modern and more picturesque"* (Howells -December 2004). Photographic description of the city suburbs, knowledge of major streets, familiarity with the architectural monuments, evidence of preparedness of the traveler, his knowledge of the history of foreign state and possession of methods of art criticism analysis. Delving into the origins of the history, describing a work of art, admiring the naturalness of the Italians, W.D. Howells in his works captures different spheres of Italian life, notes the importance of understanding the role of Italy in global development. But the most important thing for him is the fact that Italy – the Kingdom of Wonderland, where the mysterious spirit of the time hovers, majestic and beautiful cities form the bizarre and mysterious (mystical) world. In this book, unlike the first ("Venetian life") W. D. Howells appears as a connoisseur of the scenic wonders of the trecento and quattrocento.

In the book "Tuscan Cities" (1886), written later, Tuscany and its artistic heritage, such great creators like Leonardo Da Vinci, Michelangelo and Dante Alighieri have covered W. D. Howells with a deep sensibility and established around the refined atmosphere of romance and celebration. In his prose, there is a special character of representing the path and the dotted theme, a synthesis of the empirical and metaphorical. On the foreground the real way is described (Florence, Siena, Pisa, Lucca), which the traveler follows, fixing his observations. On the background there is a spiritual development of the author, change of the core of the personality under the influence of the impressions of Italy: *"Perhaps also one feels a want of unity in the group; perhaps they are too much like the dishes set upon the table : the Duomo is a vast and beautiful pudding; the Baptistry a gigantic charlotte russe; the Campo Santo, an exquisite structure in sugar; the Leaning Tower, a column of ice-cream which has been weakened at the base by too zealous an application of hot water to the outside of the mould. But I do not insist upon this comparison; I only say that I like the ancient church of St Paul by the Arno"*.<sup>8</sup> Imbued with the classic spirit of Italy, W. D. Howells drew inspiration from the origins of European civilization.

Conveying the specifics of life in Italian cities Howells emphasized its dependence on the cultural environment, the historical path and political system of the state. Like many writers of the travelogues, W.D. Howells evaluates seen, gives his opinion on many current issues. Reflecting on the past of Italy, the writer

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<sup>8</sup> W. D. Howells, *Tuscan Cities*, Leipzig, Ed. F. A. BROCKHAUS, 1911. p. 264.

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discovers a number of contradictions in the country's development and the role of the individual in society.

The image of Italy is recorded in the travel notes, becoming not only the place of action of many of them, but a way of expressing a particular attitude. Italy holds a special place in the system of spatial images of world literature of the XIX century, securing the status of special historical, economic and cultural object. According to the figurative expression of Y. M. Lotman, becoming the "iconic image of semiosphere – the language in which a variety of non-spatial values are expressed".<sup>9</sup> In such novels of W.D. Howells as "A Foregone Conclusion" (1875), "The Lady of The Aroostook" (1879), "A Fearful Responsibility" (1881), "Indian Summer" (1886) – the main places of action are Venice and Florence.

So, the first novel, "A Foregone Conclusion" tells about friendship of two persons, very different in interests – the American Consul Henry Ferris and Venetian priest don Ippolito. If the first thinks himself great but misunderstood artist, the latter has a passion for mechanics and is constantly busy with a variety of strange and useless gadgets. The friendship of these originals is in danger, when in Venice, fleeing from the horrors of the Civil war, come two American women – Mrs. Vervain and her beautiful daughter Florida. Despite a vow of celibacy, don Ippolito immediately falls in love with Florida. Ferris thinks that the girl is uneducated and devoid of artistic taste, but in the end also could not resist her charm. The fight of the friends for the hand of Florida overcomes the framework of the love competition and leads to profound changes in their worldview. W. D. Howells describes the Italian countryside in details. The motive here is the Italian character in the image of don Ippolito. This is a typical Italian man, passionate and romantic, prone to internal agony, naive and straightforward. He is a dreamer, thinking of idealized New World and inventing numerous cunning, but useless things: *"Heaven only knows what kind of inventor's Utopia, our poor, patent-ridden country appeared to him in these dreams of his, and I can but dimly figure it to myself. But he might very naturally desire to come to a land where the spirit of invention is recognized and fostered, and where he could hope to find that comfort of incentive and companionship which our artists find in Italy"* (Howells -December 2004). Becoming a priest according to the will of his uncle, he is weary of the sun and grieves the falseness of his position, believing more in science than in God. Don Ippolito lives with emotions, capable for impulsive actions and so noble that he is willing to abandon his girlfriend after learning about her feelings to a happy opponent, but he dies himself from the sacrifice he made.

