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ART

THE DEBATE ON WRITING THE NATIONAL DISCOURSE OF CHINESE MUSIC ART CRITICISM IN THE POST-NEW PERIOD

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Abstract

In the field of Chinese music art criticism in the post-new period, there has always been a debate about national discourse. The core issue of this debate involves how to define and express the nationality in Chinese music art, and under this background, what kind of ghostwriting and interpretation can best convey this nationality. In the ongoing development and modernization of Chinese music art, music critics and critics have been exploring how to incorporate elements of traditional Chinese music into contemporary music creation, and how to cope with the cultural shock of globalization to ensure the local and traditional nature of Chinese music. This paper aims to analyze the debates on ghostwriting in the field of Chinese music art in the post-New era, with a special focus on the various definitions and practices of national discourse, and the key issues behind these debates.

Keywords: Post-new period, Chinese music art, national discourse, ghostwriting debate, retroism.

Introduction:

In the post-new period, the field of Chinese music art criticism has always been full of fierce debates, especially the controversy of ghostwriting about national discourse. During this period, China's music culture has undergone profound changes, from traditional music to modern music. The wave of globalization and technological progress has made the expression of music more diversified. Against this backdrop, how to convey China's cultural identity and national characteristics in music has become a hotly debated topic. The core issue of this generation's writing debate involves how to define and express nationality in Chinese musical art, and what kind of ghostwriting and interpretation can best convey this nationality in this context.

1. The evolution of Chinese music art in the post-New era

The evolution of Chinese music art in the post-New period is a complex and diversified process, which reflects the great changes in China's social, cultural and technological environment. In the post-new period, Chinese music art has undergone a profound evolution, reflecting multifaceted changes in society, culture and technology. This period, roughly from the late 1980s to the early 21st century, marked a new stage of modernization and globalization for Chinese music. Post-new period Chinese music was greatly influenced by globalization, and musicians and creators began to communicate with international musical styles and genres. This has led to the mixing and fusion of musical elements to create new musical forms, while also expanding the international influence of Chinese music. The rapid development of technology has provided unprecedented opportunities for music production and distribution. The proliferation of digital recording and the Internet has changed the way music is made and distributed, allowing more musicians and creators to enter the music scene and interact^[1] with audiences. During this period, discussions on the national discourse of Chinese music became particularly important. The music field began to explore how to preserve and promote China's

traditional musical elements in modern music so as to maintain the uniqueness of Chinese music. In the post-new period, many different genres of music have emerged in Chinese music, including pop, rock, folk, electronic music and jazz. These genres reflect the aesthetic orientations of different musicians and listeners, making Chinese music more diversified. Music education and the music industry in China have also experienced significant development. The popularity of music academies and music disciplines has trained generations of musicians, while the growth of the music industry has provided more opportunities for music creators. The evolution of Chinese music art in the post-new period reflects the modernization and globalization trend of Chinese society, and at the same time highlights the pluralism of China's music field. The debate of national discourse plays an important role in this process, reflecting the challenges of Chinese music in how to express its uniqueness and cope with cultural globalization. The musical evolution of this period brought new opportunities and challenges to Chinese music, and at the same time contributed to the diversification of the world music field.

Second, the importance of national discourse

National discourse helps maintain and promote the cultural identity of Chinese music. China has a rich musical tradition, including traditional folk music, opera and classical music. By preserving and passing on these traditional elements, music can convey the uniqueness of Chinese culture and help build the international image of Chinese music. National discourse helps pass on traditional Chinese musical elements to a new generation of musicians and listeners. This inheritance includes not only the techniques and expressions of the music, but also the cultural background, values and historical memory. Through music, the traditions of Chinese culture can be revitalized and passed on to the next generation. The discussion of national discourse has prompted music creators to explore how to preserve traditional elements in music while achieving innovation. This balance is crucial to the development of music,

which enables it to make connections between tradition and modernity, creating works that are both unique and have modern appeal. The ghostwriting of national discourse can help boost the cultural confidence of Chinese music. This can prompt musicians and creators to be more confident in bringing Chinese music to the international stage, while also sending a message of cultural confidence at home. National discourses help maintain cultural diversity. China is home to numerous ethnic minorities, each with their own unique musical traditions. By encouraging ghostwriting of ethnic discourses, the musical heritage of each ethnic group can be preserved and promoted, and cultural diversity promoted. National discourses help shape the cultural identity of individuals and societies. Music is one of the expressions of cultural identity, which can build resonance and cohesion in society and make people more proud to identify with their own culture^[2]. The importance of national discourse in Chinese music art in the post-new era is reflected in the aspects of maintaining cultural inheritance, promoting cultural diversity, shaping cultural identity and improving cultural self-confidence. This discourse helps Chinese music to find a balance in the era of globalization and realize the integration of tradition and modernity. At the same time, it helps Chinese music to stand out on the international stage and become a unique form of music.

3. The historical background of the Ghostwriting debate

During the Cultural Revolution, music in China was subject to severe political interference and censorship, and traditional music and cultural elements were criticized and suppressed. This period had a profound impact on the way music was created and expressed in China, and the art of music hit a low point. China's reform and opening up policy has brought new opportunities to the music sector. Musicians and creators began exploring different musical styles and forms, absorbing international musical elements, reactivating traditional musical elements, and seeking diversity in music. In the late 1980s and early 1990s, China's music scene began to be affected by the wave of globalization. The entry of international music genres and cultures into China has made music more diversified. This has led to discussions on how to preserve the national character in Chinese music. During the reform and opening up period, China's traditional music has also experienced a certain revival. Traditional musical elements such as folk music, opera and classical music have received renewed attention, and music colleges have begun to train traditional music teachers, contributing to the protection and development of traditional music. The rapid development of the Internet and digital technology has changed the way music is made and disseminated. Music production has become easier, music can be distributed more widely, and musicians and creators can collaborate more easily across cultures. With the development of diversified and globalized music in China, discussions on national discourses have been on the rise. Music critics, musicians and cultural scholars began to explore how to ghostwrite and express Chinese

cultural identity and traditional elements in music. The debate between music critics and creators has become more heated. Some advocate ghostwriting national character through conservative and traditional means, while others favor innovation and fusion. The debate raises key questions about the future direction of Chinese music. The historical context of the ghostwriting debate reflects the political, social and cultural changes in the art of music in China, as well as the different views and orientations^[3] of the music industry in the face of these changes. This background provides a key explanation for the complexity and pluralism of the ghostwriting debates in China in the post-new era.

Fourth, the different methods of ghostwriting nationality

Retro and traditionalism This approach emphasizes the conservative inheritance of traditional Chinese musical elements. Music creators use classical instruments, traditional tones and musical forms to perform and create music in a traditional way. The goal of this method is to faithfully inherit and preserve the traditional elements of Chinese music to maintain its purity. **The hybridism approach** combines traditional Chinese elements with international musical styles to create fusion music. This may include blending with Western pop, rock, electronic music and other styles to create a unique sound. This approach promotes cross-cultural exchange of music and makes Chinese music more modern. **The innovationist approach** emphasizes the forward-looking and original nature of music. Musicians express China's national character through innovative musical elements, new playing techniques and sound experiments. This approach often involves the reinterpretation and reimagining of traditional musical elements to create a unique musical experience. Folk music is used as a method to introduce Chinese folk music elements into music creation. This may include using traditional folk instruments, adopting the rhythms and melodies of rural music, and telling folk stories and traditional subject matter. This approach emphasizes the presentation^[4] of rural Chinese culture and lifestyle. Some musicians combine elements of traditional Chinese music with ceremonial music, such as religious music or celebration music. This method conveys the sense of ritual and solemnity of Chinese culture through the ceremonial performance of music. Some musicians use sound experiments and electronic music techniques to re-enact traditional Chinese musical elements. They may use synthesizers, digital sound effects and sound processing to create modern music while preserving the Chinese national character. These different approaches represent a diverse exploration of the national character of Chinese music ghostwriting. Musicians and creators can choose different methods according to their aesthetic views, creative goals and musical styles to express Chinese cultural characteristics in music. The use of these methods also reflects the diverse views of the music industry on how to deal with the challenges of a globalized culture.

Chinese folk music refers to the traditional folk music performed by Chinese traditional instruments in the form of solo or ensemble.

Chinese folk music is generally divided into five categories, namely songs, singing and dancing music, rap music, opera music and instrumental music.



Fifth, write the key issues of the debate

7. Defining the nationality of Chinese music

The nationality of Chinese music means that the music contains the characteristics of Chinese culture, history and tradition, and reflects the elements of Chinese national identity and cultural identity. These characteristics may include the musical elements of traditional Chinese music, such as traditional tones, instruments and musical forms, as well as the cultural themes and values conveyed in the music. Nationality can also be expressed in the way the music is played, lyrics and themes of the song. The nationality of Chinese music is also a cultural expression, reflecting the cultural identity and historical inheritance of the Chinese people. This definition emphasizes the role of Chinese music as a cultural expression, which includes not only musical forms and elements, but also cultural context and emotional transmission. However, it is important to note that different people may have different understandings of the national character of Chinese music, which is also a key aspect of the ghostwriting debate. Whether the nationality of ghostwriting music should include traditional musical elements, regional characteristics, cultural symbols, etc., may spark debate and discussion^[5].

(2) Balance between conservatism and innovation

The view of traditional conservatism holds that when ghostwriting the national character of Chinese music, emphasis should be placed on retaining traditional musical elements and techniques. This approach emphasizes faithfully inheriting the traditions of Chinese music, including the use of traditional instruments, tones and musical forms. Traditional conservatism advocates keeping the original flavor of Chinese music to preserve its uniqueness and cultural inheritance. The innovationist view holds that ghostwriting the national

character of Chinese music needs to adapt to changes in modern society through innovation. This approach emphasizes creative reinterpretation of traditional elements while introducing new musical elements and techniques. Innovationism advocates incorporating elements of globalization and modernization into music in order to make Chinese music more attractive. Some views advocate blending traditional and innovative elements in music to achieve balance. This approach holds that tradition and innovation are not mutually exclusive, but can complement each other. Music creators can retain traditional musical elements while introducing innovative ways of expression to create unique music. Balancing tradition and innovation also requires consideration of audience needs and market trends. Sometimes, music creators may need to balance tradition and innovation based on audience tastes and market trends to meet audience needs. Music education plays an important role in balancing tradition and innovation. While music education can develop musicians' skills, it should also encourage students to be innovative and experiment. In addition, music education can impart knowledge and skills of traditional music to help preserve and pass on traditional music. The balance between conservatism and innovation is a complex and challenging task when ghostwriting the national character of Chinese music. Different musicians and creators may take different approaches, depending on their aesthetic views, musical styles and creative goals. The realization of this balance needs to take into account both the preservation of traditional music and the creation of innovative music to ensure that Chinese music both retains its unique cultural characteristics and can appeal to modern audiences.



(3) Cultural impact of globalization

Globalization has led to the mutual exchange and integration of Chinese music with other musical cultures around the world. This enriches the diversity of Chinese music, but also brings challenges^[6] to the management of cultural diversity. Musicians need to adapt to different cultural influences while preserving their national identity. Some people worry that globalization has led to the invasion of Chinese music by Western music culture. They believe that the traditional elements and values of Chinese music may be impacted by Western music culture, thus losing its uniqueness. Globalization has also provided musicians with opportunities to communicate and cooperate with the international music community. Such exchanges can stimulate musicians' creativity and inspire them to blend different cultural elements to create new musical forms. Globalization has made it easier for Chinese music to enter the international market. Chinese musicians can take their music globally and attract international audiences through the Internet and digital technology. This brings more market opportunities for Chinese musicians. The globalization culture shock has also led to discussions on cultural self-confidence and cultural protection. Some people advocate showing Chinese cultural confidence through music, while the protection of traditional music should also be strengthened to cope with the cultural shock brought about by globalization. Globalization has promoted cross-cultural cooperation, and musicians can co-create and perform with international musicians. This helps Chinese music integrate global cultural elements, while also providing international audiences with more opportunities to learn about Chinese music. The cultural shock of globalization has brought both opportunities and challenges in the national character of ghostwriting Chinese music. Musicians need to carefully balance traditional and modern,

local and global elements to ensure that Chinese music is both national and stands out on the international stage. It also requires strengthening cultural self-confidence, while also paying attention to cultural protection to cope with the cultural shock of globalization.

(4) Cultural identity and cultural conflict

The national character of Chinese music writing can strengthen the Chinese people's sense of identity of their own culture. Through music, people can express their pride in Chinese culture and pass it on to the next^[7] generation. This helps consolidate the Chinese cultural identity. Ghostwriting the national character of Chinese music can also broaden the scope of Chinese cultural identity. Music can show the diversity of different regions, ethnic minorities and historical periods in China, giving people a better understanding of the complexity of Chinese culture. With increasing globalization, Chinese music is facing the challenge of cultural conflicts on the international stage. The values and aesthetic views of different cultures can lead to conflicts, and music creators need to deal with these challenges. Ghostwriting the nationality of Chinese music can promote cultural integration. Chinese music can absorb elements from other cultures and influence international music at the same time. This mutual influence can promote cultural exchange and understanding. Music can also reflect the diversity of cultural identities. Different music genres and styles can represent the identity of different cultural groups, thus enriching the diversity of Chinese cultural identity. Some argue that cultural identity is not antithetical to innovation. Music can show cultural identity through innovation, and at the same time inject new elements and ideas into Chinese culture. When ghostwriting about the nationality of Chinese music, music creators need to think deeply

about the issues of cultural identity and cultural conflict. They can choose how to represent Chinese culture, while also staying alert to cultural challenges in a globalized environment. This requires musicians to have a keen understanding of the complexities of cultural identity, while also promoting cultural innovation and development.

(5) Controversy over music criticism and music creation

Music critics and music creators may disagree on the aesthetic standards of music. Critics sometimes evaluate music in terms of traditional and classic aesthetic standards, while creators may advocate new aesthetic perspectives that emphasize innovation and experimentation. The controversy involves critics' criticism of music creators, and whether creators should maintain creative freedom. Some musicians may believe that too much criticism and expectations will limit their creative freedom, while critics believe their role is to evaluate the quality of the music. Some music creators may pursue commercial success, while critics may advocate that the first priority of music is cultural expression^[8]. This controversy involves whether music should cater to the needs of the market or focus more on cultural communication and artistic expression. The controversy may also involve the emphasis and criticism on the national character of ghostwriting Chinese music. Some critics may argue that overemphasis on nationality leads to stereotyped and stale music, while creators may argue that it is an attempt to protect cultural traditions. Ghostwriting the nationality of Chinese music involves the expression of cultural identity, and critics and creators may disagree on how best to express Chinese cultural identity. Some may believe that ghostwriting nationality should be presented in a traditional way, while others may advocate expressing cultural identity through innovation. The controversy may involve the public influence of music criticism. Critics' reviews can influence the reception and marketing success of music, so the role of critics is widely discussed. Resolving the controversy over music criticism versus music creation requires constructive dialogue and mutual respect from all parties in the music industry. Critics and creators can work together to explore the role of music, aesthetic standards and cultural expressions to promote further development and innovation in the music field. Such controversies can also help push the music industry to think deeply and discuss different aspects of music.

(6) Audience demand and market pressure

Music creators usually consider the tastes and interests of the audience. Audience needs can influence the creative direction of music, as musicians may try to create music that suits the tastes of the audience in order to attract more listeners. Trends in the music market have an impact on music creation. Some musicians may be driven by market trends to create music related to market needs in order to be commercially successful. Audience demands and market pressures may sometimes conflict with the preservation of traditional culture and innovation. Musicians may feel pressure to find a balance between satisfying audience demands and preserving traditional culture. Music education

plays an important role in shaping audience tastes and needs. Music education can cultivate audiences' understanding and appreciation of different musical styles and forms, while also providing music creators with more creative inspiration. Music creators sometimes need to weigh the relationship between making their own music and catering to the needs of the market. Some musicians adhere to their desire to create, while others may be more inclined to pursue commercial success. The diversity of the music market provides opportunities for music creators to find an audience in different genres and styles of music. This diversity helps meet a variety of audience needs^[9]. When ghostwriting about the nationality of Chinese music, music creators need to carefully weigh audience needs and market pressure against the originality and cultural delivery of the music. Understanding audience needs can help musicians better interact with the audience, while also needing to keep the music innovative and artistic. This requires musicians to have a meticulous market insight while remaining passionate and loyal to the art of music.

7. Music education and preservation of traditions

Music education plays a key role in the preservation of traditions. Music education can impart knowledge, techniques and history of traditional music, helping new generations of musicians to understand and inherit the characteristics of traditional music. Music education needs to find a balance between tradition and innovation. It should not only teach traditional musical elements, but also encourage students to innovate on the basis of tradition to keep music alive. Music education can help pass on regional culture. The music and folk customs of different regions are unique, and music education can promote the inheritance and promotion of these regional cultures. Ghostwriting the nationality of Chinese music needs to consider the relationship between cultural protection and globalization. Music education can help Chinese music withstand the impact of globalization on traditional music, while also educating students to cope with the challenges of globalization. Music education should be diverse, including teaching different music genres and styles. This helps students gain a more comprehensive understanding of the diversity of Chinese music. In addition to formal music education, community participation and informal inheritance are also important ways to preserve traditional music. These approaches can help keep musical traditions alive, while complementing^[10] music education. Music education is closely related to the preservation of traditional music, and a balance needs to be struck between inheritance and development. While music education can provide a new generation of musicians with traditional music knowledge and skills, it should also encourage innovation and experimentation to ensure the vitality and inheritance of traditional music. This requires continued exploration of how best to combine music education with traditional preservation to support the development of Chinese music.

In summary:

Overall, the paper covers the key issues in the ghostwriting debate, reflecting the complex issues fac-

ing the Chinese music scene in the context of the cultural challenges of globalization and the protection of national identity. Addressing these issues requires active participation and thoughtful approaches from all parties to advance the development and protection of Chinese music.

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ТЕСТОВЫЕ МОДЕЛИ

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TEST MODELS

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Аннотация

В представленной статье предлагаются цветные тестовые модели состоящих из различных геометрических фигур, также букв. Такие тесты могут стать значимыми для развития междисциплинарных связей с такими предметами как черчение, геометрия, изобразительное искусство, дизайн цветоведение, психология (логическое мышление) и др.

Abstract

The presented article offers color test models consisting of various geometric shapes, also letters. Such tests can become significant for the development of interdisciplinary connections with such subjects as drawing, geometry, fine arts, color design, psychology (logical thinking), etc.

Ключевые слова: изобразительное искусство, дизайн, мышление, тестирование, интегративный подход.

Keywords: fine arts, design, thinking, testing, integrative approach.

Для всестороннего формирования и развития личности наряду со знаниями по различным дисциплинам необходимо тщательное и всестороннее изучение физических свойств и психологических воздействий цветов[4], а также форм и структур различных фигур (особенно геометрических фигур и тел) и предметов[1;2;3;5]. В связи с этим вопросом в процессе преподавания соответствующих предметов используются различные методы и подходы. На современном этапе в этом направлении широко применяются и тестовые методы.

Анализ соответствующей учебной литературы показывают, что, при составлении логических тестов, в отличие от цветов, больше используются графические изображения, основанные на различных формах, символах и других элементах. Однако следует учитывать, что в логических тестах, благодаря многомерным свойствам, использование цветов было бы более эффективно при комплексном изучении и исследовании субъекта. Как известно, разные цвета и их оттенки оказывают влияние на психоэмоциональное состояние человека, и они воспринимаются на разном уровне.

Цветные тесты, состоящие из геометрических фигур, особенно важны для учащихся и студентов, занимающихся дизайнерской деятельностью. Кроме того, они могут, использованы также для определения логического, художественного мышления, а также развития эстетического вкуса, визуального (зрительного) восприятия и правильного подхода к композиционному решению. Создание и применение таких тестов может основываться на многомерных особенностях цветов и в этом контексте выражать в интегративной форме суть и содержание поставленной задачи (как в фигурах, так и в цветах).

Следует отметить, что применение таких тест-методов (в средних и специальных высших учебных заведениях) может обеспечить и укрепить междисциплинарные связи между такими предметами как черчение, геометрия, изобразительное искусство, цветоведение, психология (логическое мышление) и др. Это, в свою очередь, обеспечит современный интегративный подход к учебному процессу.

Примеры тестовых заданий.

Зад. №1 (рис. 1). Определите хроматические и ахроматические цвета в таблице?

а, хроматические:

А. – 1,4,6,7; **В.** – 9,10,11,12; **С.** – 1,2,3,4,5,6,7,8; **Д.** – 5,8,9,11

б, ахроматические:

А. – 1,6,7,4; **В.** – 9,10,11,12; **С.** – 5,2,3,8; **Д.** – 5,8,9,11

Зад. №2 (рис. 1). Сколько крестиков можно определить в таблице?

А. – 5,6,7,8 (4); **В.** – 5,6,7, 9,10,11,12 (7); **С.** – 8, 9,10,11,12 (5); **Д.** – 5,6,7,8,9,10,11,12 (8)

Зад. №3 (рис. 2). Из каких разверток можно получить коробку?

А. – 1,6,8; **В.** – 3,4,5; **С.** – 2,3,7; **Д.** – 2,5,7

Зад. №4 (рис. 3). Определите холодные и теплые цвета в таблице?

а, холодные:

А. – 1,3,6; **В.** – 3,5,6,8; **С.** – 2,3,5,8; **Д.** – 3,4,7,8

б, теплые:

А. – 1,2,5,6; **В.** – 4,6,7; **С.** – 2, 5,8; **Д.** – 1,4,6,7

Зад. №5 (рис. 4). Сколько вариантов развёртки куба имеется в таблице?

А. – 5,6,10 (3); **В.** – 3,4,7,9 (4); **С.** – 1,2,3,4,5 (5); **Д.** – 2, 6,7,8,10,11(6)

Зад. №6 (рис. 5, а, б). Какие буквы не имеют зеркальное отражение в данном слове?

А. – Л, Д; **В.** – Ф, Т; **С.** – Ш, Н; **Д.** – А, Д

Зад. №7 (рис. 6, а, б). Какие буквы имеют зеркальное отражение в данном слове?

А. – К, Т; **В.** – С, У; **С.** – Т, О; **Д.** – В, И

Зад. № 8 (рис. 7, а, б). Какие квадратики нарушают общую гармонию в паркет - композиции?

А. – а - 7, м - 8; **В.** – а - 7, м - 9; **С.** – а - 1, м - 9; **Д.** – м - 8, с - 9

Зад. № 9 (рис. 8 а, б). Сколько различных видов равностороннего креста можно выделить в композиции?

