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Music – The First Principle.

(Role of music in evolution of consciousness)

“A poet’s duty is to try to mend
The edges split between the soul and body
The talent’s needle. And only voice is thread.”
Joseph Brodsky

Grand piano, drums, violins, a singer’s voice, organ, or a simple bugle, sounding in a musical piece, sometimes can stir up deep feelings. Why? How come, sounds of music touch human psyche that ancients called “soul”? For millennia philosophers were raking their brains over this mystery.

Music touches the entire human nature, “so completely and so deeply understood by (man) in his inmost consciousness...” wrote A. Schopenhauer.¹ Is it possible to penetrate into the nature of musical affect on our soul? Even Aristotle was trying to understand how “rhythms and melodies, just mere sounds, remind states of soul?”² More than two thousand years have passed since Aristotle, still no answer was found. Which part of our soul does music speak to? What are the mind mechanisms involved? How could ability for music emerge in the process of evolution? Is music involved into historical process of evolution of consciousness?

By combining mathematics, psychology, neurophysiology in this article we consider parallel evolution of consciousness and music. I hope to convince the reader that it is not by chance that music accompanies the entire history of humankind. I’ll try to show that an ability of our psyche to be affected by music gives us a sort of advantage. Without it we all would have been different than we are. Music is necessary for natural evolution of human consciousness.

* * *

Consciousness evolved in history through several epochs. From ancient fuzzy consciousness that did not separate self from the world, to animistic and polytheistic consciousness that dissolved the human will in manifold of self-ruling wills. With appearance of Judaism and then Christianity a monotheistic consciousness followed, in which human cognized co-belonging of self to the eternal; and as a purpose, as aim there is an idea of individual consciousness, which will determine all the beginnings and ends, triumphs and tragedies, creativity and responsibility. Evolution of consciousness is a complex process, non-linear, with repetitions, returns, – and it seems sometimes that the entire history is a closed, eternally repeating cycle (so Ancient Greeks have thought). However, following Darwin’s discovery of the evolution of species, today’s science discovers mechanisms of the *directed* evolution of consciousness, determining the evolution of cultures.

Nature of creativity changes along with evolution of consciousness. The role of conscious increases. Creative process becomes more complex. Ancient creativity was directed at objective concepts of the mind (hunt, sharing spoil), which increased a sphere of conscious. Currently this process touches at once conscious and unconscious, conceptual and emotional. Closer to our time these seemingly opposing ingredients of creativity gain more equality.

Man exists in two worlds, the outer world of objects and inner world of concepts and emotions. We will attempt to demonstrate that art, music strive to unite the outer and the inner, so

that the picture of the world created by culture corresponds to inner instinctive needs, Closer to our time more intense is this striving. Music appeals to conscious and to unconscious so that *conscious corresponds to unconscious*.

So! If music and consciousness are connected, does it mean that music has changed along with consciousness? Can we trace these changes in history? Using as a springboard a theory of intellect, which connects psychology with math theory of the mind, let's try to trace the parallel evolution of consciousness and music.

But first, let's define a "glossary of terms," which we will need to understand each other (to the extent possible).

Mechanisms of the mind and Kantian aesthetics

*"...All was mixed at the beginning;
but the mind appeared and created order."
Anaxagoras*

As well-known, Kant founded aesthetics on his theory of perception and cognition, the processes of interaction between psyche and the surrounding world.³ By discovering the a priori inborn nature of our psyche as the basis of cognition Kant overturned the historical course of human thought and redirected the philosophical analysis of relationships of the human and the world, objective and subjective.

Before getting to complex conclusions about interactions of consciousness and music, it seems appropriate to briefly remind (even just to list) some Kantian ideas close to our topic. Here they are.

Concepts are created by our mind on the basis of the corresponding model. We can find our way around due to (and to the extent of) our concept-models being adequate or similar (in some way) to the corresponding objects-in-themselves.

Correspondence between concepts in our mind and the world around is established by the ability for Judgment. Judgment ability is *purposeful*; it is aimed at connecting the inner and the outer worlds, subjective and objective (unconscious and conscious). This is Kant's great discovery. It is not the world of concepts, which is purposeful according to some a priori law dictated by the mind. No. Judgment ability is purposeful. Whether our understanding is true or not, the ability for judgment gives us foundations for actions. We perceive our actions as purposeful. Purposefulness of judgment, therefore, gives us satisfaction.

Next. When our understanding of the highest purposes of our existence improves, we feel the presence of beauty. And when our understanding improves of how to act to achieve the highest purposes, we feel the presence of spiritually sublime. In this way, ability for judgment is a foundation for perceiving beautiful and sublime, a basis for art and religion.

What is the beauty according to Kant? Beautiful is aimless purposiveness. It is aimless because it is not directed at "lower" bodily instincts and needs.

While developing complex issue of dialectics of objective and subjective in beautiful, aesthetics of Kant did not resolve it. His notion of beautiful as aimless purposiveness provokes arguments till this very day. Several times Kant came close to identifying the problem. But its solution became possible only when philosophy, psychology, neurophysiology, and math unified and broke out from the enchanted circle of objective and subjective.

Let us add brief explanations of few terms necessary for understanding our arguments.⁴

The main mechanisms of the mind include instincts, emotions, and concepts.

Instincts indicate to an organism its unconditional needs for survival; e.g. low level of sugar in blood indicates hunger.

Concepts. From sensor signals neural mechanisms create in our mind models of the world; in other words, concepts of objects, situations, etc. This is why they are called sometimes *models-concepts*.

Emotions are neural signals connecting instinctual needs with concept-models and evaluating every concept for its ability to satisfy instincts.

Instinct for knowledge. In processes of perception and cognition, concepts are "fitted,"

changed for better correspondence to the surrounding world. This is the process of knowledge increase. The inborn instinct for knowledge drives us all the time to improve our knowledge and understanding of the world.

Aesthetic emotions. Evolution of consciousness creates more and more crisp, conscious models. The crisper is the model, the more accessible to consciousness it is. Emergence of more conscious models, satisfying the instinct for knowledge, we perceive as *aesthetic emotions*. Aesthetic emotions connect our perception of the world with speech (language) and participate in improving concepts of the highest purposes of our existence. Process of improving these concepts we perceive in our consciousness as the presence of *beautiful*.*

Differentiation and synthesis

Perception and cognition consists in adapting our inner models to the surrounding world. Dynamic logic governing these adaptation processes is purposeful and directed at satisfaction of the instinct for knowledge. In other words, *the instinct for knowledge is the basis of the mechanism driving adaptation of concept models*. And an inseparable part of this mechanism is aesthetic emotions, measuring and signaling the degree of satisfaction or dissatisfaction of the instinct for knowledge.

Now, let us continue our “glossary” and try to describe the two most important for us mechanisms in the processes of the mind: “Differentiation” and “synthesis.”

Creation of new concepts in culture requires tremendous psychological efforts from creative individual, as compared to everyday learning of already existing concepts. However, the main neural mechanisms of learning and creativity are the same: *Differentiation and synthesis*. **

Differentiation is a process in which more and more varied, detailed, and concrete properties of models are developed and become conscious; properties that were fuzzy and unconscious become crisp and conscious. Consciousness operating with more differentiated models discerns life situations in more detail, better adapts to the variability of the surrounding world, and creates the possibility for a more harmonious existence.

(For example, the concept-model “terrorist” is undergoing today an intense process of differentiation: Who is a terrorist? How dangerous? For whom? Who is a freedom-fighter? etc.).

We receive most of concepts in a ready-made form from language. Language quickly creates a vast number of finely differentiated concept-models (especially in childhood), however, a deep understanding of these models comes after their adaptation to personal experience, which takes a lifetime.

Synthesis connects language with cognition, conscious models with life experience, with unconscious bases of psyche, with instinctual unconditional needs. In the process of synthesis *the meaning of concept-models appears*. Synthesis is needed for normal psyche of every human being. It creates wholeness of psyche, a creative state, inspiration. Without synthesis concept-models existing in language may turn into empty sounds. Connection between conscious and unconscious severs, human life loses meaning. An inborn instinct for synthesis, connecting abilities for language and cognition, is a basis for tremendous acceleration of evolution of human intellect and a foundation for cultural continuity. On an evolutionary scale the inborn mechanisms of synthesis are young. Bodily instincts of hunger and fear emerged hundreds of millions or even billions of years ago. The knowledge instinct unites us with higher animals (tens of millions of years ago its evolution accelerated leading to primates). The language instinct might be two million years old. And the inborn mechanisms for synthesis of language and cognition, emotions and concepts, appeared possibly with Homo sapiens, between 500,000 и 50,000 years ago.

Collective concepts enter individual consciousness only through the individual adaptation. They have to be “lived through,” emotionally connected to other instincts, in particular, to the knowledge instinct. This requires interaction of all the multitude of conscious and unconscious models of the mind. (For example, a concept “freedom” is reevaluated many times over the lifetime, by “fitting” to life experience. Say, when fighting soviet power, many people did not imagine

* A more detailed description of the mind mechanisms is contained in the Appendix.

** Processes of differentiation and synthesis in human psyche were discovered by C. Jung. However, contradictions and clashes between differentiation and synthesis – the main topic of this paper - are not mentioned by Jung, nor by any other philosopher.

complexity of organizing new political and economic structures and could not foresee the consequences; the same is true about Americans attempting to liberate Iraqis). Emotional unification of the entire wealth of knowledge consists in intuitive evaluation (emotional coloring) of each concept from the point of view of other related concepts, their correspondences or disparities in the general system of concepts about life. This requires a huge diversity of concepts.

Music is the main mechanism of differentiation of emotions (whereas language is the main mechanism of differentiation of concepts). Because emotions interact with the entire wealth of human experience, *music, at the same time, is the most important mechanism of synthesis.*

Art is directed at once at differentiation and at synthesis of conscious and unconscious. These processes are equally important for the development of humanity and culture. Differentiation speeds up the cultural development, but could lead to a split between conscious and unconscious, to a loss of synthesis. The danger of split is exacerbated by the fact that connection among generations turns out to be a “weak link” in cultural development. In the process of transfer of cultural symbols from generation to generation connection between conscious and unconscious may disappear. Cultural symbols, contained mainly in language, in speech, may turn into just written or sound signs, having no meaning, which existed in the past. The consciousness might turn out to be developed and differentiated, but lifeless, corresponding not to the deep human needs; connections of concepts to instincts is severed and creative potential dies. This was the mechanism of ruin of ancient civilizations, which were superseded by peoples whose consciousness was less differentiated, but linked stronger to unconscious, instinctive, material basis of existence, and was more vital.

Since ancient times, ‘unreliable’ inborn individual mechanisms of synthesis have been enhanced by art and religion. By different means they restore connections of consciousness with unconscious archetypes through differentiation of the concepts of the “highest.” Art as well as religion create cultural symbols, unifying rational and human in people.

So, to continue existence and development of culture, to preserve every human’s psyche, to save a man from insanity, differentiation should be accompanied by synthesis. Synthesis ought to be continuously restored; differentiated conscious concepts ought to be continuously reconnected with deep primordial needs stored in unconscious models-archetypes.

This last paragraph summarizes the credo of the paper.*

Whence beauty in sound? – Mechanisms of music perception

“Beauty... flows and changes... or always the same?”
Socrates

Physics and aesthetics of musical sound

This paper develops what could be called for now “Theory of differentiation and synthesis of consciousness in the process of musical influence on psyche.” Let us compare this theory with physical theory of sound and psychoacoustics, which define, to a significant extent, a theory of musical harmony, major, minor, and some initial rules of musical composition.

We would not go into details of major and minor scales (this is described in many musical textbooks). Similarly, we will not calculate frequencies of overtones. These phenomena were known to some extent to Pythagoras and Aristotle. They did not know, however, that sound perception was also related to inborn mechanisms of ear. The eardrum properties are such that all overtones of the main tone F (namely, 2F, 3F, 4F...) are perceived by our psyche as pleasant (“in harmony”). On the opposite, two close frequencies (say F, and separated by halftone 0.92F) are unpleasant to ear (disharmonious).

Pythagoras described the main harmonies as whole-number ratios of sound frequencies about 2,500 years ago. In the 19th century a physicist Herman Helmholtz made an instrument that decomposed a sound into constitutive frequencies and created an acoustic theory of musical sound. Helmholtz’ theory explained consonances and dissonances, major and minor by similarity or dissimilarity among overtones. This theory with minor modifications forms a basis for electronic musical instruments till today.

Recent laboratory experiments confirmed that musical harmony is based on inborn

mechanisms. Babies (beginning at 4-month) like consonant sounds and dislike dissonances. The same relations between voice sounds and states of psyche existed millions of years ago. Our hearing and voice, its melody evolved to explore multitudes of overtones and their temporal changes for communicating fine shades of emotions.

Connection of voice sounds with the states of soul was inherent in our ancestors long before language began evolving toward conceptual content at the expense of the emotional one. Gradually, evolution shaped musical ability to create and perceive sound as something principally important, touching all our being. This is why wolves howl at the Moon, whereas humans express such a diversity of emotions in sounds. Laboratory neural research in this field just started, but it is already clear that music used these natural mechanisms of perception of consonants and dissonants and evolved them toward tremendously toward complex aesthetical effect. Which part of this development is genetically inborn and which is created by cultural evolution remains a question for future research.

Synthesis in voice melody

Music appeared from voice sounds, from singing. Intonation, prosody, or melody of voice sounds, rhythm, accent, ton pitch are governed by neural mechanisms in the brain. Images of neural activity show that the human brain has two centers controlling melody of speech, ancient center located in the limbic system and recent one in the cerebral cortex. The ancient center is connected to direct uncontrollable emotions; the recent is connected to concepts and consciously controlled emotions.

Prosody of speech in primates is governed from a single ancient emotional center in the limbic system. In part, because of this, conceptual and emotional systems (understanding and evaluation) in animals are less differentiated than in humans. Sounds of animal cries engage the entire psyche, rather than concepts and emotions separately. An ape or bird seeing danger does not think about what to say to its fellows. A cry of danger is inseparably fused with recognition of a dangerous situation, and with a command to oneself and to the entire flock: "Fly!" An evaluation (emotion of fear), situation (concept of danger), and behavior (cry and wing sweep) – are not differentiated. Conscious and unconscious are not separated: Recognizing danger, crying, and flying away is a unified situational-behavioral fuzzy form of thought-action.

Emotions-evaluations in humans have separated from concepts-representations and from behavior (For example, when sitting around the table and discussing tigers, we do not jump on the table uncontrollably in fear, every time "tigers" are mentioned). Similarly, a professional musician learns to switch her attention from an ancient unconscious-emotional system to the recent conscious-emotional system. This enables a more accurate control of voice or bow, without experiencing at the same time uncontrollable strong emotions. (A professional singer on a stage may wipe sweat from his forehead not because he experiences strong emotions, but because he uses tremendous effort for exact control of the voice tract).

Prosody or melody of speech is related to thinking and emotions. To trace this connection, let us revisit the main mechanisms of intellect discussed previously. We have an inborn instinct to understand the world around us, the instinct for knowledge. It drives us to improve correspondence of model-concepts and signals perceived by sensory organs. Satisfaction of this instinct, when the surroundings correspond to our expectations, we perceive as an aesthetic emotion of harmony, and dissatisfaction as disharmony. Along with the everyday model-concepts, we are also endowed

* This paper is devoted to the problem that was studied in hundreds of books and thousands of papers from Plato and Aristotle to our time. How does music affects people? What are the mind mechanisms of music perception? How did an ability for music perception evolved in human mind? The founder of contemporary aesthetics, Kant in the 18th c. wrote: "(as for) the expansion of the faculties which must concur in the judgment for cognition, music will have the lowest place among (the beautiful arts)... because it merely plays with senses."⁵ Contemporary experts in evolutionary psychology follow Kant (for example, S. Pinker, a Harvard professor, author of hundreds of papers and most popular books on psychology, mind, and their evolution, writes that music is "auditory cheesecake," a byproduct of natural selection that just happened to "tickle the sensitive spots." ⁶ The current paper offers a different conception of the hierarchy of music among arts in terms of its principal importance for human existence, for evolution of our consciousness and culture. For the first time this paper explains neural mechanisms of musical influence on human psyche as a whole, from unconscious archetypes to the highest concepts of the meaning of human existence. This paper shows the reason why music participated in human evolution, and how music gave an advantage to our psyche in struggle for existence. Bases for our conclusions come from a recently created theory of the mind, which on the basis of mathematics unified data from psychology, neurobiology, cognitive science, and evolution theory.

with ideas-models of the meaning and purpose of our existence; they are fuzzy, less conscious. When these most important models become crispier, more conscious, we perceive this highest harmony as beauty. Beauty reminds us of the purpose in our life (sometimes as if purpose existing in the world). The purpose in one's life is realized through purposeful behavior.