In the novel "The Lady of the Aroostook" (1879), the character of which is a young unspoiled girl Lydia Fornication, who grew up in the territories North from Boston, sails on board of the "Aroostook" to Venice, where she is deeply shocked with Sunday Opera and the ease of Italian mores. Duality can be observed both in everyday life and in the observance of sacred rituals. As a Protestant she was surprised by the asceticism of Catholics along with the adherence to religious norms of behavior – they demanded that the ladies have to come to the Church

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<sup>9</sup> Y. M. Lotman, *The semiosphere: Culture and Explosion*, Sankt Petersburg, Art-SPB, 2000, p. 320.

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wearing a hat, but were able to attend the Opera on Sunday. The situation with women who are unable to go out alone or being accompanied by a stranger men, but are free to change lovers seems her strange. Introducing Lydia Blood with the characteristics of Italian morals, Ms. Ervin strongly advises: "*All you have to do is to reverse all your American ideas*".<sup>10</sup>

The novel "A Fearful Responsibility" (1881) can be attributed to the type of romance novels, because in its focus is the love story of Professor Owen Elmore, who came during the Civil war to Venice to write its story. The life in Venice appears to be difficult, as it is built on the contradiction of life and death, sorrow and happiness, so it brings disbalance to the worldview of the character, who is looking for the proof of sincerity of his beloved's feelings: "*In the security of his own deposited affections, it appeared to him cruelly absurd that a passion which any other pretty girl might, and some other pretty girl in time must, have kindled, should cling, when once awakened, so inalienably to the pretty girl who had, in a million chances, chanced to awaken it. He wondered how much of this constancy was natural, and how much merely attributive and traditional, and whether human happiness or misery were increased by it on the whole*".<sup>11</sup> Venetian world turns out to be expensive and involving for the heroes of the novel, and the city itself becomes a form of expression of attitude while staying in it.

The latest novel by Howells "Indian Summer" (1886) tells the story of a 40-year-old American journalist Theodore Colville, who lives in Florence. Caring for the young Imogene Graham, an adopted child of the widow Lina Bowen, he realizes that he isn't young already and that romantically-minded girl has just assured herself that she loves him. Mrs. Bowen prevents the doomed union up to the time as she is married to the main character. The romantic atmosphere of Florence catches adult Colville, who arrived to Italy to write a book about its architecture, and he immersed in the past, both historical and private. Florence is shown as a fairy tale, a miracle, a realized dream: "*Colville was finding a sort of vindictive satisfaction in the power to ignore the surrounding frippery of landscape and architecture. He isolated himself so perfectly from it, as he brooded upon the river, that, for any sensible difference, he might have been standing on the Main Street Bridge at Des Vaches, Indiana, looking down at the tawny sweep of the Wabash*".<sup>12</sup>

After analyzing the image of Italy as an artistic cultural phenomenon in the works of William Howells, it is possible to identify the motifs of the writer's perception of a cultural environment (see Table 1).

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<sup>10</sup> Howells W. D. (December 2004). Indian Summer. The Project Gutenberg EBook (Online). Available: <http://www.gutenberg.org/files/7359/7359-h/7359-h.htm>, accessed 12. 05. 2017.

<sup>11</sup> *Ibidem*.

<sup>12</sup> *Ibidem*.