А. – 2; **В.** – 3; **С.** – 4; **Д.** – 5

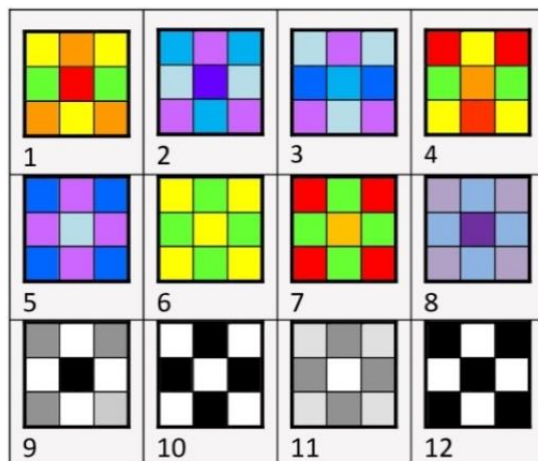


Рис. 1

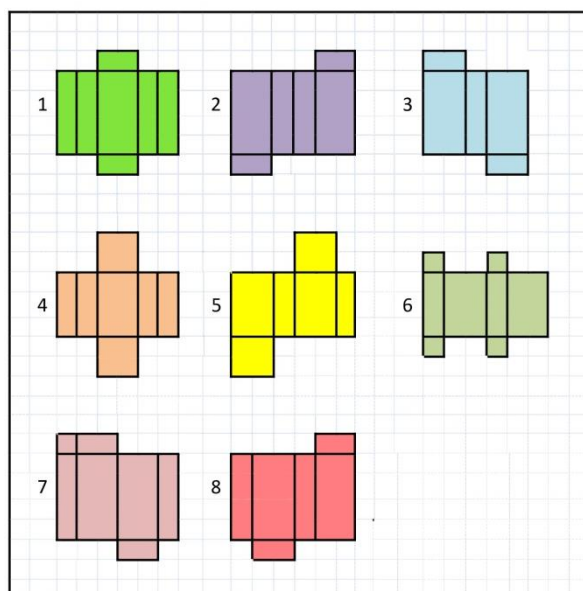


Рис.2

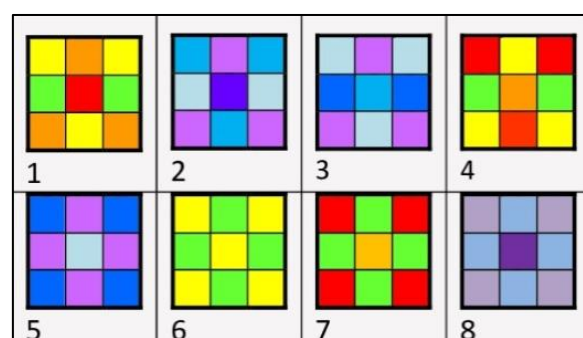


Рис.3

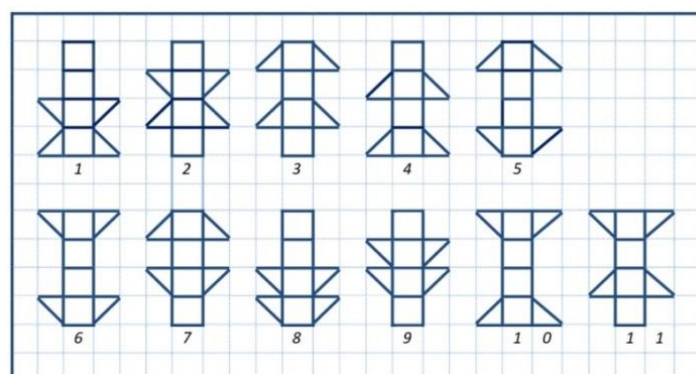


Рис.4

ЛАНДШАФТ

а)

ИСКУССТВО

а)

Рис.5(а, б)

Рис.6(а, б)

ЛАНДШАФТ

б)

ИСКУССТВО

б)

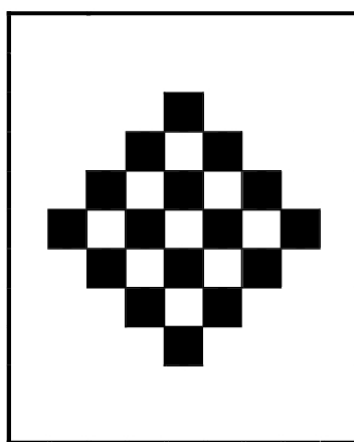
	1	2	3	4	5	6	7	8	9
a									
b									
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j									
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l									
m									

a)

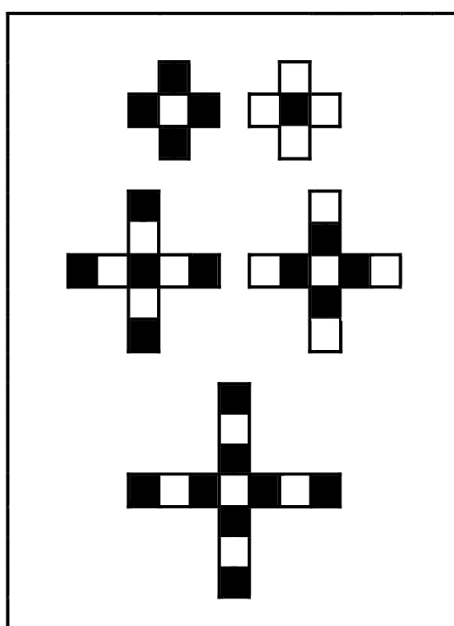
	1	2	3	4	5	6	7	8	9
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h									
i									
j									
k									
l									
m									

b)

Рис. 7(a, б)



a)



б)

Рис. 8(a, б)

Правильные ответы:

Зад. № 1 а. – **С**;
Зад. № 1 б. – **В**;
Зад. № 2. – **Д**;
Зад. № 3. – **А**;
Зад. № 4 а. – **С**;
Зад. № 4 б. – **Д**;
Зад. № 5. – **С**;
Зад. № 6. – **А**;
Зад. № 7. – **С**;
Зад. № 8. – **В**.
Зад. № 9. – **Д**.

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CULTUROLOGY

TECHNOLOGIES OF FORMATION OF "INTELLECTUAL CULTURE" OF THE BEGINNING OF THE XXI CENTURY

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Abstract

The article analyses the dynamics of technologies and their application in the life activity of modern man. The scientific approaches of research and the relationship between the concepts of "culture", "technology" and "technology" are substantiated. The author introduces a relatively new concept of the early XXI century "intellectual culture", comparing its relationship with the concept of "universal design" - an intellectual environment that involves the design of necessary adaptive products for the life activity and culture of modern man

Keywords: culture, technique, technology, algorithm, social technology, intellectual culture, universal design.

Introduction. In the cultural sphere, engineering and technology are involved in the all-round transformative activity of human beings. Their rapid development was accompanied by the emergence of technical sciences, which became a link between natural sciences, engineering knowledge and production. Technologies of the XXI century as a set of technical software tools and methods are an important part of modern culture. The dynamics of technological transformation now outstrips the pace of scientific research and development. Technologies are recognised to become the basis of cardinal transformation of the quality and level of human life, formation of intellectual culture of the society, all its structures and relations, each country and the whole world community.

Main part. There are different approaches to defining and analysing the nature and essence of culture. Some, for example, refer to culture as a certain community characterised by a special set of norms, values and meanings (ethnos, nation, civilisation). Others consider culture as a special form of activity, inseparable from creativity, thinking, art, etc. For others, culture is a general system of values, moral norms and representatives of a particular class, estate or professional group (youth, professional subculture), national aggregations of people, etc. There are other interpretations of the concept of "culture" in scientific literature. In social life, culture acts as a means of transformation of the world, communication, cognition, management, evaluation of the system of values. In addition, the most important function of culture is historical continuity, i.e. the transmission of social heredity from generation to generation. The laws of development and functioning of culture, its structure, functions, dynamics, history and theory, interrelations and interactions with other spheres of material and spiritual life are studied by culturology [12, p. 23].

So, we will proceed from the fact that culture (from Latin *cultura* - cultivation, upbringing, education, development, veneration) is a system of historically developing suprabiological programmes of human life ac-

tivity (activity, behaviour and communication), providing reproduction and change of social life in all its main manifestations.

Programmes of activity, behaviour and communication are reflected in a variety of knowledge, norms, skills, ideals, patterns of activity and behaviour, ideas, hypotheses, beliefs, goals, value orientations, etc. In their totality and dynamics, they form historically accumulated social experience. Culture also generates new programmes of activity, behaviour and communication, which, being implemented in appropriate types and forms of human activity, generate real changes in the life of society [14, p. 658].

Culture is characterised by integrative, polysystemic ways of activity, free, open and search forms, which are based on meaningful self-learning, causal links of interaction, complex communicative and integrative relations, mediated by specific personal experience and the nature of interactions [12, p. 23]. Therefore, all cultures that develop as historical formations build up civilisational potential (technologies, scientific discoveries, optimisation of life activities, etc.). Therefore, civilisationality as a constantly updated technological potential of human activity is also a part of culture.

N. Berdyaev was one of the first Russian philosophers to foresee the role of technology in transforming the culture of the world. Technology, the philosopher believed, as the most important manifestation of civilisation, invades the natural human life, leads to the loss of its connection with the rhythm of nature. And the path of peoples to civilisation is inevitable. The author in anticipation of the scientific and technological revolution of the XX century foresaw the invasion of the machine in the human world ("Spirit and Machine" 1915). N. Berdyaev does not deny the role of technology, on the contrary, he believes that culture is impossible without technology, as its very emergence is due to technology. At the same time, the final victory of technology, the world's entry into the technical era leads to the death of culture [11, p. 249-250].

The traditional and technogenic way of development are radically different from each other. The technological paradigm of civilisation (the theory of post-industrial society) is formed in the 60-80s. XX century in the works of D. Bell [1; 2], E. Castells [7; 8; 9], P. Bourdieu [6], A. Toffler [15; 16], Z. Brzezinski [3; 4], Yo. Masud [19], A. Touraine [17] and other scientists who study the development of world civilisation, forecast opportunities and threats to humanity.

The concept of "technology" (from Greek "τεχνική" - art, skill, craft, science) implies a set of means of human activity, created to carry out the processes of production, as well as to serve the non-productive needs of society. The knowledge and experience accumulated by mankind during the evolution of social production and scientific research based on the use of technical sciences (engineering sciences), which describe and study the regularities of the "second nature", i.e. the technical world, are materialised in technology. The objects of study of engineering are not only material, existing objects, but also objects of not yet existing engineering, which need to be created. Therefore, the main methods of technical sciences are modelling and design [5, p. 106-107].

Also, 'technology' is an elusive concept, it relates to both material objects (machines, equipment, etc.) and broader themes - systems, methods, organisations. Technology is a constantly evolving body of knowledge that ultimately transforms communities and transforms itself. Technologies transform the surrounding reality, the nature of things and culture as a whole [13, p. 24].

In the current literature, the development of artificial evolution is considered on the basis of three main paradigms:

- the first, the conservative scientific community advocates the preservation of the biological without nanotechnological interventions in the natural mechanisms of nature;
- the second one is based on the possibility of artificial completion of "biological man" with the help of technical devices;
- third - development of socio-technological and cultural evolution on the basis of technoscientific programmes (nano-, bio-, information, neuro-technologies, etc.) with their introduction into both bodily and mental essence of a human being - creation of "posthuman", "transhuman", "avatar", etc.

The period of mobile technologies, which has been observed since the early 2000s, expands the possibilities of contactless technologies with a wide range of functions.

Since 2008, blockchain technologies appear as decentralised systems characterised by openness and accessibility, but requiring from users high-level analytical knowledge of IT-technologies, finance (types of crypto), information security, economics and others.

Since 2010 comes the period of artificial intelligence and machine learning, in which technology is capable of performing complex tasks and making autonomous decisions. Technology is becoming more automatic, gradually eliminating humans from social

processes and moving to the post-social stage of evolution of controlled systems.

The process of displacement of organic elements by inorganic (artificial) technical elements continues. Since the 2020s, meta-spaces have been developing, providing decentralisation and syncretism of virtual objects with real ones.

Also, within the framework of human activity, social technologies are implemented through algorithmisation, breakdown into separate procedures, operations and techniques. Social technologies permeate all human cultural activities: art, science, education, production, etc.

Researcher V. N. Makarevich believes that an algorithm as an obligatory element of social technology "is a predetermined sequence of steps. But social technology uses developed algorithms - methods, social systems developed with certain goals" [10, p. 99].

If we consider the concept of "social technology" from the point of view of cultural activity, it can be defined as "an element of human culture, which is formed in culture evolutionarily or is built according to its laws as an artificial formation. Artificial education is connected in a unified system of methods, techniques, methods, means of influence on human activity" [10, p. 99] [10, c. 99].

That is, social technology involves the use of advanced intellectual systems based on artificial intelligence (hereinafter - AI). AI technologies are actively used in everyday human life activities, forming the culture of everyday life and belonging on the basis of intellectual environment.

Intellectual culture should be understood as an *evolutionary component of heterogeneous technologies embedded in the material and spiritual structures of society in order to analyses, control and manage its resource processes.*

Certainly, in intellectual culture it is important to take into account the use of technologies that can adjust to the physical, sensory and cognitive abilities of an individual person - to preserve and improve health, to ease living or professional conditions, to replace him in hazardous types of labour, to form an information database for his interests and needs, to improve his social adaptation and inclusion (for people with disabilities).

Technologies of intellectual culture should be aimed at the creation of "universal design" [18] - intellectual environment that implies the design of adaptive products convenient and accessible to everyone regardless of their age, ability and status [18] - intellectual environment, which implies the design of adaptive products convenient and accessible to each person regardless of his age, abilities and status. The priority areas that should always be available to each person in the universal design of intellectual environment are food availability, safety and comfortable living conditions, analyzing the level of well-being and health, stress management, counteracting loneliness.

Conclusion. In the second half of the XX century there was a complete merger of science and technology, in scientific literature appeared the term - technoscience. If during the XX century science was the main

source of development, the period of the end and beginning of the XXI century is characterized by the dominance of technologies, which are developing so rapidly that the society does not have time to master and understand their quantity.

"Intellectual culture" is a thoroughly new concept, which includes the use of heterogeneous technologies embedded in the material and spiritual structures of society in order to analyses, control and manage its resource processes.

Modern science, engineering and technology have opened up the possibility not only to "conquer" and transform the surrounding culture, but also to invade the nature of man himself, his biosystem. In this regard, there is a need for a holistic constructive-critical understanding of the theory and practice of development and use of the achievements of scientific and technological revolutions in order to develop new worldview and methodological imperatives of the civilization process and sociodynamics of culture in the conditions of technogenic civilization.

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MEDICAL SCIENCES

DEPENDENCE OF PERIODONTAL DISEASES ON PRIMARY HYPOTHYROIDISM

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Abstract

Currently, the close attention of scientists and practitioners is attracted to thyroid diseases associated with endemic foci of iodine deficiency in soil and water. Iodine deficiency diseases are among the most common non-infectious human diseases. Most often, pathology of the thyroid system is accompanied by hypothyroidism syndrome, caused by insufficient production of thyroid hormones and peripheral disturbances of their activity. One of the targets of endocrinological pathology is periodontal tissue.

Keywords: primary hypothyroidism, young people, periodontal disease.

The purpose of the study was to study the prevalence and intensity of periodontal tissue diseases in young people with primary hypothyroidism.

Results. According to the data obtained, periodontal diseases were detected in 78% of patients in group I with hypothyroidism. In persons without endocrine pathology, periodontal diseases were observed in 60% of the general population, which is 1.2 times less than the data of the 1st group. Intact periodontium in patients of the 1st group was found in only 12% of patients, while in the 2nd group there were twice as many patients with healthy periodontium. Generalized periodontitis of I and II degrees of development predominated in the structure of periodontal diseases. all age groups. Deterioration of the condition of periodontal tissues was observed in both Zvicom groups, but in patients with hypothyroidism, an increase in signs of early dystrophic-inflammatory periodontal lesions and rapid progression were studied. The relationship between the increase in intensity and generalization of the pathological process in periodontal tissues in young people and the duration of thyroid pathology.

Introduction. The number of organs and systems that respond to thyroid hormones includes the issue of thyroidology in the sphere of interests of various medical specialties, and the growing incidence of thyroid diseases in the population brings these problems to the forefront of modern endocrinology [1, 2]. Currently, close attention is paid to thyroid diseases, which are associated with endemic foci of iodine deficiency in soil and water [5]. Iodine deficiency diseases are the most common non-communicable diseases in humans [6, 8]. There are many areas in Ukraine where the population is at risk of iodine deficiency [4]. The absence or deficiency of iodine disrupts the synthesis of thyroid hormones, which leads to the development of hypothyroidism, one of the most common diseases of the endocrine system [3]. However, in the genesis of iodine deficiency diseases, the root cause of iodine deficiency is a weakening of the functional activity of the thyroid gland, which may be due not only to a reaction to iodine

deficiency, but also to the action of other stromogenic factors. The decrease in the functionality of the thyroid gland increases under the influence of an unfavorable environmental situation, an increase in the number of stressors, and a busy rhythm of life. Most often, pathology of the thyroid system is accompanied by hypothyroidism syndrome, caused by insufficient production of thyroid hormones and peripheral disorders [7]. Most often, primary (thyroidogenic) hypothyroidism is caused by direct damage to the thyroid gland. The overall prevalence of primary manifest hypothyroidism in the population is 0.2–2%, subclinical – 7–10% among women and 2–3% among men [9]. With a deficiency of thyroid hormones, which are absolutely necessary for the normal functioning of almost every cell, weight gain develops in all organs and systems without exception. One of the manifestations of the influence of hypothyroidism on the body is damage to periodontal tissues. Methods - study of the prevalence and intensity of periodontal tissue diseases in young people with primary hypothyroidism.

290 people aged 25–44 years were examined. Of the total number of those examined, 174 people (60%) were diagnosed with primary hypothyroidism (group I). No endocrinological pathology was detected in 116 people (40%) examined; they made up group II.

Research results and discussion

According to the data obtained, 85.13±2.55% of young hypothyroidism patients had periodontal tissue disease, $p < 0.01$; in patients without endocrinological periodontal pathology, it was observed in 69.63±3.97% of those examined, which is 1.2 times less than the data of the 1st group. Intact periodontium was found only in 15% of patients in group I, whereas in patients in group II with healthy periodontium it was more common (30.37%). In the structure of periodontal diseases, generalized periodontitis of the initial 1st and 2nd stages of development predominated. Generalized periodontitis of the 3rd degree in patients of the 2nd group was detected only in 2.41±1.19% of people, while in the 2nd group there was no GP of the 3rd degree. This fact is

associated with the examination of young age groups of patients. Attention was drawn to the fact that earlier forms of periodontitis were detected in patients without endocrine pathology: there were 1.8 times more gingivitis than in patients with primary hypothyroidism (23.40 ± 4.39 and $12.65 \pm 2.59\%$, respectively); Localized periodontitis was detected in $21.28 \pm 4.24\%$ of patients in group II, while in patients in group I it was 1.9 times less common, $p < 0.01$ in terms of age. At the age of 25–29 years, periodontal diseases were detected in $73.58 \pm 6.11\%$ of those examined, which is 1.5 times more than in persons of the same age without endocrine pathology ($48.72 \pm 8.11\%$, $p < 0.01$). In the age range of 30–34 years, the percentage of periodontal diseases in patients with hypothyroidism increased to $85.33 \pm 4.11\%$, $p < 0.01$. An increase in the number of periodontal diseases was also observed in people of group II in a similar age group, but the percentage of people with periodontal diseases was significantly lower than in group I ($77.36 \pm 5.80\%$, $p < 0.01$). In the age range of 35–44 years, periodontal diseases were observed in patients with primary hypothyroidism in $94.03 \pm 2.92\%$ of those examined, and in patients without endocrinological pathology this figure was 1.2 times lower ($79.07 \pm 7.08\%$, $p < 0.01$). Thus, in patients with hypothyroidism, the prevalence and intensity of periodontal diseases is significantly higher than in persons without endocrine pathology in all age groups.

The condition of periodontal tissues of patients with primary hypothyroidism was analyzed depending on the duration of the underlying disease. According to the data obtained, it was established that in patients with endocrine pathology from 1 to 5 years, intact periodontium was found in $22.94 \pm 4.04\%$ of subjects, and the inflammatory process in the periodontium (gingivitis) was observed in 16, $51 \pm 3.57\%$ of persons and $60.55 \pm 6.01\%$ were diagnosed with periodontitis, $p < 0.01$. Total diseases of periodontal tissues in patients of group I with a duration of primary hypothyroidism from 1 to 5 years were observed in $77.06 \pm 4.19\%$ of cases, $p < 0.01$. With the duration of concomitant pathology, the number of people with healthy periodontitis decreased by 4.93 times, gingivitis was observed 4.73 times less often, and the number of dystrophic-inflammatory periodontal diseases reached $91.86 \pm 2.96\%$, which is 1.5 times more. data on persons with a history of hypothyroidism from 1 to 5 years, $p < 0.01$. The data obtained indicate an increase in the intensity and generalization of the pathological process in periodontal tissues in young people and an increase in the duration of endocrine pathology. As a result of the studies, the prevalence and intensity of periodontal disease were found to be significantly higher in patients with hypothyroidism at a young age compared to people without endocrine pathology at a young age. all age

groups. In the structure of periodontal tissue diseases, generalized periodontitis of I-I and II degrees of severity with a complicated course prevailed. With age, deterioration of the condition of periodontal tissues was observed in both groups, but in individuals with hypothyroidism, the increase in identified signs of early dystrophic-inflammatory periodontal damage and its rapid progression were studied. A relationship was revealed between the increase in intensity and generalization of the pathological process in periodontal tissues at a young age and the duration of endocrine pathology.

In further studies, it is planned to study changes in protein and mineral metabolism in sheep caviar homogenate using an experimental model of hypothyroidism and to substantiate the pathogenetic directions of corrected disorders.

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MODERN THERAPY OF VARICOTHROMBOPHLEBITIS: BIOFLAVANOID AND ORAL THROMBOLYTIC

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Abstract

The paper analyzes the results of treatment of 82 patients with acute varicothrombophlebitis of the lower extremities. Conducting a comprehensive clinical and instrumental examination of patients allowed in all cases to finally establish the diagnosis and choose the optimal treatment method. The article compares the effectiveness of the use of micronized purified flavonoid fraction in comparison with synthetic analogues in groups of patients at the outpatient stage.

Keywords: thrombophlebitis, MOFF, thrombolytic, anticoagulant.

Relevance. Acute varicothrombophlebitis (OVTF) or superficial varicothrombophlebitis (TFPV) is one of the most common acute diseases of the vascular system of a vascular surgeon on an outpatient basis in clinical practice. This disease occurs 10 times more often than thrombophlebitis of non-varicose veins, and in most cases in patients suffering from varicose veins of the lower extremities for a long time [1]. The frequency of occurrence of this pathology is due to the wide prevalence of varicose veins of the lower extremities, which is observed in 80-90% of patients with subcutaneous vein thrombosis [2]. In a European population study conducted by E. Rabe et al. (2003), subcutaneous vein thrombophlebitis was diagnosed in 10-20% of patients suffering from varicose veins [1].

The importance of subcutaneous vein thrombophlebitis is due to the significant threat to the life of patients, which is associated with the spread of thrombosis from the superficial venous system to the deep veins and the possibility of pulmonary embolism. According to a number of authors, deep vein thrombosis in subcutaneous vein thrombophlebitis occurs in 3-20% of patients [3, 4, 5], and the incidence of symptomatic pulmonary embolism is in 1.9-13.3% of patients [6].

Patients with low and moderate risk of thromboembolic complications are treated conservatively, on an outpatient basis. This cohort of patients is supposed to perform radical intervention in the absence of contraindications after the relief of an acute inflammatory reaction.

The purpose of this study was to study the effectiveness of the results of treatment of patients with superficial varicothrombophlebitis in outpatient surgical practice.

Materials and methods. A prospective analysis of the case histories of outpatient patients with TFPV who were treated in 2020-2022 on the basis of the polyclinic department of the Ulyanovsk Regional Clinical Hospital by a vascular surgeon was carried out. A total of 82 patients were treated, the average age was 54.8 years. There were slightly more women than men – 49 (59.7%) and 33 (40.3%), respectively. At the initial

emergency admission, all patients underwent a standard clinical and laboratory examination, which included a general blood test, coagulogram, lung radiography, as well as ultrasound duplex scanning (USDS) of the veins and arteries of the lower extremities.

All patients were prescribed basic therapy according to clinical recommendations: Rivaroxaban (Xarelto) 10 mg once a day for 45 days, permanent elastic compression of both lower extremities of class 2, local ointment dressings with heparin-containing agents (Lyoton-1000 gel), venotonics. In addition, in order to stop the process as soon as possible, as well as accelerate recanalization, patients are prescribed a direct oral thrombolytic – Trombavazim at a dosage of 800 mg 2 times a day, a course for 21 days. The patients were divided into two groups of similar composition. The main group of the study included 44 patients, including 32 women (68.2%) and 14 men (31.8%). The comparison group consisted of 38 people, men and women equally, 19 patients each. In the main treatment group, a venotonic drug was used consisting of naturally obtained diosmin 900 mg (90%) and flavonoids in terms of hesperidin 100 mg (10%) in the form of a micronized purified flavonoid fraction (MOFF) – Detralex 1000 mg. In the comparison group, a drug was used as a venotonic, which included only diosmin in a dosage of 600 mg (Phlebopha).

Results. In a clinical study and after USDS, it was found that TFPV was more often localized in the basin of the great saphenous vein (BPV) – 47 patients (57.3%). In the system of the small subcutaneous vein (MPV), a pathological thrombotic process was detected in 26 patients (31.7%). In 9 people (11.0%), TFPV was detected in the anterior femoral tributary of the great saphenous vein, which can be considered a major vein, according to

Varicose veins were present for a long time in all patients, the distribution of classes of CVD was as follows: C2 – 25 patients (30.5%), C3 – 32 patients (39.0%), C4 – 17 patients (20.7%), C5 – 8 people (9.8%).

At the control examination, the progression of the thrombotic process was not detected in any patient in both study groups. One patient of the main study group and two people of the comparison group noted the appearance of minor bleeding during 30 days of treatment, while the patient of the main group noted the appearance of nosebleeds on the 20th day of therapy, and the man and woman of the comparison group noted the development of minor hemorrhoidal bleeding and hyperpolymenorrhea on the 27th and 12th days of treatment, respectively. These pathological conditions did not require medical treatment and were treated independently.

Complete relief of subjective clinical manifestations of varicthrombophlebitis, such as a feeling of tightness under the skin, local soreness in the area of varicose veins was noted by 34 people (77.3%) of the main group, and 22 patients (57.9%) of the comparison group. At the same time, 10 patients (22.7%) of the main group and 16 (42.1%) of the comparison group noted moderate retention of subjective symptoms at the control examination. A decrease in the signs of chronic venous insufficiency was noted in 28 people (63.6%) of the main study group and 10 (26.3%) patients of the comparison group.

According to ultrasound data, complete recanalization of initially thrombosed subcutaneous veins was observed in 31 (70.5%) patients of the main group and in 23 (60.5%) patients of the comparison group. Partial recanalization was detected in 13 (29.5%) and 15 (39.5%) patients of the main group and the comparison group, respectively.

