Journal of Literature and Art Studies, September 2025, Vol. 15, No. 9, 688-695
doi: 10.17265/2159-5836/2025.09.003

Neurolinguistic Identification of the Paradigm of the Creative Process in Art

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This article is devoted to the study of the neural mechanisms of the binary substance of the brain in the process of creating, presenting and evaluating new approaches, methods and tools in the field of art. The interrelation and interdependence of genetically determined neural structures in the subcortical sphere and the neocortex in the creative process are shown. The scientific interpretation of the concepts of trance and bifurcation as mechanisms for the emergence of a new approach, method, and means for an innovator is given, and the peculiarities of perception and identification of innovations by art connoisseurs are characterized.

Keywords: trance, critical bifurcation point, expressionism, genetic cryptogram

Introduction

Currently, much attention is being paid to the problem of socio-cultural codification of verbal information and the exponential growth of the range of distribution of works of art. This article attempts to provide a scientific identification of natural language as a quasi-semiotic system that becomes the basis of the creative process in art, the neural mechanisms of adequate perception and comprehension of works of art in the substance of the brain, to characterize the dominant role of the three-dimensional (material, energy, informational) genetic substance of the brain in the formation of mental constructs in the cerebral cortex. This takes into account the postulate that the system of codification of the substance of the brain is a biopsychosocial phenomenon that obeys the laws of nature, human existence and society.

Speaking about the patterns of creative activity, it is necessary to consider the neural mechanisms for achieving harmony in art. Harmony (other-Greek. ἁρμονία, Latin. harmonia—connection, connection, correspondence, ratio, from other Greek. ἁρμόζω—to adjust, to adjust, and also Lat. coptatio, convenientia) the opposite of chaos. In the philosophical sense, it is the coordination of heterogeneous and even opposite (conflicting) elements (for example, in music—consonance and dissonance). This concept in music theory means the construction of chords.

The ancient Greek philosopher Heraclitus (the first half of the 5th century BC) does not use this word, but gives a peculiar interpretation of this concept. The theologian of the Middle Ages, Isidore of Seville, notes that “harmony is the proportionate movement of the voice, the coordination, or coherence, of various sounds

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[melodies].” Harmonious notes can be found in a melody, parallel narratives, or something visual—composition and color.

In establishing harmony in visual perception, it is necessary to find the golden ratio. This pattern was discovered by the ancient Egyptians. To get the golden ratio, you need to divide the line into two parts so that the long part correlates with the short one in the same proportion as the whole line correlates with the long one. This proportion is called the number “phi”, and is always equal to 1.618. This proportion was observed during the construction of the pyramid of Cheops, the tomb of Tutankhamun.

In music theory, it is noted that Johann Sebastian Bach, in his three-part invention E-dur No. 6 BWV 792, used a two-part form in which the size ratio of the parts corresponds to the proportions of the golden ratio.

At the beginning of the twentieth century, Expressionist music rejected any traditional, rigid formal restrictions, establishing peculiar requirements for the direct expression of the content of the human soul.

Since all human abilities (intelligence, reasonable emotions, value attitudes) manifest themselves only in the neocortex, bifurcation leads to the transformation of the neural network reflecting innovation in the brain shell, however, all shades of innovation determine a kind of cryptogram of the subcortical sphere.

It would be appropriate to note here that all mental properties (intelligence, human emotions, attitudes towards oneself and the surrounding (natural and social) environment) manifest themselves only in the neocortex, while the identification of these human properties in the subcortical sphere is not relevant to the perception of attributes of being in the cerebral cortex. The paradox of the interaction of these two levels of the brain substance lies in the fact that the deep, genetically determined sphere, which is completely devoid of human qualities, plays a dominant role in coordinating all conscious actions in any field of activity, including in the creative process. Moreover, the subcortical sphere forms neural structures of the cortex as neoplasms unilaterally without conscious human involvement. At the same time, the subcortical sphere does not react to a person’s words and thoughts, but only to intentions (from Latin. intentio “intention”), which arise in the sphere of consciousness, and determine the orientation of consciousness towards a certain object. Afferent connections help the subcortical sphere to extract all the intentions of the cortex in a timely manner, and the system of efferent connections sends energy impulses to the cortex that provide specific actions (performing in music, painting or sculpting in fine art, etc.).

