

## On the Social Aspects of Forming the Concept of "Chef-D'oeuvre"

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**Abstract**— Aesthetic Emotions caused by the perception of an Artworks (music, painting, literature, architecture, dancing, etc.) represent the enigma, since they are quite individual and caused by (generally) no rational reasons. However, the individual concept of Chef-D'oeuvre, that is the effect of 'goose bumps', is sincere and objective since could be measured by skin sensors. In our previous works, we have proposed so-called Natural-Constructive Cognitive Architecture that is represented by the complex multilevel combination of various-type neural processors. Being based on this architecture, we have argued that the Aesthetic Emotions are connected with activation of the 'halo-neurons', those that correspond to atypical (rare) attributes of the real objects. It was shown that the personal feeling of Chef-D'oeuvre could be caused by the 'recognition paradox' effect, when the artwork seems similar to well-known patterns but is still unusual. In this paper, we consider certain social aspects of this concept's formation. It is shown that this process is also paradoxical and largely similar to the process of individual learning.

**Keywords** – emotions; association; paradox; halo-neurons; core-neurons; ambiguity; expertise.

### I. INTRODUCTION

Understanding and modeling emotions in artificial cognitive systems is really a challenge and attract great attention [1]—[6]. Emotions, being a more ancient way of reaction to the environment [3], than rational thinking (perhaps for this very reason) appear to be rather difficult to be conscious and formalized. This is especially so when it comes to the Aesthetic Emotions (AE), i.e., the perception of artworks and natural phenomena (fire, waterfall, etc.) [7]—[9]. In contrast to the so-called "pragmatic emotions" associated with the attainment of a specific goal, AE do not have visible rational reasons and clear criteria. Moreover, the standard division into positive and negative emotions is not applicable here, since one can only say whether they "like" or "dislike" an artwork. Thus, AE are always purely individual and sincere: strong AE are accompanied by an objective (and even measurable) effect of "goose bumps". This effect occurs when a phenomenon or an artwork is perceived as a "Chef-D'oeuvre" (ChD).

In our previous work [10], we have considered possible mechanisms and manifestations of AE in individual cognitive systems. It was shown that, in addition to the apparent influence of cultural context and public opinion, the concept of ChD is formed under the influence of

- childish vague impressions;
- personal fuzzy associations;

- the influence of cultural mini-media (family, messmates, etc.).

All these factors produce *subjective fuzzy associations*, and this is the very mechanism of artwork perception. It was shown also that, using the terminology of J. Levin ("explanatory gap between the Brain and the Mind") [11], these associations appear at the border between the Brain and the Mind.

In this paper, we consider possible mechanisms of forming the public opinion about the value of certain artwork. We employ the so-called Natural Constructive Approach to the problem of cognitive process modeling, that has been proposed and elaborated in our previous works [10][12][13]. In other words, we try to realize, how the symbol ChD could appear in the "social Mind". Thus, the paper is aimed to reveal possible "natural" mechanisms of social appreciation of a certain artwork as a ChD besides the obvious propaganda, marketing policy, etc. However, it is necessary to stress that this work is in progress yet.

The paper is organized as follows. Section II is focused on the formalization of the problem of forming the public evaluation of ChD. In Section III, a possible solution to the problem is presented. Summary and discussion of further working perspectives are presented in Section IV.

### II. FORMALIZATION OF THE PROBLEM

In engaging with the problem of forming a public appraisal of a certain Artwork, we did not fully realize the whole measure of its complexity. Any Artwork, as well as the concepts of 'information' and 'thinking', has both material and virtual component, and the processes of formation of their social assessment vary significantly. For example, paintings (originals) of well-known and recognized masters are valued as brands; they are so expensive because only a single copy of the work exists. Here, the laws of the market do work, which practically have no relation to the artistic content of the picture. This fact explains that musical ChDs have low material price (the notes are easily reproducible), but tickets for a concert of a famous performer can reach a fairly high price, if the performer is fashionable. But what is the mechanism of the word "fashionable"? Here again, marketing policy and propaganda do work, i.e., forcible implanting into the public consciousness the idea of "greatness" of certain pattern. To the same range of problems, the political considerations could be related. So in the Soviet Union, rather weak (untalented) and deservedly forgotten now artworks,

glorifying the party and the government, were highly appreciated.