In the patients of the main group of the study, there was a significant improvement in the indicators of nine scales according to the SF-36 quality of life questionnaire compared with the patients of the comparison group: physical functioning by 10.2%, role functioning due to physical condition by 8.8%, pain intensity decreased by 16.5%, general health improved by 5.3%, vital activity increased by 10.4%, social functioning – by 15.6%, role-based functioning due to emotional state – by 9.9%. Cumulative indicators on the scales, such as mental health and the physical component of health, were higher by 10.5% and 8.9%, respectively, in the main study group.

Conclusion. Real clinical practice demonstrates conservative tactics in the treatment of acute varicthrombophlebitis, as a method that effectively prevents the development of venous thromboembolic complications. At the same time, the use of a direct oral anticoagulant in combination with a direct oral fibrinolytic shows high efficiency in recanalization of the veins affected by the thrombotic process. Among the huge arsenal of drugs used to treat chronic venous diseases and varicthrombophlebitis in particular, the first-choice drug with proven clinical effects is MOFF (Detralex). Due to the pleiotropy of the effects and increased bioavailability due to the micronization of active molecules, the drug acts as a universal means of pharmacotherapy in patients with all forms and stages of chronic venous diseases and complications of varicose veins.

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ПЕРВЫЙ ОПЫТ ПЕРОРАЛЬНОЙ ЭНДОСКОПИЧЕСКОЙ МИОТОМИИ

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THE FIRST EXPERIENCE OF PERORAL ENDOSCOPIC MYOTOMY

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Doctor of Medical Sciences, Professor*DOI: [10.5281/zenodo.10558233](https://doi.org/10.5281/zenodo.10558233)**Аннотация**

Пероральная эндоскопическая миотомия (ПОЭМ) была впервые выполнена Н. Иноуэ в 2008 году. С тех пор этот метод получил широкое распространение при лечении ахалазии кардии. На базе хирургического торакального отделения №2 ГАУЗ РКБ МЗ РТ впервые в Республике Татарстан была успешно выполнена ПОЭМ 3 пациентам с диагнозом ахалазия кардии. Послеоперационный период прошел без особенностей. Пациенты были выписаны в удовлетворительном состоянии на 7 сутки.

Abstract

Peroral endoscopic myotomy (POEM) was first performed by H. Inoue in 2008. Since then, this method has become widespread in the treatment of cardiac achalasia (CA). On the basis of the surgical thoracic department No. 2 of the Republican Clinical Hospital of the Ministry of Health of the Republic of Tatarstan, for the first time in the Republic of Tatarstan, POEM was successfully performed in 3 patients with a diagnosis of cardiac achalasia. The postoperative period passed without features. Patient were discharged in a satisfactory condition on the 7th day.

Ключевые слова: ахалазия кардии, нижний пищеводный сфинктер, пневматическая дилатация, пероральная эндоскопическая миотомия.

Keywords: cardiac achalasia, lower esophageal sphincter, pneumatic dilatation, oral endoscopic myotomy.

Введение

Ахалазия кардии (АК) – это редкое заболевание пищевода с нарушением моторной функции, которое проявляется отсутствием расслабления нижнего пищеводного сфинктера (НПС) и нарушением перистальтических сокращений тела пищевода [1, 2]. АК впервые описал английский врач Т. Williams в 1674 г. у пациента с прогрессирующей рвотой, расширив пищевод с помощью китового уса. Термин «кардиоспазм» ввел J. Mikulich в 1882 г., объяснив нарушение нервно-мышечной передачи из-за снижения функции блуждающих нервов, и как результат этого сокращение гладкой мускулатуры в области НПС. Термин «ахалазия кардии» появился в 1914 г. Он был предложен С. Perry, а затем А. Hurst (1927 г.) как отсутствие релаксации (от греч. а — отсутствие, *chalis* — расслабление) [1]. Основным постоянным и самым ранним симптомом этого хронического заболевания является прогрессирующая дисфагия, к которой присоединяются загрудинные боли, отрыжка, регургитация и потеря веса. Длительное течение приводит к развитию стриктуры с декомпенсированным расширением и S-образной деформацией просвета пищевода. Выявляемость АК 1,07–2,5 на 100 тыс. населения, заболеваемость от 1,9 до 10–15,7 на 100 тыс. населения [2, 3]. По данным американских исследователей, регистрируется постепенный рост заболеваемости с

2,51 на 100 тыс. населения в 1996 г. до 26,0 на 100 тыс. населения в 2021 г. [4]. По данным эпидемиологических исследований, АК чаще диагностируют в возрастной группе от 25 до 60 лет, различий уровня заболеваемости по половому признаку не выявлено. Среди всех заболеваний пищевода по данным Т.А. Суворовой (1966) и А.З. Моргенштерна (1968 г.) АК составляет 3,1–20% [1]. Несмотря на активное изучение, этиология заболевания до сих пор остается неясной.

В лечении АК применяются консервативный и оперативный методы. К неоперативным методам относятся применение лекарственных средств с целью релаксации НПС, эндоскопические инъекции ботулинического токсина А, а также баллонная дилатация кардии [5, 6]. Перечисленные методы не дают стойкого функционального результата, а проведение баллонной дилатации, которая в ряде случаев обеспечивает ремиссию на 1–2 года, связана с повышенным риском перфорации стенки пищевода от 1,6% до 3% случаев по разным данным [7]. На сегодняшний день миотомия как операция Э. Геллера с фундопликацией по Дору и эзофагофундографией является операцией выбора в лечении АК 1-2 типа. Развитие внутрипросветной оперативной эндоскопии создало малоинвазивные и эффективные способы лечения АК. Первые методики миотомии

через эндоскоп из подслизистого доступа были разработаны и выполнены в эксперименте группой «Аполло» в 2007 г. [8]. Пероральная эндоскопическая миотомия была впервые выполнена Н. Inoue в 2008 г. в Showa University Northern Yokohama Hospital [9]. Прооперировав и тщательно обследовав более 500 пациентов, он доказал безопасность, эффективность и хорошие функциональные результаты метода пероральной эндоскопической миотомии (ПОЭМ) в лечении АК [8, 10]. Данный вариант миотомии можно выполнять на большем протяжении пищевода.

Описание клинического случая

В декабре 2022 г. на базе хирургического торакального отделения №2 ГАУЗ «РКБ МЗ РТ» впервые в Республике Татарстан была выполнена ПОЭМ 3 пациентам с диагнозом АК. Длительность заболевания пациентов составила в среднем 3 года. Пациенты отмечали жалобы на затрудненное проглатывание твердой и жидкой пищи. Ранее пациенты проходили медикаментозное лечение по месту жительства и двое перенесли несколько курсов

баллонной дилатации кардии с незначительным и непродолжительным эффектом. Для оценки клинической выраженности заболевания нами использовалась шкала Eckardt в диапазоне от 0 до 12 баллов, согласно которой наиболее тяжелая степень расстройств, сопровождающаяся дисфагией, регургитацией и ретростеральными болями после каждого приема пищи, а также снижением массы тела более чем на 10 кг, оценивалась в 12 баллов. По данной шкале степень выраженности заболевания у наших пациентов составила 5 и 6 баллов. Среди 3 прооперированных пациентов было 2 мужчин и 1 женщина в возрасте 35, 48 и 55 лет. По данным рентгеноскопии пищевода и желудка выявлены характерные рентгенологические признаки АК: расширение просвета пищевода до 3.5-4 см, наличие натошак в пищеводе остаточного содержимого, отсутствие отчетливого газового пузыря в желудке, признак “птичьего клюва” или “крысиного хвоста” (рис. 1). Также у одного пациента имелись признаки спастической АК.

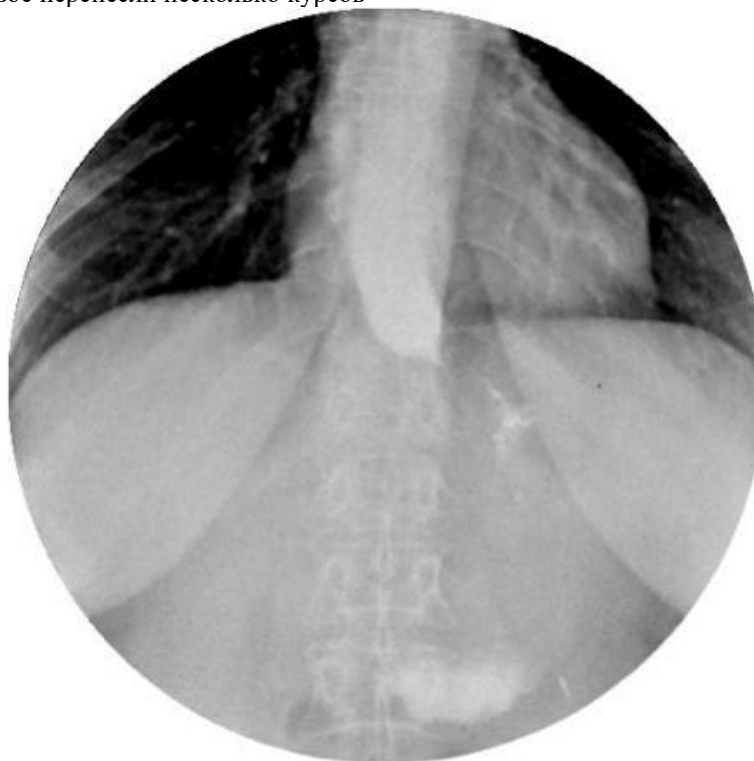


Рис. 1. Рентгенограмма пищевода (расширение пищевода с нависанием стенки над его сужением)

По данным эзофагогастродуоденоскопии, выполненных амбулаторно, у всех пациентов просвет пищевода расширен, дилатирован, содержит пенную жидкость, симптом “коры дерева” (рис.2), у

одного пациента на всем протяжении определялись сокращения перекрывающие просвет пищевода (признаки спастической ахалазии).

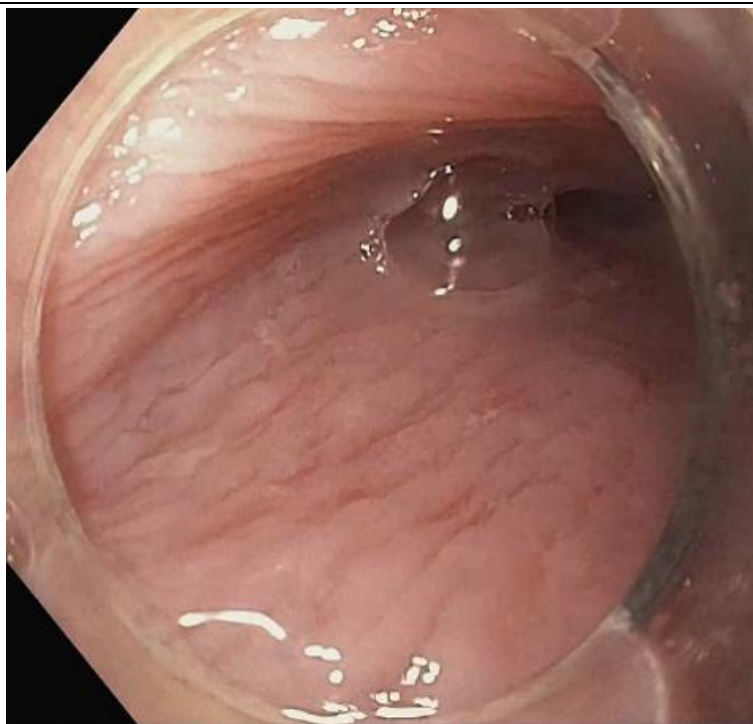


Рис. 2. Эндофото. Слизистая пищевода (симптом "коры дерева")

Двум пациентам до операции была выполнена манометрия пищевода с использованием манометра высокого разрешения и водно-перфузионного метода. Исследование проведено 22-канальным водно-перфузионным катетером в положении пациента лежа на спине, выполнено 10 глотков воды объемом по 5 мл каждый. Данные манометрии трактовались согласно Чикагской классификации V3.0. Давление покоя НПС в норме, раскрытие в ответ на влажный глоток затруднено; сокращения в грудном отделе пищевода не перистальтические с нормальной интегральной сократимостью в дистальном отделе, IRP за 4 сек в среднем равен 19 мм рт. ст., в некоторых глотках до 22 мм рт. ст.; тест быстрых глотков: резерв сократительной способности пищевода отсутствует; индекс ТБГ ИСДС/ИСДС < 1. Данные манометрии 2-го пациента: давление покоя НПС в норме, раскрытие в ответ на влажный глоток затруднено; сокращения в грудном отделе пищевода не перистальтические, со

сниженной интегральной сократимостью, сред. DCI=213 мм рт. ст., в 5 глотках из 10 DCI < 1; IRP за 4 сек в среднем равен 24 мм рт. ст. У первого пациента выявлена АК 1 типа (отсутствие перистальтики грудного отдела), у второго - АК 2 типа (с эзофагеальной компрессией). Одному пациенту по техническим причинам выполнить манометрию пищевода не удалось. Показатели давления НПС в покое у пациентов соответствовали 22 и 24 мм рт. ст., отсутствовало расслабление НПС в ответ на глотательные движения.

Методика выполнения ПОЭМ

1. Формирование тоннеля в подслизистом слое пищевода. После инъекции с помощью иглы Finemedix 23Gv подслизистый слой раствора Волювен, окрашенного индигокармином производили продольный разрез слизистой оболочки шейного и грудного отдела пищевода длиной 2 см (рис. 3) на расстоянии 18–19 и 28–29 см от резцов.



Рис. 3. Инъекция в подслизистый слой пищевода раствора окрашенного индигокармином и разрез слизистой оболочки

Путем диссекции в режиме спрей коагуляции, создавали длинный тоннель в подслизистом слое, который своим дистальным слепым концом закан-

чивался на уровне субкардиального отдела желудка. Для обработки сосудов и остановки кровотечения использовалась диатермокоагуляция эндозажимом в режиме мягкой коагуляции (рис. 4).

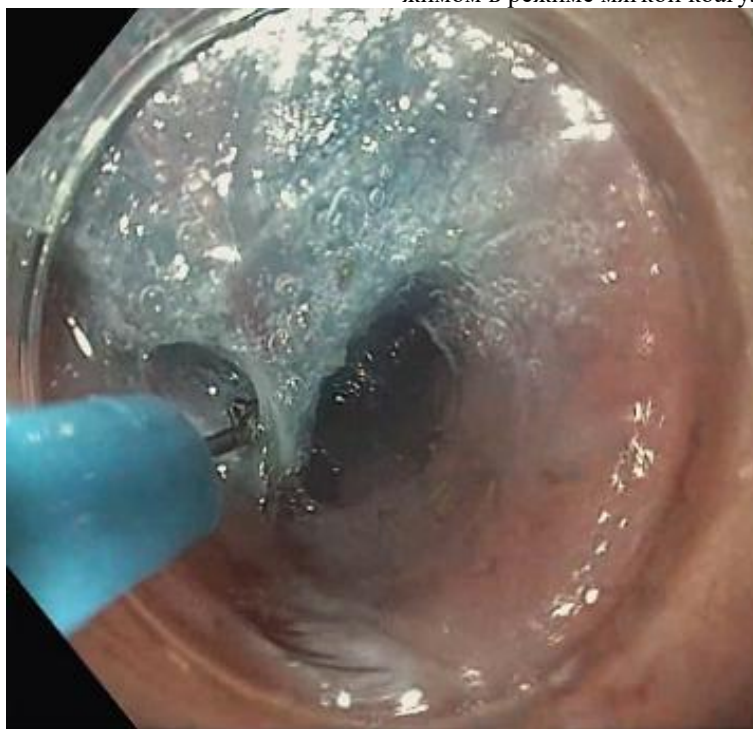


Рис. 4. Диссекция с созданием длинного тоннеля в подслизистом слое

2. Миотомия циркулярных волокон на протяжении 13 см и 18-20 см начиная на 2-3 см дистальнее нижней границы доступа в подслизистый слой пищевода (рис. 5) с пересечением циркулярных мышечных волокон пищевода, и дистальнее на 2-3 см

нижнего пищеводного сфинктера и кардиального отдела желудка в режиме спрей-коагуляции. После ее завершения выполнялись: тщательный контроль гемостаза, санация подслизистого тоннеля.

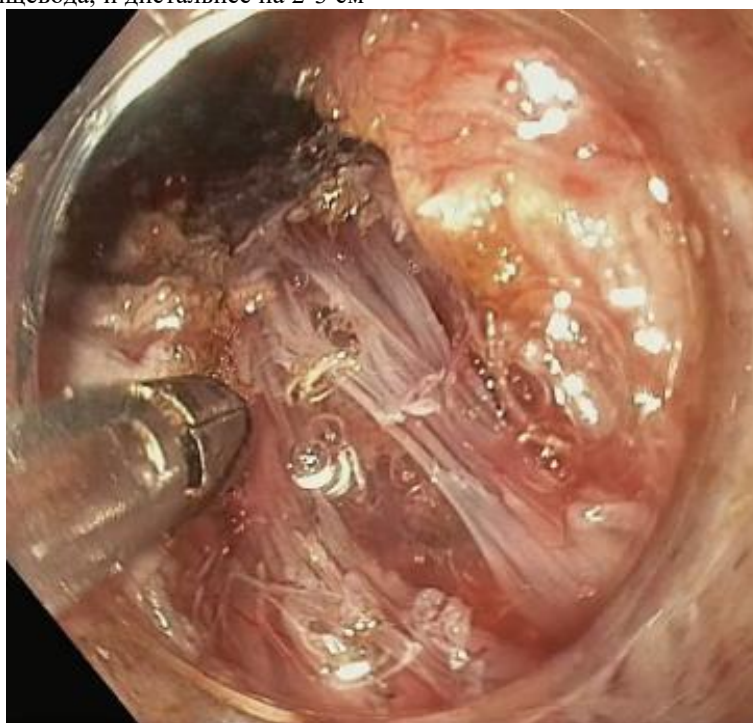


Рис. 5. Миотомия циркулярных волокон

3. Ушивание дефекта слизистой оболочки последовательно 4–5 эндоклипсами с сопоставлением краев разреза (рис. 6).

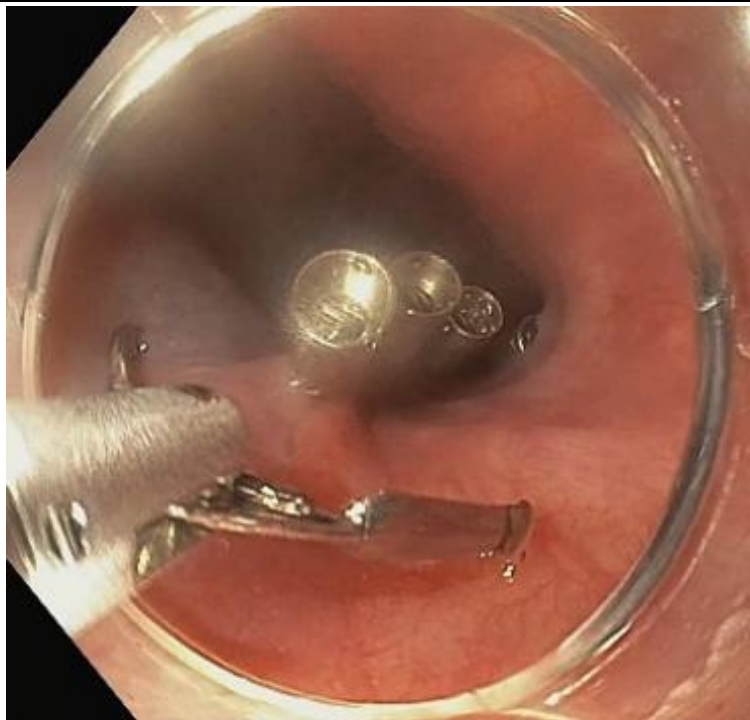


Рис. 6. Ушивание дефекта слизистой оболочки пищевода

Результаты

Вмешательства проводились под общей анестезией с использованием комбинированного эндотрахеального наркоза. Время операций составило 105, 120 и 135 мин., соответственно. Во всех случаях ПОЭМ была успешно выполнена в полном объеме. Длина подслизистого тоннеля составила от 15 см до 23 см. Общая протяженность миотомии составила от 13 см до 20 см, при этом 2-2,5 см распространялись на желудок. В процессе выполнения ПОЭМ у пациентов повреждение слизистой со стороны подслизистого тоннеля не было. При миотомии циркулярных мышечных волокон, произошло частичное разволокнение наружных продольных мышечных волокон у двух пациентов, что привело к развитию клинически незначимой подкожной эмфиземы на шее которая разрешилась на 3 сутки. Несмотря на превентивную коагуляцию сосудистых структур в процессе ПОЭМ у двух пациентов возникли незначимые кровотечения. Выполнение эндоскопического гемостаза в процессе вмешательств не составило сложностей. Послеоперационный период проходил без осложнений. В первые сутки после операции пациентам был назначен постельный режим, голод, антибактериальная терапия и внутривенное введение ингибиторов протонной помпы. На вторые сутки всем пациентам было разрешено пить воду и передвигаться в пределах палаты. Контрольная рентгеноскопия пищевода и желудка была выполнена на 3 сутки. У всех троих пациентов было отмечено свободное прохождение контрастного вещества через пищеводно-желудочный переход, затекание контраста в средостение и признаков пневмомедиастинума не отмечено. Пациенты выписаны в удовлетворительном состоянии на 7 сутки.

Заключение

ПОЭМ, успешно выполненные в клинике, показали безопасность и непосредственную эффективность данного метода в лечении АК. Методика ПОЭМ показала высокую эффективность в купировании дисфагии у больных АК, несмотря на тип, давность существования болезни, местные изменения. Во время операции был отмечен ряд технических сложностей, главными из которых явились фиброз подслизистого слоя и не контролируемая подача CO_2 с возникновением подкожной эмфиземы. ПОЭМ должна выполняться в специализированной клинике, имеющей в своем составе торакальное отделение и команду высокопрофессиональных врачей эндоскопистов, владеющих методикой выполнения ПОЭМ с соответствующим оборудованием.

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ДВУСТОРОННЕЕ ТОРАКОАБДОМИНАЛЬНОЕ РАНЕНИЕ

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BILATERAL THORACOABDOMINAL INJURY

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Несмотря на развитие хирургии, активном внедрении эндоскопических вмешательств, лучевых методов диагностики проблема выбора оптимальной тактики лечения пациентов с торакоабдоминальными ранениями является актуальной и на сегодняшний день. Нет общепризнанной тактики, существует ситуативный алгоритм действий при наличии того или иного признака. В данной статье представлен клинический случай пациента с множественным торакоабдоминальным ранением с оказанием медицинской помощи на различных этапах, начиная с районной больницы, заканчивая республиканской клиникой.

Abstract

Despite the development of surgery, the active introduction of endoscopic interventions, radiation diagnostic methods, the problem of choosing the optimal tactics for treating patients with thoracoabdominal wounds is still relevant today. This article presents a clinical case of a patient with multiple thoracoabdominal injury with medical care at various stages, from the district hospital to the republican clinic.

Ключевые слова: торакоабдоминальное ранение, травма грудной клетки, повреждение диафрагмы, видеоторакоскопия, эмпиема плевры.

Keywords: thoracoabdominal injury, chest trauma, diaphragmatic rupture, videothoracoscopy, empyema pleurae.

Ведение

Торакоабдоминальные ранения представляют собой особую группу сочетанных ранений органов грудной клетки (ОГК) и брюшной полости с единым раневым каналом со сквозным повреждением диафрагмы и относятся к наиболее тяжелым повреждениям груди и живота с летальностью, достигающей 13–20%. Частота повреждения диафрагмы в мирное время составляет 10–50% от числа пострадавших с проникающими ранениями ОГК. Сложность диагностики и выбора наиболее оптимального алгоритма лечения обусловлена возникновением повреждений в разных анатомических областях (плевральной полости, средостения, брюшной полости, забрюшинного пространства), что часто сопровождается множественными ранениями полых и паренхиматозных органов, жизнеугрожающим кровотечением, недостаточной информативностью имеющихся способов диагностики [1].

Современный диагностический алгоритм пациентов с травмой ОГК, в зависимости от состояния пациента, предусматривает применение ультразвукового исследования плевральной полости, органов брюшной полости и забрюшинного пространства, лучевых методов исследования (обзорная рентгенография органов грудной клетки в стандартных проекциях, спиральная компьютерная томография с внутривенным контрастированием);

электрокардиографии и ЭХО-КС; диагностической видеолaparоскопии и видеоторакоскопии. Выбор проводимого обследования зависит от состояния пациента, наличия и объема кровотечения, характера и тяжести повреждения, от времени получения ранения [3]. Обследование должно проводиться оперативно и максимально в достаточном объеме, для принятия правильной хирургической тактики. Ошибки и отсутствие оперативности в диагностике могут привести к таким осложнениям, как дислокация органов брюшной полости органов в грудную полость с летальностью 4,4–48,1%, геморрагическому шоку, перитониту. Частота не диагностированных повреждений диафрагмы составляет 15–20% случаев у пациентов с колото-резаными ранениями нижней части торакоабдоминального отдела [4].