The model-concepts of the meaning and purpose as well as models of behavior realizing this meaning are fuzzy, inconcrete. Let's dwell for a moment on this principled point. These models are vague and cannot be completely conscious because there is an irresolvable contradiction in the very foundation of human life. We know about our finiteness in the material world. Yet we fill limitless eternity of our spiritual existence. This feeling is sometimes fleeting (since life in the material world does not directly support this feeling) and it might be completely unconscious. But even if unconscious, the models of meaning perfectly perform their main function: Creation of synthesis as a condition for inspiring life and creativity. This is why these models are the highest, the most important ones. A feel-perception of meaning creates synthesis in the soul. This leads to creativity, which highest manifestations begin to analyze (differentiate) this feeling of meaning and models it is based upon. And when models of the meaning (and related models of behavior) become crispier, closer to consciousness, we feel the presence of beauty or spiritually-sublime. Models of meaning and of corresponding behavior are important not because of rules of morals; it is the other way around, morals directing us to meaning evolved because meaning is required for concentration of will and for survival.

Our perception and cognition is related to speech (language) through *aesthetic emotions*. This process of connecting concepts with emotions, conscious models with unconscious archetypes, we called *synthesis*. *The human voice engages concepts and emotions. Melody of voice is perceived by ancient neural centers involved with archetypes, whereas conceptual contents of language involve conscious concepts. Human voice, therefore, involves both concepts and emotions; its melody is perceived by both conscious and unconscious; it maintains synthesis and creates wholeness in psyche.*

Synthesis in differentiation of emotions

Before prying the door, which conceals the mystery of music, its role in the mechanisms of the mind, let us note one substantial point. The road to synthesis is obstructed sometimes by principled contradictions. When adapting model-concepts to life experiences, a person does not want to doubt one's most cherished values. Everyone knows unpleasant emotions when these values are questioned. (For example, an old anecdote: A husband returns home, looks in the window, "my wife with another man?! – Or is the glass curved...?"). A concept of retaining the status quo turns out to be more important than a general correspondence of concepts and experiences. Talking scientifically, a mechanism of these negative emotions is still related to the instinct for knowledge. In addition to improving correspondence among concepts and experiences, this instinct first takes care of the most valuable concepts; it improves correspondence among all the multiplicity of concepts.

...It's time. The door to the "mystery of music" is set ajar. Please, enter, if you can squeeze through.

The correspondence among concepts and life is evaluated by aesthetic emotions – therefore a multiplicity of emotions is required, corresponding to multiplicity of concepts and their relations. The closer consciousness is to our times, the more there are differentiated concepts, the larger number of various emotions one needs to support synthesis.

In every type of art, direct emotional effects are important. Music, however, by differentiating sounds involves primordial emotional neural centers and possesses incomparably stronger means for differentiation of emotions than other arts. For example, mechanisms of visual perception are located in cortex; they use concept-models, which literally model surrounding world. Therefore, visual perceptions affect emotions only indirectly, through concepts. Direct impact of visual signals on emotions, circumventing visual cortex plays a minor role in emotionality of visual perceptions.^{7*} Even more so literary prose perception is based on conceptual mechanisms. Texts affects emotions not directly, but only through its conceptual content. Therefore, literature (prose), visual arts (paintings, sculpture, graphics, architecture) are perceived and cognized conceptually; mainly through concepts they can influence emotions. Poetry, like songs, affects conceptual and

emotional mechanisms directly (concepts through words, and emotions through sounds). Synthetic art forms (theater, film, TV) act similarly. *Essentially, of all art forms, only music affects emotions directly.*

I was inspired to seek for metaphysical connections between music and differentiation of emotions by Yuri Dimitrin. A well-known musical dramatist, a poet, author of rock-opera lyrics, explained to me the mechanisms of his creativity. Creating new plots for classic operas, while perfectly preserving great music, "... in this bar" he told me "I hear 'sadness # 24'... and here is 'sorrow # 5'... Creating new vocal text I cannot deviate even by a micron from emotions dictated by music that has been written for different situation in the past." ⁸ This description turned out to become a strongest driver for writing this paper.

By constructing new shades of emotions and by talking to archetypes of psyche (that is to primordial, vague, undifferentiated emotions-concepts, which contain the high and the low only as potentialities), music differentiates the aesthetic need, that is the instinct for knowledge. Music does it to a much larger extent than any other art. *The multitude of differentiated emotions created by music we use to evaluate every concept in its multifaceted relationships to our knowledge as a whole.*

Sounds arranged into a meaningful sequence and thus becoming music can reach the most ancient unconscious depths of human psyche as well as to most exalted ideas of human existence. Music engages the human being as a whole, - such is the nature of archetypes, ancient, fuzzy, undifferentiated emotions-concepts of the mind. Music moves foundations directly into hearts of listeners. (Nietzsche ⁹). Isn't this the reasons why folk songs, popular songs, or opera airs might affect stronger than words or music separately? Such is synthetic impact of a song, connecting conscious and unconscious. This does not state absolute primacy of vocal music over any other one. Sometimes a song affects our psyche stronger than anything else. Sometimes soul demands a fugue.

Coming to a completion of this part of the discussion, let us note the duality of the music nature. By *differentiating* emotions, music unifies contrarian concepts in their multifaceted relationships to our knowledge in its wholeness. By turning to undifferentiated unconscious structures of psyche, archetypes, music connects conscious and unconscious, conceptual and emotional and creates *synthesis*.

In language the world strives to split into pieces, and music makes it whole in manifold of emotions. This is why "Music is so deeply understood by our inmost being." *Music differentiates emotions, invoking divisions, yearnings, dissatisfactions. And at the same time it is a mechanism of synthesis, creating harmony and wholeness in the human soul.*

Differentiation and synthesis. The battle of the worlds.

*"To be beautiful everything must be conscious."
Socrates*

The purpose of this chapter is to clarify the mechanism of continuous battles of differentiation and synthesis in a particular historical epoch. We select Ancient Greece for this discussion.

In myths and legends the surrounding world is full of meaningless chaotic forces pursuing human beings; acts of gods, like acts of people kneeling before them, are unpredictable, dark, and their purposes hardly exist. Dealings amongst gods, like dealings amongst people are founded on fear, deceit, and sacrifice. Consciousness is fused with unconscious and a human being is immersed into unordered chaos of material world. This consciousness mixes causes with effects and meanings are rarely clear.

Development of consciousness was accelerated by writing. In Homer poems (written down at about 900 BCE) human consciousness enjoys the force and power of language concepts

* Let's compare influence of music on consciousness to similar actions of bodily instincts. Emotions of satisfying hunger or sex drive human perceives directly, like emotions from music. But to find food we need concepts. A visual image of food does not evolve emotions directly, but only through concepts about food. Therefore, direct musical influence on emotions described herein is more adequate to a very sexual act, or eating, rather than to erotic contemplation of human body or looking at food.

overcoming the chaos of the ancient world. Using language, human overcame vague synthetic mythic consciousness. Nietzsche called Homeric consciousness Apollonian (after the god of reason, harmony, light, embodying conscious, conceptual world outlook). And here is Schopenhauer's characteristic of Homeric consciousness: "Just as in a stormy sea, unbounded in its expanse, rising and falling with howling mountainous waves, a sailor sits trusting in his frail bark, so amidst the furious torments of this world the individual sits tranquilly, relying on principium individuationis."¹⁰ Let's clarify, individuation here is a separation of human being from the word. Schopenhauer thought that individuation created by consciousness is a foundation for human activity. *

Differentiation protects human being from the world by ordering and simplifying it. Sometimes however, unforeseen breaks forth into life, unordered passions seize man and draw him into primordial chaos. Man faces life's torrents of horror that destroy the principle of individuation. He is ready to give up his individuality, forget it, and to accede to "the glorious transport which arises... even from the very depths of nature" to the feeling of oneness with nature. Here "we are in a position to apprehend the essence of Dionysian rapture, whose closest analogy is furnished by physical intoxication."¹¹ Dionysian in mathematical chapter of the paper we will call "synthetic undifferentiated consciousness." And horror of differentiation, mentioned by Nietzsche, we describe as the breakdown of harmony, synthesis, and wholeness in human soul (So for a catholic during the Reformation it was impossible to accept that a man can use his own mind to interpret the Ten Commandments. So in the 1990s it was horrible for a communist in Russia to find out that his sacrifices and poverty had had no meaning; and that private business ownership and wealth is OK. And many people in the world have to search for unity and meaning in one's soul, search for synthesis destroyed by differentiation.)

Human ability for conceptual thinking, differentiation is too powerful a mechanism for an individual psyche. Accelerated by language this ability has been perfected rather quickly, compared to almost immovable biological instincts. In evolution as well as in individual life, man begins discerning objects and situations in the surrounding world much earlier than movements in one's own soul. Contradictions between the world and soul are felt as pain, as a tragic state. Separation of man from nature, from collective, and from collective unconscious is a process painful like birth. Life demands equilibrium between the ideal meaning and material reality, between synthesis and differentiation.

In prehistoric vague consciousness human is one with nature, and the meaning of existence is perceived naturally, like an instinct. Creative forces are sleeping; freedom of self-thinking does not exist. Differentiated consciousness creates a possibility for thinking. Man begins to perceive the world in terms of clear concepts of the mind. In other words, differentiated consciousness gives a possibility for freedom. But, it also separates a man from the world and the purpose of life is questioned. Splitting from unconscious, crisp thinking may lead to loss of meaning and creative potential. Concepts split from life, a will to life disappears. This means that differentiation overpowered synthesis: "In this supreme jeopardy of the will salvation comes" from a magic sorcerer, art. Reconciliation of cognition and life was achieved in Ancient Greece through tragic drama: "salvation comes from the satyr chorus of the dithyramb." Dithyramb is a frenzied and impassioned song, ecstatic poem made up of energetic sharp lines at the verge of gaiety, sorrow, or distress. – This description may fit a contemporary rock-concert. – In the chorus of tragedy, Ancient Greek spectators met with themselves – similarly young people today are searching for their self, combining their conceptual and emotional, being lost among the complexities of life's choices.

In the art of Attic tragedy "the abrogation of the principium individuationis for the first time becomes an aesthetic phenomenon." A new form of consciousness has appeared, a *consciousness of rapture, of the tragedy of human existence*. This consciousness sprouted from the poetry of Archilochus, who lived in the seventh century BCE. Ancient Greek reliefs show Archilochus side by side with Homer. Archilochus was so honored for introducing folk song into literature. In a song, Schopenhauer saw alternations of unsatisfied willing and pure contemplation, as if musical cognition.¹² In contemporary language of science, the Archilochus achievement was that he transformed unconscious into conscious and created new model-concepts of the meaning of human life, in which Apollonian and Dionysian could 'agree'.

Tragic drama spoke to man as a whole, to his conceptual and emotional, it unified conscious and unconscious. In this way Ancient Greeks achieved the victory of spirit over the

eternal return into magical and cruel senselessness of chaos: Synthesis was achieved not by abrogating consciousness, but through differentiation – through new conscious concept of the tragic. Instead of repeating the eternal myth, again and again returning to the animal state, then trying to repair life, a human being acquired an ability to relive the eternal return in art. Tragedy, according to Nietzsche, becomes conscious *due to music*.

Tragedy was transformed into art; this stopped chaotic swings of psyche between divided concepts and emotions. A symbol of tragedy of human existence breaks into consciousness, accelerating the process of individuation. In essence, “all the famous characters of the Greek stage, Prometheus, Oedipus, etc., are only masks of” Dionysus. Hundreds of dramatic tragedies written by great Greek authors explore one universal tragedy of individuation – emergence of Apollonian consciousness and its separation from Dionysian unconscious. And the tool used by art to penetrate into this mystery is music combined with poetry (enhanced by plot of scenic action).

In Aeschylus’ dramas, tragic effect is achieved by combining emotionality of music with conceptuality of poetry. The aesthetic means are dithyrambs performed by the chorus of satyrs, animals-humans; this emphasized the fused animalistic state of psyche. Gods and mythic heroes act on a stage, and the basis for events is the archetypal myth. Aeschylus’ student Sophocles also uses mythic plots but he reduces significance of the chorus and amplifies poetic text. This emphasizes conceptual content and separates it from music. Thought splits from unconscious, individual from collective. And already Euripides transported onto the stage the common man, people with their own thoughts. This was a revolution in the history of thinking. (Inconceivable power needed for this revolution Euripides drew from the philosophy of Socrates.) From the entrails of collective consciousness that thinks by clear images of objectified myths, *a new type of consciousness emerges, unprecedented, unknown in history – a man is predestined to decide on his own what and how to be.*

Ancient Greek theater, by combining poetry with music, created synthesis that overcame sufferings of individuation (Aeschylus, Sophocles). Conditions emerged in human soul for tremendous acceleration of creative thinking. Socrates (in philosophy) and Euripides (in theater) called to life a new type of rational consciousness, which creates models of the mind according to its own understanding, without support of collective archetypal models. Armed with the idea of individuality, rational consciousness captured the world and formed a foundation for the scientific method of thinking, which fruits are used by all of us. As explained, however, by the knowledge instinct theory, rational method is differentiation split from the emotional depths of unconscious. The rift between new consciousness and unconscious was too deep for Greek culture. Ancient myth turned into tall-tales that did not grab by the guts, a symbol turned into a sign. New Socratic way of thinking destroyed a bridge “over the abyss of soul.” Greek culture died, writes Nietzsche, and the entire ancient world died with it. Ancient Greek civilization was succeeded by new peoples, whose consciousness was less differentiated, but intimately connected to unconscious, to foundations of psyche and to the source of living energy. **

Recapitulating, let us delineate the main fights of differentiation and synthesis, which defined destiny of the Ancient Greek world. Two periods (moments) of Ancient Greek flourishing, Homeric and tragic, are times when conceptual and emotional were unified (truths between the battles). During the period of Homer, ancient synthetic consciousness gained access to clear concepts (truth negotiated by differentiation) through language enriched by writing. During the period of Attic tragedy, torn differentiated consciousness was unified in a symbol of tragedy. Sufferings that gods sent to human became conscious as inseparable part of human destiny. Musical tragedy combined conceptual and emotional; it created a symbol unified conscious and unconscious (truth negotiated by synthesis.***). Rational consciousness however, uncovered the irrational nature of myths and gods, the unconscious roots of tragedy. The idea of tragedy was differentiated. Synthesis was destroyed.

* Individuation is a psychological and cultural process of creating personality. Schopenhauer wrote about principle of individuation as a foundation for human ability to live in the world of suffering. Jung developed the notion of individuation as combining differentiation and synthesis. He considered individuation as the most important task of every human life.

** This unavoidable loss of the significance of ancient myth does not mean that following generations forget great art pieces based on myths. They entered general cultural stream of evolving world culture. This is the essence of movement of culture and consciousness. However, their role in our times is incomparable with that in Ancient Greece, when myth acted autonomously, by itself creating sense in human life.

*** Here, both truths-victories are metaphorical emphases of the periods of equilibria of synthesis and differentiation; first, enhanced differentiation came to equality with synthesis; then enhanced synthesis came to equality with differentiation and

unified differentiated consciousness in the symbol of tragedy.

Music and individuation. Historical excursion

*“...all their power brawns
In consonance of gender flexion tones.”
O. Mandelstam*

Interaction of differentiation and synthesis considered in previous chapter is a general scheme characteristic of any epoch in human history. Accelerated differentiation of everyday life tips the balance of the everyday and the highest. “It is difficult to keep the scissor blades together.”¹³ It is difficult because *the condition of the creative process is a combination of oppositions, differentiation and synthesis*. Their complex dynamics determines the development of culture. When unity within the soul is achieved (synthesis), creative energy is directed at exploration of the outer and inner world, at widening the sphere of conscious – that is, diversification (differentiation) of everyday concepts and emotions. (So, Judeo-Christian synthesis created conditions for emergence of scientific thinking, although it took thousands of years to come to fruition. Only Descartes in the 17th c. completed “expelling spirit from matter” and Newton, following him, could think about completely causal, that is scientific explanation of the material world).