The mechanism of artificial formation of public opinion is the subject of sociology research, not cognitive science. The problem that we are trying to solve is how a natural (or "sincere") feeling that some artwork is a ChD does arise not for one individual, but for a large part of society.

One important factor should be noted. In modern society (as well as in any sufficiently developed and structured one), the professional corporations (for example, the Union of Writers, the Union of artists, the Nobel Committee, the Academy of Sciences, etc.) have a great influence. These are sufficiently closed communities that are reluctant to accept both new members and new ideas. Within these communities, certain (sometimes tacit) criteria for evaluating the artworks and the notion of "right" work are accepted, but these criteria can not guarantee that this work is a ChD .

It seems that the word "right" could not be applied to an artwork, but initially the term ChD, or *masterpiece*, had the meaning of the best example of a product made by an artisan, "an approved work sample." Only after the artisan made a ChD, he could enter the *guild* (a trade and craft corporation that united masters of one or several similar professions), open his own 'shop' (*studio*) and become a master. Thus, it was the professionals who evaluated the artwork, and often the appraisal was influenced by personal interests of the corporation's members (in other words, by intrigues). This is a good example of the emergence of *conventional information*, i.e., subjective information accepted within the given society. The mechanism of formation of subjective (conventional) information was considered within the framework of the Dynamic Information Theory [14][15], where it was shown that the choice of the society (in the given context, the choice of the ChD) should not and often is not the best. It is the result of the struggle and agreement of the community's members, which could not stand the test of time and/or be not shared by the society in a broader sense (outside professional corporations). In the days of Mozart, it was Salieri who was treated as a recognized (and highly paid) master, because he wrote the "right" music, which was familiar and pleasant hearing of the nobles, while Mozart had the reputation of a bully whose music was not serious and understandable to commoners. However, nowadays it appeared that Mozart's music (we will be bold enough to say that not all, but only several outstanding patterns like, e.g., "*Lacrimosa*") is really great, i.e., causes true and sincere "goose bumps" not only among professional musicians, but also among a lot of people far from music. Speaking about ChD we mean just this effect.

Traditionally, the problem of public acceptance of ChD was considered in the humanities, within different branches. These approaches account for, first of all, the social and historical aspects of the ChD appearance. However, within the limits of different directions of art criticism, some specific characteristics of those artworks that society recognized as a ChD are analyzed. For example, in the framework of musicology, certain laws of musical harmony

[9] are trying to distinguish genius creations from simply good professional work. Similarly, within the framework of literary studies and linguistics, texts are analyzed for the correlation of different grammatical constructions in recognized ChDs, and so on. However, the problem that we set for ourselves is to highlight certain regularities in the process of shaping public opinion in the "sincere" evaluation of any ChD, regardless of whether it relates to music, painting, literature, architecture, etc.

### III. POSSIBLE SOLUTION WITHIN THE NATURAL CONSTRUCTIVE APPROACH

In our work [10], the Natural-Constructive Cognitive Architecture (NCCA) has been proposed and considered. Let us recall briefly some conclusions on the individual perception of ChD obtained in the framework of this model.

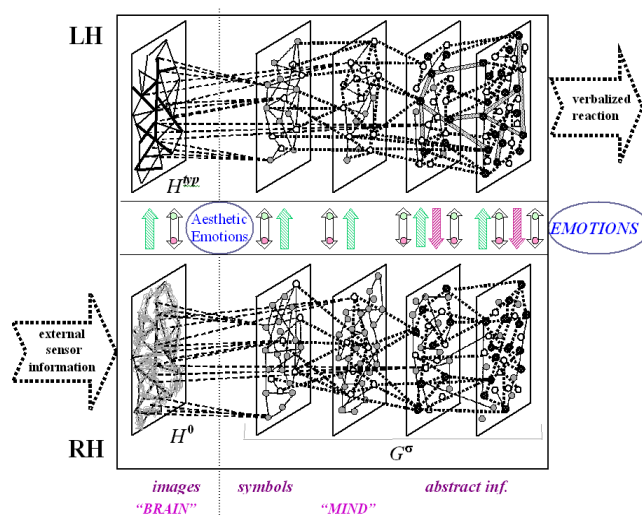


Figure 1. Schematic representation of NCCA.