Актуальной проблемой, наряду с проведением интенсивной терапии, является выбор оптимального алгоритма хирургической коррекции полученных повреждений. В подавляющем большинстве случаев, первым этапом выполняется дренирование плевральной полости с последующей оценкой отделяемого по дренажам. При подозрении на ранение ОГК и средостения, сердца и крупных сосудов, что сопровождается массивным внутриплевральным кровотечением, выполняется экстренная торакото-

мия. Одной из возможных, но не абсолютной, альтернативой торакотомии является видеоторакоскопия (ВТС). В большинстве случаев применение ВТС можно расценивать как диагностический этап, что позволяет, при отсутствии серьезных повреждений в плевральной полости, предотвратить торакотомию. Чаще всего, при торакоабдоминальных ранениях, на абдоминальном этапе используется лапаротомия. Основными показаниями для ее проведения являются: наличие признаков повреждения полого или паренхиматозного органов, массивное внутрибрюшное кровотечение, явления травматического шока. В случае стабильной гемодинамики, отсутствия данных о серьезных повреждениях органов брюшной полости, но при подозрении на абдоминальную патологию возможно выполнение видеолапароскопии [3]. При сквозном повреждении диафрагмы выполняется трансдиафрагмальная ВТС с ревизией ОГК или трансдиафрагмальная видеолапароскопия. Как видно из всего вышеперечисленного, на сегодняшний день нет общепризнанной тактики при торакоабдоминальной травме, существует скорее ситуативный алгоритм действий при наличии того или иного признака повреждения органов брюшной и грудной полостей.

Клиническое наблюдение

Мужчина, 27 лет доставлен в тяжелом состоянии с жалобами на боли в области послеоперационных ран ОГК, брюшной полости, выраженную слабость. В области грудной клетки с обеих сторон, в брюшной полости имеются дренажные трубки, по которым эвакуируется скудное серозно-геморрагическое отделяемое. Два дня назад, после множественных ножевых ранений грудной клетки и брюшной полости, доставлен в хирургическое отделение ЦРБ с диагнозом: множественные колото-резанные торакоабдоминальные ранения грудной клетки передней и задней поверхности, резаные раны правой кисти, правого плеча, геморрагический шок 3 степени. После проведения рентгенографии ОГК, УЗИ плевральной полости, КТ ОГК, ОБП – выявлен двусторонний гемопневмоторакс, гемоперитонеум. Выполнена операция: двусторонняя торакотомия. При ревизии ОГК выявлено: в правой плевральной полости - ранение верхней доли правого легкого, в левой - ранение перикарда, нижней доли левого легкого. Выполнено ушивание раны перикарда, ран обоих легких. Вторым этапом выполнена лапаротомия, выполнено ушивание ран печени, желудка. На этом этапе допущена диагностическая интраоперационная ошибка. Вследствие несоблюдения алгоритма хирургического осмотра не выявлены дефекты диафрагмы с обеих сторон, ранение левой доли печени. На вторые сутки послеоперационного периода по дренажам левой плевральной полости появилось мутное отделяемое коричневого цвета до 1500 мл., что явилось основанием заподозрить повреждение пищевода. Введенный перорально раствор бриллиантового зеленого выделился по дренажам из плевральной полости слева. Также повязки в области правого подреберья скудно пропитались желчным отделяемым. Выполнена рентгеноскопия пищевода с водорастворимым контрастом, КТ

ОГК, по данным которых убедительных данных за повреждение пищевода не выявлено, но диагностировано поступление контраста в левую плевральную полость. Выполнена ФГДС, на которой патологии не выявлено. Состояние пациента оценивалось, как стабильное, тяжелое. Было принято решение о переводе пациента в торакальное отделение ГАУЗ «РКБ МЗ РТ».

Поступил в тяжелом состоянии с жалобами на боли в области послеоперационных ран грудной клетки, брюшной полости, в области установленных дренажей, выраженную слабость. Из-за тяжести состояния был госпитализирован в ОРИТ. Общий анализ крови: эритроциты – $3,54 \times 10^9/\text{л}$, гемоглобин 108 г/л, лейкоциты $8,1 \times 10^9/\text{л}$. Выполнена КТ головного мозга, ОГК, ОБП с пероральным и внутривенным контрастированием - по ходу пищевода затека контраста и пузырьков воздуха не выявлено. Дно желудка плотно прилежит к куполу диафрагмы слева, стенка утолщена. Мелкие пузырьки воздуха между желудком и левым куполом диафрагмы. По задней поверхности дна желудка определяется затек контраста в плевральную полость. Гиподенсная жидкость в плевральной полости слева толщиной слоя 28 мм в задне-нижних в задне-верхних отделах неоднородной плотности геморрагического характера с пузырьками воздуха по периферии. Жидкость в малом тазу толщиной слоя 34 мм. Кости таза без травматических изменений. Контур мочевого пузыря ровные, четкие. Тазовая клетчатка структурная, лимфатические узлы не увеличены.

Заключение компьютерной томографии: КТ признаки затека контраста на уровне дна желудка в левую плевральную полость. Ателектаз нижней доли слева. Гемоторакс слева. Субплевральная тяжистая инфильтрация правого легкого. Жидкость в малом тазу. Гиподенсные линейные участки пониженного накопления контраста на уровне задней поверхности селезенки.

Был выставлен диагноз: Несостоятельность швов ушитой раны желудка. Ранение диафрагмы с формированием желудочно-плеврального сообщения.

Учитывая признаки затека контраста из желудка в левую плевральную полость принято решение о необходимости повторного хирургического лечения в экстренном порядке. Выполнена релапаротомия. В брюшной полости обнаружена желчь в объеме до 500 мл. Обнаружено колото-резанное ранение диафрагмы справа над левой долей печени до 3,5 см, которое ушито узловыми швами. На диафрагме слева обнаружены две колото-резанные инфицированные раны, размером $3,0 \times 0,6$ см и $2,5 \times 0,4$ см с подтеканием через них желудочного содержимого и остатков пищи с фибрином из плевральной полости в брюшную полость. В области дна желудка имеется раневой дефект, диаметром до 2,0 см. Через дефект желудка, левую половину диафрагмы контрастное вещество поступало в левую плевральную полость, что было ранее выявлено по данным КТ ОГК (рис. 1).

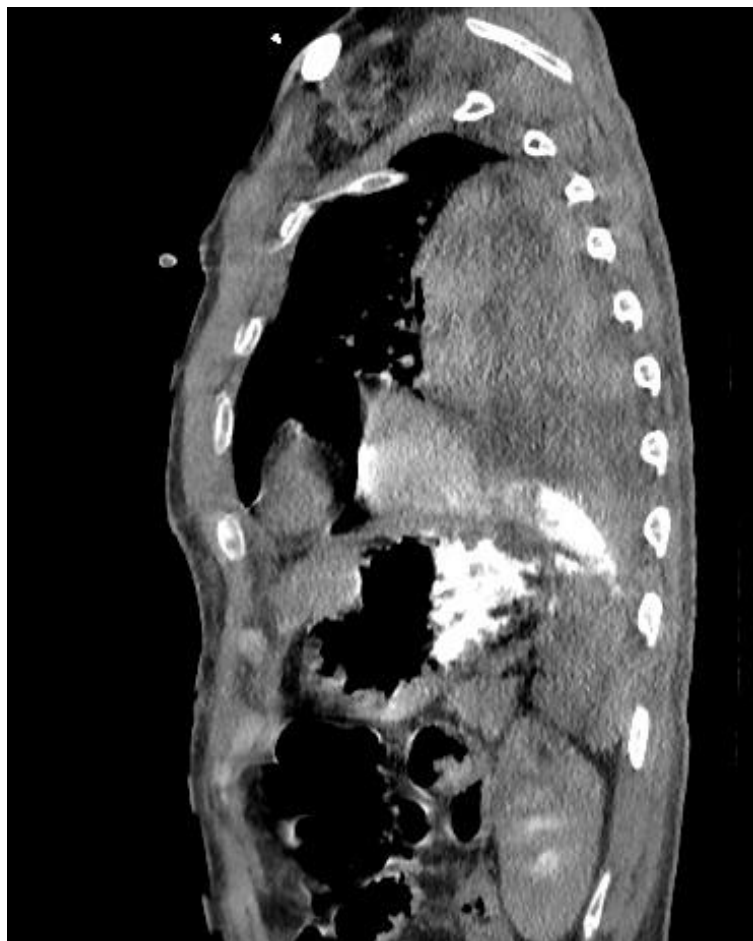


Рис. 1. Компьютерная томограмма в сагитальной проекции с затеком контраста в плевральную полость через дефект желудка и диафрагмы

Обнаружено колото-резанное ранение левой доли печени с желчеистечением. В левом поддиафрагмальном пространстве имеется абсцесс с фибрином, кровью и желудочным содержимым. В области верхнего полюса селезенки имелось ранение с образованием гематомы. Выполнена операция в объеме: атипичная резекция желудка, ушивание ран диафрагмы, ушивание дефекта печени, спленэктомия, дренирование брюшной полости, редренирование левой плевральной полости. Выполнена трансдиафрагмальная ВТС слева, санация, дренирование плевральной полости. Проводилась интенсивное комплексное лечение в ОРИТ. На вторые сутки переведен в отделение. В раннем послеоперационном периоде отмечалась положительная динамика, легкие расправлены.

На 5-6 сутки было отмечено нарастание лейкоцитоза (до $15-17 \times 10^9/\text{л}$), СРБ (до 200-250 г/л). По дренажам брюшной, плевральной полости – скудное серозное отделяемое. Выполнена КТ ОБП, ОГК, на которой выявлено снижение воздушности паренхимы нижних долей обоих легких, ателектаз нижней доли левого легкого; скопление свободной жидкости в правой плевральной полости толщиной 35 мм, скопление неомогенной жидкости в медиабазальных отделах левой плевральной полости толщиной слоя 58 мм с распространением по междолевой борозде и наличием воздуха на уровне дренажа. Заключение: Инфильтрация задних отделов нижних долей. Ателектаз левой нижней доли.

Учитывая данные КТ, лабораторных методов исследования выставлен диагноз: левосторонняя эмпиема плевры. Принято решение выполнить ВТС слева. При ревизии плевральной полости слева обнаружено осумкование с гнойно-фибринозной жидкостью в объеме около 350мл в наружном синусе и парамедиастинально над диафрагмой. Субтотально в плевральной полости имеется скопление сгустков фибрина. Нижняя доля покрыта швартой толщиной около 2-2,5 мм. Верхняя доля фиксирована к средостению и грудной стенке. Выполнена операция декорткация нижней доли легкого, санация и дренирование плевральной полости двумя дренажами.

Проводилась интенсивная терапия, антибиотикотерапия. Послеоперационный период протекал без осложнений. Операционные раны зажили первичным натяжением. Дренажи из плевральной полости удалены на 4 и 6 сутки послеоперационного периода. Контрольная рентгенография ОГК: легочные поля воздушны, костодиафрагмальные синусы свободны, признаков свободного воздуха и жидкости в плевральной полости нет (рис. 2). Рентгеноскопия пищевода и желудка с водорастворимым контрастированием – признаков затека контраста в средостение, брюшную полость нет. Был выписан в удовлетворительном состоянии, с жалобами на периодические боли в области послеоперационных ран. Время нахождения в стационаре – 20 дней.



Рис. 2. Рентгенограмма органов грудной клетки на момент выписки

Заключение

Вопросы хирургической тактики при торакоабдоминальных ранениях, определения оптимальных хирургических доступов и очередность их выполнения на данный момент окончательно не решены. Хирургическое лечение таким пациентам предпочтительнее оказывать в многопрофильном учреждении с участием мультидисциплинарных бригад в составе врачей торакальных, абдоминальных хирургов, реаниматологов, рентгенологов. Адекватная оценка тяжести травмы, состояния раненого позволяет правильно составить алгоритм оказания хирургической помощи, с возможным применением стратегии Damage control у пациентов с крайне тяжелыми повреждениями с целью временного гемостаза и устранения бактериальной контаминации полостей.

Устранение повреждений внутренних органов, по нашему мнению, должно начинаться со стороны грудной клетки, особенно слева, при признаках повреждения сердца и крупных сосудов, что может привести летальному исходу за короткий промежуток времени. При плевральном доступе устраняются жизнеугрожающие последствия ранения, в случае необходимости, возможно наложение зажима на аорту с целью достижения временного поддиафрагмального гемостаза, что дает маневр временем для доступа к устранению внутрибрюшных последствий ранения. Дренажирование плевральных полостей при ранениях грудной клетки чаще всего остается окончательным методом хирургического лечения.

Выявленные признаки повреждения органов живота в абсолютном большинстве нуждаются в активном хирургическом вмешательстве с целью их исключения или подтверждения и устранения. Использование эндовидеотехнологий при лечении торакоабдоминальных ранений является выбором оперативного лечения в специализированных торакальных отделениях. Алгоритм диагностики должен быть универсальным с учетом состояния пациента и возможности клиники, а выбор хирургического алгоритма лечения – индивидуален, с учетом тяжести повреждения органов грудной клетки и брюшной полости, состояния пациента, интенсивности и тяжести кровопотери.

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PEDAGOGICAL SCIENCES

PR-ДЕЯТЕЛЬНОСТЬ В ПРОДВИЖЕНИИ ОБРАЗОВАТЕЛЬНЫХ УСЛУГ ВУЗА

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Аннотация

В работе изучаются теоретические базы развития PR-деятельности вузов и ее характерные черты с учетом особенности рынка образовательных услуг высшего образования. Исследование данных проблем становится актуальным в случае, когда усиливается конкурентноспособное соперничество между вузами за целевую аудиторию. PR-составляющая обладает особым преимуществом в процессе продвижения услуг высшего образования, в создании позитивного и привлекательного стиля университета, в выборе потребителем вуза. Значимость PR никак не ограничивается только данным аспектом. PR представляет и всемирную значимость для вуза, формируя результативные коммуникации со всей окружающей средой и особенно с целевой аудиторией, способствуя достижению стратегических целей университета.

Abstract

The paper examines the theoretical foundations of the development of PR activities of universities and its characteristic features, taking into account the specifics of the market of educational services of higher education. The study of these problems becomes relevant when the competitive rivalry between universities for the target audience increases. The PR component has a special advantage in the process of promoting higher education services, in creating a positive and attractive university style, and in choosing a university by the consumer. The importance of PR is not limited to this aspect in any way. PR is also of global importance for the university, forming effective communications with the entire environment and especially with the target audience, contributing to the achievement of the strategic goals of the university.

Ключевые слова: PR-деятельность, образовательные услуги, вуз, целевая аудитория, инструменты PR.

Keywords: PR activities, educational services, university, target.

Введение. С формированием информативных технологий, увеличением конкурентной борьбы в сфере работы, увеличением требований к юным профессионалам усиливается роль образования. Функционирование кооперативных университетов в главную очередь ориентирована на то, чтобы обеспечить обучающихся знаниями для их последующего применения в профессиональной работе. По этой причине наблюдение направленности развития и рынка образования, и рынка труда предоставляет огромное

превосходство в создании образовательных услуг и определения PR инструментов для популяризации кооперативного вуза.

Исследование PR-деятельности ВУЗов и конкурентов следует начинать с выставок, СМИ, конференций, которых организуют посторонние организации. В основе заключения согласно итогам изучения исполняется исследование направленности в сферы, предвидение их результатов для образовательного учреждения и уточняется цель PR-программы по популяризации

кооперативного вуза. На следующем этапе определяются целевые аудитории, уточняются конкретные абитуриенты, на которых и обращены университетские информационные потоки [1].

Теоретический часть. Единое PR-продвижение помогает достижению целей, которые уточнены стратегией прогресса университета, его дорожной картой. К главным задачам PR-продвижения относятся работа с имиджем, публикации, улучшение коммуникативного пространства, инструментов взаимодействия с партнерами, персоналом, с региональными и федеральными органами управления образовательной и отраслевой средой, представителями бизнеса и общественных организаций, конкурентами. В ходе исследования PR-активности российских университетов были выявлены инструменты, которые использовались чаще всего для улучшения в конкурентной среде[2]:

- Применение средств массовой информации
- Проведение и организация мероприятий различной степени
- Установление позиции университета в сети интернет
- Личные контакты с целевой аудиторией, профориентационная работа. Множество университетов уже осуществляют взаимодействия со СМИ посредством налаженных каналов.

С поддержкой медиа создаются взаимоотношения с целевой аудиторией, однако главный акцент совершается на публикацию материалов имиджа, которые способствуют продвижению бренда. Коммуникационная стратегия университетов содержит в себе систему и осуществление специализированных происшествий таких, как открытые лекции, семинары, конференции, панельные дискуссии, дни открытых дверей, встречи с руководителями региональных министерств и ведомств и др. Сегодня важнейшим фактором успеха PR-продвижения университета считается его размещение во всемирной сети интернет. Вузы больше всего применяют сайт как главную коммуникационную площадку для совершенствования. В данном случае применяется обширный круг способов, которые способствуют уменьшать дистанцию между университетом и потребителем информации. К ним относятся Welcome kit на русском и английском языках, виртуальный (3D) тур по кампусу, связь сайта с видео-хостингами и популярными социальными сетями, онлайн-консультанты, множество из которых обладает обратной связью.

Знаменитым инструментом продвижения находят организацию презентаций университета и рекламу услуг с учетом характерных черт целевых аудиторий в школах города и отдаленных районов. PR-стратегию вуза необходимо направить на наибольшую открытость и активный показ его ключевых преимуществ: общественных, научных, образовательных. Знаменитой практикой является глубокая взаимосвязь между студенческими PR активностями и практическим PR вуза. При всем этом

необходимо отметить, что инициативы обучающихся вписаны в коммуникационную политику ВУЗов и реализуется в глубокой взаимосвязи со специализированными подразделениями, которые ответственны за PR и взаимодействие со СМИ[3].

Мы выделили несколько направлений наряду с известными и освоенными вузами PR-способами, мало применяемых образовательными учреждениями для улучшения в конкурентной среде. Необходимо отметить, что данные инструменты не требуют особых финансовых вложений, легко прогнозировать по ожидаемому эффекту и помогает осуществлению нескольких задач сразу. С целью усиления бренда ВУЗа, увеличения конкурентоспособности университету стоит изучать вместе с традиционными и новые PR-инструменты, методы взаимодействия с целевой аудиторией. При разговоре о целевой аудитории университетов, необходимо выделить то, что они одновременно функционируют на двух рынках – образовательных услуг и рынке труда.

При этом образовательные организации обладают одной продукцией, при сочетании которого с потребителем рынка образовательных услуг, мы приобретаем товар на рынке труда. В данной связи следует применять такие способы, которые имели возможность в полной мере охватить различную целевую аудиторию, как абитуриентов, так и выпускников – настоящих и будущих представителей работодателей, которые формируют запрос на компетентностное наполнение образовательной деятельности.

Таким инструментом, равносильно сконцентрированным равно как во внутреннюю, так и в наружную аудиторию может считаться собственное телевидение университета. Есть возможность демонстрировать имиджевые мероприятия и решать профориентационные задачи, показывать увлекательные моменты процесса преподавания в формате активного репортажа. Постоянный и пространственно-безграничный доступ гарантируется онлайн-трансляцией и применением видеохостингов. Неопровержим то обстоятельство, что огромной возможностью в области маркетинговых коммуникаций обладают обучающиеся и выпускники университетов. Непосредственно они считаются более значимой частью наружного понятия об университете, его престиже и репутации. Они обладают информацией о качестве предоставляемых образовательных услуг, и вместе с тем производят данную информацию, разнося ее в своем окружении. С помощью данного источника складывается социальное мнение и создается успешный бренд[4].

Вводится период выполнения PR-программ. Одной из отличительных черт многих образовательных услуг считается их неравномерность, привязанность к рамкам учебного года. Таким образом, и динамичность PR-мероприятий, в особенности ориентированных на привлечение выпускников школ, училищ и техникумов, имеет периодический характер. Уточняется

конкретный план-расписание и рассчитывается бюджет PR-кампании. Исполнители приступают к третьему этапу – реализации PR-программы после окончания ее планирования и подготовки.

В ходе продвижения образовательных услуг кооперативным университетом осуществляется большое количество PR-мероприятий. PR-программы следует подразделить на блоки, в том числе PR в ходе специальных мероприятий, PR в печати, интернет-PR и др. Публикация статей, сообщений, экспертных мнений в печатной продукции считается одним из самых оптимальных среди печатных средств PR для образовательных учреждений, но это относится не только периодических изданий по тематике образования, таких как журнал “Куда пойти учиться?”. В данную категорию PR-инструментов следует причислить и различные публикации научных трудов, учебных пособий и учебников, авторами или издателями которых являются сотрудники и подразделения образовательных учреждений.

Подобные материалы активизируют значительно больше доверия у широких масс населения, нежели реклама либо редакционные материалы. Весьма эффективным PR-средством продвижения образовательных услуг считается объединение разных образовательных организаций в ассоциации, альянсы, сети и группы, также и международные. Такого рода процесс не только дает возможность повышения своей доли рынка расширяя территорию предоставления услуги, также и дает твердую почву для создания бренда компании, так как притягивает поддержку популярной марки. Таким образом, участие в Международном кооперативном альянсе увеличивает авторитет учебных заведений кооперативной ориентированности. Кооперативные образовательные организации ограничены в возможности широко принимать участие в проведении выставок и ярмарок[5].

Хотя подобное содействие считается одним из самых классических и сильных средств PR. В качестве эффективного события по продвижению образовательных услуг стоит порекомендовать проведение дня Открытых Дверей. Для того, чтобы мероприятие по представлению образовательной организации и кооперативного учебного учреждения в выставке стало эффективным, с точки зрения PR следует совершить следующее:

1. Сформировать мощное объявление будущего Дня Открытых Дверей. Распространение приглашений администрации средних учебных заведений, училищ и техникумов, формирование и продвижение пригласительных билетов, объявление события по каналам районных СМИ и в веб-сайте образовательного учреждения.

2. При организации Дня Открытых дверей кооперативного образовательного учреждения осуществить презентацию профессий и течений подготовки учащихся, показать материально-техническую основу и современные методы в обучении. Обеспечить потенциальных абитуриентов возможностью ознакомиться с

материалами, предлагающие кооперативный университет, и также возможностью личного участия в решении теста по иностранному языку или показать возможности компьютерной программы, применяющихся в преподавании.

3. Непременно брать контакты у всех заинтересованных обучением в кооперативном университете. Стремиться при проведении мероприятия Дня Открытых Дверей напрямую “превращать” потенциальных абитуриентов в реальных обучающихся.

4. Организовывать различные олимпиады. Фактор цены за обучение играет очень важную роль для потенциальных абитуриентов платного образовательного учреждения, следовательно следует установить специальные цены или скидки для победителей олимпиад.

5. Заинтересовать специалистов, популярных личностей для демонстрации специальностей и направлений подготовки, организовать мастер-классы.

6. Непременно осуществить опрос или анкетирование потенциальных абитуриентов и их родителей, которые побывали на Дне Открытых дверей университета.

Данное правило способствует правильной оценке качества проведенного мероприятия и поиску идеи для последующего продвижения кооперативного ВУЗа. Главное превосходство Дня Открытых Дверей состоит в том, что гостям предоставляется шанс узнать услуги кооперативного образовательной организации изнутри, удостовериться в нынешних образовательных технологиях и высокой степени профессорско-преподавательского состава.

Еще одним типом специальных событий, свойственных исключительно для образовательных организаций, можно охарактеризовать встречи выпускников. Показ такого важного для всех образовательных организации события и демонстрация сильного корпоративного духа бывших выпускников способен подтолкнуть потенциальных абитуриентов выбрать именно этот ВУЗ. PR-технологии можно применять и в организации работы кооперативного образовательной организации или его профессорско-преподавательского состава в научных конференциях, симпозиумах, семинарах[6].

Результативным PR-механизмом продвижения услуг на рынке коммерческого образования считается спонсорство, для образовательных организаций в большинстве случаев спонсорство принимает форму предоставления грантов на бесплатное обучение или проведение различных олимпиад. Подобные PR-ходы весьма возвышенно поднимают авторитет образовательной организации и предоставляют возможность в рамках данных мероприятий реализовать другие PR проекты. В современном мире одним из наиболее известных инструментов PR в сфере образования и образования на коммерческой основе стал веб-сайт учреждения. Сайт устраняет множество проблем: устоявание позиции

учебной организации на рынке образовательных услуг, вовлечение абитуриентов, партнеров, спонсоров, предоставление популярности бренда учебной организации. Кроме предоставления наиболее полной информации об учебной организации и побуждение потенциальных абитуриентов к приобретению услуги, сайт образовательной организации можно применять для быстрого решения задач и обеспечения групповой связью между настоящими и будущими учащимися.