Table 1 "Classification of artistic motifs in travelogues by W.D. Howells"

Motive	The Title of the novel	Idea
	"TRAVEL NOVELS"	
1. Road, path	"Venetian life"; "Italian Journeys"; "Tuscan Cities"	Own life as a way
2. City life	"Venetian life"; "Italian Journeys"; "Tuscan Cities"	Beauty and lightness of being. The wretchedness and the triumph of life
3. Creativity	"Venetian life"; "Italian Journeys"; "Tuscan Cities"	Contemplation and the worship is beautiful
	"ITALIAN NOVELS"	
4. Motive of meeting	"A Foregone Conclusion"; "The Lady of The Aroostook"; "A Fearful Responsibility"; "Indian Summer"	Trial of heroes
5. Italian character	"A Foregone Conclusion"; "The Lady of The Aroostook"	The triumph of love, passion, death.
6. Italy as "a better world"	"The Lady of The Aroostook"; "A Fearful Responsibility"	Italy as a space "where all roads lead"
7. Loneliness	"A Fearful Responsibility" "Indian Summer"	Americans-the strangers
8. Italian manners	"The Lady of The Aroostook"	Foreignness to the Italian reality

In the works of Italian period W.D. Howells, through admiration for the Italian culture, seeks to trace the contradiction of the "Old" and "New world". Comparing the Americans and the Italians, the writer seeks to understand the patterns of historical development, passing it through his own understanding of life. In many of his works Howells depicted the portrait of the soul, an aesthetic ideal of which he saw in the greatness of simplicity. Ali Taghizadeh comes to the same conclusion, noting that: *"the real is limited to the tangible, to the palpable, to whatever man can learn only through his sense impressions"* <sup>13</sup> (The real is limited to material, tangible, that people can learn only through their impressions of the senses). Learning the basics of the worldview of people in another country, getting used to the nature of Italy, admiring its monuments of culture, which predetermined the development of civilization, Howells sought throughout everything to understanding the origin and realism to relay known to his readers.

### Insights

In the course of genre experiments W.D. Howells moved to a new genre modifications of the "women's novel". His heroines are placed in conditions in which their individuality reveals more vividly and clearly, the major features of the national mentality are reflected. The serious attitude of the writer to the female

<sup>13</sup> Ali Taghizadeh, "Theory and Practice," in *Language Studies*, IV (2014), no. 8, p. 1628-1635.

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subject can be explained by understanding of the public life in the United States of the late nineteenth century: *"The writer should understand that in the United States, the fate of the book depends on the woman. Just women have more leisure and read more in the United States. They are usually much better educated than our men, and their taste, if not their mind, is more developed"* (14). W. D. Howells was the first in American literature who portrayed a female type of the American character, considering it to be the bearer of the best features of the American nation.

Studying the works of W. D. Howells of the "Italian period", you can find the hidden mechanisms of individual creativity, classify Italian motifs, identify the literary-historical aspects of interaction between national cultures.

### **Conclusion**

The uniqueness of the urban environment of Italy is so great that it stimulates interest in research of influence of Italian culture on European and American literature. Enchanted with Italy and the Italians, Howells supplies the heroes of his works with understanding of the particular values of the Italian culture on the attitudes of his contemporaries. The urban environment of Italy in the prose of American writer is transformed in universal creation, projected on many spheres of life and focused on a wide spatial environment.

Surely to say that Europe has become the first life experience and the final choice of W. D. Howells. He believed that the Italian urban environment acts as an experimental space for different variations of life path of humanity. Travel essays and "Italian novels" of W. D. Howells can be considered the key to all his artistic works. The prose of W. D. Howells presents opportunities for cross-cultural communication, helping the dialogue between cultures, strengthening trust between different ethnic groups.

## Identification of Large Rivers of Siberia (Ob, Yenisei, Lena) by using GIS technology based on remote sensing of Earth from Cosmos\*

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**Abstract.** Decryption of high-resolution space pictures in the territory of an Asian part of Russia is executed. This research is conducted for the purpose of a territory exception within which there is no washout of soils. Methodical questions of application of remote sensing for assessment of inundated sections of the large rivers of Siberia are considered. One of criteria of creation of an electronic vectorial card of river basins is separation of inundated sections. Visual decryption of satellite images for the purposes of detection of inundated sections of the large rivers, can be used in hardly accessible, severe conditions of Siberia, in particular behind a polar circle. As a result of the research conducted on materials of space shooting inundated sections pp are revealed. Ob, Yenisei, Lena. The largest number of inundated sections is created by the river Ob, at the same time the decoded territories are found from a river source in case of confluence of Biya and Katun, to an estuarial section. Rather the most smaller number of floodplains is identified on the Yenisei River. The mid position on the decoded inundated sections is held by the river Lena. Results of a research are planned to be used further when forming the specialized geoinformation database on small river basins of the Arctic basins of an Asian part of Russia. As the model river basin for calculation of potential washout of soils it is planned to use the Lena River catchment.