In the process of history, diversity of everyday life gets complicated and overtakes concepts of the highest, which have served as a foundation for inspiration (synthesis). Lagging synthesis leads to a discord in the soul – concepts of the highest purpose do not correspond to everyday way of life, to variety of concepts and emotions, leading to a decline of culture. (So scientific thinking destroys ancient religious synthesis). Overcoming crises and continuing the cultural process demands new concepts of the highest purpose (new synthesis), corresponding to a new level of the differentiation of psyche.

What is the role of music in this complex process of “keeping the scissor blades together”? The creative state of a collective soul (that is, the collective conscious and unconscious) is necessary for movement of the cultural process. It goes on in the interaction of conscious and unconscious, in synthesis. Collective *consciousness* belongs to the entire culture, whereas collective *unconscious* is in the neural structures of an individual brain – how are they tied together? This connection is synthesis; and we already found out that condition of synthesis is a *correspondence* of concepts of everyday material life and the highest spiritual purpose. As culture develops and the power of spiritual gaze strengthens, spaces surrounding man move apart and distances open, new more diverse concepts and emotions enter into the field of regard.

Synthesis requires ever increasing efforts of an individual human being. For this reason Jung called individuation the development of consciousness, in which differentiated concepts are combined with emotions, conscious with unconscious. A way to individuation is through understanding of one’s own purpose and meaning. A way toward differentiation (according to Jung¹⁴) is through understanding of meaning and purpose of life. This Jungian understanding further developed Schopenhauer’s individuation, which we discussed previously. Jung thought this to be the highest aim of every human life. Even more radical was Kant, who wrote that consciousness of the purposiveness coincides with the Christian ideal of sainthood.

Consciousness and culture are developed on the edge of differentiation and synthesis. Too strong a synthesis fuses conscious and unconscious together into a fuzzy undividedness, a need and ability for the new disappears, as in pre-historic consciousness. Prevalence of synthesis is characteristic of Eastern cultures, striving for the peace of soul. A payoff for the peace of soul is millennia of cultural immobility. Prevalence of differentiation is characteristic of Western cultures, when differentiation overtakes synthesis, the meaning of life disappears, and creative potential is lost in senselessness.

Let us start on the promised historic excursion. We will remember about *uniqueness of music among other arts in its synthetic effect on psyche, directly involving unconscious and emotional*. Tracing parallel evolutions of music and consciousness we will see that during the flourishing of material life, diversity of musical forms increases, whereas during crises, when tensions grow between emotional and conceptual, conscious and unconscious, also a *need grows for spiritually-healing musical power*, and musical forms turn to a search for the sublime.

From pre-history to monotheistic synthesis

How did ancient music sound (clearly, not a single sound was preserved in recordings)? Our ancestors, wrote Charles Darwin, or more accurately, early progenitors of mankind possibly used their voice for singing, unlikely we would ever have direct proof for this conjecture. The most ancient evidence of the musicality of our ancestors, according to some historians of music, might be a remnant of a flute made from a cave bear femur bone more than fifty thousand years ago. Flutes made of a wing bone of the red-clowned crane more than 9,000 years ago have been found in China. They could still be played; their sounds approximate the contemporary do, re, mi... – Material culture was in its infancy, there was no agrarian culture, nor permanent settlements, but there already was music and notions of octave and scale.

The most ancient fragment of a song found so far was recorded about 3,400 years ago, in Ugarit (contemporary Syria) in Hurrian language using cuneiform; the song's musical notations according to some musicologists are similar to the contemporary scale do, re, mi... Nine hundred years before Pythagoras there were musical notations for a seven-note scale, a foundation of contemporary musical harmony. Ancient Greek music (two-three thousand years ago) was a single-voice melody (rarely accompanied by a simple harmony) – this was sufficient for differentiation and synthesis in the ancient world. When Pythagoras found that the main harmonies were based on ratios of whole numbers, this was perceived as a confirmation that music came from gods: Mathematics ruled music and astronomy.

The tremendous potency of music to affect consciousness, to move people's souls and bodies since time immemorial was ambivalently perceived. Plato wrote about idealized imagined music of the Golden Age of Greece: "... (Musical) types were... fixed... Afterwards... an unmusical license set in with the appearance of poets... men of native genius, but ignorant of what is right and legitimate... Possessed by a frantic and unhallowed lust for pleasure, they contaminated... and created a universal confusion of forms... So the next stage... will be... contempt for oaths... and all religion. The spectacle of the Titanic nature... is reenacted; man returns to the old condition of a hell of unending misery." ¹⁶ The process described by Plato, in terms of evolution of consciousness, is the breakdown of synthesis in the result of differentiation as a consequence of Socratic rationalistic consciousness.

Looking back in history we know that Plato's foresight came to pass more than once. And today, a significant part of humankind is immersed in suffering, terror, wars. Is it also due to "musical vulgarity"? Here is an example from recent past. A significant part of French public opinion, after lightning defeat in a war with Bismarck (the 19th c.) blamed weakness of France on... Offenbach's "vulgar music." Another, closer example. Soviet power during Stalin twice blamed composers for "wrong, anti-people" music ("Sumbur vmesto muzyki", 1936, newspaper "Pravda," and the 1948 ruling of the Central Committee of the Communist Party denounced composers, including the most talented ones, making glory of Russia today). Does music participate in evolution of human consciousness?

Contemporary Western music originated from church and sinagogal singing; according to Piero Weiss and Richard Taruskin, "Psalmody (the singing of psalms) is surely the oldest continuous musical tradition in Western civilization." ¹⁷ However, the first Biblical description referring to King David time (3,000 years ago) refers to "the clangorous noise of instruments... reminds the modern reader of no Western form of divine service... (similarly does a scene) of David dancing before the arc of God." ¹⁸ Why? Possibly because there were no irresolvable contradictions in the souls of David and his contemporaries, the monotheistic idea was a sufficient basis for synthesis. Human imperfections were sins, for which one had to be accountable before God, but the notions of sin, freedom, and personal responsibility were not yet sufficiently differentiated to precipitate existential crises. This type of consciousness we see in the book of prophet Amos written in the 8th c. BCE, 250 years after David. Consciousness presented in this book, was characterized as follows: "In Amos there are no words for the mind or think or feel or understand or anything similar whatsoever; Amos never ponders anything in his heart. In the few times he refers to himself, he is abrupt and informative...";¹⁹ in his speech, voice, words, emotional and conceptual contents were fused, there were no deliberation, no arguments, no choices to be made. In this period of fuzzy consciousness, music of the divine service like all creative forces was directed at differentiation.

However, a new type of consciousness was already rising at that time; consciousness with self-reflection and internal contradictions. Although the prophecy of Isaiah took place only one generation after Amos, Isaiah's consciousness was ahead of his contemporaries. The impending catastrophe that he foresaw created tensions in his soul between conscious and unconscious. This tension appeared in his vision as an antiphony of the voices of Seraphims. For the first time the principle of antiphony was mentioned in the Bible, the split choirs answering back and forth, which was to become a foundation of psalmody in Jewish and Christian divine service: "Seraphim... one cried to another, and said, Holy, holy, holy is the Lord of hosts." (Is. 6, 1-4.) "The words sung by the Seraphim entered the Jewish liturgy... and were later adopted by the Christian church..."²⁰

Development of consciousness in Ancient Greece and Israel remarkably coincide. In the 6th c. BCE the first Greek philosopher Thales repudiated myths, demanded conscious thinking, and pronounced the famous "know thyself".²¹ In Israel, Prophet Zechariah (Zech. 3-4) forbade prophecy, an outdated and already dangerous form of thinking; he demanded conscious thinking. Conscious thinking created a discord between personal and unconscious-universal, led to a feeling of separateness from the world; tensions appeared in psyche, which were mirrored in antiphonal singing. – Forms of music appeared, corresponding to the forms of consciousness. – Singing of split choirs symbolized differentiated nature of the highest principles, and brought closer to consciousness the feel of the split in psyche. Antiphonal singing, appealing to conscious and to unconscious, drew them closer, linked the feeling of the split with conscious perception of "self-world" relationships, and restored synthesis. Antiphon as a generally accepted form of divine service is mentioned in the Bible for the first time in the book of Nehemiah (Neh. 12, 27-43) in 445 BCE, just a century after Zechariah and Thales' "know thyself."

In the following centuries the tension grew between unconscious strivings for the absolute and the reality of human sufferings that were consciously perceived. Differentiation accelerated, overtaking synthesis and threatening to split conscious and unconscious. Can we imagine the ways of Western civilizations if the split occurred? – An example of a split consciousness we find in Buddhism, where the highest unconscious strivings are separated from conscious life in the material world. Buddhist's synthesis, peace and inspiration of soul, is achieved by the price of repudiation of the world of matter. A Buddhist person refuses to suffer, but also refuses to live in the material world. Christianity forestalled the split in the human soul; a new symbol of suffering God assimilated the fundamental contradiction of human nature (between finiteness of matter and infinite spirit, between conscious and unconscious). Sufferings became possible to endure because it was understood consciously as a part of the Divine; the highest and the everyday were joined; suffering acquired meaning that is necessary for man to live. *Unity of conscious and unconscious brought about by religion and art was a testament of preserving synthesis and continuing culture.*

Synthesis and differentiation before Renaissance

At the beginning of the Christian era anxiety often did not find justification or an outlet. Similar feelings are often experienced by contemporary people, but 2,000 years ago the symbol of God suffering on the cross created a mystical sensation of meaning and pacified contradictions in the soul. Such a mystical and powerful process in psyche Jung called the autonomy of a symbol-process. When a symbol acts autonomously it assimilates a larger part of sufferings and contradictions. Remaining contradictions were reconciled in the synthesis of antiphonal music. Collective emotions of the spiritually sublime expressed in antiphonal singing were adequate for synthesis. "The early Christian church adopted its rituals... from the liturgy of the synagogues... Jewish liturgy... became the framework for the early Christian vigils... Modern research has uncovered a close resemblance between certain psalm melodies preserved to this day among Middle Eastern Jews and certain Gregorian chants... The singing is antiphonal... with refrains, which in Christian times became known as antiphons."

Descriptions of music as a mechanism of synthesis, unifying meanings of words with unconscious, we encounter in the church fathers in the 4th century: "The delight of melody He mingled with the doctrines so that by the pleasantness and softness of the sound... we might receive without perceiving it the benefits of the words".²² – The meaning of antiphonal psalmody was identified with a significant part of Christian teachings and the purpose of music was seen in

connecting everyday life concepts with the sublime, that is, in synthesis.

Collective experience of spiritual unification, which we called synthesis, was adequately created and expressed by existing musical forms, monody and antiphony. This was described in the writings of St. Basil and St. Augustine: "(music was) joining the worshipers into a unanimous entity", "in the practice of singing hymns... the faithful fervently united with heart and voice..."²³ Synthetic power of music was also discussed by Boethius: "...what unites the incorporeal existence of reason with the body except a certain harmony, and, as it were, a careful tuning of low and high pitches in such a way that they produce one consonance?"

However, as the knowledge instinct asserts, history is defined by complex dynamics of synthesis and differentiation. Inspiration created by early Christian synthesis released creative power for differentiation of musical forms and accompanying mental awakening. Balance in the soul shifted and threatened to destroy synthesis. Development of consciousness in Christian Europe reminds processes in pagan Ancient Greece. Again, powers of music were recognized in their complexity, constructive and destructive, similarly to Plato's view of poets and musicians as a threat to culture. Music appealing to regressive instincts is repudiated by the church as a destructive force: "Passions sprung from a lack of breeding and baseness are naturally engendered by licentious songs... at the sound of a flute (some) are excited to a Bacchic frenzy." (Possibly here St. Basil talks about unknown to us mass culture of the time?)

Ambivalence toward music is a result of more complicated dynamic interaction between differentiation and synthesis. We find its self-reflective depths in the 4th c. in St. Augustine: "The tears flowed from me when I heard your hymns and canticles, for the sweet singing of your Church moved me deeply. (When singing) the jubilus... it is a certain sound of joy without words, the expression of a mind poured forth in joy... There are particular modes in song and in the voice, corresponding to my various emotions and able to stimulate them because of some mysterious relationship between the two. But I ought not to allow my mind to be paralyzed by the gratification of my senses, which often leads it astray... Senses... attempt to take precedence and forge ahead of (the mind)..."²⁴

According to foremost thinkers in the 4th and 5th centuries (including St. Augustine) the mind was not strong enough to be reliably in charge of senses and unconscious urges. Differentiation of emotions and feelings was perceived as a danger. Boethius (5th c.) expressed a firm belief that in an individual human being the highest was associated with conceptual reason that ought to judge sensual and emotional: A musician is the one who maintains "the sovereignty of reason... and not through the slavery of labor" learned music. Instrument players and poets (composers), according to Boethius, are not musicians, because players "devote their total effort to... skill... use no reason, but are totally lacking in thought," and "compose songs not so much by thought and reason as by a certain natural instinct." Differentiation of emotions in the 4th c. was dangerous for synthesis, which was not yet ready to unify the entire material sphere of human existence. Therefore early Christian music was directed at spiritually sublime emotions with synthesizing power. In religious and social life, similarly, unity in soul was fragile and creativity was directed at strengthening synthesis at the price of repudiating the material and innovative.*

In the 4th century Christianity was not ready for synthesis of material and spiritual. Repudiation of material life contradicted foundations of the Roman empire and empire disintegrated. In the 5th c. Western Europe was subjected to a series of invasions by Visigoths and Huns. Differentiation of consciousness achieved once by Greeks and Romans was lost. Artistic and scholarly work also faded. It took centuries to create foundations in the collective soul for unifying spiritual and material on the basis of Christian synthesis and turn around this process of decay. Cambridge University was founded in the seventh century. Christian states appeared in the 8th century, and much of Europe was unified under Charlemagne, who codified the laws and promoted a cultural revival. Cities, population and prosperity grew, universities opened, philosophical thought was reacquainted with Aristotle.

Synthesis in psyche was fortified about the eighth century, when Christian states emerged. Creative powers could again be directed to differentiation of consciousness. Unification of opposites, a conflict between rational thought and mystical foundation of religion created tensions in the human soul. The emerging tension inspired creativity in search of synthesis. New musical forms of sequences and tropes,²⁵ unified conscious and unconscious in the interaction of conceptual contents of texts and emotional contents of melodies. (These new forms added texts to melodies or melodies to texts in such a way that one syllable corresponded to one note. A popular

song is structured and affects us in a similar way).

An important step toward differentiation of musical content was the invention of musical notations (9th c.). This was a revolution in the history of Western music determining “all future development of the art... musical style began to change with increasing rapidity... (It) made the cultivation of polyphony on a grand scale really practicable... which above all sets Western music apart from all other traditions.” From this time on originality and individuality of music is valued, composers’ status is elevated, differentiation of internal experiences, feelings and emotions is accelerated. In early form of polyphony, organum (9th c.), two voices move in parallel motion. Organum “reminded of the universe (that) in accordance with the uniform will of the creator, is welded into one harmonious whole...” – this witness of Erigena confirms the previous scientific conclusion that music is understood by both conscious and unconscious and is capable of differentiation as well as synthesis.*

During the following centuries organum evolved toward richness of emotional content in greater melodic independence. Differentiation of experiences and emotions did not correspond any longer to antiquated Christian synthesis based on repudiation of worldly pleasures. Lagging synthesis again threatened a cultural catastrophe. In 1159 bishop John of Salisbury protested against danger perceived in new music: “the singers... with lewdness of a lascivious singing voice... To such an extent are the high or even the highest notes mixed together with the low or lowest ones – that... the intellect, which pleasurable of so much sweetness has caressed insensate.” * In the bishop’s mind, clearly the lower emotional appeal of this music was stronger than its synthetic power to combine the material with spiritual. (Does it point to the unknown to us mass culture of the 12th c.? Let us note that “fear of emotions” is repeated in about 800 years, beginning with Plato. Does it point to a cycle of differentiation and synthesis?)