Одним из методов такого рода связи могут быть специализированные форумы. Подобным способом, диапазон организуемых мероприятий весьма обширен, любой из них имеет собственные отрицательные и положительные стороны, по этой причине каждый реализуемый PR-ход подлежит кропотливому дальнейшему рассмотрению. Если прибегнуть к формуле RACE, то последняя степень реализации PR-программы – это ее оценка и, прежде всего, оценка ее производительности. Для верной оценки результативности PR-мероприятия необходимо много времени и средств. Почти нельзя определить результативность целой PR-политики образовательной организации, хотя вероятно предоставить верную оценку единичным PR-мероприятиям и методам. Безусловно, увеличение применения методов оценки PR-политики образовательной кооперативной организации станет осуществлять к увеличению качества организуемых мероприятий, таким образом, к увеличению качества оказанных образовательных услуг[7].

Выводы. В качестве результата еще можно определить более всемирные усовершенствования в области образовательных услуг, так как обеспечение образованием – особенный вид услуг, качество которого непосредственно связано не только с отдельными пользователями, но и с более обширными суждениями, такими как, повышение квалификации сотрудников, интеллектуальное развитие нации.

В заключении можно уверенно заявлять о том, что одним из основных методов продвижения университетов на рынке образовательных услуг считается таким образом именуемые «новые медиа», также являющиеся одним из основных каналов продвижения продукта в Интернете, в случае рекламного и PR-продвижения. Репутация университета является довольно эффективным и результативным методом воздействия на восприятие целевой аудитории, также она увеличивает степень конкурентоспособности ВУЗа.

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PHILOLOGICAL SCIENCES

EXPLORING THE INTERNATIONAL COMMUNICATION OF CHINESE LANGUAGE AND THE EXPANSION OF THE CHINESE LANGUAGE LEARNER GROUP FROM THE PERSPECTIVE OF CHINESE LANGUAGE LEARNING MOTIVATION

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Abstract

This article elaborates on the important significance of stimulating Chinese learning motivation for the international dissemination of Chinese language, discusses the relationship between expanding the international use of Chinese language, improving Chinese teaching efficiency, and stimulating and maintaining Chinese learning motivation, and puts forward several suggestions on how to make Chinese more useful and easier to learn.

Keywords: language communication, international dissemination of Chinese language, motivation for learning Chinese language, international cross-cultural communication.

This article will start from how to stimulate the motivation of foreign language learners to learn Chinese, explore the strategies for international dissemination of Chinese, and aim to illustrate that the primary task of international dissemination of Chinese is to continuously expand the group of Chinese learners. To expand the group of Chinese learners, it is necessary to be able to stimulate people's motivation to learn Chinese, and the key to stimulating Chinese learning motivation is how to make Chinese useful and easy to learn for learners. On this basis, this article proposes several ideas and suggestions on how to make Chinese useful and easy to learn.

1、International dissemination of Chinese language and the expansion of the group of Chinese language learners

Language dissemination refers to the increase in the number of people who master and use a certain language, as well as the expansion of the scope of language use. Usually refers to the spread of a language from its native speakers to other populations, which can occur within a multi-ethnic country, such as the spread of Chinese among ethnic minorities in China; It can also occur across borders in other countries, such as the spread of English around the world. The former is the internal dissemination of language, while the latter is the external dissemination of language or the international dissemination of language. The current concept of "international promotion of Chinese language" refers to the external dissemination or international dissemination of Chinese language.

The degree and scale of dissemination of a language mainly depend on two factors: first, the number and distribution range of non-native language learners of the language; second, the size of the actual and potential uses of the language and the breadth of its application areas. These two factors are mutually causal and complementary: the more non-native language learners there are and the wider their distribution, the greater the usefulness of a language, because the more learners and the wider their distribution, the more opportunities they have to use this language for communication; The

greater the use of a language, the more learners it will be, as learners can gain more benefits from mastering the language. But in terms of logic and practical order, learning and mastery are prerequisites for use. Without learners and masters, the use of a language cannot be discussed. In this sense, how to stimulate the learning motivation of foreign language learners and make more foreign language learners willing to pay the cost of time, energy, and money to learn and master Chinese is the first issue that people who hope to effectively promote the international dissemination of Chinese must seriously consider.

The process of language dissemination often refers to the dissemination of culture and ideas. National language is an important carrier of national culture and concepts, and some people (William von Humboldt, 1997:50,70) believe that national language is the national spirit, and the national spirit is the national language. When a language spreads outward, the ethnic culture and ideas it carries and contains will also spread accordingly. Moreover, compared with other forms of cultural output, the dissemination of culture and ideas through language as a medium is more natural, more prone to subtle influence, and less likely to provoke resentment and resistance. Since the dissemination of this culture and concept is carried out through language dissemination, attracting more foreign language learners to learn this language naturally becomes its primary condition. Without this condition, culture and concepts cannot be transmitted to other populations on their own. In the current situation, no matter how much people emphasize that "international promotion of Chinese language" is not just a language issue, and no matter how rich the connotation is given to "international promotion of Chinese language", this "promotion" should not be separated from the platform and carrier of international dissemination of Chinese language. Therefore, for the rich connotation of "international promotion of Chinese language", continuously expanding the group of Chinese language learners is also a top priority.

From the above discussion, it is not difficult to see that the concepts of international dissemination and promotion of Chinese language are both related to and

significantly different from traditional teaching of Chinese as a foreign language. The core issue of teaching Chinese as a foreign language is language teaching; The international dissemination of Chinese language not only needs to solve the teaching problems of Chinese language, but also needs to adopt appropriate strategies and measures to expand the group of Chinese language learners and continuously expand the application fields of Chinese language in international communication. These tasks are not fully covered by the concept of teaching Chinese as a foreign language. However, teaching Chinese as a foreign language undoubtedly plays an important role in the international dissemination of Chinese language. Without a large number of qualified teachers for teaching Chinese as a foreign language, high-quality Chinese textbooks that are suitable for various foreign language learners, and the inability to effectively improve the level and efficiency of Chinese language teaching, all predetermined goals for international dissemination and promotion of Chinese language will be difficult to achieve smoothly.

2、 The Expansion of the Chinese Language Learner Group and the Stimulation of Chinese Language Learning Motivation

Language dissemination is a social phenomenon, and the degree of openness, international status, economic development, technological development, and cultural influence of a country or nation to the outside world are the ultimate determining factors for whether and to what extent a language can be disseminated. But we should also recognize that language learning and use are human actions, and without humans, there is no existence of language, let alone the spread of language. Undoubtedly, the dissemination of language is closely related to factors such as politics, economy, technology, and culture. However, only when these macro level factors affect human behavior can they play a practical role in the process of language dissemination.

Human behavior is always triggered by certain reasons, which include both external factors and internal motivation. Motivation is the psychological process or subjective factor that drives people to engage in a certain behavioral activity, and it is the internal driving force behind the implementation of a certain behavioral activity. The acquisition of a foreign language is different from the acquisition of native language ability. The acquisition of native language ability is not a conscious learning process, but a natural formation process. The acquisition of a foreign language, especially for adults, usually involves a conscious and proactive learning process, and the initiation and continuation of this learning process are driven by specific learning motivations. Therefore, the key to expanding the group of Chinese language learners is to stimulate the learning motivation of foreign language learners and maintain this motivation. Specifically, the stimulation and maintenance of learning motivation for Chinese language learners have the following important significance for the international dissemination of Chinese language:

Firstly, the emergence of motivation for learning Chinese is a necessary condition for the international

dissemination of Chinese language. Language dissemination begins with foreign language learners learning the language, and without institutional pressure, foreign language learning is optional rather than mandatory for an individual; Even if foreign language learning is mandatory, learning a certain language may still be optional rather than mandatory. Just as other behaviors of the same person are governed by specific motivations, foreign language learning behavior is also triggered by specific motivations. Therefore, whether people have the willingness to learn and master a certain language, whether they can generate sufficient motivation to learn the language, and under certain conditions, determine whether the language may be spread among a certain population.

Secondly, the strength of motivation for learning Chinese is related to the effectiveness of international language dissemination. Psychological research has shown that the effectiveness of human behavioral activities depends on the level of the actor's abilities and the strength of their motivation. But in a sense, motivation is more important than ability. For a specific person, their abilities are fixed over a certain period of time and will not undergo significant changes. Under the condition that ability is constant, the effectiveness of behavioral activities depends on the strength of motivation. Researchers in foreign language acquisition generally believe that the strength of learning motivation is an important factor in determining the success or failure of foreign language learning. Without sufficient motivation, even the most language gifted learners find it difficult to achieve the expected foreign language learning goals. As mentioned earlier, since learning and mastering a language is a prerequisite for using it, if a language does not have a certain number of successful learners among foreign language learners, it is impossible for the language to gain any practical status in international communication.

3、 The Motivation of Learning Chinese and the Useful and Easy Learning of Chinese

Social psychology believes that motivation and needs are closely related. Necessity is the thirst and desire for something that arises from the lack of it, and the satisfaction of the pursuit of desire is the universal motivation that inspires people to take action. Therefore, necessity is the underlying reason for behavioral activities. Motivation is derived from needs and is the direct cause of behavioral activities. Due to a lack of water in the body, people may have a need to drink water, which in turn can be transformed into a motivation to seek drinking water. When a person feels lonely, there is a need to interact with others, which in turn transforms into a motivation to reunite with family or talk to friends. If a language can become an effective tool to meet people's needs, acquiring the ability to use that language will become a human need, and this need will be transformed into a motivation to learn and master that language. The more needs a language can satisfy and the more useful it is, the more urgent people's need for it, and the stronger their motivation to learn and master it. A survey report from China on the motivation of foreign students to learn Chinese shows that their motivation to learn Chinese is based on some practical

material or spiritual needs. According to these survey reports, there are two main types of motivation for foreign students to learn Chinese: instrumental motivation and integrative motivation. The former aims to use Chinese to gain certain material benefits, such as hoping to obtain better job positions and easier opportunities for promotion after mastering Chinese; The latter aims to use Chinese to obtain certain spiritual enjoyment or satisfy the desire for knowledge, with the hope of satisfying one's interest in Chinese culture, art, or society after mastering Chinese.

Motivation is derived from the need for transformation, but this transformation is influenced by the external environment. When people have a certain need and there is more than one specific goal provided by the external environment that can meet the needs, the generation of motivation has strong selectivity. This selectivity is manifested in: among multiple specific goals that can meet the needs, people often choose the most beneficial and useful goals for themselves as the direction of their behavioral activities. When people are prepared to learn a foreign language for the sake of international communication, they often face such choices. If there are several languages that can meet the needs of foreign language learners, people often choose the language that best meets their own needs to learn. So the more useful a language is, the more likely it is to win in competition with other languages and become the target of choice for more foreign language learners.

From an economic perspective, people always hope to obtain maximum benefits with the minimum cost in the process of meeting their needs. Foreign language learning is a highly utilitarian behavior, where people mostly learn a foreign language for practical gain rather than just for entertainment. Because learning a foreign language comes at a cost, just like buying a commodity. However, purchasing a regular commodity only requires money, and acquiring a foreign language proficiency requires a considerable amount of time, effort, and hard work. Just as people always hope for good quality and affordable prices when purchasing goods, they also weigh the ratio of cost and benefit when choosing which language to learn. If the cost of learning is significantly greater than the benefits of learning, people often hold a negative attitude towards learning this language; Only when the learning benefits are significantly greater than the learning costs, will more people hold a positive attitude towards learning this language. It can be seen that in order to make more foreign language learners willing to learn Chinese, it is necessary to maintain the ratio between the cost and benefit of learning Chinese within the range that foreign language learners may accept. To maintain a reasonable ratio between learning costs and benefits, we need to expand the use of Chinese in international communication and continuously improve the learning benefits of learners; On the one hand, it is necessary to find ways to reduce the difficulty of learning Chinese, make it easier to learn, and strive to reduce the learning cost for learners.

4. Actively expanding the international use of Chinese language

How to make Chinese more useful, in general, is the issue of how to strive for more discourse power for Chinese in international communication and affairs; From a small perspective, it is the issue of how to enable foreign language learners of Chinese to gain more benefits. The wider and more significant the discourse power of a language, the more substantial the investment returns that foreign language learners may receive.

The acquisition of discourse power in a language is certainly based on the national strength in areas such as economy, technology, culture, politics, and military. The size of discourse power is always roughly equivalent to the comprehensive national strength, technological level, and international status of a country. However, we should also recognize that the acquisition of discourse power is not entirely a natural process in international trade. The advantageous position in academic exchange and other aspects does not necessarily lead to the widespread dissemination of a language. As some Western scholars (Stanley Lieberman, 2001) have analyzed, even if a country is an important trading partner of other countries, its language may not necessarily become the object that these countries need to learn and master, because communication between countries can be carried out through a common mastery of another language.

In the process of language dissemination, human subjective efforts are not completely idle. Within the limits allowed by objective conditions, the state adopts active language dissemination policies, implements proactive language dissemination plans, and can accelerate and promote the acquisition of dialogue language rights. In the process of English replacing French as the most widely used language internationally, Britain and the United States adopted an active English dissemination policy, investing a large amount of funds to promote English worldwide. Taking the UK as an example, as early as 1934, the UK established a special agency to promote English overseas - the British Council. The council's budget from 1989 to 1990 reached 321 million pounds. By 1994, the council had branches in 86 countries and established 55 English teaching centers in 32 countries. As Robert Philipson (2001) pointed out, English was only a minor language in 1600, but it developed into an important language for international communication in less than four centuries. This can be attributed to the great success of Britain in warfare, colonization, and trade in the 17th, 18th, and 19th centuries, as well as the military power and technological alliance position of the United States after World War II; On the other hand, the international dissemination of English also benefits from the huge investment made by British and American governments and individuals in promoting English.

Although China still needs long-term efforts to become an economic and technological powerhouse, in terms of current national strength, China has become the fourth largest economy in the world. The country's international status has significantly improved, and foreign exchanges in trade, culture, and other aspects are unprecedentedly active. The rapidly developing China is attracting more and more attention, which has created

favorable objective conditions for accelerating the international dissemination of the Chinese language. In the face of such development opportunities, we should fully utilize the potential space provided by China's development for the dissemination of Chinese language. Through active language dissemination strategies and enterprising work, we should gradually transform the potential space for Chinese language dissemination into tangible Chinese discourse power. Otherwise, the achievements that could have been actively fought for or achieved may be lost in vain.

From the perspective of language communication strategies, increasing the frequency and level of use of a language in international communication will stimulate potential learners' needs for the language. We can start from these two aspects, actively expand the international use of bilingualism, expand the demand for Chinese, promote the international dissemination of Chinese, and gradually make Chinese an important language in international communication.

(1) Continuously increasing the frequency of using Chinese

To continuously improve the frequency of using Chinese in international communication, the first issue to be addressed is attitude and conceptual issues, that is, whether we can all confidently demand the use of Chinese under objective conditions. The actual situation seems to be different. In 2004, domestic news media extensively reported on the ban of Chinese language at the Fourth Global Chinese Physicists Conference. At this conference held in Shanghai with all Chinese attendees, English was designated as the only working language, while Chinese was banned. Even proposals to adopt bilingual English and Chinese were rejected by conference organizers citing international conventions. This matter is quite representative in today's China, where English is considered an important tool for aligning with the international community. If we blindly adhere to so-called international conventions and automatically give up the right to use Chinese in the game of discourse power, the result will only be self-destructive of the future of international dissemination of Chinese. Therefore, we hope that Chinese people can enhance their awareness of using Chinese in international communication, fully utilize the advantageous position brought about by China's economic development and international status enhancement, and gradually strive for greater space for the use of Chinese language when conditions permit. As for specific strategies, we suggest:

1. Strive to make Chinese the working language or one of the working languages in more domestic international conferences and international conferences with Chinese as the main body, and gradually strive to make Chinese one of the working languages in various overseas international conferences;

2. Strive to make Chinese the working language in more international business negotiations;

3. Strive to enable more Chinese academic journals to enter international academic publication retrieval systems such as SCI, SSCI, and AHCI;

4. Strengthen the standardization of Chinese scientific and technological terminology, so that Chinese

can better adapt to the development of science and technology today;

5. Building a comprehensive database based on the international internet and using Chinese as a carrier, continuously increasing the proportion of Chinese resources in the virtual space;

6. Gradually expand the global coverage of Chinese radio and television programs;

7. Encourage book publishing companies to actively explore the overseas market of Chinese books and continuously increase the overseas circulation of Chinese books.

(2) Gradually improving the level of use of Chinese language

In international communication, if a language is only used in the daily activities of the general public and cannot enter higher-level communication fields, it is difficult to become an important language in the international community. In today's world, the reason why English holds such an important position is not only because it has high universality in various fields of international communication, but also because it has unparalleled advantages in areas that are crucial for both national and individual development, such as international politics, international trade, international finance, technology, academia, etc. If a language is limited to low-end use, even if it reaches a higher frequency of use, its role in international dissemination is limited. Therefore, in the process of international dissemination of Chinese, more attention and more active promotion should be given to the high-end use of Chinese. The various aspects involved in our suggestions mentioned above belong to the high-end field of language use. Actively expanding the scope of Chinese language use and continuously improving the frequency of Chinese language use in these fields is undoubtedly of great significance for accelerating the international dissemination of Chinese language.

5. Strive to improve the efficiency of Chinese language teaching

How to make Chinese easier to learn, the core issue is how to enable more foreign language learners who have never learned Chinese to better master Chinese in a shorter period of time through efficient Chinese language teaching. A native English speaker naturally finds it difficult to learn French or German when learning Chinese, which is determined by the historical homology and differences between languages, and cannot be changed by human effort. All we can do is try to improve the efficiency of Chinese language teaching, so that learners can acquire Chinese communication skills with as little learning cost as possible. Chinese is considered one of the most difficult languages to learn in the world (Xu Daming, Tao Hongyin, Xie Tianwei, 1997:165). If we cannot reduce the difficulty and cost of learning Chinese within the possible range, learners may develop a fear of difficulty, their learning motivation and confidence may be shaken, and the international dissemination of Chinese will inevitably be hindered to a certain extent.

The key to improving the efficiency of Chinese language teaching is to solve the problems of what to

teach and how to teach. Although there may be different opinions on these issues, one thing should be certain: the resolution of these issues should be subject to the teaching objectives of teaching Chinese as a foreign language. Our teaching objective should be clear, which is to enable more foreign language learners who have never learned Chinese to master it more easily in the shortest possible time. This is also one of the most fundamental goals of international dissemination of Chinese language.

In order to achieve the teaching objectives of teaching Chinese as a foreign language, we believe that the following aspects should be given attention and importance:

(1) Strengthening the Research on Chinese Ontology for Teaching Chinese as a Foreign Language

What we mean by Chinese ontology research for teaching Chinese as a foreign language is not a completely different research field from general language ontology research, but rather a Chinese ontology research that is problem oriented, fully considers teaching needs, targeted, and not solely based on academic interests. Only by strengthening such research can we make our teaching content more suitable for the needs of foreign language learners, better answer their questions and improve their learning efficiency. In this type of research, we believe that the comparative study of Chinese and foreign languages and the comprehensive study of grammar rules should be given attention.

1. Comparative Study between Chinese and Foreign Languages

In the process of foreign language learning, learners' mother tongue can interfere, and the differences between the target language and mother tongue often lead to negative transfer, which is one of the main reasons for learners to make errors. In teaching Chinese as a foreign language, the difficulties for foreign language learners to learn Chinese are often related to the differences between foreign languages and Chinese. (Long Qingran, 1990; Zheng Yide, 1995; Lu Jianming, 2000) Therefore, understanding the similarities and differences between Chinese and foreign languages is of great significance for Chinese language teaching. However, as of now, research in this area seems to be relatively weak, with limited available results and even fewer systematic comparisons. Moreover, the scope of comparative research is relatively narrow, with less or even less involvement in important languages such as Russian, French, German, Spanish, Arabic, etc. (Li Quan, 2006; Ding Chongming, 2006) This situation clearly cannot meet the current need to accelerate the international dissemination of Chinese language.

2. Comprehensive research on grammar rules

At present, research on Chinese grammar is constantly refining, with increasingly detailed rules and more subcategories of parts of speech. This is undoubtedly necessary for deepening people's understanding of Chinese. But if there is only analysis without synthesis, only refinement without summarization, some fundamental and global grammar rules will not be easily discovered. According to our incomplete statistics, between 2004 and 2005, there were over 360 modern Chinese grammar research papers published in official

domestic journals each year. Based on this quantity, the total number of officially published modern Chinese grammar research papers in China should be over 10000 so far. What are the specific grammar rules proposed in these 10000 papers? How many subcategories of parts of speech should be separated? Nevertheless, people still believe that the current grammar rules are not detailed enough, as these rules still cannot completely seal the errors produced by Chinese learners. This view may be correct, but from another perspective, this phenomenon may indicate the limitations of research that emphasizes analysis over synthesis, and the resulting rules may not have enough explanatory power. From a teaching perspective, the number of rules with strong explanatory power and wide applicability is limited, making them easier to learn and master. Once mastered, their usefulness will also be greater. However, rules that can only explain individual grammatical phenomena are bound to be numerous. If these rules are isolated from each other and lack systematic connections, learners will face enormous pressure to learn and master them. So whether from the perspective of Chinese ontology research or improving the efficiency of teaching Chinese as a foreign language, we should consciously strengthen the comprehensive study of Chinese grammar rules, and try to explain systematic grammar phenomena with more general rules as much as possible.

(2) Promoting the improvement and refinement of teaching concepts

Teaching philosophy refers to teaching ideas or concepts (Zhao Jinming, 2007), the teaching philosophy of teaching Chinese as a foreign language. According to our understanding, its core content should be a theoretical understanding of the teaching objectives and methods of teaching Chinese as a foreign language. However, teaching philosophy is not a specific teaching objective and method itself, but a theoretical principle based on which different teaching objectives and methods are evaluated and screened. The specific objects of teaching are different, and the teaching objectives and methods to achieve these objectives often vary. However, different teaching objectives and methods can adhere to the same teaching philosophy. Teaching philosophy should have a high theoretical content and reach a high level of generalization. Only in this way can teaching philosophy have broad guiding significance in complex and diverse teaching practices, and this guiding significance is the main reason why we value teaching philosophy.

In recent years, scholars (Zhao Jinming, 2007) have conducted in-depth summaries of the historical development of teaching Chinese as a foreign language and provided their own interpretations of some important language teaching concepts. We believe this is a very beneficial work. The practice of teaching Chinese as a foreign language in our country has gone through more than half a century, which has condensed the experience and wisdom of several generations. Now, on the one hand, we need to summarize, refine, and elevate these valuable practical experiences based on the general theories of linguistics, education, and

psychology. On the other hand, we need to pay attention to the development of the teaching philosophy of teaching Chinese as a foreign language in the world, especially in other countries. With a broad mind that embraces all rivers, we can learn from and draw useful elements from it, continuously improve and perfect our teaching philosophy. Only in this way can all practices of teaching Chinese as a foreign language be guided by advanced teaching concepts, and the effectiveness and efficiency of teaching Chinese as a foreign language be fundamentally guaranteed.

(3) Exploration of Strengthening Teaching Methods

Teaching methods are crucial for language teaching, and different teaching methods may result in significant differences in teaching effectiveness. Therefore, strengthening the research and exploration of teaching methods is of great significance for improving the efficiency of teaching Chinese as a foreign language. At present, people's understanding of the laws of foreign language acquisition is still very limited, and it is unclear what kind of teaching method is the most effective. In this situation, innovation and exploration of teaching methods should be encouraged, and various attempts and experiments should be conducted. Comparison is the key to identification. Only through continuous exploration and experimentation can we discover truly effective teaching methods.

In the exploration of teaching methods, we believe that the issue of the relationship between knowledge and ability is worth serious consideration. From the user's perspective, language is an ability, and mastering a language means being able to rely on intuition, that is, language sense, rather than rational analysis for encoding and decoding. It is based on this understanding of the nature of language that people generally believe that Chinese language classes for foreigners should be a skill course aimed at cultivating language ability, rather than a theoretical and knowledge course. However, what are the effective ways to acquire language ability? How can we achieve the teaching goal of cultivating language ability while minimizing learning costs to the greatest extent possible? People's understanding of this is not consistent, and we will only take grammar as an example. One viewpoint holds that in teaching Chinese as a foreign language, grammar knowledge is not important, and strengthening listening and reading to acquire a large amount of sensory knowledge is the most important way to develop language ability; Another viewpoint holds that learning grammar knowledge is an effective method for mastering a language, and grammar teaching should play an important role in teaching Chinese as a second language. (Zhao Jinming, 2002) These two perspectives may each have their own reasons, or they may each adapt to different levels of learners. However, rational knowledge does not equate to ability. Some basic grammar rules may need to be taught, but how to teach them is beneficial for learners to develop language ability or sense, which should be carefully studied. The accumulation of sensory knowledge to form language ability essentially relies on the learner's own language induction ability to acquire language rules, and this induction process is also

the process of forming language sense. But in terms of learning efficiency, can moderate teaching of grammar knowledge guide and assist learners in their induction? If the teaching of grammar knowledge can play such a role, then to what extent is it moderate? These issues also require careful study. We suggest conducting comparative teaching experiments on the questions raised here, and believe that these teaching experiments will be helpful in seeking answers to the questions.