**Keywords:** rivers of Siberia, inundated sections, GIS-analysis, remote sensing, visual decryption, databases, washout of the soil.

### Introduction

Plans for the territorial development of Siberia should be correlated with research on the natural potential of the region, which is inextricably linked with the basins of the great rivers of the Asian part of the Arctic watershed of Russia (Ob, Yenisei, Lena, etc.). The agricultural development of the region causes a need to determine the potential washout of soils to assess the rates of their possible degradation, as well as to determine the costs of the system of anti-erosion measures. The development of GIS tools provides an opportunity to create an electronic map of soil erosion, to carry out process modeling in the office environment.

Calculation of the potential erosion of soils from the catchment area of the river requires excluding territories not subject to soil washout.<sup>1</sup> In the main channels of the major rivers of Siberia, this category includes flood plains, old river arms, lake-marsh complexes, etc. We made an attempt to identify the floodplain sections of the main channels of the rivers Ob, Yenisei, and Lena, with the use of geoinformation systems.

Objective of the study is to identify the floodplains of the major rivers of Siberia (Ob, Yenisei, Lena) according to the satellite-based Earth remote sensing data (ERSD).

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<sup>1</sup> T. V. Vereshchaka, A. T. Zverev S. A. Sladkopevtsev, S. S. Sudakova, *Visual decryption methods*, Moscow, Nedra, 1990, p. 341.

As a review of the literature shows, the interpretation of floodplains by digital image processing is carried out both automatically<sup>2</sup> and visually<sup>3</sup>. Due to constant changes in floodplain contours caused by channel processes, it is preferable to use the Earth remote sensing data (ERSD) for visual decryption. Automated means of manipulating Earth remote sensing data are geographic information systems (GIS), which allows to manage and process spatial information.<sup>4</sup> Space images have a number of significant advantages: accessibility, high resolution, repetition, and coverage of large areas<sup>5</sup>. With the help of space imagery, it is enough simply to obtain data on hard-to-reach territories. At the same time, a clear lack of identification of space images is the need for high qualification and great practical experience in the given subject area. Decoding of high-resolution space images is used in many branches of science, including agriculture and forestry, geography, geology, archeology, meteorology and climatology, oceanology, etc.

Visual decryption is one of the most important and complex tasks of digital image processing, since the use of deciphering features is of a qualitative, heuristic nature, and the results of the analysis, respectively, are subjective.<sup>6</sup> In the process of space image decoding, objects are identified and their significance is estimated.

Methodically, the work was carried out as follows:

1. Selection of space images;
2. Decryption of the floodplain areas of the Siberian rivers (Ob, Yenisei, Lena);
3. Geoinformation mapping and verification of satellite images from different resources;
4. Creation of a geoinformation database of the floodplain areas of the Siberian rivers (Ob, Yenisei, Lena).

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<sup>2</sup> *Ibidem*, p. 341.

<sup>3</sup> I. V. Kozlova, *Decryption of aerial photographs in mapping landscapes*, Tomsk, UMP, Tomsk, 2006, p. 21-28.

<sup>4</sup> V. V. Konakh, A. A. Topaz, F. E. Shalkevich, "Decryption of soils in floodplain landscapes by digital processing of aerial photographs," in *Materials of the II International Conference "Information systems and technologies (IST'2004)"*, 1<sup>st</sup> part, Moscow, 2004, p. 180-186.