In the complex hierarchical structure of spiritual culture, peculiar terminals function, represented in subsystems, which include: moral culture, artistic culture, etc.. Each of these cognitive-linguistic units represents a multi-step hierarchy of cultures.

In the sphere of public consciousness, the cultural program “artistic culture” consists of the slots “artistic creativity”, “organizational infrastructure of culture” (creative associations, associations, etc.), “material infrastructure” (showrooms, workshops), “art education” (academies, conservatories, etc.), “art criticism and scientific art studies”, “technical aesthetics and design”, “information source”.

The immanent properties and essential parameters of language are rooted in the genetic cryptogram, located in the subcortical area. The biophysiological material substrates of language—neurons and a neural network—cause an exponential growth in the range of coverage of the noetic field of language and culture.

The creative process in art is subject to the dialectical laws inherent in the existence of society, including:

(1). **The law of succession and renewal**. Language as a semiotic system and type of culture preserves continuity between different stages or stages of the development of codes of both the language itself and cultural codes, at the same time, a systemic transformation occurs, outlines of extrapolation of trends in the development of these systems are outlined.

(2). **The law of translational circular motion**. The development of the language system and the system of verbal codification have the character of a progressive (ascending and descending) movement, which has a cyclical character. The ascending line leads to the emergence of new cultural codes, while the descending line is the process of disappearing some of the signs and codes developed at the previous stage of development.

(3). **The law of conjugation of social and individual attributes in language**. That art represents both the belonging of a creative personality and the public domain.

A native speaker learns a system for codifying cultural content in their native language. Learning a foreign language causes the formation of new code signatures. At the same time, language and thinking function as interrelated correlates of the cognitive process in the speech act.

Speech acts as cognitive units are able to represent ("represent") things existing in the world. The speech act has an inherent intentionality, thanks to which words with abstract meanings (whiteness, bravery, clarity, etc.) are formed in the language, cultural content is represented in the field of art, reflecting the realities of nature, society, and human existence.

It should be assumed that language, as a biopsychosocial phenomenon that obeys the laws of living nature and social existence, is experiencing exponential growth, which leads to an expansion of the range of existing works and the designation of the creative field of new works.

Some syntactic constructions of the English language are used as complex linguocultures to designate certain genres and trends in art: rock music, fan club. Rock is a generic name for a number of popular music genres. The word rock (translated from English—"rock", "rock", "rock") originated as an abbreviation of the name of rock and roll

The famous German philosopher Hans-Georg Gadamer (1900-2002), when substantiating the philosophical interpretation of the definition of "text", proceeded from the concept of duality of being-real (empirical) and unreal (transcendent), which defines the dialectic of relations between conscious (verbalized, conscious) and unconscious (nonverbalized, unconscious), which always remains beyond the limits of the spoken and it requires the "disclosure of the hidden."

In a work of art, the objective or event-based basis can form only part of the theme and plot of the external form. The composition and its figurative system have no external support in reality, as they are components of the author's creative imagination.

Subjectivity as a characteristic feature of a work of art is due to the fact that it displays the author's ideas about objective reality, which are determined by intentions and attitudes, conception, worldview, conceptual foundations of the work, values and other attitudes. Spatial coordinates are interpreted from the standpoint of a certain aesthetic ideal.

A peculiar interpretation of the reflection of cultural content is given in memetics (other Greek: "mimetes")—"imitator, imitator", exploring the essence of memes. According to Dawkins, the founder of

memetics, memes can be “melodies, ideas, catch phrases”, as well as “buzzwords, ways of cooking chowder or building arches,” i.e. all units reflecting culture.

Clinton Richard Dawkins (born Clinton Richard Dawkins) March 26, 1941, Nairobi, British Kenya) is an English ethologist, evolutionary biologist, scientist (Hirsch index 19) and popularizer of science. Distinguished Fellow of New College. From 1995 to 2008, he worked as a professor at Oxford University as part of the Simon Professorship for the Popularization of Science.