Romantic idea of love emerged in worldly life, feelings to a beloved one took on a religious tinge. Variety and refinement of emotions began to flourish in courtly life and the knightly tradition. In secular songs of troubadours and trouveres in France, minnesingers and meistersingers in Germany, emotions are differentiated more than ever before. “Like the music of the Church, the poetry and music of the noble troubadour were sober and reflective, and served to elevate and memorialize the permanent values of life... service to lord and lady, the idealization of love, and the fervor of Crusades.” The idea of romantic love was elevated to a level of the highest spiritual purpose and love feelings were elevated to the level of religious ones. Differentiation and synthesis of the highest and lowest emphasized in collective consciousness the most powerful instincts, material and spiritual, an opposition previously suppressed. Romantic sublimation of love became a part of the new synthesis of emotional and conceptual – it was a step toward individuation becoming such an important element of Western culture. Poet-composer in a song turned to his beloved one, – an “eternal theme,” songs about love, appeared only about one thousand years ago.

Combination of diversity and meaning, differentiation and synthesis, was accompanied by enhanced interaction of music and text. Musical techniques of secular songs emerged, which are still used today: Instrumental accompaniment, stronger and more regular rhythms, recurrent short rhythmic patterns and refrains; instead of Latin, texts in vernacular languages accessible to understanding enhanced synthesis of the secular and mystically high. In secular life, differentiation and synthesis got ahead of these processes in the life of Church – *the Christian symbol, having created during the millennium a new type of consciousness with a higher level of individuation, began losing autonomy in the human soul, its role as the spiritual source of life was waning.*

Individuation: Renaissance, Reformation, and Bach

For the first time since antiquity a European man felt the power of a rational mind separating from collective consciousness. A new consciousness engages and inspires people only if it creates a

* Let’s note that today also attitude to emotional music is ambivalent. Some musicians and theoreticians of academic music, say admirers of D. Cage music, call to abandon emotions and strong feelings. They consider emotions and feelings as belonging to entertaining and ideological music. Fears of emotional music are also seen in attempts to create intellectual, non-emotional music (P. Boulez), and to separate serious-conceptual music from popular. One can take such attempts with irony, but when huge crowds in concert halls and fields are losing control of the mind, and, it seems, are ready for destructive actions, thoughts about danger of emotional music may not seem ridiculous. Does today culture face danger from “musical vulgarity,” or consciousness became strong enough and there is no bases for the fear? Let’s abstain from answering this question yet.

new synthesis in place of the old decaying one. A process of creating synthesis, new symbols, inevitably goes through tragedies and catastrophes of the demise of the old ones. Human intellect is not as omnipotent as it may seem to collective consciousness. However, in the beginning of Renaissance (13-14th c.), synthesis was backed up by both, a new symbol of the greatness of human reason and by ancient religious mystical symbols; the result was a creative explosion. *Polyphony*, “probably the greatest... development in the entire history of Western music,” defined the next step in evolution of consciousness, where *the individual as a part of the highest began to permeate into collective consciousness*.

The principal polyphonic form during the 13th c. became motet; it was more complex than organum, in several different parts with independent melodies, texts, and rhythms sung simultaneously, and “everywhere sounding in harmony.” But already, differentiation was overtaking, the unity of concepts and emotions became of less concern: “the words are fitted to the music only after the music is completely composed, and then only ‘as best one can.’” The millennial tradition of music perception was changing. For eleven centuries, Plato, Boethius, and Erigena (from 4th c. BCE to 9th c. AD) saw the positive content of music in its relations to objective ‘motion of celestial spheres’ and to God-created laws of nature. – This changed by the 13th century: The music was now related to listeners, not to celestial spheres. Songs for “average people... relate the deeds of heroes... the life and martyrdom of various saints, the battles...”; songs for kings and princes “move their souls to audacity and bravery, magnanimity and liberality... about delightful and serious subjects, such as friendship and charity... a motet ought not to be propagated among the vulgar, since they do not understand its subtlety... but it should be performed for the learned... for their edification.”²⁶

From the “objective,” music moved toward human feelings. In the 14th c. the first musical avant-garde emerged; Ars Nova (The New Art) used notes of variable durations for differentiation of emotions. Change of musical technique paralleled differentiation of European consciousness: mystical power of the religion diminished, diverse emotions created in music “distracted” from religious life. In 1323 Pope John XXII criticized the new music: “By... dividing of beats... the music of the Divine Office is disturbed with these notes of quick duration. Moreover, they hinder the melody with hockets (interruptions), they deprave it with discants (high-voice ornamental melodies), and... pad out the music with upper parts made out of secular songs... The voices incessantly rock to and fro, intoxicating rather than soothing... devotion... is neglected, and wantonness... increases. Nevertheless, it is not our wish to forbid the occasional use of... (polyphony), which heighten the beauty of the melody... (Polyphony) would, more than any other music is able to do, both soothe hearer and inspire his devotion, without destroying religious feeling in the minds of the singers”.²⁷ The Pope as if foresaw the crisis of culture due to the lost beliefs. The Christian symbol was losing autonomous power in the human soul. Trouble was all over Europe, strifes among nations and social classes, Papal exile, schism within the Church, The Great Plague. The catastrophe coincided with a lost unity within the soul, and again, chasing the lost wholeness, a cycle of the restoration of synthesis wound up.

What kind of music could inspire people, when the power of the mysterious was lost and the dominating idea was humanism, the power of human reason? Beginning in the Renaissance and until our time, a musical system of tonality was developed for differentiation of emotions, and for connecting the everyday with sublime. Tonality is the system of functional harmonic relations, governing most of Western music. Tonal music is organized around tonic, a privileged key to which melody returns. Melody leads harmony, and harmony in turn leads melody. A melodic line feels closed, when it comes to rest on (resolved in) tonic. Emotional tension ends and a relaxation is felt in the final move on to the tonic, to a resolution in a ‘cadence’.

Music connecting differentiated emotions with the sublime emerged in the 15th c. John Dunstable, according to contemporary witnesses, changed all “music high and music low,” music became more consonant and euphonious. Melody and rhythm were concentrated in the top part, supported by chordal harmonies. “Harmonies exalted even heaven... like angelic and divine melodies... (As if the) songs of angels and of divine Paradise had been sent forth from the heavens to whisper in our ears an unbelievable celestial sweetness.”²⁸

New music created inspiration-synthesis that freed creative forces for differentiation and took over multiple aspects of cultural life. Gutenberg printed the Bible, - spiritual truths could be investigated by an individual human being outside of the collective church interpretation (man seeks understanding, not just mystery). A corporate democracy emerged in Holland. Petrucci

printed polyphonic music. – Music was no more an exclusive property of churches and castles, but it was for the public buying, from then on the composer's income and therefore music would be affected by public tastes.

The Renaissance synthesis was based on humanism, human values: "music's true purpose and content... (is its) power to move" emotions (Glaireanus, the 16th c.). This thought "a medieval thinker would have found incomprehensible... The new Renaissance attitude... valued the natural, spontaneous gift of the artist over the application of reason and mastery of theoretical doctrine." Attitude to emotions in music was changing. In the beginning of the Christian era St. Augustine was afraid of unruly emotions, balance in soul and synthesis required repudiation of material and suppression of passions. Now, after 1500 years of Christianity man was becoming (to some extent) a master of the self. Untamed emotions were no longer considered a morbid threat to society, self, and spiritual interests. Humanistic ideal had inspired the Renaissance man to look for increasingly stronger emotions – and this search continues today (although an opposite tendency, fear of strong emotions, has reappeared in the 20th c.) Polyphony became complicated, harmonic orientation enhanced, correspondence of text and sound strengthened – differentiation (in texts) and synthesis (in music) were developed together. Variety of human emotions was successfully combined with spiritual aspirations.

Religious polyphony of the sixteenth century found its highest expression in major scales and angel choirs of Palestrina. Heavenly harmony in Palestrina's music represented one side of the soul of a medieval Christianity, absolute purity expressed in the idea of Christ personality. Christianity raised the ideal into the heights unreachable to man, but this also delineated, emphasized existence of evil as absolutely opposite to the Divine. Absolutization of evil was confirmed by the practice of inquisition, in essence acknowledging evil as a self-governing force. However, the idea of a real existence of evil long remained unconscious. Medieval theological concept of evil as *privatio bono* (absence of good), meant that evil did not exist. Similarly, in musical tradition from early Church psalmody to Palestrina, dissonant chords were not encouraged, tritone chords sounding with complex emotions of major and minor at once were forbidden, - as if evil did not exist. Thought endured a contradiction: In theology and music evil did not exist, but evil existed in life. Unconscious (undifferentiated) status of evil was an obstacle for the process of individuation.

The highest ideal of Christianity, improvement of inner spiritual life traditionally demanded repudiation of the material world perceived as temptation and distraction from the highest spiritual purpose. The best way to achieve the ideal of sainthood was supposed to be a monastic way of life and rejection of secular life. However, rejection of the world acknowledged the absolute power of evil projected in the material world. By the 15th c. the ascetic ideal came to contradictions with developing rational thinking and the emerging capitalistic economy. Reformation in the 16th c. accepted that the highest human calling was in perfecting the inner spiritual world as well as the outer material world (and material conditions of one's life). The religious ideal was reconciled with new consciousness.

Highest human purposes Luther brought closer to everyday rational pursuits. The church was to become the community of believers and religious life more rational. Instead of the monastic choir, the entire congregation shared in church singing. This was the purpose of the Lutheran chorale, the unaccompanied congregational hymn, sung in unison and in the vernacular. Luther saw in music the synthetic power that unifies the Word of God with human passions: "Therefore... message and music join to move the listener's soul... The gift of language combined with the gift of song was only given to man... (so that he proclaim) the word through music."²⁹ *

Reformation reduced the absoluteness of the split between spiritual and material, good and evil, - the contradiction between good and evil was taken from the heights of Heaven and the depths of Hades and placed into the human soul. From then on a protestant woman or man was to

* I will note, that opera (we will talk about it later) follows not the Luther's example, nor "proclaims the word through music." Operas are usually performed in original languages, which public does not understand. Reasons for these are many. Among them is fashion, which interferes with the best judgment, and brings to the minds of singers and producers a provincial desire to seem accultured. But here is also an objective demand of singing techniques. An opera diva, traveling around the world, would not study classic texts in many languages, too much work. Therefore, the practice of opera rejects the meaningful perception and has to accommodate serious aesthetic losses. I will also note, that operetta and musical fully follow the Luther's way (and common sense). They are performed in a language understood by the viewing public, with only exceptions made for touring troupes.

decide on his own, within his own consciousness how to reconcile contradictions between material and spiritual needs. Consequences were on one hand an inconceivable acceleration of the development of capitalism and improvement of material conditions of life. On the other, the autonomy of religious symbols was lost; their unconscious contents were to a large extent transferred into consciousness. The fundamental contradiction of human nature between finite matter and infinite spirit, which formed the mystical foundation of Christianity, was brought by Reformation into everyday culture and made a part of collective consciousness. Tragic tensions originally projected onto the Christian symbol were assimilated by human psyche. *Tensions in the human soul reached the maximum.*

Naive humanism of the 15th c. barely glimpsed into the contradictions of human thoughts. Consciousness of the mind's internal contradictions was an achievement of the Reformation, and this consciousness required new forms of synthesis to restore wholeness. In search of synthetic forms of art creative minds turned to the epoch of crisis long gone, when salvation was found in art. From the books of Plato, Aristotle, and other authors of antiquity it was known that tragic musical drama in Ancient Greece created catharsis, an intimate bond with the human soul, which miraculously calmed discontent, soothed character and behavior. 'Radical humanists' in the sixteenth century sought to recover the true music of antiquity, which according to their ideas was in close connection with rhetoric, the art of orators and actors. A literary expression of these ideas was given by Vincenzo Galilei (Florence, 1588). These ideas were practically realized on the scene by Bardi circle and their ideologue, poet, and dramatist, Ottavio Rinuccini, the world first musical dramatist, or librettist.* A new form of music, 'musical speech', or recitative, quickly led to a true opera "Orpheus" by Claudio Monteverdi (1600) and made a profound influence on the following development of Baroque music.

The Baroque was full of dualism and drama, expressing tensions imposed by the Reformation. – It is a world searching for *differentiated synthesis*. Dualism was embodied in a new musical style, where opposition was emphasized: Vocal against instrumental, solo against ensemble, melody against bass, dynamic levels were contrasted, opposition of the dominant and tonic, all expressed emotional tension and resolution. The role of dissonances increased, and modulations became commonplace expressing more and more complex emotions in their continuous flow. Creating emotions was becoming the primary aim of music; composers strived to imitate speech, the embodiment of the passions of the soul. At the same time conceptual content of texts increased, "the words (are to be) the mistress of the harmony and not its servant," wrote Monteverdi. This became the main slogan of the new epoch of Baroque music.**

Thus, conscious aims of Baroque music were differentiation of emotions in parallel with synthesis of conceptual and emotional, which is, individuation of consciousness.

The nature of emotions became a vital philosophical issue. Descartes attempted a scientific explanation of passions (1646).³⁰ He rationalized emotions, explaining them as objects and relating to physiological processes. "Descartes descriptions of the physiological processes that underlay and determined the passions were extremely suggestive to musicians in search of technical means for analogizing passions in tones."⁴¹

Based on Descartes' theory, Johann Mattheson formulated a new theory of emotions in music, called "The Doctrine of the Affections." (Emotions "are the true material of virtue, and virtue is naught but a well-ordered and wisely moderate sentiment"³¹). Now the object of musical imitation was no longer speech, the exterior manifestation of emotions, but the emotions themselves." ***

Already during Palestrina, young Italian composers began using dissonances to express passions in madrigals; however until the end of the 16th c. dissonances were used sparingly, for a short pause, and mainly in secular music. Beginning in the seventeenth century dissonances were used

* Great dramatists of Ancient Greece are not considered librettists; as far as we know ancient Greek tragedies were not musical theater in our understanding, but dramatic tragedies with music.

** It is worse to note how this slogan was transformed through the ages. Rococo transformer of opera C. Gluck wrote "Words and singing ought to be so close that text... seems as much created for music as the music for the text." In the next generation Mozart wrote: "Words are maidservants of music". A. Pushkin (in a letter to P. Vyazemsky): "What did you took to your head to write a libretto, to subserve words to music? I would not move a finger even for Rossini". The nature of music is such, that in any synthetic art, direct emotional affect of music subdues the main attention of listeners, even if the depth and content of the other art forms exceeds that of music sounding alongside. Because of that many poets – Pushkin, Brodsky, and others – refused to write libretto or song lyrics.

* In the unconscious, psychic processes are not differentiated; emotions, concepts, feelings, sensings, intuitions, thoughts, are unified in a fused, inseparable state. Therefore, a statement that music *expresses* emotions is wrong, it is too narrow. Music *calls* emotions.

more often, emphasizing the dramatic effect. A dissonance was always followed by a resolution in a consonant chord, later several dissonant chords were used in a row, increasing tension. The heightened sense of drama in musical dissonances corresponded to the tension between conceptual and emotional, material and spiritual, which in the result of the Reformation were assimilated by human heart and soul. Personal expressions grew even in seemingly minute details as the signs 'allegro, forte,' which composers inscribed on their works. Music became extremely expressive, conveyed passionate human emotions; theory of major and minor scales were developed for this purpose, chromatic scale was used. Chorale was unified with counterpoint, harmony with polyphony. These new musical forms were perfected in works of Buxtehude and then Bach.

The most complex and sublime form of polyphonic music was acquired in fugue. Fugue is a conversation of several musical voices, in which a topic "flies" from one voice to another; voices could talk politely or argue, interrupting each other. In Bach fugues a human arguing with oneself turns to God or to the highest in oneself. Whereas old psalms affirmed an existence of the objectively sublime, as some collective purpose far removed from individual experiences, fugue expressed emotions of one's own contradictions in quest for the highest. Fugue was a way of individual consciousness turned to sublime, a combination of differentiation and synthesis. Rational understanding of Church service introduced by the Reformation interacted in music with the highest spiritual values and mystical feelings of sublime, created during thousands of years by monotheistic religions.