<sup>5</sup> V. V. Konakh, A. A. Topaz, F. E. Shalkevich, "Decryption of soils in floodplain landscapes by digital processing of aerial photographs," in *Materials of the II International Conference "Information systems and technologies (IST'2004)"*, 1<sup>st</sup> part, Moscow, 2004, p. 180-186; I. A. Labutina, E. A. Baldina, *Workshop on the course "Aerospace Photographs Decryption": Study guide*, Moscow, Geographical Department of Moscow State University, 2013, p. 168; V. F. Usachev, "Monitoring of Russian Rivers," in *Gim International. The Worldwide magazine for Geomatics*, XVII (2003), p. 34-37.

<sup>6</sup> V. N. Sudarikov, O. N. Kalinina, *Geological decryption of aerial photographs: methodological guidelines*, Orenburg, IPK GOU OSU, 2008, p. 22; E. A. Shynbergenov, *Identification of the floodplains of the major rivers of Siberia (Ob, Yenisei, Lena) according to the satellite-based Earth remote sensing data (ERSD)*, Treshnikovskii, Readings, 2017; N. A. Iliina et all. (eds.), *Modern Geographic World View and Technology of Geographical Education: Materials of the Scientific-Practical Conference*, Ulyanovsk, 2017, p. 304-305; L. I. Usova, *Practical manual on landscape interpretation of aerial photographs of various marshals in Western Siberia*, St. Petersburg, Nestor-Istoriiia, 2009, p. 80.

### Object and research methods

Within the framework of the Russian Geographic Society's project "Rivers and river basins of the Arctic watershed of the Asian part of Russia" visual interpretation of the main channels of the floodplain areas of the large rivers of Siberia was carried out using the Earth remote sensing data. This study was conducted with the purpose of excluding the territories not subject to soil washout. One of the criteria for constructing an electronic vector map of river basins is the allocation of floodplain areas. Identification of an object is based on the comparison and determination of direct (shape, size, tone, structure of the object, shadow) and indirect decryption features, for example, when decrypting floodplains, the space images taken during the growing season and cloudless day were used.

Decryption was carried out in the channels of the rivers Ob, Yenisei and Lena using SAS Planet 160707 software. The method of highlighting the floodplain sections provides for the comparison of satellite images of high resolution and conventional maps in a raster format provided by Google Earth, Google Maps, Yandex.maps, Here Satellite, Bing Maps, General Staff - TopoMap (Маршруты.ру). Pictures of good quality are confined to settlements (cities, regional centers); unsettled areas have relatively poor quality maps; in this case it is possible to vary maps from different services using the "Maps" tab.

The process of visual decryption of floodplain areas of the large rivers of Siberia in SAS Planet 160707 was carried out as follows. Decryption was carried out only for those sections that were displayed in the level of generalization accepted for the study, i.e. at a scale of 1:1 million, to fulfill one of the fundamental principles of cartography – a co-scale. When looking at the valley at a scale of 1:500,000, a contrasting green floodplain is visible, differing from the rest of the territory by the presence of a multitude of old river arms, marshes and tributaries. In the enlarged map, the border between the floodplain and the terrace above the floodplain is visible; if the contour of the desired object is not clear, the source with the high quality of the satellite images presented in the list of satellite resources will be selected and the perimeter of the floodplain is selected by adding a new polygon in the "Tags" tab. In the case of tributaries that flow within the floodplain of the river, polygons were built on both sides of the tributary's coastal line.

A characteristic feature of the identification of the main channels of the floodplain areas of the major rivers of Siberia, considering the vast territory occupied by the objects of the study, we believe that it is impossible to perform this operation on the basis of images from a single satellite service, since the presented images are fragmentary; for a certain area coverage the images of different quality (high and ultra-high resolution) and season (spring, summer, autumn, winter) are used, etc., which introduces certain adjustments in the selection of ERS resources.<sup>7</sup> SAS Planet software product is an affordable, convenient GIS

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<sup>7</sup> F. V., *Recommendations on the use of aerospace information in the study of the channel process*, Leningrad, Gidrometeoizdat, 1985, p. 88.

tool for visual interpretation of floodplains. The obtained images of polygons of floodplain areas can be further processed in any GIS.