One of the main principles of the Natural-Constructive Approach is that any cognitive system should be divided into two subsystems, in analogy with hemispheres of the human brain [16]. One of them, the Right Hemisphere (RH) is responsible for generating information and learning new information (it contains the necessary random factor, the "noise"), the other one, tLeft Hemisphere (LH) being responsible for processing well-known information. This specialization is ensured by the fact that the connections between the dynamic formal neurons in the RH are trained according to the Hebbian self-organization principle [17] (amplified with time), while in the LH, the strongest (black) connections are selected according to the Hopfield principle [18] "redundant cut-off".

The whole system represents a complex multi-level hierarchical structure. The main (lower) level contains imaginative information (distributed memory)  $H$ , where signals from each real object activate a chain of neurons. In Levin's terminology, this level corresponds to the area of the Brain. Already at the next level, symbols [19] of typical

(i.e., most clearly learned) images are formed, which themselves can form "generalized" images (chains of connected symbols). At all subsequent levels, this process is repeated, leading to the structured ensemble of neurons. We emphasize that the process of symbol's formation relates to the generation of a conventional (subjective for a given system) information. However, the chosen symbol is not necessarily (that is often impossible) *the best*, i.e., the most vivid representative of active neurons. It was obtained precisely as a result of "struggle and agreement" in the ensemble of neurons. Thus, all the symbolic information refers to the field of Mind, because it is not created objectively (in response to physiological signals), but as a result of the perception of this information in the given community of neurons.

It was noted that the scheme of NCCA in Figure 1 repeats the location of the various zones of the neocortex [13]. Emotions, as a product of the interaction between the sub-cortical structures and the neocortex, control the interaction and activation of the subsystems RH and LH. They can be indicated on the diagram only schematically, i.e., between the subsystems. In this process, the so-called pragmatic (or rational) emotions associated with the achievement of a certain (symbolic) goal, which can easily be formalized and formulated, refer to the area of Mind. In [10], we have shown that AE, which have no certain goal as well as a clear explanation, can arise on the boundary between the Brain and the Mind, i.e., when objective information obtained by the system results in generation of the subjective (conventional) information. Let us consider this process in more detail.

In the process of recording any perceived object at the lowest level of RH, there participate so-called *core*-neurons encoding typical (the most characteristic and frequently repeated attributes) of this object, and so-called *halo*-neurons corresponding to atypical (not characteristic, rare) attributes. The first are activated at any presentation of the object, and the connections between them intensify faster and become "black". After that, the image is replicated in LH, becomes a "typical image" and gets its symbol at the next hierarchy level, etc. In this process, only the core-neurons are involved in the symbol's formation, so the perception of a typical image can be formulated and verbalized, i.e., expressed by the symbol-words.

The halo-neurons are activated only at atypical (rare) representations of the object, therefore the connections between them and the core-neurons remain rather weak ("grey"). They have no connection with any symbol, so their activation leads to vague impressions that could not be formulated and expressed by words. However, the halo-neurons provide multiple associative links between images that are lost at the stage of the typical image/symbol formation. Note that the majority of halo-neurons are concentrated in the lowest level  $H^0$  in RH (that is why it was called the "*fuzzy set*"), which could be associated with human's sub-consciousness.

According to our hypothesis, it is these implicit associative connections that the Brain perceives, while the Mind do not realize, that create the "paradox of recognition" when perceiving the artworks. It is the impossibility of verbalized resolution of this paradox that leads to the effect of "goose bumps".