However, the Reformation has laid unbearable responsibility on an individual and created too much tension within the human soul - humankind is not ready yet for individual consciousness. The string of tension connecting conscious and unconscious broke. Rational consciousness that came after the Baroque rejected mystery of sublime differentiated in fugue. *Music that was natural to Bach seemed too intellectual and "not natural" to the next generation.*

Classicism

A new style Rococo appeared in French clavecin school in Francois Couperin, although Bach and Handel were still writing music. "The heroic dimensions of the Baroque were cut down to a more human scale... a graceful decorativeness and sweet intimacy of expression were prized above all." In Germany, leaders of this style were Bach sons, C.P.E. Bach, J.C. Bach, and W.F. Bach; they simplified harmony and texture, abandoned counterpoint and polyphony, retained one leading voice, sometimes with a simple accompaniment. Restrained expression and aristocratic style, ornamentation, delicacy and obsession with structural clarity corresponded to secular interests that replaced a search for the highest meaning. Interests moved "away from 'reason' and back to 'the ear'." Contemporaries were convinced that the superiority of the new music was a matter of 'ear' or 'good taste'. But looking back, we can see that the change of musical forms corresponded to the underlying change of consciousness. *In consciousness, an idea of the highest was lowered to the 'human scale.'*

Why were contradictions of Baroque superseded by simplicity of Rococo? Between Renaissance and Reformation, as mentioned, interaction of conscious and unconscious – synthesis based on mystery lost autonomous power. The Christian symbol did not touch unconscious archetypes as forcefully as in previous epochs, and the Reformation was a theologic and political acknowledgment of this process. After the Reformation, the creative process was inspired by reason more than by mystery. The idea of rationality was amplified by scientific method. In collective consciousness there emerged a myth of rational mind, which substituted ancient symbols.

In this period of rationality collective consciousness of Rococo replaced 'mystery of the highest' with refined, ordered, aristocratic, and rational, - mysterious and unconscious were perceived as unnatural and in poor taste. The epoch of mystical contradictions was dying out; sharp contradictions in the human soul retreated into the past and were superseded by a belief in rationality of the mind. Fugue, having been created for achieving synthesis in a soul torn by contradictions, was too complex for perception, and demanded unjustified spiritual efforts, when synthesis was based on the rational.

The idea of rationality influenced all areas of cultural and social life; Rococo is a time of Enlightenment and rationalism in European consciousness. Rationalistic thinking drew inspiration –

that is synthesis – from successes of science and Newtonian physics. The new symbol of rational scientific thinking accomplished synthesis of material and spiritual without penetrating into mysteries of the highest purposes. Mystery as if disappeared, as if there were no unsolvable contradictions between reason and passions. Displaced from consciousness, mystery ‘went’ into rational endowed with Divine powers.

Rational, secular, clear ideals of Rococo were continued in the Classical period in music of Haydn, Mozart, and early Beethoven. Whereas Bach talked to God directly, Mozart could only appeal to the beauty of his melodies. He brought everyday people onto a scene. A similar transformation of consciousness from sublime to everyday occurred in Ancient Greece, when gods and mythic heroes of Aeschylus and Sophocles were replaced in Euripides’ plays by everyday people. But whereas in Greek myths the rational has just begun appearing from unconscious fuzziness and their comedies are emotionally simple, in Haydn and Mozart there is a finest differentiation of emotions. Whereas Euripides’ revolution destroyed the tragic symbol along with the unity in the collective soul of the ancient world, Haydn and Mozart, by differentiating emotions of common men and women, created a foundation for synthesis. European collective consciousness in the eighteenth century changed compared to Ancient Greece: Rationality became a foundation for synthesis.³²

“The expression of a child-like, serene mind governs Haydn's compositions. His symphonies lead us to endlessly green pastures, to a merry, colorful throng of happy people... A life full of love, of bliss, like before original sin, in eternal youth; no suffering, no pain, only a sweet, melancholy longing for a figure that floats by in the distance, at dusk, and does not come nearer, does not vanish, and, as long as it is present, it does not turn into night, since it is the evening glow, itself, in which mountains and fields are steeped. Mozart leads us into the realm of spirits, but, without pain, it is more of an anticipation of the infinite. Love and melancholy sound in lovely spirit voices; night arrives in a purple glow, and with unspeakable longing, we move towards them who wave at us to join their ranks and to fly with them through the clouds in their eternal dance of the spheres. Haydn sees the human in human life... his music is more commensurable, more comprehensible to the majority. Mozart evokes the super-human, the wonderful that dwells in the innermost of spirit” – wrote E.T.A. Hoffmann.³³

For thousands of years music expressed and created emotions, but only in the 18th c. the idea of music as *expression* of emotions, creating emotions in listeners, was brought into consciousness. The previous theory of imitation was chiefly associated with vocal music and with the ‘doctrine of the affects’; it considered music alongside all the other arts as a medium of stylized representation of reality. But this does not correspond to workings of the mind. The knowledge instinct theory tells us that representations, notions are the mind’s model-concepts, whereas emotions are principally different neural signals evaluating and relating concepts to instincts. It seems we should not expect a direct relationship between music and philosophical ideas about emotions. One may wonder how direct it turned out! Descartes understanding of emotions as objects and Matthesons’ doctrine of the affects turned out directly related to musical practice of the opera seria (serious opera). Opera seria inherited ideas and practice of Monteverdi, but soon turned into their opposite. By the middle of the 17th c. opera became stylized and rigidly regulated set of airs, expressing concrete emotions. (*This emphasizes how important for music and for art in general is correct scientific understanding of the nature of emotions and beauty.*) Previously mentioned Calzabigi-Gluck reform was directed against this regulated opera and wrong understanding of emotions.

Music is different from other arts in that it affects emotions directly (not through concepts-representations). This clear scientific understanding of the differences between concepts and emotions did not exist. Nevertheless, an idea of music as expression, differentiating (creating new) emotions, was formulated in the second half of the 18th c. (C. Avison, 1753 and J. Beattie, 1778). This idea of emotion as expression led to understanding of music as art differentiating (creating new) emotions; it related the *pleasures* of music sounds to the ‘*meaning*’ of music. T. Twining (1789) emphasized an aspect of music, which today we would name conceptual indefiniteness: Musical contents cannot be adequately expressed in words and do not imitate anything specific. “The notion, that painting, poetry and music are all Arts of Imitation, certainly tends to produce, and has produced, much confusion... and, instead of producing order and method in our ideas, produce only embarrassment and confusion.”³⁴

Understanding the nature of emotions remained utterly confused: “As far as (music) effect

is merely physical, and confined to the ear, it gives a simple original pleasure; it expresses nothing, it refers to nothing; it is no more imitative than... the flavor of pineapple." Twining expresses here correct intuition (music is not an imitation), but he mixes it up with a typical error. Pleasure from musical sounds is not physical and not confined to the ear, as many thought. – Pleasure from music is an aesthetic emotion in our mind, whereas we like the flavor of pineapple because it promises to our body enjoyment of a physical food. Even the founder of contemporary aesthetics, Kant had no room for music in his theory of the mind: "(As for) the expansion of the faculties which must concur in the judgment for cognition, music will have the lowest place among (the beautiful arts)... because it merely plays with senses." ³⁵ Kant could not understand the role of music in cognition, because the instinct for knowledge was not known. Hence, differentiation and synthesis were not known. Even today, these ideas remain little known among musicologists; the idea of expression continues to provoke disputes, "embarrassment and confusion."

To summarize, period of Rococo and classicism in the 18th century turned out to be a cultural respite between the highest tensions of preceding Baroque and the following Romanticism. In this period a firm synthesis was achieved through a symbol of rational scientific thinking. Let me emphasize, synthesis was achieved not through science, but through the symbol of science, which assimilated projections of the mystery of human soul. Correspondingly, creative forces were directed at differentiation: In politics - at the idea of Enlightenment (differentiation of the idea of equality). In philosophy - at differentiation of the idea of the mind (Kant), in music – differentiation of emotions (Bach sons, Gluck, Calzabigi, Haydn, Mozart).

Split soul: Romanticism

Refinement of classicism near the beginning of the 19th century was replaced by the unboundedness of romanticism, why? Changes in consciousness and culture, as previously, were defined by a complex play between the two factors, differentiation and synthesis. Synthesis of Rococo and Classicism based on the rational was destroyed by differentiation of rationality. Once more, as it happened in history many times previously, the very foundation of synthesis gradually leads to its destruction. So, by the end of the 18th c. the rational uncovered a complex, diverse, and irrational nature of emotions. Found by Kant mechanisms of the mind, understanding, and emotions, for the first time rationally explained mysteries of unconscious, beautiful, and sublime. Kant outlined the directions toward scientific unification of rational and irrational, but his works were too complex for intuitive understanding. Kant delineated future unification of physics and philosophy, however mathematical methods for describing Kantian intuitions did not yet exist, and much of it was lost for his followers. Penetration of art into unconscious, the critical gaze into oneself – the method of Kantian aesthetics, only a century later would become the foundation of modernism.

The immediate followers of Kant inherited another aspect of Kantian theory, the awareness of the a priori structures of the mind. The "a priori" defined the object of their attacks. The a priori makes creativity possible and also sets its limits. As a reaction to this antinomial nature of the a priori, there is a romantic dream of a pristine, perfect cognition of a primitive human, unspoiled by education and concepts. Whereas Kant discovered a conscious rational approach to analyzing unconscious and its limits, the romantic idea of creativity was a denial of limits, 'leap through' unconscious.

In this denial of apriority, romanticism *replaced God with the subjective human ego*, a conscious part of the soul (which attracted projections of the unconscious). Romanticism emerged as a political force in the French revolution. Thousands of people died at the hands of Marat, Robespierre, and Danton, romanticists who placed a part of their ego (conscious ideas of liberty and brotherhood) above all else, above reality of the unconscious and human experience. Jung analyzed the psychological dangers of inflation of the ego. The unconscious is psychologized, its power is unrecognized, leading to enantiodromia, and a psychic catastrophe (Jung defined enantiodromia as collision in a human psyche of contrary tendencies of conscious and unconscious). Romantic ideas of the highest purpose till today exert a profound effect on artistic and political thinking. The great achievements and failures of mankind in the 19th and 20th centuries have been defined by romantic consciousness.

The romantic creative 'break through' was a source of inspiration and basis for synthesis. Romanticism continued the creative process of differentiation and synthesis, accepting as the highest purpose and value the *subjective, man* with his rational and irrational. Differentiation of notions of the highest turned to human emotions and feelings. Musical romanticism began with late Beethoven, connecting it with the classical tradition: "Beethoven's music sets in motion the lever of fear, of awe, of horror, of suffering, and awakens just that infinite longing which is the essence of romanticism... (He) opens to us the realm of the gigantic and unfathomable... Gigantic shadows swaying back and forth, encircling us closer and closer... aiming at bursting our chests with its unison of all passions, do we live on and are we rapturous seers of the realm of spirits!" - E.T.A. Hoffman wrote in 1813.³⁶

Romantic elements had been present in the collective consciousness for a long time. Even in medieval knighthood, ideals of devotion to one's lord, friendship, and beloved woman, romantic feelings were bestowed with the highest meaning, replacing God. Romanticism in music can be heard in Monteverdi, chromatic organ works of Bach, in his sonatas for clavier and violin, in Handel's expressive arias. Romanticism emerged gradually, through centuries it accumulated in musical art, before it became commonplace to call Schubert, Schumann, Chopin, Liszt, Wagner romanticists. If looking back at the past periods, one pays attention only at musical style, it is easy to overlook that a fundamental change in consciousness occurred. When reading in a textbook simple facts, like: "In classical music form and order came first, in Romantic music expressive content," – it is worth remembering that "form and order" or "expressive content" came first in music because they came first in consciousness.

Let me repeat, romantic synthesis stood on subjective, bowed before it. Therefore transience of human states, their uniqueness, national differences were emphasized. Musical Romanticism was closely related to nationalism, impressionism, expressionism, and 'realism'. Let's decipher these terms. Nationalism saw folklore as more valuable than generally-humane; expressionism emphasized emotions and states; impressionism valued ephemerality as more important than transcendent and eternal. 'Realism' had nothing to do and was even opposite to philosophical realism of Plato, Aristotle, Kant and Nietzsche. According to philosophical realism the real 'things' were concepts in our mind based on concept-models, whereas romantic 'realism' concentrated on some arbitrary, often lowlife aspects of human experience (as if 'more real' than lofty ideals; but of course, the highest manifestations in every art form transcend limits of collective consciousness.) Even recently Tchaikovsky, Verdi, Mussorgsky, Dvorak... were called "romantic realists", a better term "late romanticists" is used now.

The emotional range of music was enriched in the romantic period; emotions became more urgent and intense. Musical forms expressing diverse extreme emotions got freer. Orchestra was more widely combined with solo; music became more chromatic, tone color richer, harmonies widened, melodic phrase structure freer, while melody ascended over harmony. Characteristic new genres were solo songs with piano accompaniment (Schubert, Schumann, Brahms, Wolf) and symphonic poems, as if musical stories combining emotional with conceptual. This combination was the quintessential Romantic way to achieve synthesis, unity of emotional and conceptual. Whereas the Romantic means of differentiation of emotions, creating new conscious experiences by bringing unconscious psyche closer to consciousness, included boldness in modulating to ever more distant keys, coloring without a resolution in a perfect cadence, which resulted in 'chromatic frustration', violation of listener's expectations.

Violent burst of romanticism replacing balanced harmony of classicism, could a scientific theory of consciousness follow these seemingly unpredictable movements of collective soul? Let me remind that an ideal harmony is just a first step towards beauty; and consonant sounds, like psychological equivalents of perfect correspondence between concept-models and surrounding world, cannot satisfy knowledge instinct or refined musical taste. Classical harmony self-destroys in differentiation of emotions. In consciousness, rationality of classicism is superseded by irrationality of romanticism. In music, passions are coming to the fore. Passions in music are created by contrasts between consonances and dissonances. The more composers wound up the dissonant tension, the clearer one felt a psychological need for its resolution in a consonance.

Let me remind that alternations of psychological states of tension and relaxation in music was based on tonal system, which was created over hundreds of years for expressing emotions. The single most important tonal sound in music was triads. "In the Romantic period, the triadic system was exploited to the farthest consequences, chromatic modulations and distant keys...

diluted the strength of a single tonal center and tonality started to disintegrate.” Whereas the basis of tonality was in the emotionally distinct desire for returning to the tonic, to resolution, more and more complex *unresolved emotions* were gaining importance during the romantic period, emotions in chords without a clear direction of resolution.

Among such chords, a most important one, ‘diminished seventh’ was studied by M. Aranovsky.³⁷ It sounds in Glinka’s romance “Do not seduce” (on the accented syllable of the word “disenchanted” - “...разочарованному”). It sounds in the Beatles “Michelle” is the fourth chord of the song, “Michelle, ma belle.” This chord lacks a tonal center and sounds ambiguously, as a major and minor at once without a clear ‘direction of resolution’ of its tension.

Diminished seventh was discovered by composers long ago. Psychologically it might be perceived as a ‘climax’. Even Bach used it this way. During romantic period, when inspiration was thought in irresolvable states and emotions, Liszt and Chopin amplified its psychological tension making it sounds as ‘impending catastrophe’. Searching for new psychic states music was looking for chords with even more ambiguous directions of resolution, transcending limits of the tonal system. The famous Tristan chord in Wagner’s “Tristan und Isolde” is even more ambiguous than the diminished seventh. Saturation with dissonance and tonal-ambiguous chords without resolutions in closed cadences created the Wagnerian unending melody filled with the finest colors of irresolvable emotions.

Artists and composers strive to influence the objective, the super-personal, and this is why *unattainability* of human aims became the main object of romantic art. This is why not repose, but restless seeking and impulsive reaction governed romanticism; it sought out a radical kind of subjective expression, the new, the adventurous, concentrated on remote and strange, was haunted by a spirit of longing. There were boundlessness, unbounded emotions, movement, passion, and endless pursuit of the unattainable

One cannot, however, “stop at Self.” Bowing to the subjective, romanticism laid the foundation for its own demise – differentiation of the subjective in the finest works of art revealed the internal limitation of romanticism – the subjective disappears and *dies inside itself*. Romanticism valued an individual human being above all, but it threatened the individuality in a psychic process that Jung called psychological overvaluation, “puffed-upness,” which led personal lives of many romantic poets and composers to tragic demise. The ‘end of tonality’ was not due to its exhausted means, but because subjective romanticism destroyed itself.