Dawkins became famous in 1976 when his book “The Selfish Gene” was published, which substantiates a gene-centered view of evolution.

In the modern information space, infographics are used—a graphical way of presenting information that helps to explain complex things in simple language in one picture. This is the transfer of information graphically as a set of pictures and other elements that add up to a specific story and instructions. Infographics consist of images that are complemented by blocks, text, diagrams, diagrams, arrows, etc. The question arises here: is it possible to convey a work of art in its full form without distorting the content and ideological basis. To this reasonable question, an equally reasonable answer arises in memory: infographics only partially reflect certain nuances of a work of art. This form of representation cannot adequately represent the content of the work, since infographic leads to a distortion of the ideological basis of the work of art. In order to give a more detailed and reasonable answer to this question, it is necessary to characterize the dominant role of the three-dimensional (material, energy, informational) genetic substance of the brain in the formation of a peculiar cryptogram in the subcortical sphere and mental constructs in the neocortex (cerebral cortex) in the framework of neurolinguistics.

Literature Review

When considering the creative process, the products of the creative process within the framework of neuro-linguistics, the scientific identification of the concepts of trance and bifurcation is very important.

Trance (from the French transir “to become numb”) ← lat. transire (“crossing the boundaries of something”) is a series of altered states of consciousness, as well as a functional state of the psyche that connects and mediates conscious and unconscious mental functioning of a person, in which, according to some cognitive-oriented interpretations, the degree of conscious participation in information processing changes.

K. Hoffman argues that “Trance is still traditionally defined as a state of decreased consciousness or a state of drowsiness. However, more recent anthropological definitions associate it with altered states of consciousness (Charles Tart), and this is becoming increasingly accepted.”

A term from the theory of self-organization, bifurcation (from Latin. bifurcus (“forked”) means qualitative rearrangements or metamorphoses of various objects when parameters change, and in scientific creativity it is also associated with a change in the research paradigm. At the critical point of the bifurcation, there is uncertainty about the further development of the system, which may become chaotic or it may move to a new, higher level of order. This state is an immanent property of the creative process, which culminates in the discovery of a new approach, a method of depicting objective reality, which is initially perceived by art fans as a deviation, a distortion of traditional approaches. However, art connoisseurs are gradually beginning to understand the essence of the new vision and way of displaying the realities of life.

It should be noted that bifurcation points arise due to the interaction of neural structures located in the surface layer (neocortex) and deep nuclear zones of the brain substance. Bifurcation leads to drastic changes in the neural structures of the cortex, and the neural formations of the subcortical sphere retain the forms determined by the genetic program. Since all human abilities (intelligence, reasonable emotions, value attitudes) manifest themselves only in the neocortex, bifurcation leads to the transformation of the neural network reflecting innovation in the brain shell, however, all shades of innovation determine a kind of cryptogram of the subcortical sphere. These mental shades of innovation enter the subcortical sphere due to the establishment of afferent connections with the cortex, in the future, the subcortical sphere provides structural, energetic and informational transformations in the form of efferent connections, the functioning of the mechanisms of which belongs to the exclusive prerogative of the deep zones of the brain. Such neural mechanisms help the innovator to comprehend the shades of a new approach to creativity and work, and then implement the innovation in his works.

Based on the above, let's consider the creative biographies of some prominent figures of music and fine arts.

Ludwig van Beethoven Ludwig van Beethoven pronunciation: ['luːtvɪç fan 'beːthoːfn] 16 December 1770 he was born in Bonn, Cologne Kurfurst, the Holy Roman Empire—March 26, 1827, Vienna, Erzherzogin Austria, Austrian Empire) was a German composer, pianist and conductor, last representative of the "Viennese classical school."

Beethoven suffered from deafness, the first signs of which appeared at the age of 26, According to the Popular Beethoven website, in order to continue making music, Beethoven was looking for any ways to compensate for his lack of hearing. At some point, he started using hearing aids of the time, such as ear tubes, which amplified sounds and directed them directly into his ears.