(4) Solve the problem of cultural introduction well

Verbal communication always occurs in specific social contexts and is constrained by them. Cultural factors are an important component of social contexts. Therefore, the use of language, including speech comprehension and expression, is inevitably influenced and constrained by specific cultural backgrounds. Due to the close relationship between language proficiency and cognitive level of relevant cultures, the issue of cultural introduction in teaching Chinese as a foreign language has always received widespread attention since the 1990s.

"Culture" is a comprehensive category, and due to the needs of language teaching, many people advocate distinguishing between cultural factors that directly affect cross-cultural communication and those that do not. Some people refer to the former as "communicative culture". According to the existing discussions on communicative culture, its basic content is the specific cultural connotations of language forms and pragmatic conventions based on specific cultures. Therefore, some people also refer to it as "semantic culture" and "pragmatic culture". (Chen Guanglei, 1992) In fact, these cultural factors themselves are an important component of human language ability, and therefore should certainly become an important teaching content in teaching Chinese as a foreign language. The problem is that Chinese language teachers have long been accustomed to these cultural factors of their own ethnic group and do not feel that they (at least a considerable part of them) have any special features, so they cannot be keenly aware of their special significance to foreign language learners. To solve this problem of neglect, it is necessary to conduct comparative analysis and research on communication cultures between China and foreign countries. If we can organize a group of scholars who are familiar with both Chinese and foreign communication cultures to conduct comprehensive and targeted analysis and research on the similarities and differences between Chinese and foreign communication cultures, the results obtained will have a wide range of positive effects on classroom teaching of Chinese as a foreign language and textbook development.

From previous discussions, the focus of attention on cultural introduction in teaching Chinese as a foreign language has always been on so-called communicative cultures that may lead to cross-cultural communication barriers. Many scholars believe that cultural introduction should be related to cultivating students' language communication abilities. (Lu Jianji, 1990; Xu Jiazhen, 2000) If we only look at language teaching from a simple perspective, this view is undoubtedly reasonable. However, if we look at the historical mission of "international promotion of Chinese language"

and only emphasize the introduction of "small cultures" such as communicative culture, while ignoring the dissemination of "big cultures" such as the worldview, values, and moral views of the Chinese nation, it may not be appropriate. Because the spread of any language is always accompanied by the spread of a "big culture", pure language dissemination never exists. We only need to look at the spread of Chinese characters in North Korea and Japan in history, as well as the spread of English around the world today, and it is easy to understand this. Of course, we do not advocate specifically teaching and promoting these cultural contents in the classroom of teaching Chinese as a foreign language. This completely detached cultural dissemination method is not in line with the concept of "international promotion of Chinese language" and may not necessarily achieve good results; We only advocate that there should be a conscious awareness of cultural dissemination in the process of teaching Chinese as a foreign language. In terms of the selection of texts and teaching content, we should incorporate and reflect the content of "big culture" in a way that is not propagated or instilled, so that foreign language learners can gradually appreciate the excellent culture of the Chinese nation in the process of learning Chinese.

(5) Compilation of Usage Reference Books

To do a good job, one must first sharpen their tools. A good Chinese reference book is a powerful tool for learning Chinese. At present, the main reference books we can provide to Chinese learners are grammar books and dictionaries. Grammar books explain the organization rules of sentences based on parts of speech (including subcategories), and their explanation of grammar functions only involves categorical words, without involving individual words (excluding virtual words); Dictionaries (excluding function word dictionaries) mainly explain the meaning of words rather than their usage, although the object of explanation is the individual words. From here, we can see that there is still a gap in the Chinese language knowledge provided by reference books, which is the usage of words. The usage of words mainly refers to the usage characteristics of words (including some solidified sentences) that are difficult to summarize and explain in class form. For example, some words have the same part of speech, but the words they can be paired with are not exactly the same, such as "see" and "see", "see" and "see", etc; Some language elements have been solidified, but due to their different forms from words, they are generally not included in dictionaries; Due to its unique usage and inability to generalize, grammar books do not cover the special meanings and usage of phrases such as "look at you", "look at me", "you're here again", "really", "really", etc.

These knowledge of usage and grammar are disregarded because they are too individualistic and often cannot or cannot be fully analogized, making it difficult to incorporate them into the grammar rule system; A general dictionary doesn't care because it mainly explains the meaning of words. If usage is also included, a considerable number of entries will have longer explanations, and the length of different entries will be

extremely uneven, which is a taboo in dictionary compilation. People often say that teaching foreigners Chinese grammar is easy to understand and easy to use, and this mistake is often due to improper vocabulary. Grammar can only provide the skeleton of sentences, and the details of word selection are not discussed. Grammar is generally not taught in the classroom (because it cannot be taught completely). In this situation, if there are no reference books available for searching, learners can only explore on their own. If this situation is not changed, it is obviously very unfavorable for learners to master the details of Chinese usage rules. If we can strengthen the research on word usage and write usage reference books for foreign learners, it is equivalent to providing learners with an extracurricular teacher in Chinese usage, which is undoubtedly very beneficial for improving their learning efficiency.

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PHYSICS AND MATHEMATICS

PHYSICAL REALITY OF IMAGINARY NUMBERS AND THEIR PHYSICAL ESSENCE¹

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Abstract

In the article it is shown that the version of the special theory of relativity (STR), stated in all textbooks of physics, is wrong as the relativistic formulas received in it are wrong, they are incorrectly with use of wrong principle of non-exceeding of speed of light are explained and from them wrong conclusions about physical unreality of imaginary numbers and also about existence in the nature of our only visible universe are made. This generally recognized version of STR is refuted experimentally proved as a result of research of transient processes in linear electric circuits by the general scientific principle of physical reality of imaginary numbers discovered 500 years ago. It is explained that imaginary numbers in astrophysics correspond to the world of invisible parallel universes in other dimensions. Its cognition is the task of future science. However, the neighbouring universes can be seen on the starry sky in portals even now. The corrected relativistic formulas are obtained and the corrected version of STR corresponding to them is created.

Keywords: imaginary numbers, special theory of relativity, invisible universes, hidden Multiverse, Hyperverse.

1. Introduction

Imaginary numbers were discovered 500 years ago by Scipione Del Ferro, Niccolo Fontana Tartaglia, Gerolamo Cardano, Lodovico Ferrari and Raphael Bombelli [1]. And perhaps even earlier than them such a scientific discovery was made by Paolo Valmes [2], who was burned alive at the stake for this by the verdict of the Spanish inquisitor Thomas de Torquemada. Even Sir Isaac Newton² was forced to take into account the opinion of the Inquisition about imaginary numbers, who therefore preferred not to use them in his works.

However, their physical significance remains unknown in science to this day. Indeed, everyone knows what 7 seconds, 12 meters, or 19 grams are, but no one knows what $7i$ seconds, $12i$ meters and $19i$ grams, where $i = \sqrt{-1}$, are. We all know that 7, 12 and 19 are simply numbers having no physical significance outside of their context. However, this knowledge was not enough to understand the STR.

2. The Problem of Understanding Imaginary Numbers

Works of famous mathematicians Abraham de Moivre, Leonhard Euler, Jean le Rond d'Alembert, Caspar Wessel, Pierre-Simon de Laplace, Jean-Robert Argand, Johann Carl Friedrich Gauss, Augustin Louis Cauchy, Karl Theodor Wilhelm Weierstrass, William Rowan Hamilton, Pierre Alphonse Laurent, Georg Friedrich Bernhard Riemann, Oliver Heaviside, Jan

Mikusiński and others contributed to creation of a perfect theory of functions of a complex variable. However, the theory neither proves physical reality of imaginary numbers nor explains their physical significance³.

Imaginary numbers are now widely used in all exact sciences, including radio engineering, electrical engineering, optics, mechanics, acoustics, etc. But in them also the physical reality of imaginary numbers is not proved and their physical meaning is not explained⁴.

But in the generally accepted version of the special theory of relativity (STR) [3]-[5], which is rightly considered one of the most outstanding theories created in the 20th century and is therefore currently studied in all physics textbooks, it is even denied, since its creators were unable to explain the relativistic formulas obtained therein.

$$m = \frac{m_0}{\sqrt{1 - (v/c)^2}} \quad (1)$$

$$\Delta t = \Delta t_0 \sqrt{1 - (v/c)^2} \quad (2)$$

$$l = l_0 \sqrt{1 - (v/c)^2} \quad (3)$$

where m_0 is the rest mass of a moving physical body;

m is the relativistic mass of a moving physical body;

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² In the atmosphere of the omnipotence of the Inquisition and intolerance of dissent that existed at that time, Newton's friend William Whiston was stripped of his professorship in 1710 for some of his careless statements and expelled from Cambridge University.

³ Naturally, about physical reality and physical essence of imaginary numbers, as well as real numbers, we can speak only in relation to named numbers, equipped with indications on the used units of measurement of corresponding parameters of physical objects and processes.

⁴ More precisely, in radio engineering and electrical engineering it is actually revealed in the process of their practical use, but nothing is written about this in textbooks, so as not to refute physics.

Δt_0 is the rest time of a moving physical body;

Δt is the relativistic time of a moving physical body;

l_0 is the rest length of a moving physical body;

l is the relativistic length of a moving physical body;

v is the velocity of a moving physical body;

C is the speed of light;

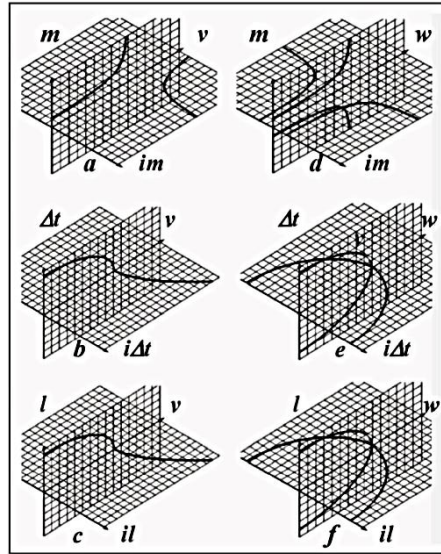


Fig. 1. Graphs of functions $m(v)$, $\Delta t(v)$ and $l(v)$ corresponding to the existing and the corrected versions of the STR in the sub luminal $v < C$ and superluminal $v > C$ ranges

They could not explain physical significance of these formulas for the superluminal velocity range, where, according to these formulas, mass, time, and distance were measured in imaginary numbers (see Fig. 1a,b,c). However, since a theory that could not be explained even by its creators would be useless to anyone, in the STR had to introduce a postulate⁵, known as the principle of light speed non-exceedance, the meaning of which is clear from its name.

In relation, for example, to the Lorentz-Einstein formula (1), it was explained as follows. The postulate asserted that since the situation at $v > C$ never occurred anywhere in the early 20th century, it did not need any explanation. Thus, imaginary numbers were unnecessary. i.e. non-existent. Moreover, they were even called imaginary

However, since the existing version of the STR was based solely on a postulate, that is, an unproven assumption, there was no complete certainty that it was correct. Actually, it turned out to be incorrect, since in 2008-2010 (i.e., even before publication of results of the unsuccessful OPERA experiment⁶ conducted at the Large Hadron Collider in 2011), it was experimentally

proven [6]-[10] that imaginary numbers are physically real.

3. Proof of Physical Reality of Imaginary Numbers

Thus in the 21st century, a Hamlet's question has arisen in physics – is the generally accepted version of the STR correct or not correct? Consequently, does it require correction or not? To address this, it was necessary to answer another question – whether imaginary numbers discovered 500 years ago are physically real or not. And the response to this question required experimental confirmation, even though this issue falls within the realm of mathematics. However, Oliver Heaviside asserted on a similar issue, “*Mathematics is an experimental science.*”

Let us further examine electromagnetic transient processes in linear electrical circuits⁷ [10]-[15], which allow us to answer this question conclusively using simple experiments⁸. These experiments can be carried out by any engineer in less than a day in any radio engineering laboratory. Such processes in linear electrical LCR circuits are described by linear differential equations (or systems of such equations)

$$a_n \frac{d^n y}{dt^n} + a_{n-1} \frac{d^{n-1} y}{dt^{n-1}} + \dots + a_0 y = b_m \frac{d^m x}{dt^m} + b_{m-1} \frac{d^{m-1} x}{dt^{m-1}} + \dots + b_0 x \quad (4)$$

where $x(t)$ is the input action (or the input signal);

$y(t)$ is the response (or the output signal);

$a_n, a_{n-1}, \dots, a_0, b_m, b_{m-1}, \dots, b_0$ are the constant coefficients;

$n, n-1, \dots, 0, m, m-1, \dots, 0$ is the order of derivatives.

A solution to the equation (5) is known to equal the sum of two components

$$y(t) = y(t)_{forc} + y(t)_{free} \quad (5)$$

⁵ Since it has never been proven theoretically or confirmed experimentally by anyone.

⁶ Which was no longer needed

⁷ Unlike the extremely complex and expensive MINOS, OPERA and ICARUS physics experiments, which were no longer needed

⁸ In contrast to the extremely expensive physics experiments MINOS, OPERA and ICARUS, which were no longer needed

where $y(t)_{free}$ is the free component of response, corresponding to the transient process;

$y(t)_{forc}$ is the forced component of response.

They are found in different ways. We are only interested in the free component of response.

Finding a specific type of a free component of response begins with writing and solving the so-called characteristic algebraic equation (usually of the second order) corresponding to the original differential equation (4)

$$a_n p^n + a_{n-1} p^{n-1} + \dots + a_0 = 0 \quad (6)$$

where a_n, a_{n-1}, \dots, a_0 are the constant coefficients same as in the equation (4);

$n, n-1, n-2, \dots, 1, 0$ are the degree indices, the magnitude of which is equal to the order of the corresponding derivatives in differential equation (4);

p is the variable, which is often called a complex frequency, when it takes values in the form of complex numbers.

Currently, two algorithms for solving algebraic equations (4) are used in mathematics. According to the first algorithm, solutions are found in the form of real numbers known to everyone. The second algorithm finds solutions to complex numbers that no one understands.

Then, one might assume that no one needs complex numbers because of their incomprehensibility. But, actually, the use of complex numbers greatly simplifies mathematical reasoning and many engineering calculations. Thus, when solving algebraic equations of power n according to the first algorithm, we would receive either n roots or $n-1$ roots or $n-2$ roots ... or even no roots, depending on the value of coefficients. a_n, a_{n-1}, \dots, a_0 And when using the second algorithm to solve the same algebraic equations of power n , we

would always receive n roots. Therefore, for some combinations of coefficients a_n, a_{n-1}, \dots, a_0 , the algebraic equation (6) might not have any solution within the first algorithm, and would always have n solutions within the second algorithm.

This definitely contradicts common sense and requires an answer to the question – which of the algorithms mentioned above provides the only correct solution in a particular situation? After all, two mutually exclusive statements cannot be simultaneously true. In the formal logics, the Latin aphorism ‘*Tertium non datur*’, i.e. there is no gap between them that corresponds to this situation.

However, the question is uneasy, otherwise, the answer thereto would have been received long ago. Since humans have a visual thinking, graphical solutions to algebraic equations would be the most helpful in explaining the situation.

For this purpose, we shall convert, for example, the algebraic quadratic equation

$$a_2 p^2 + a_1 p + a_0 = 0 \text{ as follows}$$

$$\begin{cases} y = a_2 p^2 + a_1 p + a_0 \\ y = 0 \end{cases} \quad (7)$$

Then its solution (see Fig. 2) would correspond to the intersection of the parabola

$y = a_2 p^2 + a_1 p + a_0$ and the line $y = 0$, i.e. the abscissa axis p .

As can be seen depending on the parabola position relative to the axis p , which is determined by values of coefficients a_2, a_1, a_0 , the parabola $y = a_2 p^2 + a_1 p + a_0$ can cut the axis p either at two or one or none of the points.

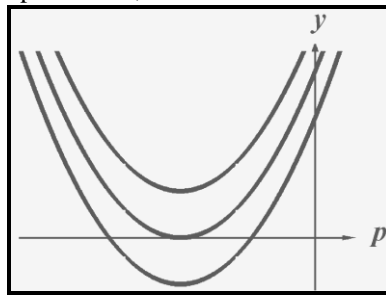


Fig. 2. Graphical solution to the quadratic equation in the set of real numbers, explaining that the equation can have either two or one or no solutions

The result obtained is consistent with the corresponding analytical solution to the quadratic equation. Actually, if a discriminant of the equation $a_2 p^2 + a_1 p + a_0 = 0$ is positive, the equation has two different real roots $p_1 = -\sigma_1$ and $p_2 = -\sigma_2$. If a discriminant is equal to zero, i.e. $a_1^2 - 4a_2 a_0 = 0$,

the equation has one real root $p = -\sigma_0$. And if a discriminant is negative, i.e. $a_1^2 - 4a_2 a_0 < 0$, the equation does not have any real root.

The result is so simple and obvious that it would seem to even serve as a proof of existence of the only right solution according to the first algorithm using real numbers. But this is not the case, since a no less clear graphical solution to the quadratic equation can also be obtained within the second algorithm. It looks to be impossible at first sight, since the graph of function, where

and are the complex quantities, should be four-dimensional. Humans can neither imagine nor depict four-dimensional graphs. Really, try to imagine and draw, for

example, a four-dimensional cube (also referred to as a tesseract or octachoron). But mathematicians can do this.

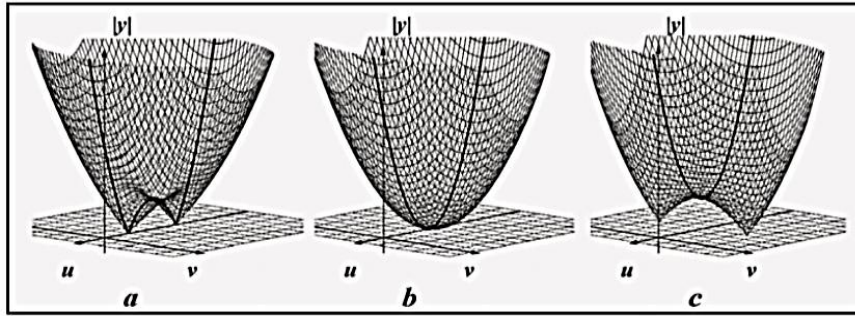


Fig. 3. Graphical solution to the quadratic equation in the set of complex numbers, explaining that the equation can have two solutions or one double solution

However, the problem becomes quite solvable if a four-dimensional graph of the function of complex variable $y = f(x)$ is replaced by a three-dimensional graph of function $|y| = |f(x)| = |f(\sigma + i\omega)|$. Thus, within the second solution algorithm, the quadratic equation can be converted into a system of equations, corresponding to the Fig. 3.

$$\begin{cases} |y| = |a_2(\sigma + i\omega)^2 + a_1(\sigma + i\omega) + a_0| \\ |y| = 0 \end{cases} \quad (8)$$

Herewith, Fig. 3a would correspond to the case when a solution to the quadratic equation for $a_1^2 - 4a_2a_0 > 0$ has two real roots of different values $p_1 = -\sigma_1$ and $p_2 = -\sigma_2$. In this case, the surface $|y| = |f(x)|$ would contact the plane of the complex variable $x = \sigma + i\omega$ at two different points $p_1 = -\sigma_1$ and $p_2 = -\sigma_2$ on the axis of real numbers σ .

Fig. 3b would correspond to the case when a solution to the quadratic equation for $a_1^2 - 4a_2a_0 = 0$

has one double⁹ real root $p_{1,2} = -\sigma_0$. In this case, the surface $|y| = |f(x)|$ would contact the plane of the complex variable $x = \sigma + i\omega$ at one point $p_{1,2} = -\sigma_0$ on the axis of real numbers σ .

Fig. 3c would correspond to the case when a solution to the quadratic equation for $a_1^2 - 4a_2a_0 < 0$ has two complex conjugate roots $p_{1,2} = -\sigma \pm i\omega$. In this case, the surface $|y| = |f(x)|$ would contact the plane of the complex variable $x = \sigma + i\omega$ at two points that are not on the axis of real numbers σ .

Algebraic equations of the third and higher degrees can be solved graphically in a similar way. Fig. 4 gives an example of a graphical solution to the algebraic cubic equation $a_3p^3 + a_2p^2 + a_1p + a_0 = 0$, which in the set of real numbers is converted as follows

$$\begin{cases} y = a_3p^3 + a_2p^2 + a_1p + a_0 \\ y = 0 \end{cases} \quad (9)$$

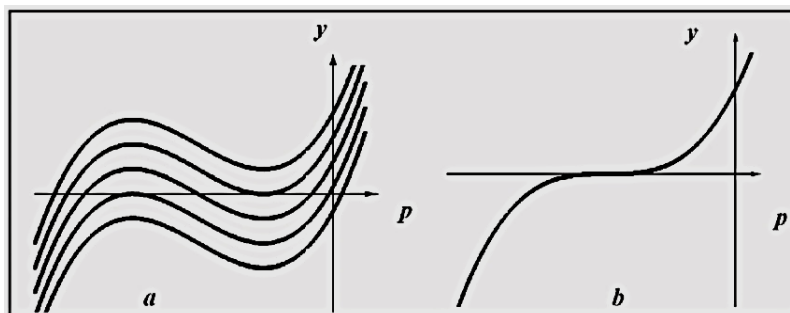


Fig.4. Graphical solution to the cubic equation in the set of real numbers, explaining that this equation can have either one or two or three solutions

⁹ For example, for the equation $(x + \sigma_0)^2 = 0$

Apparently, depending on the position of the curve $y = f(x)$ relative to the abscissa axis (i.e. depending on the value of coefficients a_3, a_2, a_1, a_0), the cubic equation can have either one or two or three real solutions within the first algorithm (see Fig. 4a,b). Fig.

$$\begin{cases} |y| = |a_3(\sigma + i\omega)^3 + a_2(\sigma + i\omega)^2 + a_1(\sigma + i\omega) + a_0| \\ |y| = 0 \end{cases} \quad (10)$$

As can be seen, a solution to the equation $a_3p^3 + a_2p^2 + a_1p + a_0 = 0$ has always three roots when using the second algorithm. But some roots can be double as in Fig.4a, Fig 5b, Fig 5d, and even triple¹⁰ as in Fig 4b and Fig 5f. In the latter case, in Fig.3b, the graph is somewhat different, looking like a tangentoid (or cotangentoid).

And while the points of intersection of the curve $y = a_3p^3 + a_2p^2 + a_1p + a_0$ and the abscissa axis p correspond to solutions to the equation $a_3p^3 + a_2p^2 + a_1p + a_0 = 0$ in Fig. 4, the points of contact of the surface $|y| = |a_3(\sigma + i\omega)^3 +$

$a_2(\sigma + i\omega)^2 + a_1(\sigma + i\omega) + a_0 = 0$ in the set of complex numbers for the same combinations of coefficients a_3, a_2, a_1, a_0 , as in Fig. 4, equivalent to the system of equations

$a_2(\sigma + i\omega)^2 + a_1(\sigma + i\omega) + a_0 = 0$ of the complex plane $x = \sigma + i\omega$ correspond to solutions to the same equation $a_3p^3 + a_2p^2 + a_1p + a_0 = 0$ in Fig. 5.

Moreover, both figures show the same particular cases of the situations mentioned. Consequently, equally convincing graphical solutions can also be proposed to the cubic equations (and equations of higher degrees) in the set of both real (Fig. 4) and complex (Fig. 5) numbers.

Thus, purely mathematical reasoning above do not allow us to make an indisputable conclusion about the truth of one and the falsity of another algorithm for solving algebraic equations; or, in other words, to draw a conclusion about physical reality or unreality of their solution expressed in the form of complex numbers.

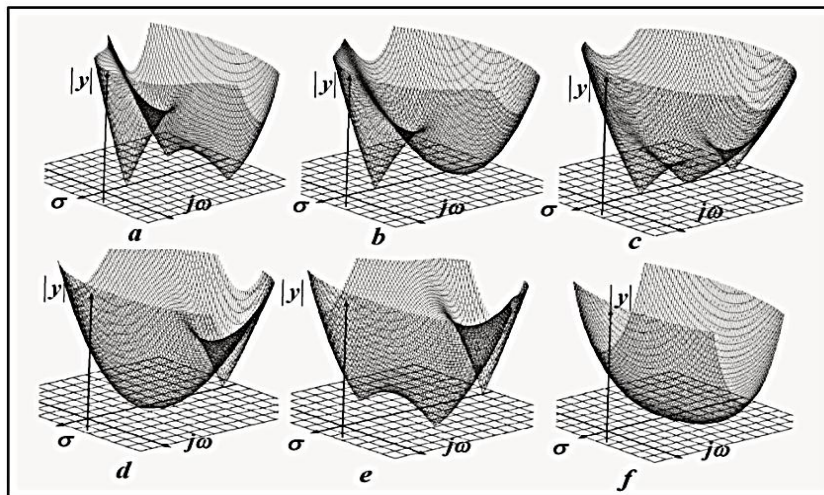


Fig. 5.