To reiterate a premise expressed previously – *differentiation destroys synthesis that inspired the differentiation, and this contradiction is the basis of the cultural evolution.*

And let us add: *The highest romantic achievements in music – differentiation of emotions were destroying the tonal system created for expression of emotions.*

Consciousness and music in the 20th century

*“In everything I’d like to get
To very essence...”*

B. Pasternak

Changes in consciousness near the end of the 19th century affected all directions of cultural life, including politics, science, philosophy, arts, and music. Ideas inspiring a creative person changed. In politics, an idea of a national state was superseded by ‘brotherhood of humanity’ as the highest goal; in economics, individualistic capitalism was replaced by socialism and communism; scientific inspiration - by formal logic; Hegelism - by positivism; poetic symbolism - by ‘realism’; and impressionism in paintings - by abstractionism. The romantic idea of a free individual, unbounded, creative was replaced by an idea of society. Subjective intuitions and emotions were displaced by *objectivity*, by creativity free from personal emotions and intuitions; challenging society - by egalitarian equality; beautiful - by disgusting; and ‘unique’ – by the ‘mass-produced’. *Collective consciousness idolized an idea of the objective.*

In music this tendency away from individual and toward the objective was most clearly formulated by Arnold Schoenberg. He thought that the traditional tonal system developed over centuries for expressing human experiences, emotions, and intuitions, was “no longer available, as

a vehicle for sincere artistic intentions... (diminished seventh) fell from the higher sphere of art music to the lower sphere of music for entertainment... a sentimental expression of sentimental concerns. (Diminished seventh) became banal and effeminate”³⁸. (I remind that the diminished seventh chord was used frequently over the previous two centuries, it sounded as a ‘climax’ or ‘impending catastrophe’).

To overcome the psychology of tonal music, Schoenberg formulated an atonal rule, or twelve-tone technique (dodecaphony): A composer had to use all twelve notes of the scale (all white and black piano keys), before any key was repeated. This arbitrary rule (with few modifications) played a major role in 20th c. music. Why? Whereas in social life there emerged synthetic ideas of the objective (socialism, communism), there was no such idea in music. Many composers were literally ‘lost’ among the unlimited possibilities of combining sounds. Schoenberg’s rule limited unboundedness of possibilities and gave direction. This limitation of uncertainty some musicologists viewed as the main reason for attractiveness of Schoenberg’s technique for composers. Schoenberg and his followers (his student A. Webern was among the first in this regard) were ready to accept that this type of music ceased affecting anybody, except for narrow specialists interested in formal play. Still intellectual and emotional tension of such games could be fairly strong (like in chess).

Dodecaphonic or serial direction in music is similar to modern directions in linguistics, philosophy, and mathematics. Linguistics was dominated by Saussure’s idea that the meanings of words in language are defined through other words (like in a dictionary), and that relations of words to objects in the surrounding world are arbitrary and defined by conventions. Philosophy was ruled by logical positivism, maintaining that all metaphysics, the entire totality of knowledge exists in a form of relationships among notions, that content is form, and no other meaning exists but form. In psychology, behaviorism emerged explaining all human behavior as a sequence of stimuli and reflexes, and denying consciousness as a necessary scientific notion of human intellect.

All these developments were inspired by and related to the idea of the objective and its manifestation in mathematics. In mathematics and logic, the objective is manifested in formalism: The only meaning of the mathematical objects was defined by their logical relations and arbitrary axioms. The quintessence of the formal direction was formulated by David Hilbert. He and his followers believed that the entire human creativity consisted of predetermined rules. – The same type of consciousness was reflected in Schoenberg’s ideas.

The “formal” direction seduced much of the 20th c. by its novelty, and still it is “as old as the world.” In essence, it is nominalism, a type of consciousness that appeared two and half thousand years ago. As a part of classical philosophy in Ancient Greece, it was created by a Socrates student, Antisthenes. Nevertheless, formalization in became the main method of search for the objective at the beginning of the 20th c. It would not surprise us that playing with forms as a self-sufficient purpose distracted interests from the deep processes in human psyche and from mechanisms of the mind.

Gradually, infatuation with the objective self-destructs. In mathematics, Gödel used perfected precise tools of logic to prove inner contradictions of logic (1930s). Logic turned out not to be omnipotent, or as ‘logical’ as expected, and could not explain the mind. Soon thereafter, logical positivism disintegrated in philosophy. In linguistics – mechanisms of the mind and not the forms of language determined new directions (Chomsky, the 1950s). In psychology – the formal direction of behaviorism lost attractiveness since the 1960s. In music – serialism and other directions closely related to the idea of equivalence of form and content also lost attractiveness (although, it still attracts interest among some academic musicians, despite public indifference, which is not the criterion of truth anyway).

A contradiction between form and content comes to light in the creativity of the very founder of musical formalization, Schoenberg. Whereas he suggested formal rules of dodecaphony aimed at bringing the human spirit beyond limits of emotions, his own works strived to create sublime human feelings. He wanted to express in music what is inexpressible in words, the Biblical prohibition of creating God’s images. Unverbalizable nature of the Divine he wanted to express in sound. As known, Schoenberg worked on this theme for more than sixteen years, on the oratory “Jacob’s Ladder”, then on the opera “Moses and Aron.” Schoenberg, however, came to a conclusion that he can not create music adequate for this high aim. (Possibly, for this reason both works remained unfinished). The inner logic of his failure is possibly in the principal contradiction between Schoenberg’s goal (to create in music a purposeful meaning) and arbitrariness of

dodecaphony, its detachment from the world of human experiences (as formulated by the composer himself).

Could dodecaphonic, serial, atonal music express human experiences, and what kind? Possibly the first convincing example of atonal music expressing human passions belongs to Schoenberg's pupil, Alban Berg. His opera *Wozzeck* is considered a high point of 20th c. music. The opera is about a man who lost belief in himself, in love, and commits suicide. Atonal music in the opera expressed extreme hysterical harrowing human states, inexpressible in any 'beautiful' tonal music. "*Wozzeck*" could be compared to contemporary thriller movies, which went much farther in this direction, and use music that often cannot even be written with notes. Hysterics, of course, was not a psychological discovery, but its expression in music was discovered by Berg. Kierkegaard, Dostoevsky, and Nietzsche brought into collective consciousness an idea of unsolvable existential tragedy of every person, contained in the finiteness of life. Whereas in Ancient Greek tragedy spectators were attracted by mystical inscrutability, whereas listening to Bach, one feels emerging new previously unknown sublime feelings, inspiring human to reach to God, but Berg perceives the meaning of life as unavoidable defeat in a fight with the devil.

The 20th c., possibly more than any other period, was a colorful illustration of this fight. Two world wars, millions of prisoners of fascism and communism, hostages of terrorism, indeed a cannibal backdrop of the century. This backdrop is a part of contemporary consciousness. Of course, evolution of music and art corresponded to this consciousness, and we see it in 'fighting' differentiation and synthesis. Long-known harrowing states of psyche have to be comprehended within contemporary differentiated consciousness.

While the dodecaphonic formalization emerged in music, a similar objective direction in poetry was developed by T.S. Eliot³⁹. He was freeing poetry from romantic ways; he searched for this freedom in impersonal poetry, depersonalization: "The progress of an artist is a continual self-sacrifice, a continual extinction of personality." In depersonalization Eliot saw art coming close to the objectivity of science. Similar doctrine in art, called dehumanization, was studied by Ortega y Gasset. De-humanization of art deleted the human figure, insisting that form and not a metaphor of human defines contents of an artwork. "Art purged of those 'human, all too human' elements that to artists in the early twentieth century suggested ephemerality, inconstancy, mortality, in favor of abstract patterns and precision suggesting transcendence of our muddy vesture of decay..."⁴⁰ In creative arts, this purge meant a move away from content and expression.

J. Brodsky as if responds to Elliot. "To start, only content could be innovative... Poetry is not an act of self-elimination... poetry is an imperative art, thrusting its reality in the reader. A poet striving to demonstrate his ability for self-elimination... shouldn't limit himself to neutrality of diction... he has to make the next logical step and shut up completely... Illogicalism, deformation, pointlessness, disharmony, incoherence, arbitrariness of associations, flow of unconscious – all these elements of contemporary aesthetics... theoretically are called to express its peculiarity – in real life are categories of marketplace, which is witnessed by the corresponding price list... Atomization and brokenness of contemporary consciousness, tragic attitude, etc. seem today so conventional a truth, that their expression and usage of means demonstrating their presence, turned... simply into the demand of market. The demand of innovativeness in art witnesses... the dependence of art on the marketplace reality."⁴¹

Alongside with objectification, modernism* includes its opposite, critical gaze into self, self-reflection. It breaks into unconscious, subjective, and at once objectifies the inner world. According to Clement Greenberg ("Foremost Kantian art critic of our time" that 'discovered' Jackson Pollock) Modernism in collective consciousness started with Kant. The main feature of Modernism is self-referentness, critical exploration of the depths of self. In paintings, modernism was most vividly expressed in abstract expressionism that penetrated into the unconscious and revealed strange image-less forms that some perceive aesthetically, as if magically related to archetypes of psyche. Imageless forms turn to intuitions and emotions never before expressed in a word or artwork. Penetration into the depths of unconscious, however, led to the subjective and contradicted to an idea of the objective, the basis of synthesis in modernism.

Again, the fight of differentiation and synthesis was reenacted. Differentiation of an idea of the objective in modernism destroyed synthesis. By opening depths of the unconscious, the best modern artworks revealed complex interactions of the objective and subjective, and proved that creativity cannot exist limited by the objective.

* Term "Modernism" refers to many directions in art of the 20th c.

In the moment of crisis, when culture was at the edge of demise, and it seems there was no basis for synthesis, Postmodernism emerged *. Postmodern art forcefully returned to the historic tendency of increasing conceptual content accessible to consciousness, towards an understandable 'message', even at the price of simplification of its content. Postmodern rejects differentiation and seeks synthesis by all means, including rejection of culture. According to the knowledge instinct theory, aesthetic emotion is present in every act of perception and cognition, and postmodern has concentrated on this ubiquitous *omnipresent* nature of aesthetic emotion. Minimalism, Dadaism, Conceptualism, and other directions of postmodern has concentrated on the *availability to cognition* of concepts of the simplest objects and messages. In terms of the knowledge instinct, postmodernism is similar to the Buddhist's 'emptiness': An artist, like bodhisattva, "wonders at perception of emptiness in any object," that is, concentrates on an object as a concept accessible to cognition.

Whereas modern continued differentiation at the expense of synthesis, postmodern rejected differentiation to save synthesis. The divide between conscious and unconscious in collective psyche, between differentiation and synthesis in modern and postmodern, extended over the entire twentieth century often dividing periods in life of individual artists or composers. This divide cannot be assigned to a definite year or decade. Modern as objective investigation in art of the depths of human nature, and Postmodern, as a return to simplified conceptual contents, are 'generalized' terms, including many separate directions.

The very idea of objective art contained antinomy manifested in the most unexpected ways. Malevich declared the aim of Suprematism – to free art from any symbolic content – but his "Black square" was interpreted as a symbol of impenetrable unconscious content. Contradictions in Schoenberg's ideas were already mentioned. In "Ulysses" Joyce created a form of language to express a 'stream of consciousness', but an almost complete absence of consciousness was the outcome. C. Jung uses "Ulysses" to characterize a significant part the 20th c. art and collective consciousness as follows: "...A passive, merely perceiving consciousness, a mere eye, ear, nose, and mouth, a sensory nerve exposed without choice or check to... a stream of physical happenings... The stream... not only begins and ends in nothingness, it consists in nothingness. It is all infernally nugatory... Today it still bores me as it did then (in 1922). Then, why do I write about it?... (It) is a collective *manifestation of our time*... the collective unconscious of the modern culture... the modern artist immerses into destructive processes, to affirm in destructiveness the unity of his artistic personality... We still belong to the Middle Ages... For that alone would explain... why there should be books or works of art... (like) "Ulysses." They are drastic purgatives... for the soul... which is of use only where the hardest and toughest material must be dealt with." ⁴² Those agreeing with Jung about roots of Joyce popularity would find many similar examples in music and other arts. **

In music, like in visual art and philosophy, two contrary historical tendencies of evolution of consciousness collided again, differentiation and synthesis. It's not surprising that changes in musical forms paralleled visual arts, philosophy, and science. (Differentiation of self, as a penetration into the depths of unconscious was manifest in the psychology of Freud, paintings of Pollock, music of Scriabin and Schostakovich, to name just few). Differentiation, however destroyed the wholeness of the world perception, and a contrary tendency emerged, postmodern, as a striving for synthesis based on the simplest notions. Whereas in the past centuries differentiation may have dominated one epoch and synthesis another, in the 20th c. all mixed up. While Modernism sought depths of self, Postmodern with equal force rushed to simplicity of the bases of aesthetic. The opposing tendencies of collective consciousness were present in conscious and unconscious of an individual composer or artist. Their collision in an individual psy-

* Term "Postmodernism" appeared in the 1980s. I use it, however, as a 'generalized' term to denote a tendency toward objectification in consciousness of elementary notions. (Postmodern tendencies appeared at the beginning of the 20th c. as a challenge, s iconoclasm, 1913 Duchamp's Conceptualism, 1913 Malevich' Suprematism, 1916 Dadaism, and then emerged during the second half of the century in pure aesthetic attitude to everydayness, in an attempt of synthesis through simplified content (the 1960s Pop-art, Warhol, minimalism, including music D. Cage, F. Glass, S, Raich).

** Jungian psychological analysis of the meaning of "Ulysses" (Jung wrote a similar article about "africanisms" of Picasso) is directed not at negation of modern art, but at understanding the mechanisms of its perception. 20th c. art is such as its consciousness is. And so far, there is no reasons to forget about fascism, communism, terrorism... Individual consciousness still remains a rare lot of few people, in separate moments of their lives. And possibly, Jung as well as art masters of the 20th c. would help some of us to reduce our ties to Middle Ages, by freeing "the soul... (from) the hardest and toughest material."

che (enantiodromy), for a moment annihilated the art object.

A distinction was lost between art and non-art. An important role here was played by politics and ideology. Art did not lose value in communist Russia, nor in fascist Germany. Fascists and communists used the power of music for propaganda. As a reaction against this exploitation of art, academic art in the free world repudiated emotional and affective music. Therefore, unexpectedly, in the free world politics strongly influenced the direction art: "Ideology of cold war... sanctioned association of logical positivism with democracy and formalism with defense of political freedom", wrote Richard Taruskin. The split between conscious and unconscious is painful, because, I repeat, wholeness is an instinctual need, a result of the knowledge instinct. To achieve wholeness men and women are ready to reject diverse knowledge and to narrow their consciousness to frames of ideology – communism and fascism were such attempts to achieve ideological synthesis. Communism promised to satisfy instinctive unconscious needs through the ideal of the objectively-sublime (ideal society, Heavenly kingdom on Earth), and fascism promised to satisfy ideals of the sublime through objectivity of collective unconscious instincts. Both attempts led to national enantiodromias: In fascism as in communism, collective consciousness and collective unconscious rushed in opposite directions, rousing along the way world catastrophes and destroying national psyche. As a national phenomenon, the bridge between conscious and unconscious built by fascism survived a little more than ten years, the communistic 'bridge' survived for about seventy. However, as local phenomena, there have always existed attempts to reach synthesis using narrow-ideological symbols, cutting consciousness down to simple formulae. Examples include European and Russian terrorists (destroying romanticism of social struggles) in the 19th c., and contemporary fanatical and terrorist groups.

In totalitarian societies, music is used to wire feelings. But in pluralistic societies, destinies of art do not seem less troubled. Because in pluralistic societies, thoughts expressed emotionally are rejected, strong emotions are colored with a suspicion in an ideology or entertainment and are discounted. Existential spiritual sufferings of individuation of a separate human being are muffled, cannot be heard. Concepts of consciousness are losing connections with unconscious instinctive bases of psyche. Mass culture emerges.

Existential content of a musical piece came to oppose the form, as if form without content had any meaning. Discussion about form and content excited many a mind. Whereas romanticism "acknowledged clear separation between content and form," positivism considered content to be "a function of form."