### Results and discussion

The presence and spatial distribution of the floodplain areas of the rivers Lena, Yenisei and Ob is determined by the terrain, soil structure and rocks composing the valley (Fig. 1). The floodplain areas of the rivers Lena, Yenisei and Ob start from the middle course.

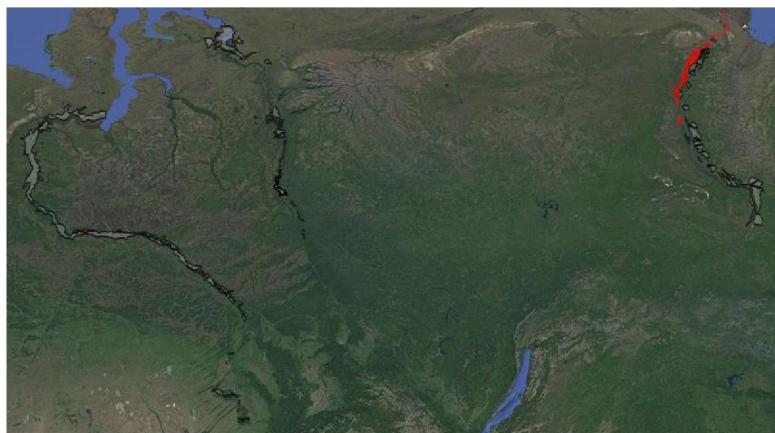


Fig. 1. The floodplain areas of the rivers Ob, Yenisei, Lena

The river Ob has floodplains from its source (the merger of the rivers Biya and Katun) to the mouth (Obskaya Guba), which can be explained by the low-lying nature of the terrain (West Siberian Plain) and the corresponding low flow rate of the river, which contributes to a flood plain multi-arm structure. The average width of the upper course of the river is 8.53 km, the middle course – 23.7 km, and the lower course – 35.1 km (see Table 1).

The analysis of the obtained materials allows us to state that the river Yenisei, in comparison with the rivers Lena and Ob, has a smaller number of floodplains, especially on its right bank, which is caused by the terrain. Based on the results of interpretation and subsequent processing, it was found that the average width in the middle course is 8.41 km, and in the lower – up to 20.1 km.

Floodplain areas on the river Lena, formed as a result of the bifurcation of the riverbed, begin at the confluence of the Biryuk canal, occur sporadically before the confluence of the Buotama canal, and run further along both sides of the river, but mostly along the left bank. The average width of floodplain areas in the middle course is 18.2 km, in the lower course – 29 km (Table 1).

Table 1. Average width of the floodplain areas of the rivers Ob, Yenisei, Lena, km

River	Upper course	Middle course	Lower course
Ob	8.53	23.7	35.1
Yenisei		8.41	20.1

Lena		18.2	29
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The results of the research will be used in future for creating a specialized geoinformation database on small river basins of the Arctic watershed of the Asian part of Russia. It is planned to use the watershed of the river Lena as a model river basin for calculating the potential washout of soils.

### **Summary**

1. Space images due to a number of advantages (high resolution, accessibility) can be applied for decryption.
2. The floodplain areas of the Siberian rivers (Ob, Yenisei, Lena) were decrypted by satellite images on the basis of identification features.
3. For geo-information mapping, the satellite images from different resources were decrypted and verified in SAS Planet;
4. Geoinformation database of the floodplain areas of the rivers Ob, Lena, and Yenisei can be used as a basis for drawing a map of potential loss of soil as areas not subject to soil washout.

### **Conclusion**

Thus, the obtained result of visual decryption of the floodplain areas of the rivers Ob, Lena, and Yenisei can be used as a basis for drawing an electronic vector map of river basins and their inter-basin spaces. A comparative analysis of the results of the identification of floodplain areas revealed a watercourse with a large number of objects – the main channel of the river Ob. Floodplain areas are found from the source to the mouth. Then follows the main course of the river Lena, with the floodplain in the valley starting from the middle course. A smaller number, as well as a relatively smaller width, is characteristic of the main riverbed of the river Yenisei: its floodplains are decrypted in the middle and lower courses. The information is new for the objects under investigation.

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