Graphical solution to the cubic equation in the set of complex numbers, explaining that in this case it has either three solutions or two solutions, one of which is double, or one triple solution, i.e. having always three solutions

It is clear that then the choice from the mentioned two algorithms for solving algebraic methods could be made differently - in accordance with the general scientific criterion called "Occam's razor"¹¹. According to this criterion, the theory that has the simpler explanation¹² must be accepted as true. And in accordance with this criterion, in all likelihood, sooner or later the second recognized algorithm would be true.

But the trouble is that this choice would require explaining physical significance of complex numbers.

Physicists do not have an explanation. And, what is worse, instead of admitting this, they state without evidence that imaginary (and, consequently, complex and hyper-complex) numbers have no physical content, referring to the principle of light speed non-exceedance. Authority of the STR actually hinders the study of this important problem. Such a point of view turned out to be even terminologically¹³ fixed in science, since one of components of complex numbers is called imaginary, i.e. supposedly non-existent, numbers.

¹⁰ For example, for the equation $(x + \sigma_0)^3 = 0$

¹¹ 'Occam's Razor' is a principle formulated in the 14th century by the English monk William of Ockham: "More things should not be used than are necessary".

¹² As, for example, in astronomy the Copernican heliocentric system was recognized as true and the Ptolemaic geocentric system was recognized as false.

¹³ Actually, long before the STR was created.

That is why mathematics still uses both algorithms for solving algebraic equations, even despite the fact that

- solutions obtained by these algorithms often mutually exclude each other;
- the STR considers one of these solutions (in the form of complex numbers) to be physically non-existent¹⁴.

So what is the answer to the question whether solutions to algebraic equations physically exist in the form of complex numbers? Since, as has just been shown, the use of purely mathematical¹⁵ means cannot answer the question, let us try to figure it out relying solely on common sense.

For this purpose we try to understand what meaning the words ‘solution exists’ or ‘solution does not exist’ should have. Where does it exist? On paper? In computer? On a blackboard in a university classroom? We could say so, but “in nature, in the physical world we live in” would apparently be more correct answer.

Therefore, we should talk about existence of a solution as a physical reality. And it would be logical to conclude that answering the question requires physical experiments. What kind of experiments are these? And it turns out that such experiments have been done for a long time by both humans and nature. We meet them everywhere. They are well known to everyone. These are shock oscillations. In any form. In the form of sound of a piano or a tuning fork, in the form of tsunami or ‘Indian summer’, in the form of children’s swing¹⁶ rocking after being pushed by parents, etc.

In this regard, let us recall that only solutions in the form of complex numbers are always used in solving characteristic algebraic equations (6) while studying transient processes (for example, in electrical circuits). The first algorithm for solving algebraic equations using real numbers is never applied in relation to characteristic equations.

Why? The answer to this question is extremely important. Therefore, let us consider in more detail how this question is covered, for example, in the electrical circuit theory. It states that if a characteristic algebraic equation of the second degree has two different real roots $p_1 = -\sigma_1$ and $p_2 = -\sigma_2$, then an aperiodic transient process exists in an electrical circuit and is described by the time function

$$y(t)_{free} = Ae^{-\sigma_1 t} + Be^{-\sigma_2 t} \quad (11)$$

If roots of a characteristic equation of the second degree are real and multiple of $p_{1,2} = -\sigma_0$, then the so-called critical transient process exists in an electrical circuit and is described by the time function

$$y(t)_{free} = (A + Bt)e^{-\sigma_0 t} \quad (12)$$

And, finally, if roots of a characteristic equation of the second power are complex conjugate numbers $p_{1,2} = -\sigma \pm i\omega$, then an oscillatory transient process corresponding to them exists in an electrical circuit, and the quantities p_1 and p_2 are the complex frequencies of free oscillations. This transient process is described by the time function

$$y(t)_{free} = e^{-\sigma t} [A \cos(\omega t) + B \sin(\omega t)] \quad (13)$$

Herewith, integration constants A and B are determined from the initial conditions $y(0)$ and $y'(0)$ in all particular cases.

Solutions to characteristic algebraic equations of higher powers can include aperiodic, critical and oscillatory components. This is covered in detail in textbooks. However, they neither explain nor substantiate why characteristic equations are solved only using the second algorithm, which allows finding their roots in the form of complex numbers. And, it turns out, because only in such a case the transient can also exist in the form of shock oscillations (13). The use of the first algorithm would necessitate arguing that shock oscillations should not have existed. However, they do exist.

Thus, the point is that oscillatory transition processes exist in nature. And they can exist only if the characteristic algebraic equations corresponding to them have solutions in the form of complex numbers. And only for this reason the unsolvable in pure mathematics question about which of the two mutually exclusive algorithms of solving algebraic equations is correct, turned out to be quite solvable with the help of simple physical experiments. And common sense.

It follows from the above that it is necessary to recognise solutions of algebraic equations¹⁷ using complex numbers as the only correct and corresponding to physically real existing processes in the world around us. Therefore, complex frequencies $p_{1,2} = -\sigma \pm i\omega$ of free oscillations are physically real, including their imaginary components. And not only complex frequencies, but also any other imaginary and complex numbers. And as this statement is true for transients not only in the theory of linear electric circuits, but also for transients studied by all other sciences, i.e. it is general scientific, so we will call it the principle of physical reality of imaginary numbers.

And this experimentally provable principle of the physical reality of imaginary numbers naturally refutes the postulated principle of non-exceeding the speed of light, asserting from the unreality,

¹⁴ Consequently, mathematicians have not recognized the principle of light speed non-exceedance postulated in the STR as scientifically sound.

¹⁵ But we must not forget that names such as mathematics, physics, radio electronics, etc. were given by people specializing in some narrow research area subject to their limited intellectual capabilities. However, when it comes to Nature, all these names are replaced by the only name of Science.

¹⁶ It is interesting to note that children’s swing, on which children are rocking without the help of their parents, refutes another scientific misconception, which, according to information on the Internet, is shared by many authoritative scientists. The misconception suggests that unsupported motion devices, the so-called inertoids, cannot exist, and their existence is therefore denied by modern science, as it contradicts the law of conservation of momentum.

¹⁷ And not only characteristic ones.

4. Explanation of Physical Essence of Imaginary Numbers

Hence, for relativistic formulas of STR (1)-(3) the results of calculations on them not only in the form of real, but also in the form of imaginary numbers should be explainable. Nevertheless, these formulas still cannot be explained for one more reason - as can be seen (see Fig. 1a,b,c) their graphs in sub light and hyper light ranges have essentially different form. Moreover, they correspond to physically unstable processes, which cannot exist in Nature. Therefore relativistic formulas (1)-(3) are still incorrect.

And so that the same patterns took place in nature in the subluminal $V < C$ and superluminal $V > C$ speed ranges, and, therefore, formulas describing the corresponding processes could be explained, the graphs $m(v)$, $\Delta t(v)$ and $l(v)$ should be as depicted in Fig.

1d,e,f. For this purpose, the function i^q should be introduced into the corrected relativistic formulas of the STR corresponding to them.

$$m(q) = \frac{m_0 i^q}{\sqrt{1 - (v/c - q)^2}} = \frac{m_0 i^q}{\sqrt{1 - (w/c)^2}} \quad (14)$$

$$\Delta t(q) = \Delta t_0 i^q \sqrt{1 - (v/c - q)^2} = \Delta t_0 i^q \sqrt{1 - (w/c)^2} \quad (15)$$

$$l(q) = l_0 i^q \sqrt{1 - (v/c - q)^2} = l_0 i^q \sqrt{1 - (w/c)^2} \quad (16)$$

where $q(v) = \lfloor v/c \rfloor$ is the "floor" discrete function of the argument v/c ;

$w = v - qc$ is the local velocity of each universe.

This is the function convenient for explaining, as for integer values of the argument $0, 1, 2, 3, 4, 5, \dots$ it takes the required alternating values $+1, +i, -1, -i, +1, +i, \dots$ corresponding to four types of universes alternating in space. Herewith local velocity $w = v - qc$ (Fig. 1d,e,f) of each universe takes finite values only in the range $0 \leq w < c$.

But it's not hard to notice that Euler's formula takes the same values $+1, +i, -1, -i, +1, +i, \dots$ corresponding to the integer values $0, 1, 2, 3, 4, 5, \dots$ of the argument q . And the right side of Euler's formula allows determining the values of this function also for non-integer values of the argument q . Therefore, considering this circumstance, we can conclude that the function i^q takes the form

$$i^q = \cos(q\pi/2) + i \sin(q\pi/2) \quad (17)$$

for both integer and non-integer values of the argument q .

The new formula thus obtained has an important advantage - it introduces into the mathematics of complex and hyper complex numbers the mathematical

operation of raising imaginary numbers to a non-integer degree, which has been absent in it until now. In astrophysics, it therefore allows us to assert that the integer values of the quantity in formula (17) correspond to mutually invisible parallel universes¹⁸, since they are relative to each other beyond the event horizon, and its non-integer values correspond to portals between such neighbouring universes. And the invisible Multiverse containing these parallel universes has a spiral structure.

In other cases, described by other mathematical formulas containing imaginary numbers, other objects of the invisible world will correspond to them, Determining the specific nature of these objects will require further specialized research. The research will significantly define the content of future science.

5. Conclusion

In the article *by simple researches of transients in linear electric circuits*, carried out before publication of results of extremely difficult and expensive, but unsuccessful experiment OPERA, **the physical reality of imaginary numbers is proved** and, consequently, the fundamental principle of non-exceeding the speed of light in the generally recognized version of STR is refuted. And **therefore it is asserted that the version of STR stated in all physics textbooks used in the educational process of even the most prestigious universities is incorrect** [16]-[72].

The existence of physically real imaginary numbers, discovered 500 years ago, shows that besides our visible world there is also a bigger, but invisible and unknown to us world. And cognition of physical essence of this invisible world will become the main problem of science of the future [73]-[96]. Moreover this problem is now in relativistic physics astrophysics, overcoming the resistance of opponents, is already solved. And that's fine. One of the most authoritative philosophers of science of the 20th century Sir Karl Raimund Popper [97] wrote on this occasion that *"...the struggle of opinions in scientific theories is inevitable and is a necessary condition for the development of science"*. I.e., the development of science is possible only as a result of identifying incorrect statements in existing theories and their subsequent refutations [98]-[104].

This article identifies such false statements and **demonstrates how the incorrect (due to the use of the erroneous postulate of light speed non-exceedance) version of the STR can be corrected.**

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¹⁸ Since, despite their boundlessness, they do not overlap anywhere, but they do dip slightly into each other in many places, forming portals.

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РОЛЬ ФИЗИКИ В ГУМАНИТАРНЫХ СПЕЦИАЛЬНОСТЯХ

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ROLE OF PHYSICS IN HUMANITIES

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head of "School" department, master*DOI: [10.5281/zenodo.10558267](https://doi.org/10.5281/zenodo.10558267)**Аннотация**

В статье приводятся важность физики в гуманитарных специальностях 01140100-«Педагогика и методика начального образования» и дошкольного образования. Выделены основные направления прогресса физической науки, сформировать у студентов представление о физике как науке, имеющей экспериментальную основу, научить их применять законы физики, ознакомить с этой сферой человеческой культуры, обеспечить элементарные понимания основных принципов работы технических устройств, с которыми современный человек цифровизации встречается на каждом шагу.

Abstract

The article describes the importance of physics in the humanities 01140100-“Pedagogy and methods of primary education” and preschool education. The main directions of progress in physical science are highlighted, to form in students an idea of physics as a science that has an experimental basis, to teach them to apply the laws of physics, to familiarize them with this area of human culture, to provide a basic understanding of the basic principles of operation of technical devices that modern digitalization people encounter at every step.

Ключевые слова: гуманитарный профиль, роль физики, цифровизация.

Keywords: humanitarian profile, the role of physics, digitalization.

Каждое направление профильного обучения предполагает углубленное изучение определенных предметов и наличие нескольких профильных дисциплин.

Гуманитарный профиль создан для подготовки специалистов, которые в будущем будут взаимодействовать с людьми и обществом. В таких специальностях как 01140100-«Педагогика и методика начального образования» больше часов отводится определенным гуманитарным дисциплинам. Но это не влияет на изучение физики, химии и математики. В первых курсах гуманитарного направления студенты проходят основную школьную программу 10-11 классов по точным предметам. Кроме того, у студентов происходит кардинальная смена деятельности, момент адаптации и окружения, их внутренние установки претерпевают сильные изменения. Вспомнить школьную программу физики некоторым студентам бывает тяжело, особенно тем кто целенаправленно поступает в гуманитарии избегая технарей. Происходит переориентация ценностей, освоение новых социальных ролей, студенты по-другому начинают воспринимать себя и других. Успешная адаптация первокурсника к жизни в колледже является залогом дальнейшего развития каждого студента как личности и как будущего специалиста [1].

Физика формирует творческие способности будущего специалиста дошкольного образования и педагогики и методики начального образования, их мировоззрение и убеждения. Эта основная цель может быть достигнута только тогда, когда в процессе обучения будет сформирован интерес к знаниям.

Обучение физики в колледже имеет цель вооружить учащихся знаниями и умениями необходимыми для их общего развития, для подготовки к работе в различных сферах деятельности и продолжения образования.

В общей концепции гуманитарного образования призван дополнить его естественнонаучным и техническим содержанием, чтобы, с одной стороны, скорректировать односторонность «чисто гуманитарного содержания», с другой - дать возможность гуманитарному образованию быть действительно общекультурным и современным [2].

Для специальностей дошкольного образования и педагогики и методики начального образования курс физики важно выделив основные направления прогресса физической науки, сформировать у студентов представление о физике как науке, имеющей экспериментальную основу, научить их применять законы физики, ознакомить с этой сферой человеческой культуры, обеспечить элементарные понимания основных принципов работы технических устройств, с которыми современный человек встречается на каждом шагу.

Надо поставить себе цель: учить ребят проводить наблюдения и эксперименты, т. к. это два очень важных для физики умения. Физический эксперимент является органической частью курса физики.

Существенным элементом содержания курса для «гуманитариев» являются многообразные физические феномены, причем рассматриваемые в живом эксперименте. Обязательна правильная последовательность предъявления материала: сперва

явление, эксперимент, а только затем его осмысление - закономерность. Программа должна охватывать историю физики, культуру, физику в поэзии, в творчестве, физику в эстетике, в экономике, в экологии. Важно специалисту работая в дошкольных учреждениях знать физику даже в литературах, таких как например: в теме «Различные состояния вещества» можно процитировать рассказ М. М. Пришвина «Кочки оттаивают»: «Когда мороз сошел, то кочки обдались росой и засияли на солнце, а когда разогрело, то от каждой повалил легкий пар, как будто каждая кочка, спасенная солнцем, облегченно вздохнула».

Масштабная цифровизация всех сфер жизни общества настоятельно требует от преподавателя физики трансформации, при которой ему важно сохранить лучшие достижения классического полного физического образования человека, и при этом умело и целесообразно впустить с свою профессиональную работу необходимые, с одной стороны, и неизбежные, с другой, новшества и инновации. «Решающим фактором в достижении высокого качества обучения в цифровом образовании является цифровая компетентность преподавателя, так как это находит отражение и в качестве размещенных учебно-методических материалов и в его умении адекватно реагировать на изменения в сфере развития цифровых технологий в целях задействования новейших разработок в своей профессиональной деятельности. На учителе лежит груз очень большой ответственности, которая редко осознается в

современном мире [3].

И конечно, живя в обществе, которое в ближайшем будущем придет к новому цифровому формату, нельзя не уделять пристальное внимание его цифровым инструментам, тенденциям, требованиям и веяниям. Студенту гуманитарии важно хорошо ориентироваться в современном информационно-образовательном пространстве, обладая для этого навыком «цифрового самообразования» не исключая из жизни точные науки. Задача же колледжа – создать благоприятные условия для формирования этого важного навыка будущего цифрового общества.

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POLITICAL SCIENCES

THE POSSIBILITY OF RECOMPOSING A LATIN AMERICAN PATRIOTISM IN THE 21ST CENTURY

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Abstract

In this article, we investigate the meaning of patriotism in the 21st century, particularly in Latin America, and ask if it is possible to reconstruct a Latin American patriotism that embraces the diversity of the region. We thus intend to reflect on the role that patriotism represents today and identify its influence in society and politics. The authors argue that patriotism plays an important role in society and politics. It can foster unity and a sense of community, as well as promote positive values such as respect and tolerance. The methodology we apply is qualitative: location, compilation and processing of written sources, reading and analysis of them. As first findings, we were able to observe that it is important that patriotism is based on shared values and not on exclusion or discrimination. In conclusion, the recomposition of Latin American patriotism is a process that requires time and effort. However, it is an important objective, since it can contribute to the construction of a more united and prosperous Latin American community.

Keywords: Latin America, Patriotism, politics, society, values.

Introduction.

In work we address the topic Recomposing a Latin American Patriotism that implies a feeling of pride and belonging to the Latin community. The author clippings that we use to analyze this topic are: Rufino Blanco Fombona, J. Francisco Silva and Manuel Ugarte To rebuild the patriotism of the region, it is necessary to promote greater knowledge and understanding of history and culture. The recovery of continental patriotism by these writers of the early 20th century is an important step in the formation of the national consciousness of Latin America. We delve into the work of Marcos Mele to meet Rufino Blanco-Fombona and J. Francisco V. Silva, who collaborated to dismantle the dominant historiographical story in the context of Argentina during the first Centennial.

Investigation.

In Venezuela, the figure of Rufino Blanco-Fombona began to be valued in 1974, on the occasion of his 100th birthday, his remains were transferred to the country's National Pantheon, and in these years the re-issue of some of his books began. Meanwhile, in Argentina Melé adds that figure and Manuel Ugarte are recovered by Roberto Galasso¹⁹ in 1970 who had been imagined by the official culture.

"...Blanco-Fombona who declared not to write for the "four cats" of his country but for all of Latin America. Unfortunately, Francisco Silva's work did not suffer the same fate since his books were never republished and have been transformed into practically unfindable bibliographical pieces..." (Marcos Mele 2023-8)

¹⁹ Norberto Galasso was born in Buenos Aires, in 1936. He studied at the San Martín Commercial School and at the Faculty of Economic Sciences of the UBA from where he graduated with the title of National Public Accountant, Researcher, journalist, politician, activist. In 1963. He published his first book Mariano Moreno and the National Revolution. Starting in 1966, he began his research work with a biography titled *Discépolo y su tiempo*, edited by Jorge Álvarez, and thus began his militancy activity by joining the Socialist Party of the National Left led by Jorge Abelardo Ramos where he established close relationships. policies with Arturo Jauretche and Juan José Hernández Arregui. ... In 1973, he served, for a few months, as trustee at the Editorial Universitaria of Buenos Aires, then directed by Arturo Jauretche. Continuing an already developed journalistic career in various print media, he collaborated with *Crisis* magazine. During the last Military Dictatorship (which censored his books "Life of Manuel Ugarte" and "What is National Socialism?") he took refuge in research and published articles abroad in the clandestine

press. Once democracy was restored, he published several works in the Political Library of the Latin American Publishing Center; among which it is worth mentioning...Galasso has published more than fifty titles -many with several reissues-, including essays, anthologies, historical-political studies, investigations and controversies. Among them, three stand out, without a doubt the most encouraging, which have required sustained efforts over recent years, and which have earned him notable recognition. It's about *Let's be free* and the rest doesn't matter at all. *Life of San Martín*, *From the Baring Bank to the IMF*. *History of Argentina's foreign debt*, and the documented two-volume biography of Perón. Today, the History of Argentina is added to these true pillars of Argentine historiography. Simultaneously with his work as a publicist, Galasso has dedicated efforts to the organization of political and cultural groups. *Librería Hernández* available :<https://www.libreriahernandez.com/autores/fichaAutor?authOrId=39004>

Rufino Blanco-Fombona²⁰

Rufino Blanco-Fombona was born in Caracas, Venezuela, on June 17, 1874. He began his studies in law and philosophy at the Central University of Venezuela, but abandoned them to enter the Military Academy, he went into exile in Europe, where he lived during the most of his life. His work is imbued with a deep social and political commitment. Social commitment was manifested in his criticism of the dictatorship of Cipriano Castro and Juan Vicente Gómez, as well as in his defense of the rights of workers and minorities, while his political commitment was manifested in opposition to European imperialism and in his defense of the sovereignty of Latin American countries.

Being the governor of the Amazonas Federal Territory in 1905, he protected the indigenous people from the oppression to which they were subject.

"...I protected the Indians, a hundred times more intelligent, good and hard-working than the bandits who, calling themselves rational, exploit and harass them; I declared that debts do not enslave the Indian to the debtor, according to the infamous custom there..." (Marcos Mele.2023-11).

While in Europe he became concerned about the vindication of the Liberator Simón Bolívar, and in 1915 he founded Editorial América for the dissemination of books by European and Ibero-American authors to contribute to American culture and he died in Buenos Aires on October 16, 1944.

Francisco Silva.

Moving forward in reading Marcos Mele we come to Francisco Silva, born in Córdoba, Argentina, in 1893. He studied Law at the Central University of Spain, where he graduated in 1914 with a thesis on the modern concept of the State promoting the social dimension.

"...A humanitarian, civilized State, that leads a pacifist life, a State conscious of social reality..." (Marcos Mele 2023-16)

The author describes that throughout the 1910s, Silva had an active participation in different Spanish academic institutions, such as the Royal Geographical Society of Madrid and the Royal Academy of History. He also published various articles in the Madrid magazine Comunicaciones. In 1918, Silva published *The Liberator Bolívar and the Deán Funes* in Argentine politics, in this work, he participates in the controversy started by Blanco-Fombona over the history written by

Miter and his followers, he praises Bolívar and the federal leaders, he criticizes the British intervention in the division of Spanish America. In this book, Silva reviewed Argentine history from a Hispanic perspective, questioning the traditional view that he considered Independence as a process of rupture with Spain.

We can divide Silva's work into:

His legal work, which focuses on the study of the concept of the State and the theory of law, is important for two reasons. Firstly, because he contributes to the development of legal theory in Argentina. Secondly, because it reflects the intellectual concerns of Silva, who was interested in the role of the State in society.

Silva's thesis on the modern concept of the State was one of the first works in Argentina that adopted a sociological perspective of the State. Silva maintains that the State is a social institution that arises from the need to organize society.

His historical work, which focuses on the study of Argentine history from a Hispanist perspective, Silva's historiographic perspective, questioned the traditional vision of Independence. He also wrote about Hipólito Yrigoyen emphasizing the popular and nationalist character of Yrigoyen's triumph against the anti-personalist opposition.

We could say that Silva identified with some of Yrigoyen's actions in matters of foreign policy since he maintained a neutral position during the First World War, and advocated equality between nations. He also promoted regional integration, and supported the creation of the League of Nations.

Manuel Ugarte²¹.

From the preliminary study of López María Pía in Manuel Ugarte we can briefly analyze his life and work. He was born in Buenos Aires, came from a family of the rural bourgeoisie, received a privileged education, studied at the National College of Buenos Aires, and then moved to Paris to continue his studies, there he became involved in the socialist movement. He also became interested in Latin American culture, and began writing about the history and literature of the region.

Ugarte returned to Argentina and became an active defender of Latin American unity. In 1903, he published his book *The Future of Latin America*, in which he argued that Latin American countries should join forces to face the challenges of the modern era. After 8 years he undertakes a journey that lasts 2 years through

²⁰ El Nido del Cuco 15-02-2019 available: : <https://www.elnidadelcuco.com.ar/2019/02/15/rufino-blanco-fombona/>

²¹ Manuel Ugarte 1903 available : <http://centrougarte.unla.edu.ar/manuel-ugarte/pages/biografia.html>

Latin America and recounts what he has seen in his book *The Destiny of a Continent*. He returned to Argentina in 1913, and people expressed disinterest in him and his political action. They suspended him from the Socialist Party, which was going through a difficult period. Furthermore, in the First War he assumed naturalness.

"...But, my homeland, is it perhaps the neighborhood in which I live, the house in which I stay, the room in which I sleep? "Do we have no more flag than the shadow of the bell tower?..." (López María Pía 2010-16).

Some of the important themes of Ugarte's work are:

Latin American unity: Ugarte believed that Latin American countries should join forces to face the challenges of the modern era. In his book *The Future of Latin America*, he argued that Latin American countries shared a common history, culture, and destiny.

Social justice: Ugarte was a defender of the rights of workers and the poor. In his book *La patria grande*, he criticized the social and economic injustice that existed in Latin America.

Latin American culture: Ugarte was proud of Latin American culture, and he worked to promote its dissemination. In his book *La argentinidad*, he defended Argentine culture as an expression of Latin American culture in general.

"...Manuel Baldomero Ugarte can be called the first Creole socialist and one of the most advanced historical revisionists in Latin America. A tireless activist for continental unity, he was one of the most important Latin American thinkers of his time..." (Ugarte Manuel 2023-5).

His work has had a great influence on Latin American political and cultural thought. Ugarte continued to travel and write until his death on December 2, 1951. He is considered one of the most important intellectuals in the history of Latin America.

Patriotism today means...