The principal difference we see in that formal rules and structures do not correspond to the surrounding world or the inner world. Sometimes it seems the only tie of Postmodern art to the inner world of man is assumed in the very form itself, as a logical game, as Lego, as a "Game of Glass Beads." Especially destructive is formal innovation in music, because semantics is contained first of all in the sound, "the very phenomenon of rhyme points to existence of interconnections of concepts and phenomena... sound... is a form of cognition, a form of synthesis."⁴³

While concentrating on formal innovations, music was losing existential content. Cage (influenced certain narrow part of perceptive to contemporary music audience) in the 1940s composed music by casting lots; eliminating a creative composer's choice, he came up with several ways of random 'divination' in music. Divination as a way of finding the highest purpose was popular between 1300 and 650 BCE (in Mesopotamia, and in some pagan cultures it is still used today). At those times differentiation began, fused primordial synthesis broke down, and humans were lost among a multitude of thoughts. Similarly, in the 20th c., scientific thinking accelerated differentiation, synthesis was lost, and composers were lost among a manifold of sound combinations. So, Cage's divinations were a return to consciousness outdated by three thousand years. Later, Cage came up with even more primitive synthesis, pre-human undifferentiated ability to hear just anything. "Four minutes, thirty three seconds of silence" (1952) reminded "Black Square" by Malevich (1913). But, whereas Malevich as if intended a challenge, an existential gaze into human depths, Cage and his listeners ravished in their ability to perceive at least silence. Further elimination of meaning in formalization of music was developed by Pier Boulez. He criticized Schoenberg and Berg for "inconsistent" serialism, for their desire to use the new form for expressing "outdated" content – human emotions. Boulez represented extreme formalization in music, he denied the human, the emotional (he was called the "murderer" of melody). Being more active as a conductor than composer, Boulez excluded from repertoires of orchestra under his control music of Mozart, Tchaikovsky, Prokofiev, Shostakovich, Britten,

Poulenc, Schnittke, as containing melody and harmony.

Post-structuralism was a direction in postmodernism, considering the entire culture as consisting of “empty codes,” which only referred to each other and denied any true ‘metaphysical’ reality. Poststructuralism and closely related deconstruction equated content with form and denied any other meaning but form. Poststructuralism in music (like music of Boulez) meant that tones and other elements of musical structure acquire meanings only in their interrelationships, and not in their links to the world of emotions, thoughts, and inner human life. Music was prevented from entering the gates of its main purpose – restoration of synthesis of conscious and unconscious. Poststructuralism was immersed into a complexity of play, simplified in human content, and to such an extent rejected the rest of human culture that its disappearance cannot even be called a crisis, it just disappeared.

Let’s return to the analogy between mathematics and music. Pythagoras saw a number as a mystical object, a source of synthesis, direct manifestation of the divine forces acting in the world. Therefore, connection of musical harmonies with numbers Pythagoras perceived as pointing to the divine power of music in the world. During the past two and a half thousand years consciousness differentiated, and for a mathematician today numbers are simple axiomatically defined objects. A mathematician sees mystery in the very possibility of a theory, of a theoretical correspondence-harmony among complicated mathematical objects that cannot even be described in words of language. Musicians, on the contrary, might be attracted today by the “mystery of numbers,” by its *objectivity* or simplicity. “My music,” Stravinsky wrote, “is far closer to mathematics than to literature... to something like mathematical thinking and mathematical relationships. I don’t assert at all that composers think by equations and tables, or that such things can symbolize music. But a composer’s way of thinking – the way I am thinking, it seems to me is not very different from mathematical.” Stravinsky’s confession in full measure refers to Boulez, who was attracted by tables.

Apparently, musicians were looking for objectivity in mathematics, and ‘pure’ play of forms reminded them of mathematics. However, synthesis based on the *objective* was broken down by differentiation of the objective, and the very possibility of a serious work of art was often questioned. As a consequence there appeared minimalism, search for minimally-representative forms, primitively-imitative (noise, silence), or tables of tones, rhythms, articulations, complex for musicians, but meaninglessly-simple for mathematicians (unless he is an F-student). A mathematician thinks by concepts, not by tables or equations. *Mathematicians are attracted to mathematics by mystery, whereas composers – by its absence.*

Search for objectification in music proceeded in two directions, first - serialism, anti-romantic romanticization of formal. And second – romanticization of breaking out beyond the limits of the subjective human; in the opinion of Taruskin it was developed by composers of the Russian school. Scriabin searched for inspiration in an idea of the highest objectivity, exceeding all human desires; his synthesis sounds in “Prometheus” in a mystical chord of pleroma (a Christian Gnostic term... for the all-encompassing hierarchy of the divine realm, located entirely outside the physical universe at immeasurable distance from man’s terrestrial abode). This chord is more uncertain than Tristan chord, more ambivalent toward any direction of resolution. Stravinsky, striving for the objective in the “highest mathematics of music,” was also inspired by romanticism of the primitive; in “The Rite of Spring” one hears synthesis in pre-human primitive, which objectivity is in biological foundations of pre-human passions. Shostakovich has shown the anti-human nature of ‘pre-’ and ‘post-’ human, and it sometimes seems that he revealed impossibility of creating synthesis outside of human nature. Thus, composers of Russian school kept human content in music. It might be because Russian language, in its grammatic structure, keeps a testament of connected emotions and concepts, synthesis which Russian culture contributed to world culture. *

Looking back into the 20th c., future musicologists will less value formal innovations of Schoenberg and other atonal and serial composers, who “emancipated harmonic dissonance,” but will recognize as a most important contribution surrealistic music of Shostakovich, Britten, Poulenc... who “emancipated semantic dissonance.” Aesthetics of the way “art communicates with its audiences, will replace author-centered poetics as the primary object of study.” Musical profession will come to value originality “not in the way that their music sounds, but in the way that it means.”

* Connections of music and language were discussed in chapter “Synthesis in voice melody.” Melody of language sound depends on its grammatical structure. ⁴⁶

Future musical culture, according to Taruskin and Albright, will come to value originality “not in the way that their music sounds, but in the way that it means.” Aesthetics of the way “art communicates with its audiences, will replace author-centered poetics as the primary object of study.” Looking back into the 20th c., musicologists will less value formal innovations of Schoenberg and other atonal and serial composers, who “emancipated harmonic dissonance.” And, on the opposite as a most important contribution will be recognized music of composers who “emancipated semantic dissonance.”⁴⁴ Let us name but some of these composers, contributed to individuation of differentiated emotions, who were able to withstand the anti-human onslaught of the 20th c. culture. Here are some of these great names: Shostakovich, Prokofiev, Stravinsky, Britten, Hindemith, Poulenc, Orff, Miyo, Honneger, Messiaen, Bartok, Janacek, Penderecky... Here are no fewer classical music composer names than in any other century. Most of their careers started with rejections, and a path to acceptance was tortuous and difficult. Still, the result of their work is unfathomable amount of deep and beautiful music. Will individuation of consciousness prevail, or culture will again enter circles of eternal return? Answer, it seems, will belong to the current century.

A division between popular and serious in 20th c. art was amplified, as if objectively existing. An ever increasing role in contemporary musical culture belongs to popular music. Is there an objective difference between popular and serious? Evolution of consciousness driven by complex interaction between differentiation and synthesis does not follow a straight line. And if in the Middle Ages new forms of music creating strong emotions were regulated by Church, so in the 20th c. this role was taken by some ‘academicians’ rejecting music of human passions. Music touches human passions. Some influential musical theoreticians are ready to assign such music to ideology, or entertainment and popular, and ban it from high art.⁴⁵

Separation of popular from serious always was a difficult task. In the past, a default solution often was given by technology and affordability: marketplace art was popular, while churches and castles were places for the serious. Was it really so? This issue became more complex in the 19th c. In the second half of the 20th c. the problem became even less solvable. *Mass culture* became a new phenomenon propelled by industrial innovation and commercialization of art. Popular and serious became completely mixed up. Mozart was popular. The best works of Presley, The Beatles, and Weber, combining Mozart with Africa, are perceived as more serious than ideas of Cage outdated by three thousand years. But, how should admirers of serious music interpret the fact that pop culture attracts hundreds of times more attention than Mozart ever had? How can we understand that mass culture belongs to young and what will be the consequences? Public was buying music since Renaissance, for 500 hundred years public tastes determined directions of music. But this influence changed drastically in the 20th c. Young people spend more money on music than any other sector of the society. Musical mass culture is measured by billions of dollars. Tremendous number of singers and groups vie for the public attention and overflow multiplying numbers of stage, platforms, scenes, CD and DVD shelves, TV channels. Center of mass culture music is USA. Export of music from USA exceeds that of cars, tanks, planes. Not everyone likes this music. France adapted laws limiting import of American culture. Is the aim preservation of national culture? Or pop-culture industry affects international politics? Industry producing CDs, DVDs, guitars, microphones, amplifiers, players, electronic media and communications aimed at music fan needs, and it has to produce fans. Music is better than tanks, and music, it seems, may have a better chance to overtake the world than tanks. Should we assume that the future of the world culture, the future of history is bright and sunny? Are talents thriving and culture evolves? Can a talented person break into a multi-billion dollar industry?

Recently I was watching an interview of an American black rock star on a Russian cultural talk show, “Night flight” (“Nochnoi Polet,” a Moscow equivalent of Larry King). The show host Maxim asked the star about what is important to achieve success. In the traditions of Russian culture, Maxim as well as his viewers expected something about talent and hard work. Instead they heard that one needs is a couple of millions of dollars. A lot of people have some talents and ready to work hard. If you have enough money to promote yourself on TV, day and night, within a month you’d become a star.

Another aspect of dependence of creative person on success is that it is often impossible to break the tie. Success and money could be a source of additional inspiration, but often it becomes a narcotic, which leads to loss of talent and death.* Is it a new development in cultural evolution?

Looking at mass culture within the theme of this article, coevolution of consciousness and

music, it is clear that humankind is not yet ready for individual consciousness. In the contemporary life pulled apart by fast multiplying differentiated concepts, a human being is missing synthesis. This is what music of mass culture brings to its fans, synthesis. This is why a young person today spends so much time listening to music. He or she needs to make sense out of the fast changing life, needs to find “the vector of the direction” to the meaning and purpose. Human soul can not exist without synthesis. What could be the foundation for synthesis today, five centuries after Reformation, three centuries after Newton? What could create a unifying process-symbol in contemporary psyche? It seems, the most survivable, vital inheritance from the 20th c. is not modernism or postmodernism, but the very idea of mass culture. This idea unified strivings of every person to realize his self here on Earth, during his lifetime. Sometimes, a creative person becomes one with a crowd and for a moment realizes this dream. Feeding itself, however, this dream turns into Uroboros, a snake eliminates self, the idol, and the crowd.

Nevertheless, mass culture is a logical step in evolution of consciousness, in interaction of differentiation and synthesis. There is a chasm between differentiated concepts existing in culture and capacity of a single person to assimilate this culture, while preserving synthesis within one’s soul. Is this chasm unprecedented and unique for our times? Was this chasm smaller for Aristotle and Ancient Greek crowds? Surprising animalistic and satanic styles of some rockers and rappers could be understood if we compare them to dithyrambs of satyrs. Remember that the dithyrambic chorus of satyrs was an ancient way of creating synthesis, connecting the sublime with bestial unconscious bases of psyche. The rift between conscious and unconscious threatens the death of culture and “demands restoratory sacrifices.” Rap (hip-hop) is contemporary dithyramb, restoring the connection between conscious and unconscious. In both dithyramb and rap – quite regular thoughts are cried out at the edge of frenzy. As in Ancient Greece 2,500 years ago, so today in a complex multiform culture, people, especially young people, are losing their bearings. Words no longer call forth emotional reactions, their prime emotional meaning is lost. By shouting words along with primitive melody and rhythm, a human being limits his or her conscious world, but restores synthesis, connection of conscious and unconscious. An internal world comes to wholeness, reunites with a part of the surrounding culture.

As postmodern was a return to pre-Aeschylean, Apollonian consciousness of pure notions – so Rap is a natural continuation of postmodern: Dionysian breaks forth into Apollonian consciousness. These types of consciousness antiquated about 2,500 years ago. But consciousness does not whirl in a closed circle. Conceptual and emotional contents of contemporary culture have become much richer, and the previously unseen poles of differentiation are to be unified by the coming synthesis.

Leaning upon scientific understanding of the mind functioning, this paper traced changes of forms of consciousness parallel to changes of musical forms. Summarizing, I would emphasize that music is a most mysterious thing on earth; it contains differentiating and synthesizing powers. Necessity governs relationships between these powers: When rocking toward differentiation – concepts lose meanings, but when rocking toward synthesis – strong emotions nail down thoughts to traditional values. Both lead to a slowdown of evolution. As no other art music can forestall cultural slowdown. Music transports reality into the hearts of listeners and restores a possibility of continuation of culture. But will the unity of differentiation and synthesis extend over life? Or will our entire culture be torn into shreds?

* Here are few lines from the first Russian rock opera “Orpheus and Eurydice.” “ORPHEUS (to fans) Gnomes! You despise me! Live your own life, not mine! Spiders! Grave-diggers!.. HARON (to Orpheus) Through abuse, delight, and swindles / You will get it to the end. / Where your fans, like ant drones eat / In crowds singer’s life. / But there is the inverse count / By the glory weaving thread: / We, the idols with no fans, / cannot get rich, we cannot live.”⁴⁷

Mathematical theory of interaction of consciousness and music.

Now we will formulate mathematically mechanisms of mind described above. As a satellite trajectory cannot be computed using word arguments alone, so some fundamental thoughts of this paper without their mathematical descriptions may remain insufficiently understood (as remained misunderstood thoughts of Aristotle, Kant, and some others, until centuries and millennia later adequate mathematical theories were created for description of their intuitions).

It is understood that not all readers of this section possess necessary professional knowledge for reading mathematical equations. Therefore, all mathematics is also explained in words; it remains to readers to relate words to mathematics and trace references in mathematical and cognitive science literature, or to trust the author's relations and conclusions. A math. theory of interactions between music and consciousness is possible, and here is a first publication summary based on previous publication ⁴⁸.

Neural organization of the brain, as discussed, is hierarchical in significant aspects, and is comprised from many levels. At the bottom of hierarchy there are elementary perceptions, concrete objects, higher up there are situations, relations, abstract concepts. Let us consider one level in this hierarchy. For concreteness, let us talk about visual perception of objects. Inborn and accumulated knowledge are described mathematically by models, \mathbf{M}_k ; here "k" is an index numbering the models. Models in our theory are what Plato and Aristotle called ideas or forms of the mind; Jung called archetypes; we called them concepts. Model, \mathbf{M}_k , is a neural structure, which creates a vague, fuzzy image on the visual cortex (for example, if closing eyes one tries to remember a well-known object). Neurons in visual cortex we will enumerate using index "n". Changes in models during perception are described by changes in parameters of the models, \mathbf{S}_k (size, color, view angles, etc.). Models thus are changing with parameters, neuron index, $\mathbf{M}_k(\mathbf{S}_k, n)$. Incoming signals we denote "X", these are neural signals coming from a lower level (for simplicity, consider them coming from an eye retina; in reality, there are many levels between retina and cortex). Incoming signals into neuron n, we denote $\mathbf{X}(n)$. During perception the brain compares a multitude of models \mathbf{M}_k with signals $\mathbf{X}(n)$, and those models that match signals become accessible to perception and consciousness; we perceive (see) object "k." This process of perception usually takes about 1/5 of a second. In this process, models are not just compared to signals, but as mentioned, are modified so that they are better correspond to signals. These model changes, improvement of models (adaptation, learning) improves our knowledge about the world. This process is governed by inborn mechanisms, instinct for knowledge. Its aim is to improve our knowledge, in other words, correspondence between the models and signals. The measure of correspondence we $L(\mathbf{X}, \mathbf{M})$, it is described by the following equation

$$(1) \quad L(\mathbf{X}, \mathbf{M}) = \prod_n \sum_k l(n|k).$$

Here "Π" denotes multiplications over all input signals, Σ denotes a sum over all models, and $l(n|k)$ denotes a measure of correspondence between one signal $\mathbf{X}(n)$ и one model $\mathbf{M}_k(\mathbf{S}_k, n)$. A concrete function $l(n|k)$ differs for object perception, abstract concepts, or words of language; it is not essential for our purposes. Mathematically, the instinct for knowledge is described as maximization of the correspondence, $\max L(\mathbf{X}, \mathbf{M})$. This maximization, let us repeat consists in changing model parameters, \mathbf{S}_k (the mind finds quantities \mathbf{S}_k such that correspondence $L(\mathbf{X}, \mathbf{M})$ is maximal; this are the correct values of parameters). The dynamical mechanism of the instinct for knowledge is expressed mathematically by the following two equations (2) and (3), and for the reasons, which will become clear soon, this mechanism is called *dynamic logic*. Equation (2) describes positive aesthetic emotion related to increase of knowledge, to learning

$$(2) \quad d\mathbf{S}_k/dt = \sum_n f(k|n) [\partial \ln[l(n|k)] / \partial \mathbf{M}_k] \partial \mathbf{M}_k / \partial \mathbf{S}_k,$$

On the left in this equation is speed of change of the model parameters. These changes, according to the theorem of convergence ⁴⁹ lead to increase of correspondence measure (1), and consequently, to satisfaction of the instinct for knowledge. On the right, $f(k|n)$ is a degree of correspondence between model \mathbf{M}_k and signal $\mathbf{X}(n)$ as compared to all other models,

$$(3) \quad f(k|n) = l(n|k) / \sum_{k'} l(n|k').$$

Characters ∂ denote partial derivatives along the corresponding parameters, and \ln denotes logarithm. Quantity $f(k|n)$, when summed over all signals, n, $a(k) = \sum f(k|n)$, gives a measure of Kant's judgment about how well a general concept-model $\mathbf{M}_k(\mathbf{S}_k, n)$ corresponds to a concrete objects in front of our eyes (or the other way around, how well a concrete object corresponds to the general concept).