Let us stress that these multiple nonverbalized associations can be considered as a mechanism for the effect of "seeing the invisible, connecting the unconnectable".

How this consideration could be applied to formation of the concept of ChD in a "Social Mind"? Actually, the society represents a more primitive structure than the human's Mind, but it definitely has highly structured organization. We can suppose that the "Social Brain" can be treated as the whole (unstructured) community, the analogy to the fuzzy set  $H^0$ . But what is the "Social Mind"? Paradoxically, it seems that it is presented by just the next (lowest) symbolic level, while all others correspond to the artificial "power vertical".

Of course, it is impossible to apply these arguments literally to the analysis of the process of forming the public opinion. However, certain analogies suggest themselves. Thus, professional communities can be treated as a "typical image" of the profession, and the core-neurons represent the analogy with its recognized masters. They determine the evaluation of the works in this area, i.e., just they select those works that deserve the symbol of ChD. It is conventional information of this community (corporation).

According to our hypothesis, the concept of ChD is formed as follows. First, there is a group of professionals in the art that defines the standard (pattern) of the "right" work (ChD). They play the role of core-neurons and form the *typical image* of the profession. This corporation, officially formalized (analogous to the transmission of a typical image in the LH), itself selects works that receive an assessment of ChD. At the same time, their evaluation can be influenced by corporate (however, personal) interests, so this estimate may not be related to the true value. Moreover, a really great work never corresponds to existing patterns.

We suppose that true (sincer) perception of ChD in society is provided by a group of people who have a certain and sufficient experience in this area of art and understand the subtleties and measure of paradoxicalness of ChD, which represent an analogy with the halo-neurons. Then, there is a paradoxical effect of the "unconnectable connection", i.e., personal sensation of ChD appears to be extended to all (almost) the community. However, it should be stressed that speaking about the halo-neurons we imply only those, that were involved in some (any) learning process and got certain experience (expertise) in some area of Art. Note that the process of acquiring the experience requires certain time.

An analogy to the phenomenon of "collective goose bumps" can be considered spontaneous (hysterical) popularity of certain creations (such as "Yesterday") not caused by an official propaganda. Thus, "sincere" AE and the appreciation of real ChD in the society arise in full

correspondence with that in the individual cognitive system. Being provided by the excitation of halo-neurons (halo-people), this effect corresponds to the formula “to connect unconnectable”.

#### IV. CONCLUSION

We have shown that, apart from obvious propaganda and marketing policy (that are not a subject of our research), there could be a “natural” mechanism of forming the public evaluation of certain artworks. It is in many respects similar to the formation of individual perception of ChD and refers to the true great artworks providing the “recognition paradox” (an object, being in many respects similar to well-known ones, still seems unusual). In the majority of cases, the impression of ChD could be expressed by the formula “to see invisible, to connect unconnectable”.

According to our hypothesis, this effect is provided by forming common opinion within not the related professional communities, but in a rather large community of no professionals who nevertheless have sufficient expertise to estimate the value of ChD and the degree of its paradoxical features. This group represents an analogy to the halo-neurons in the fuzzy set  $H^0$  of individual cognitive system and could be called “the sub-consciousness of society” relating to the “Social Brain”.

It is shown that ChD acceptance in the “Society Mind” requires more time, than corporative evaluation (possible, incorrect). This effect could explain certain delay in the creation and appreciation of almost all ChDs – the society should get certain expertise to value the ChD adequately.

However, there are still many open questions that do not allow us to extend the architecture of Figure 1 to human society. First of all, there is no (formal) division in a society into two subsystems, one of which generates information while the other works with well-known information. Of course, there are people more and less creative, but this does not determine the structure of society. In principle, the hierarchy of the architecture in Figure 1 recalls the hierarchical organization of power, but these problems require additional reflection and analysis.

Furthermore, the conclusions drawn should be verified by, e.g., public opinion poll in certain groups, which are not connected professionally. Thus, the work is in progress.

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