The homeland is an expression of the human community, which is manifested in the nation. In this sense, the homeland is the highest level of social reality, since it represents the union of individuals around a common project.

The origin of the homeland dates back to ancient times, when the Greeks and Romans spoke of the "terra patria", the land of the fathers. At that time, the homeland was understood as the community of the inhabitants of the same city-state.

Currently, the homeland is understood as the nation, which is a sovereign political community that shares a common territory, history and culture. The nation is a social construction, but that does not make it any less real. Human memory is selective, and that means that the past reaches us with a load of myths and legends. However, these myths and legends are not false, but are part of the nation's identity. Patriotism, love for one's country, is a feeling that manifests itself in times of glory, but also in difficult times. Patriotism is an expression of the human need to belong to a community. The homeland is a complex social construction

that transcends ideologies. It is made up of three fundamental elements:

- A historical dimension: the shared past of a people, their struggles, their achievements and their failures.

- A territorial dimension: the physical space that houses that town.

- A symbolic dimension: elements that represent the homeland, such as the flag, the anthem or national heroes.

From a rational perspective, these elements may seem insignificant. However, it is the feeling of the people that gives them special value. It is the feeling of belonging, pride and solidarity that transforms a piece of cloth into a flag and a song into an anthem.

Patriotism is a universal feeling that can be experienced by people of all social classes, ideologies and beliefs. It is not a question of ideology, but of feeling. Therefore, the homeland is not a particularity, but a symbolic space that houses all citizens, regardless of their differences. It is a place where we share a past and build a future together. (La Nación 2002).

The role of citizens as an essential part when it comes to rebuilding Patriotism in the Region is also evident from what has been said "the idea of active citizenship, which not only refers to belonging to a State as an organization, but also to the status that is defined by the rights and duties of citizen" (Pérez Gamón Carcolina 2023-799)

Findings.

The relationship of Patriotism with the idea of a group Ugarte believed that Latin American countries should join forces to face the challenges of the modern era, with which patriotism is an expression of the human need to belong to a community.

As we also observe that rebuilding Latin American Patriotism implies promoting the common values that the region shares. This can be achieved by promoting education about history and culture, making known the thoughts and actions carried out by these men who promoted dialogue and cooperation between countries, thus giving citizens a sense of belonging.

Conclusions.

The recomposition of Latin American patriotism is a process that requires time and effort on the part of society and politics. However, it is an important goal as it can contribute to building a united and prosperous community. Blanco Fombona portrays the social reality of his time, showing the misery and inequality that the poorest suffered. His work is a denunciation of corruption and injustice, and a call to action to build a more just society.

Francisco V. Silva created intellectual spaces and political-historiographic ideas between Argentina and Spain, proclaimed the union of the Hispanic peoples. Despite his clear historical opposition, Silva did not abandon the institutional spaces of his time nor did he abandon his participation in that region.

Ugarte was an important figure in the history of Latin America. His work continues to be relevant today, and his legacy continues to inspire Latin Americans fighting for social justice, culture, and promoting unity in the region.

Here are some examples of how Latin American Patriotism can manifest itself in the 21st century through: support for common causes, such as the fight against poverty or the defense of the environment, working together to promote peace and regional cooperation, as well as also the recognition of Latin American cultural diversity.

We can conclude by saying that Patriotism is a substantial part of the identity of Latin Americans, it helps define who they are and what unites them, and it also has the potential to be a positive force for change. However, it is important that it is developed in a way that is inclusive and respectful of diversity.

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SOCIAL SCIENCES

POVERTY AS A PROBLEM AND DEVELOPMENT FACTOR IN SOCIETY

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Abstract

Many social problems have always acted and continue to act not only as a factor that creates difficulties and harms society, but also as an aspect that stimulates the development of that society. Responding in a timely manner and adapting to perfection has been a factor in human evolution throughout history. Today, there are problems and issues of any form and scale, the solution of which is important and necessary. However, some issues can never be fully resolved, the human factor, the interests of individuals, and so on. does not allow it. Therefore, in reality, we should see problems only in an adaptive form in terms of incentives for development. The word "problem" should not be seen as a negative concept, but as a factor leading to a better and more developed environment. The fact that human history has come to its present state after such a long time is due to the fact that there are many "problems" and human initiatives. One issue that needs to be addressed is the foundation of a new future.

Keywords: Social problem, problem and issue, development, stimulus, improvement, society, interests.

Problems have always existed as factors that are relevant and concern people. From another point of view, the concept of "problem" is not only as a negative phenomenon, but as a sign guiding towards development. Considering poverty, we can see that it is a matter that exists at any time and is constantly being fought. Poverty has been and has been a natural process, leading to many complications both economically and socially. With the formation of society, the process of resource allocation arose in parallel, which is the most important aspect in the emergence of inequality. The diversity of human categories leads to the fact that in the society in which they live, resources are divided according to those categories. Given that the political situation in different parts of the world is different, it is possible to determine the difference of poverty. In the society in which we live, each process is realized, resolved on the basis of political issues, etc. Political relations differ in individual countries, including in poverty [3].

The most important point in considering poverty as a "issue" rather than a "problem" is that in any case, this issue remains real and relevant, and it exists as a starting point for further development. If humanity accelerates the evolutionary process on the way to eradicating poverty and has been doing it for millennia, then this natural process is the basis of new beginnings, having the character of an incentive.

The problem of poverty has worried human society since ancient times. However, despite this, humanity has not been able to solve this problem. And paradoxically, poverty continues to be an integral feature of any society. The fight against poverty and inequality is one of the main tasks of the socio-economic policy of any state. To date, there is no single methodology for solving this problem, since each work requires an individual innovative approach. Unequal access of members of society to any necessary resources, both material and intangible, is called social inequality [5].

Poverty is a "pronounced decrease in well-being", that is, the economic situation in which a person or group of persons cannot meet a certain minimum of

needs necessary for the preservation and improvement of life, working capacity. Poverty is a relative and ambiguous concept and depends on the general standard of living in a particular society (Gini coefficient, Theil index). The poor are a vulnerable stratum of society, and this, in a sense, slows down the development of the country. In other words, they are those who do not have enough funds or whose level of consumption is insufficient to keep them above a certain level of poverty. These people may not have a home, food, or a decent state of Health, which leads to a change in the level of nutrition or literacy. Poverty can always be compared to a depth without a bottom that pulls down [8].

Poverty is not a catastrophic factor, but this deficiency hinders the development of both developing and developing countries. Therefore, the great powers of the present world are fighting precisely against poverty and inequality. But what about underdeveloped and developing countries? Because it is impossible to achieve any development and progress without reducing the level of poverty in the country.

Poverty is the result of various and interrelated causes and is grouped in the following aspects: [4]

- * Economic (unemployment, economic inequality, including low wages, low labor productivity, competitiveness of the industry);
- * Socio-medical (disability, old age, morbidity);
- * Demographic (single-parent families, a large number of dependents in the family, overpopulation);
- * Educational specialization (low level of education, lack of sufficient professional training);
- * Political (military conflicts, forced migration), etc.

Thus, understanding poverty, it can be conditionally divided into 3 subspecies: absolute, relative, income-based or multidimensional, which is called a numerical measurement of poverty. For example, in 2012, the US government set the poverty line for a family of 4 at \$ 23,050 per year. But, despite this, many people remained outside this line. Thus, it can be concluded that if the state has a certain limit or limit in poverty, it

does not insure either the state or the vulnerable segment of the population against poverty.

Absolute poverty means the absence or partial satisfaction of basic needs (food, clothing and housing). British scientists Charles Booth and Seab Rowntree, who introduced the concept of the poverty line, began to engage in quantitative calculations of the poverty level in the 1890s.

The poverty line is only the minimum income required to obtain the necessary food, clothing and shelter. If the state sets the poverty line, then it is nominal, and the real one is very different. And people who remain on the other side of the poverty line are in a state of "chronic poverty." [7]

Relative poverty refers to the poverty of a person compared to other people in a given society. This is the difference between absolute and relative poverty. That is, the first group includes the necessary goods and services, and the second includes people who are provided with vital things and services, but cannot maintain the "standard" accepted in society.

The UN applies the term "Least Developed Countries" to poor areas, as many respondents are embarrassed to admit that they are poor. According to UN data for 2019, the list of "Least Developed Countries" includes 47 countries, including Tajikistan, Afghanistan, Moldova and Ukraine. This status is granted according to three criteria: [2]

- * State economic weakness index;
- * The level of income of the population or GDP per capita over the past three years;
- * Real quality of life assessment.

The index of economic weakness or the index of State weakness (index of Failed States) is a complex indicator that characterizes the ability (incapacity) of the authorities of a country to control the integrity of its territory, as well as the demographic, political and economic situation.

Assessment of real quality of life or index of quality of life - correlates the results of studies on the subjective assessment of life in countries with objective determinants of the quality of life in these countries [7]. The Human Development Index was calculated in 2013 (from the Economic Intelligence Unit) and covers 80 countries, with Switzerland, Australia and Norway leading.

The cost of living is a very important indicator. On its basis, the minimum wage, the amount of pensions and benefits are determined, Republican and regional budgets are calculated, social programs are developed [9].

It is one of the important issues to differentiate and evaluate the processes and situations taking place in society in various forms and aspects. Many times, when assessing the situation taking place, the process of thought formation is formed according to the established criteria. Considering that there are categories of different groups of society, the aspect of thinking can change and form based on this. Any event from its form and structure leads to processes such as development

and improvement. From a certain point of view, situations such as difficulties and problems have supported the formation of a better and more complex society and life throughout human history. Just as each person forms a personal opinion and opinion against a particular process or object, as well as the issue of poverty is no exception. Poverty is one of the issues that has been relevant, formed, developed and changed with us, almost from the moment of human existence to the present day, which has caused many deaths over many years [6].

Based on Maslov's theory of needs, we can see that physical demand is a matter that is located higher than all other needs and is one of the important aspects. It is on these characteristics that all the processes taking place in human life take place. Considering that not every event and process exists spontaneously, and each has a reason for its occurrence. Various interdependent phenomena affect in a systematic form, creating more diverse factors. The issue of poverty refers to the processes and phenomena inherent in human society. Because the emergence of understanding is intended for the surplus of the current socio-economic situation within society and is intended to explain this aspect.

An unambiguous answer to the question of whether poverty is a problem or a matter cannot be found, and it is not correct. It acts as a process that changes in terms of context depending on which side we look at it from. In the philosophical sense, poverty is a state that is an integral part of society, always stimulating development by its existence. In the socio-economic sense, poverty is a situation that causes many problems in society and the country, which must be resolved, completely or partially eliminated. Both thoughts can be considered correct, the relevance of each is a fact [1].

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TECHNICAL SCIENCES

SIX SIGMA AND STATISTICAL APPLICATIONS

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Abstract

This article investigates the integration of Six Sigma methodologies within the logistics sector, exploring its transformative impact on operational efficiency and overall performance. Six Sigma, renowned for its focus on minimizing process variability and enhancing quality, is examined in the context of logistics operations to ascertain its applicability and effectiveness. The study reviews key principles and tools of Six Sigma, highlighting its adaptability across various logistics subdomains.

The article emphasizes the importance of a cultural shift within organizations for successful Six Sigma implementation in logistics, requiring leadership commitment, employee training, and a sustained focus on continuous improvement. As logistics operations evolve in response to technological advancements and global complexities, Six Sigma emerges as a strategic framework capable of fostering a culture of continuous improvement and data-driven decision-making.

Methods: During the research process, historicity, scientific character, an objective and critical attitude to historical processes, and their comparative analysis were chosen as the main research methods.

Scientific innovation: Rigorous research into student achievement; the results were interpreted in the direction of addressing the core competencies of education.

Conclusions: In conclusion, the integration of Six Sigma principles into logistics operations has emerged as a transformative strategy to enhance efficiency, reduce variability, and improve overall performance within the supply chain. Through the systematic application of Six Sigma methodologies, logistics practitioners can identify and address process inefficiencies, streamline operations, and elevate the overall quality of services provided. This thesis has explored the key principles and tools of Six Sigma and their application in the logistics domain.

Keywords: six sigma, logistic, application, statistical application.

Introduction. The importance of the logistics sector is increasing as its growth potential is quite high. In Turkey, logistics is the second sector with the most potential after tourism. This reveals the strategic importance of the logistics sector for the development of the Turkish economy. Companies serving in the logistics sector within the scope of logistics activities; carry out material management, order-taking, storage, handling, and packaging operations. Logistics companies are expected to take into account the 7 basic rules that are the purpose of the logistics process while carrying out these activities. 7 rules- It is to deliver the right product, in the right quantity, at the right quality, at the right time, and at the right cost, to the right customer and at the right place. Ignoring any of these rules leads to customer dissatisfaction and therefore to a decrease in the company's competitive advantage and market share. It can be seen in the literature that various studies have been conducted on these rules.

Today, service-producing businesses have also increased their need for the 7P (product, price, promotion, people, physical facilities, and process) marketing mix to overcome the strong competition in the markets. One way to provide quality products and services that will increase customer satisfaction is to improve processes, which are among the 7P elements.

Therefore, to provide quality services, logistics companies must ensure perfection in all processes such as accepting orders, managing them, and solving problems. In most studies in the literature, customer satisfaction is determined by the survey method to improve the service quality of logistics companies. In this study, process improvement was taken as a basis to reduce return rates, which are indicators of customer dissatisfaction. Since processes in logistics companies have a complex structure, advanced methods and tools are needed for improvement. The Six Sigma method is one of these effective quality methods. With this method, it is possible to achieve zero error and provide error-free products and services that the customer wants. The method also enables the improvement in the process to be measured numerically with the sigma level. While the method was first developed and applied only to manufacturing processes, it has recently been widely applied to processes in different service areas such as healthcare, hotel management, and supply. In the study, the Six Sigma method was applied to a company that provides warehousing services in the logistics sector to reduce the returned products coming from building material stores that are its customers. In the problem addressed, the Six Sigma method was used because it is a customer-oriented method and it presents

the improvement of the current situation and the performance of the post-improvement situation in a numerical form by expressing it with the sigma level. The application aimed to reduce the return rate, which was initially 0.0007, to 0.0002 and thus reach the sigma level process of 3.54 sigma level. In addition, Six Sigma; By following the steps of define, measure, analyze, improve, and control, the reasons for return were determined and corrective action suggestions were developed.

Method: During the article's development, the author exerted considerable effort to systematically organize all sources and information through a detailed examination of specific historical analyses, aiming to construct a thorough understanding of the subject. Throughout the research process, the primary research methods emphasized were historicity, scientific rigor, and an objective and critical approach to historical processes. The author employed comparative analysis as a pivotal method to enhance the depth of the investigation.

Scientific innovation: Thoroughly researched student achievements; the results were interpreted in the direction of solving the main competencies of education.

Main part.

Six Sigma is a method that uses data and statistical tools to improve and maintain processes according to customer needs using systematic and scientific approaches. This method ensures the realization of the "zero defect" goal by understanding customer requirements, measuring and improving the quality of processes through the use of data and statistical analysis. Six sigma eliminates the variability that causes problems, develops permanent solutions, and ensures continuous improvement. (Abdullayev Edgar F., 2018: p. 26). In other words, it aims to eliminate errors in all product or service-related processes and operations.

The basis of Six Sigma is to constantly reduce the variability in products and services caused by small changes in production factors such as people, machines, materials and environmental conditions. For this purpose, change and its causes are identified and reduced or eliminated with corrective actions. Six sigma enables to reduction the defect rate in a process to approximately 3.4 per million, that is, to increase the defect rate to approximately 999997 per million. 3.4 defects per million makes the method valuable because it is very close to the zero defect level (Ballou, R., 2022: p.102).

In applying the Six Sigma method, the steps of define, measure, analyze, improve and control are followed, respectively. In the Define phase, the project is defined and customer demands and expectations are determined. In the measurement phase, the current state of the process is determined and data that can determine the root causes of the problems are collected. With the data obtained during the analysis phase, the difference between the current performance and the target is defined in order to determine the root causes of errors and improvement opportunities, and various analyzes are performed to determine the sources of variability. In the improvement phase, solutions aiming to eliminate the causes of the problem are developed and implemented. In the final control stage, the continuity of the solution applications, that is, their permanence, is ensured.

Failure mode and effects analysis (FMEA); It is an effective quality method that enables to identification, prevention and/or eliminates the occurrence of possible or known errors, problems and errors related to design, process, system, or service. With this method, which is a systematic approach that allows examining all aspects of an error, known and possible errors and their causes and effects are identified, the detected errors are prioritized according to the risk priority number (ROS) and corrective actions are developed. (George, M., 2023: p.90).

Table 1.

FMEA Probability Scale		
Violence	verbal expression	Degree
Very low	The customer is not aware of the error. There is no visible effect on the product.	1
Little	It is a mistake that will cause little dissatisfaction on the customer.	2-3
Middle	The customer is disturbed by this error. There is a noticeable decrease in performance.	4-5-6
High	There is a high degree of customer dissatisfaction. Disruptions occur in the process and service.	7-8
Very high	When an error occurs, it has a huge impact on the customer.	9-10

Source: By the author.

For example, there is only one company in the country's transportation sector that improved its processes by first applying Six Sigma and later by applying Lean Six Sigma. In the world, some activities are carried out on Six Sigma in the transportation sector. Although studies on the implementation of the Lean Six Sigma methodology have not yet made full progress, businesses continue their activities in reducing waste, which is the basic philosophy of Lean Thinking along with Six Sigma. In this part of the study, information about the profits obtained as a result of Six Sigma applications of some transportation companies that apply Six Sigma in the world will be briefly discussed.

Burlington Northern Santa Fe, one of the largest railroads in America, has developed a system called "World Class Maintenance" that includes methodologies including Six Sigma and Lean processes. The goal of the system is to eliminate idle time and improve labor and asset utilization, business process flow, material movement, and security of physical facilities. Mechanical and engineering groups at NSF have also had the opportunity to improve their efficiency through processes such as Six Sigma and Lean, which aim to reduce waste in maintenance procedures related to locomotives, freight wagons, rails, signals, and bridges. In this way, the opportunity to save more than 100 million dollars was seized.

Additionally, Six Sigma is used to examine the root causes and understand the errors of absolute sources. CSX has become one of GE (General Electric)'s leading transportation companies in America, thanks to the Six Sigma philosophy spread throughout the company. CSX generated \$17 million in annual revenue from projects related to service quality, industrial work orders, locomotive fuel, demurrage bills, and legal expenses. Six Sigma has become part of CSX's strategic plan and culture. While labor savings begin to be achieved thanks to the improvements in efficiency, the philosophy of reducing costs, which is important for the company, is also carried out by the people working in the Six Sigma team. (George, M., 2022: p.89).

By improving the process and using fact-based techniques to identify and eliminate waste, costs have been greatly reduced. In 2001, CSX saved more than \$20 million. The company also followed the path of developing this program. Thanks to Performance Improvement Teams and Six Sigma applications, CSX has implemented specific action plans to increase efficiency, offer new services, and reduce costs and has achieved its goals. 115 3.2.5.3. Norfolk Southern In October 2000, Norfolk Southern company announced its "21st Century". Launched an initiative called "Norfolk Southern for the 21st Century (NS21)". NS21 is an internal initiative launched to improve performance, focus on customer service, and reduce costs. Six Sigma was used together with NS21 and contributed to the growth of the railway. In 2003, Norfolk Southern refocused on what was called the 2nd version of NS21 and set new goals to improve the structure and density of rails, employee productivity, equipment costs, warehouse rationalization, and turnover growth. The company has also implemented the "Top Operation Plan" (TOP), which optimizes the way it operates the railway network by improving on-time movement, reducing the number of vehicle handlings, shortening routes, speeding up trains, increasing asset utilization, etc. In 2003, the first 3 cycles of the projects carried out within the framework of the NS21 program were completed. A total of \$110 million in revenue has been achieved over the last 2 years, which includes savings on recurring costs of \$45 million. The earnings from 17 Six Sigma projects completed by 2003 amounted to approximately \$36 million and included concepts such as revenue increase and cost prevention. Additionally, better resource utilization and workforce efficiency have been achieved thanks to Six Sigma initiatives. By using the Six Sigma methodology, the maintenance process of locomotives has been improved, which has allowed for a reduction of train delays, reduced malfunctions of the machines' batteries, and reduced delays of in-service locomotives. (George, M., Dave-Kastle, B., 2015: p.12).

Union Pacific has been using the Six Sigma methodology for many years to increase customer satisfaction, reduce errors, and preserve energy. UP has not only achieved significant cost savings, but also made improvements in the quality of learning, training delivery, and project implementation. The company's

Total Quality Management system focuses on customers. The relationship between managing quality and improving customer service shows that customer satisfaction increases when costs decrease due to the reduction of rework and errors. Total Quality Management also includes Six Sigma tools to reduce errors. The Six Sigma project carried out in 2002, solved the wagon problem affecting automobile parts. In this way, customer satisfaction was achieved. In addition, it is aimed to protect the environment and natural resources by researching solutions to expand the use of diesel fuel or to cut locomotive emissions with the latest technologies.

Reducing variability, the basic philosophy of Six Sigma is an extremely important concept for logistics businesses. Logistics is related to managing stocks, and managing stocks is related to managing variability. When examining different types of inventory, it becomes clear that variability plays a significant role in how inventory is managed throughout the business process and supply chain. For example, safety or buffer stocks are held against uncertainties. Safety stocks; They are kept by businesses to avoid problems such as variability in supplier quality, transportation reliability, production process capacity, and customer demand patterns. In other words, if variability in the process from supplier to customer can be understood and controlled, reliance on safety stocks can be reduced. Lean Thinking has a very significant impact on logistics businesses. The most obvious mistake of the lean philosophy is that it finds application only in the production sector. The goal of Lean Thinking is to eliminate waste, reduce the number of goods waiting in stock to be completed, and respectively reduce the delivery times of the process and production, and finally increase the speed and flow of the supply chain. Another important cultural element of Lean Thinking that is important for logistics businesses is the concept of "total cost". Lean Thinking practitioners focus on total cost rather than focusing on transportation and storage, which are cost factors alone. While stock holding costs vary between 15-40% of total logistics costs in many businesses, making decisions based on total costs produces impressive results for logistics businesses. Both Lean Thinking and Six Sigma offer effective tools to the logistics industry. These disciplines and tools guide organizations in combating waste and inefficiencies. Although Lean Thinking and Six Sigma tools are very powerful, there is a need for a significant change of opinion on how Lean Thinking and Six Sigma operate in the logistics industry. First of all, decisions should be made based on the concept of "total logistics costs" and secondly, we should be courageous in eliminating waste.

However, organizational norms, traditional management approaches, and accounting financing methods struggle with the concept of "total cost" and continue to maintain natural tendencies toward the generation of waste. The Logistics Bridge Model is a model for the design and implementation of the logistics strategy based on Lean Thinking and Six Sigma principles. The Logistics Bridge Model is a compass that guides logistics professionals. It offers a

road map and comprehension ability for critical points such as the challenges of logistics in today's conditions and determining the route for the continuation of ongoing success. First of all, a bridge should be established with suppliers regarding the processes, and then the processes should be transferred to customers and a bridge should be established. While the aforementioned requirements are met, competitive forces and the pressures exerted by suppliers to reduce costs and increase market share should also be taken into account. The Logistics Bridge Model teaches that Lean Six Sigma in the logistics industry consists of 3 principles. These principles are: • Logistics Flow • Logistics Power • Logistics Discipline (Goldsby, T., Robert, R., 2015: p.90).

Conclusion

Six Sigma is a methodology that enables businesses to identify errors and variations in their current processes in line with customer expectations, determine sigma levels according to these error levels, and realize improvements using statistical tools to improve current performance. If the Six Sigma philosophy is adopted as a management approach in businesses, products, and services will be offered with close to zero errors, and at the same time, the satisfaction of customers who receive error-free products and services will be ensured. This enables businesses to carry out less costly, more profitable activities and gain an advantage over their competitors in today's competitive conditions. Lean Thinking, on the other hand, is an approach that identifies those that cause waste among the activities carried out, eliminates these wastes, and thus ensures process flow. Lean Thinking focuses on processes and increases speed and efficiency. It is seen that both approaches whose features are listed above provide positive contributions to businesses. For this reason, the Lean Six Sigma methodology emerged by bringing both approaches together. While Lean Six Sigma eliminates wastes that hinder the flow of processes, thus enabling fast and efficient processes to emerge, it also keeps the

variability in the process under control through the statistical techniques introduced by the Six Sigma methodology. In other words, unnecessary activities in the process are eliminated and statistical methods are used to eliminate the variability that prevents the process from functioning incorrectly. Lean Six Sigma methodology is used more widely in production enterprises because the flow of processes can be determined more easily, and today it has started to gain importance for logistics enterprises due to the increase in sectoral size and competitive conditions. Businesses that use Lean Six Sigma achieve significant cost savings and, as a result, achieve great returns. Issues such as reducing delivery times, achieving optimum stock levels, and increasing customer satisfaction, which are especially important for logistics businesses, are goals that can be achieved by adopting the Lean Six Sigma philosophy.

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