Dynamic logic surprisingly in details corresponds to Aristotelian description of working of the mind: Form-potentiality (that is the initial model) meets matter (that is signals) and turns into form-actuality (final model-concept). Potentialities do not follow logic, but actualities follow laws of logic. ⁵⁰ This Aristotelian statement remained not understood during 2,400 years. People thought that logic is the main mechanism of the mind. And

only when equations of dynamic logic were written, the Aristotelian thought became clear. If signal $\mathbf{X}(n)$ corresponds to model \mathbf{M}_k , then $l(n|k)$ is near 1 (100% of correspondence), and for other models $f(k^n|n)$ is small (crisp Aristotelian logic is valid for actualities: "A statement is either true or false"). When new signals, $\mathbf{X}(n)$, are coming, which are different from existing knowledge, from all existing models, \mathbf{M}_k , then all correspondences $l(n|k)$ are poor for all models. From equation (3) we see that in this case all $f(k^n|n)$ are small for all models, in other words, vague, fuzzy; nothing corresponds to anything; fuzzy logic operates and Aristotelian logic is not obeyed. This was the Aristotelian explanation of workings of the mind, and so acts dynamic logic: From fuzzy potentiality to crisp thoughts. From neuropsychological laboratory studies we know that fuzzy models-potentialities are less conscious than crisp models-actualities, conscious concepts of the mind.

Aesthetic emotion is related to satisfaction or dissatisfaction of the instinct for knowledge, and mathematically is measured by increase or decrease of correspondence measure $L(\mathbf{X}, \mathbf{M})$. In the process of learning-adaptation, equation (2), similarity $L(\mathbf{X}, \mathbf{M})$ always increases (or remains constant); this equation (2) therefore describes aesthetic pleasure from increased understanding. If new signals \mathbf{X} are not coming, models \mathbf{M} reach maximal correspondence to reality; following $L(\mathbf{X}, \mathbf{M})$ does not change, and pleasure from new knowledge ceases. Of course, even if there are no new perceptions, the process of thinking could continue at higher levels of the hierarchy. For continued aesthetic pleasures we need new thoughts or new perceptions.

What is uniquely human that sets us apart from higher animals? Dynamic logic acts in animal minds. Uniquely human is language, and language-related type of thinking. Human model-concepts consist of two parts,⁵¹ cognitive model, \mathbf{M}^C , and language model, \mathbf{M}^L :

$$(4) \quad \mathbf{M} = \{\mathbf{M}^C, \mathbf{M}^L\}.$$

But this is just the beginning. Even a dog can learn to bring shoes on command, that is connect \mathbf{M}^C for shoes with \mathbf{M}^L for a word "shoes". Humans are different in that our mind possesses such integrated two-part models at many levels of the mind hierarchy. At higher levels, abstract language models are phrases and texts composed from the same words, which denote objects at lower levels. Cognitive models of concrete objects exist in animal minds, because animals see these objects in the surrounding world. But abstract notions cannot be directly seen.

Abstract concept-models appear in human mind mostly due to language. A wise man comes up with new concepts of understanding the world, this might take tremendous effort and experience. But he can not *directly* transfer these models to his children. He could only formulate them in language. When reading "Anna Karenina" a young man receives knowledge about important language models, \mathbf{M}^L , in terms of more or less clearly formulated sentences, paragraphs, chapters. Each language model relates to a cognitive model, \mathbf{M}^C (according to equation (4)). At first, cognitive models are vague, fuzzy, but as man relates language models read in books to his life experience, his cognitive models are improved and become more concrete and more conscious. Every child learns tens of thousands of words and can talk on infinite number of topics, his language models are crisp and concrete. But corresponding cognitive models are vague and not quite conscious. All the following life a child is coming to improve understanding of abstract concepts, like love, family, responsibility, freedom. A few succeed in connecting inside one mind all the riches of language models with clear crisp cognitive models. Still, due to language human discoveries about the world are accumulated in culture. Language is a main mechanism of differentiation of consciousness.

Millions of years ago human consciousness separated from animal world. Along with language gradually neural structures appeared for two-part notions-concepts (equation (4)). In these neural structures language models exist partly independent from cognitive models and from emotional centers. This mechanism created a possibility for human culture, based on consciousness with millions of differentiated concepts. To continue evolution of consciousness, every generation should anew connect language models with cognitive ones (in other words, in equation (4) cognitive models should become as crisp and as connected to the entire wealth of knowledge as language models are. Language models should be connected with emotional neural centers. Synthesis is needed. But, the more concepts there are in language (\mathbf{M}^L), the more difficult it is to connect them with clear and crisp concepts of real life (\mathbf{M}^C). Such a connection-synthesis requires a tremendous manifold of emotions, which connect language concepts with cognitive concepts, \mathbf{M}^L and \mathbf{M}^C . These emotions, according to equations (1), (2), and (4), lead to satisfaction of the instinct for knowledge through synthesis, and as is clear from the rest of the paper (especially from the chapter "Whence beauty in sound? – Mechanisms of music perception") they are created by music.

We formulated the main mechanisms of the mind, the instinct for knowledge, concepts, emotions, language, their connection to consciousness and unconscious. We described these mechanisms mathematically and (to the extent possible in a short paper) we discussed the relationships of these mathematical formulation to the wealth of known psychological, neural and cognitive data. We are ready to confirm our conclusion. *Human consciousness evolves in a contradiction of differentiation and synthesis, defining complex, nonlinear evolution of culture.*

This conclusion determines a possibility to understand role of music in evolution of consciousness.

The time came for the final summary. From the last prophets and the first philosophers to the age of the Renaissance a culture was created based on rational thinking and religious symbols, which did not exist in previous millennia; the symbol of suffering God. This mystical symbol gave meaning to human existence by assimilating and expressing unconscious feelings of tragedy. Since the Renaissance a symbol of human reason displaced the old mystical symbol; roles of individual and rational were strengthened in consciousness. Science accelerated this process; and a new myth of the rational scientific mind started emerging.* Content of ancient mystical symbols – the existential tragedy – was transferred into consciousness. Mystical inspiration was lost and the Reformation acknowledged this fact. The Church was no longer an intermediary and man faced God alone. Tension between spirit and matter reached strength, which had never before been experienced in history - and the connection between conscious and unconscious broke down.

A continuously winding whirl followed, which ever accelerated changes of forms of consciousness in search for new inspiring ideas. But whereas the ancient mystical symbol had unified the entire contents of conscious and unconscious, so now new symbols cannot unify contradictions between spiritual and material. Rational foundations of science and the mind contradict to mystery of archetypes, which forms the basis of any synthesis.

New symbols bear the contradiction too close to the surface of consciousness. New *ideas of the highest* bear causes of self-destruction from the start. – Classicism of the eighteenth century replaced God with the rational. But differentiation of this idea led to its destruction – emotions turned out to be irrational. Romanticism in the nineteenth century was inspired by the idea of subjective humane. But differentiation of the humane destroyed the romantic symbol – too much inhumane was inside the romantic human. Modern and postmodern worshipped the idea of objective, but differentiation of the objective uncovered its limits and destroyed synthesis – a human being cannot exist limited by the objective.

Advancement of Western culture during four thousand years proceeded along a razor edge between differentiation and synthesis. Interactions of these opposing factors determined the progress. The balance between them was traditionally supported by music. Currently, the balance is tilted toward differentiation. However, while immersing into the multiform of life, the collective soul seeks unity in the sublime. Let me repeat, rational foundations of science and the mind contradict to mystery of archetypes, which forms the basis of any synthesis; this contradiction prevents formation of contemporary synthesis unifying mystery and science. Will we overcome this quandary?

In the midst of desolation and exhaustion of contemporary culture, what could arouse any consoling expectation in the future? Possibly, the only way for future synthesis – is individuation – creation of an individual psychological space, where all beginnings and ends belong to an individual human being. A space, where “edges between the soul and body are mended.” In transformation from collective to individual, inspiration could come from scientific understanding of the laws of evolution of beauty, music, and human consciousness.

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* After the Renaissance, and even more so after Newton, collective consciousness believed that science is rational (nor Newton, nor Einstein believed in that, they knew that science contains infinite mystery). Collective consciousness mystifies “rational science,” many scientists (and non-scientists) believe that rational science will explain everything and there will be no mystery anylonger. This is not a delusion, this is a *belief*; it is not based on any science data, it

contradicts mathematics (Gödel theorem), which confirms that this is mystery, a contemporary myth. This myth is still forming, the symbol has not reached autonomy.

ATTACHEMENT

Mechanisms of the mind and consciousness

Concepts, instincts, emotions

The brain structures providing the foundation for learning concepts produce in our mind models the surrounding world. The mind uses these models for understanding of the world, therefore they are called *concept-models of the mind* (or simply “models”). This ability to model the world is the reason that we perceive and understand it. Some idea about these models we get when we close eyes and remember familiar objects, situations. These memories, imagined situations usually are not crisp, a bit vague, fuzzy. Mathematically, such models are described by fuzzy logic, which decisions are continuous, vague, and different from simple ‘yes-no’. Fuzzy models are foundations for perception and cognition. Jung called these structures archetypes of the mind. From inborn structures-archetypes, the mind creates models of concrete objects and situations. Cognition and understanding of complex and abstract concepts is similar to ‘simple’ sensory perception of objects. (Our mind perceives a concrete chair using a general-chair model, containing vague, fuzzy notions of a seat, back, and legs. In the moment of perception, the fuzzy model turns into a model-concept of the concrete chair with concrete seat, back, and four legs.)

Instincts are like internal sensors that generate signals in neural networks indicating the unconditional need. For example, there are bodily sensors, measuring sugar level in the blood. When it falls below a certain level, we feel hungry. Clearly, we are not thinking about the problem of sugar level vs. hunger. We just feel hunger. This feel, or more accurate, *emotion*, is related to neural signals-emotions. Colloquially, ‘emotions’ refer to just shows of emotions (agitation, higher voice pitch, sparkling eyes). However, in our context, emotions are neural evaluations ‘good-bad’; evaluations not according to concepts of good and bad, but direct instinctive evaluations-feelings. *Emotions evaluate concepts, objects, and situation from the point of view of satisfaction of our instinctual need.*

Most of emotions originate from ancient parts of the brain, relating us to primates and even to lower animals. Emotions are signals in neural pathways that carry information about object values from instinct-related brain areas to perceptual, cognitive, decision-making, and behavior-generating areas. Emotions ‘color’ perceived concepts with their values for instinct satisfaction. Every instinct generates evaluative emotional signals indicating satisfaction or dissatisfaction of this instinct. These signals affect the process of comparing concept-models to objects around us – the process called judgment by Kant. *So, instinctual needs affect our perception and cognition through emotions.* And concept-models that are becoming more complex in evolution, initially were aimed at the same instinct satisfaction, that is for survival, as biological purpose of life.

The instinct for knowledge and aesthetic emotion

Imagine for a moment that you cannot clearly see one object from another; you do not understand their relationships and purposes. Sounds merge in noise, where you cannot discern their sources or direction. There are no clear thoughts in consciousness; and your will does not concentrate in a concrete desire. A human cannot survive in such a horrible state.

Survival requires adequate perception of the surrounding world. Even when feeling hunger or fear, an organism still has to orient itself and concentrate its will. This statement can be even strengthened: adequate perception of the surrounding world and orientation in the world are conditions for satisfying instincts. A need for perception, orientation, understanding of the surrounding world, and concentration of will are so important that nature gave us special inborn instinct instilling in us this need and driving us to satisfy it first, to some extent independently from other instincts. Let us look at the mechanisms of this instinct, and how do we feel it in

consciousness.

Kant explained our understanding of the world by our ability for judgment, which associates individual objects with the general model-concepts. Mathematical theory of the intellect clarifies: During perception and cognition concept-models are modified, adapted to concrete conditions around us. Internal models of the mind are changed; knowledge has to improve. That is why the instinct driving model adaptation is called *the knowledge instinct*. This same instinct makes little kids, cubs, piglets jump around and play fight, their inborn models of behavior must adapt to their body weights, objects, and animals around them long before the instincts of hunger and fear will use the models for direct aims of survival. Kiddy behavior just makes the work of the knowledge instinct more observable. To varying degrees, this instinct continues acting all of our life. All the time we improve our knowledge, we bring our internal models into correspondence with the surrounding world.

How can we understand the nature of emotions corresponding to the knowledge instinct? Are emotions satisfying or dissatisfying the knowledge instinct accessible to consciousness and what do these emotions feel like? Let's imagine once more a situation of utmost disorientation; objects and their relations are indiscernible, and those that are behave unpredictably: doors don't open, water does not pour, teeth cannot bite the apple, the will does not concentrate nor does it direct our actions, and nothing makes sense – a terror takes hold. (Thriller movies, by the way, depict such states of the mind). Conversely, when surrounding objects and people behave according to the ideal expectations and needs, and actions reach clear aims, we feel pleasant harmony, we like it. *We feel as harmony a correspondence between the inner concept-models and the outer world*. Emotions of pleasure and terror related to satisfaction or dissatisfaction of the knowledge instinct are *aesthetic emotions*. Aesthetic emotions are the foundation of our higher spiritual abilities; including our abilities to turn to religiously sublime and artistically beautiful. Science tells us that spiritual abilities are grounded in physiology of neural mechanisms of the brain. But being related to the knowledge instinct, they are further removed from direct bodily needs, like a need for food, for procreation etc...

Hierarchy of mind and beauty

Let us repeat that aesthetic emotions and feeling of harmony (between concept-models and the world) are related to the instinct for knowledge and are experienced independently of other instincts. They are not related directly to hunger or satiation, fear or comfort, sexual procreation (and are not always governed by these 'low' bodily needs). *The aesthetic need is 'spiritually high'*.

Harmony is just the first step toward the notion of beauty. Can aesthetics based on harmony of concept-models and surrounding objects explain the feeling of beauty? Let's turn now to the hierarchy of the organization of the mind.

Harmony so far referred to an object-harmony: Correspondence between models of perception and objects in the world. This is harmony at a lower level in the hierarchy of concepts of perception and cognition. At this level concept-models correspond to individual objects. 'Higher up' in the hierarchy there are more abstract and more universal concept-models of cognition, modeling relationships among objects, and on to the models of situations, relations among situations... and, at the top of this 'pyramid' there are concept-models of the meaning of our existence. A priori forms of these concept-models, the archetypes, are fuzzy and uncertain; they are inaccessible to consciousness, but provide the bases for learning and adaptation. In the processes of learning and cognition they become more concrete and more accessible to consciousness. Contemplating an object stimulates the process of adaptation. In the first moment, model-objects are adapted, providing for perception. In the next moment, model-relationships and model-situations are adapted, providing for cognition; and this process continues up and up the hierarchy of models, reaching sometimes the highest models of the meaning of life. Aesthetic emotions in this case is felt by us as presence of beauty.

The nature of creative process, in this way, is based on the instinct for knowledge and related to beautiful; it brings closer the artist, writer, poet, art connoisseur, philosopher, and scientist. Despite increased specialization, the nature of creative process. Creative process in art (science, everywhere) combines aesthetic emotions and concept-models turned to art objects, but also to images-thoughts in the mind of artist or connoisseur, which sometimes reach models of meaning of our existence in the world. In the context of this paper: *Beauty is feeling of a possibility*

to improve concept-models of the meaning of life.

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