After the composer's death, there were several notes left in the notebook, which later became known as Beethoven's Unfinished Tenth Symphony. In the late 2010s, a team of musicologists and programmers came up with the idea to complete this piece of music using artificial intelligence and to mark the 250th anniversary of the composer's birth, which was celebrated in December 2020. The first developments obtained using machine learning algorithms have already been approved by the staff of the Beethoven House in Bonn. In September 2021, the work was completed with the help of Florian Colombo, a programmer at the Federal Polytechnic School of Lausanne. The project was named BeethovANN,

Researchers of musical art pay attention to peculiar facts from the creative biographies of prominent artists. When studying the work of Niccolo Paganini, five interesting facts attract the attention of researchers.

Paganini was very superstitious…

famous musicians were ready to write a will after listening to Paganini…

Paganini possessed a precious collection of violins…

Paganini was fantastically absent-minded…

Paganini also performed in front of monarchs

The son of a longshoreman, Niccolo Paganini, not only managed to become famous all over the world—his violin playing was so virtuoso that it gave rise to incredible rumors: the violinist has made a pact with the devil, and instead of strings on his violin, the intestines of the woman he tortured are stretched.

Speaking about the extraordinary musical abilities of great composers and performers, it is necessary to pay attention to the mechanisms of interaction between the neural structures of the neocortex (cerebral cortex) and the

nuclear structures of the brain, primarily on the functioning of the Wernicke center (sensory speech zone, Wernicke's area)—a part of the cerebral cortex, which, like the Broca's center, since the end of the XIX century they are associated with speech. Here we can assume that the Wernicke center also provides a musical ear.

The famous psychologist Frederick Meyer drew attention to the fact that "the psychological quality called "relation" is inherent only in pairs of tones, the ratios of which can be expressed using simple fractions that do not contain primes greater than 7."

This idea of Frederick Meyer is in a certain sense identical to Miller's concept of "The Magic number seven plus or minus two", a pattern discovered by the American psychologist George Armitage Miller, a member of the National Academy of Sciences of the USA. The essence of this law is that a person's short-term memory cannot remember and repeat more than 7 ± 2 elements. This law, applied in psycholinguistics, helps to explain the nature of the involvement of short-term memory in the formation of musical hearing, which is closely related to the Wernicke center. In the process of creating a new piece of music, the composer must first imagine the sound of a new melody in the Wernicke center located in the neocortex. Mental preliminary "listening" to a new melody is possible due to the fact that a genetic cryptogram located in the subcortical sphere sends impulses to the cerebral cortex necessary for the energy supply of the neurons of the Wernicke center, in which a peculiar neural "score" of the new melody is preserved.

For a full-fledged scientific identification of the process of creating a new approach or method in art, it is advisable to consider the problem of the hidden mechanisms of the brain substance that ensure the creative process. As an example, we can use biographical materials from the life and work of Amadeo Modigliani.

An outstanding artist grew up in Italy, where he studied ancient art and the work of Renaissance masters. In 1906, he moved to Paris, where he met artists such as Pablo Picasso and Konstantin Brinkushi, who had a great influence on his work. Modigliani was in poor health. He often suffered from lung diseases. He died at the age of 35 from tuberculous meningitis.

Modigliani's work cannot be attributed to any of the artistic trends of that time. Researchers consider Modigliani's work separately from the main trends of that time.

What is especially sensuous in Modigliani's works is the unprecedented closeness of the model to the viewer and the powerful presence of physicality, not softened by any mythological narrative. Stylization of silhouettes and formalization are references to archaic art. The artist was a recognized master of the sketch: in 15 minutes, with a few strokes, he grasped the main thing.

During his lifetime, Modigliani's works were not successful and became popular only after the artist's death: at two Sotheby's auctions in 2010, two Modigliani paintings were sold for 60.6 and 68.9 million US dollars [4], and in 2015, "Lying Naked" was sold at Christie's auction for 170.4 million US dollars. In May 2018, the artist's painting "Lying Naked (on the left side)" was sold at Sotheby's in New York for a record price (for Sotheby's) of $ 157.2 million; the previous owner of the painting purchased it at Christie's auction in 2003 for $ 26.9 million.

The direction in which Modigliani worked is traditionally attributed to expressionism. However, not everything is so clear on this issue. It is not for nothing that Amedeo is called an artist of the Paris school—during his stay in Paris, he was influenced by various masters of fine art: Toulouse-Lautrec, Cezanne, Picasso, Renoir. There are echoes of primitivism and abstraction in his work. Modigliani's sculpture studios clearly show the

influence of African plastic art, which was fashionable at the time, on his work. Actually, expressionism in Modigliani's work is manifested in the expressive sensuality of his paintings, in their great emotionality.

Amedeo Modigliani is rightfully considered a singer of the beauty of the naked female body. He was one of the first to portray nudes more realistically emotionally. It was this circumstance that led to the lightning closure of his first solo exhibition in Paris. Nudes in Modigliani's work are not abstract, refined images, but real portrait images. The technique and warm light scheme in Modigliani's paintings "enlivens" his canvases. Amedeo's nude paintings are considered the pearl of his creative legacy.

In April 1917, 32-year-old Modigliani met 19-year-old Jeanne Hébuterne, a student at the Colarossi Academy. Jeanne became the main model of the artist—Modigliani depicted her on canvases at least 25 times.

After some time, the young people began to live together, and in 1918, together with the Zborovskys and Chaim Sutin, they left Paris because of the threat of invasion by German troops, going to the south of France.

One of his first Parisian friends was the German artist Ludwig Meidner, who called him "the last representative of bohemia":

> Our Modigliani, or Modi, as he is called, was a typical and at the same time very talented representative of bohemian Montmartre; rather, he was the last true Mark Restellini, an expert on Modigliani's work, explained why the artist did not depict Jeanne's eyes. Most likely, Modigliani was dominated by the talent of a sculptor: the features in his portraits ("blind" eyes, flat elongated faces, curved necks and long noses) reflected the author's attitude to models not as a painter, but as a sculptor.

Modigliani's painting is immediately recognizable by the artist's manner of portrayal. He paints women with long necks, flat, elongated faces, large almond-shaped eyes and small pursed lips. Its shades are monochrome (Greek: μόνος—"one", χρῶμα—"color"), an image containing only one color (which, however, can be of different brightness). In contrast to monochrome, a color image contains a variety of colors.

In the visual arts, an innovator can reflect his original vision, which differs significantly from the ideas of art fans. This approach can also be characterized from the point of view of neuro-linguistics as the interaction of the neural network of the neocortex and the subcortical sphere. At the same time, strong intentions arising in the sphere of the innovator's consciousness are extracted by the subcortical sphere along the line of afferent connections, efferent connections contribute to the full-fledged energy supply of cortical neurons, which identically reflect the essence of innovation. All the unusual ideas of the innovator-artist are vividly embodied in the painting.

"If an artist needs a label, then he's dead," Dedo (Modigliani), as his relatives called him, said about himself. And he, who transferred the sculptural mask "eye slits" into portraits, justified that he did not know the souls of the people he painted, and paints the appearance of a "mask", without eyes, that is, without a soul.

Conclusion

This article attempts to provide a scientific identification of the neural mechanisms of adequate perception and comprehension of works of art in the substance of the brain; harmony the opposite of chaos, this concept in music theory means the construction of chords; subjectivity as a characteristic feature of a work of art is determined by intentions and attitudes, conception, worldview, conceptual foundations of the work, values and other attitudes;

- the term trance is still traditionally defined as a state of reduced consciousness or a state of drowsiness, more recent anthropological definitions associate it with altered states of consciousness, and this is becoming increasingly accepted;

- at the critical point of the bifurcation, there is uncertainty about the further development of the system, which may become chaotic or it will move to a new, higher level of order;

- the subcortical sphere does not react to a person's words and thoughts, but only to intentions (from Latin. intentio "intention"), which arise in the sphere of consciousness, and determine the orientation of consciousness towards a certain object;

- afferent connections help the subcortical sphere to extract all the intentions of the cortex in a timely manner, and the system of efferent connections sends energy impulses to the cortex that provide specific actions (performing in music, painting or sculpting in fine art, etc.).

- the creative process in art is subject to the dialectical laws inherent in the existence of society, including:

(1). The law of succession and renewal.

(2). The law of translational circular motion.

(3). The law of conjugation of social and individual attributes in art.

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