



Leonardo

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Reviewed work(s):

Source: *Leonardo*, Vol. 38, No. 4 (2005), pp. 365-366

Published by: [The MIT Press](#)

Stable URL: <http://www.jstor.org/stable/20206096>

Accessed: 15/03/2012 09:26

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ARE "COGNITIVE FOSSILS" SIGNIFICANT FOR ART? STUDIES OF SYNESTHESIA IN NORMAL AND ABNORMAL CASES

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Several years ago *Leonardo* began a discussion on the problems of synesthesia and its role in art [1]. I think it worthwhile to summarize our principal arguments and conclusions in a condensed form, in this short paper [2].

The world is integrated; and so is the system of the senses of different modalities. The integrity of any system is determined by the variety of bonds existing within it. In polymodal perception, the following types of bonds can be singled out:

1. Joint, coordinated actions of the sense organs, ensuring versatile perception of the world. I will use the term "synergy" for such coordinated action (see works by S.L. Rubinstein [3] and B.G. Ananjev [4]). For example: One may see sunrise, sense the cool of the morning, hear the birds singing; the result is the integral (holistic) image of the dawn.
2. Associative interaction (synesthesia)—the reflection in consciousness of various connections arising in the process of synergetic reflection of the integral world; that is, intermodal "co-experience" accompanying the single-sensory perceptive act (see the works of J. Herder [5], A. Wellek [6] and B. Galejev [7]). An example: When somebody says "warm color" he or she transfers the sensation of warmth to a visual modality, marking the likeness of two heteromodal perceptions by the feeling to which they both give rise.

3. Mutual sensibilization—a change of sensitivity in one sense organ caused by the functioning of another. This means the inter-activation of the system's elements through some kind of medium, either external or internal (see work by S.V. Kravkov [8]). Thus, it is known that in some individuals certain odors can change threshold sensitivity to certain colors.

The above three types of intersensory interactions do not simply co-exist, but depend upon each other. So there exists a higher connection between them, which obviously has a systemic character also. Evidently, the existence of that connection has led to the confusion of these types of bonds in a number of works (see, for example, T. Ribot [9], H. Werner [10], A. Merriam [11], V.I. Kauffmann [12] and M. McLuhan [13]).

Synesthesia is the least studied type; and, making the situation worse, the same term is often applied to both "normal" and "abnormal" cases. I will refer to associative linkage (shared by all humanity) as "normal" synesthesia. Unfortunately, many authors prefer to focus attention on "abnormal" synesthesia, which leads to the dramatic misapprehension of synesthesia's role in the psyche, culture, language and art.

It should be stressed that asystemic bonds are possible; they are even inevitable in any complex system that undergoes fluctuations of either external or intrinsic parameters. These bonds would appear as deviations from the norm in all the above types of system-forming interactions: synergy, mutual sensibilization and synesthesia. Such deviations may result in either slackening or over-strengthening of the system's intrinsic bonds. In the first case the perceptive system loses its integrity; in the second case, the qualitative heterogeneity of its structure. So in both cases the system would fail to serve the purpose of the adequate reflection of reality.

An abnormal slackening of the sys-

tem's bonds would lead to the deterioration of the ability to apprehend metaphors, including synesthetic ones (this fact has been noted in psychopathology by V.V. Nalimov [14]). On the other hand, their abnormal strengthening would result in the meaningless replacement of synergy by a synchronous real co-sensation. Such real co-sensation is a rare condition, occurring when substantial contacts with either the physical or the information environment are broken and the functional system's bonds distorted. This leads to "altered states of consciousness," observed, for example, under drug-induced stimulation, sensory isolation, hypnotic meditation combined with self-isolation of one's personality, and so on (as observed by A. Huxley [15]). These altered states naturally often go together with the over-strengthening of inter-sensory interactions, including the arising of clinical (abnormal) synestheses.

Asystemic bonds should be distinguished from systemic ones, for they cannot be considered intrinsic for a human psyche (I remind the reader that associative synestheses refer to intrinsic bonds!). Otherwise, as one can see from the international psychological literature, the mishmash would begin at a very early stage: the classification of constituents of the poly-sensory system (sense data) by their modality signs. This would be the case, for example, when sensations are ranked with synestheses (taken literally as co-sensations) (for example, by A.R. Luria [16]).

As is known, even the most obvious form of interaction—synergy—began to be studied only in the 20th century, and, as systemic link, in its cooperation with other forms, still awaits its researcher. The cooperation of the senses was not only made mysterious by some psychological doctrines (such as associationism and Gestalt) but also sometimes was totally discarded by certain trends of idealistic philosophy originating with D. Berkeley, who rejected the existence of any connec-

tions between sensory perceptions, for otherwise their dependence upon objective reality would have to be admitted.

His followers, reducing reality to the “complex of sensations,” naturally included within it real “co-sensations,” which have no epistemological correlation with the outer world (J. Muller, H. Helmholtz [17]). Vulgar materialistic psychology at the turn of the 19th and 20th centuries, infected with positivism, fell into obvious embarrassment when facing such a complex systemic bond as synesthesia. A new splash of a positivistic approach can be observed now, as some researchers (R. Cytowic [18], S. Baron-Cohen [19]) once again try to reduce synesthetic analogies functioning in culture, language and art to the level of purely neurobiological phenomena, of exactly the abnormal kind. Let us note that these researchers describe so-called true (in fact, abnormal) synesthesia as a rare, obsessive and even inherited or genetically determined condition. Cytowic, for example, emphasizes that by their symptoms and genesis such real “co-sensations” are close to hallucinations and epileptic reactions and can be caused artificially in normal individuals by certain chemical agents (e.g. LSD or mescaline). In his opinion, the formation of such synestheses occurs in an earlier-evolved part of the brain—the limbic system—rather than in the cortical area. This gives him reason to refer to “true” synesthetes as “cognitive fossils” [20].

Such studies are now considered a triumph of modern neurophysiological methods (Cytowic applied “single photon emission tomography” to measure blood flow in different parts of the brain). Some claim that this will reveal, at last, the mystery of the “color hearing” of famous artists—Scriabin, Kandinsky, Tchiurlionis, Messiaen [21]. In my view, on the contrary, these instrumental methods should be used, first

of all, to set clear distinctions between clinical (abnormal) synesthesia and artistic, imaginative intermodal comparisons. Unfortunately, most modern followers of the “neurophysiological” trend tend to apply the results of their studies of abnormal cases in a paradoxical way—to work out new algorithms of audio-visual synthesis for various multimedia projects (hypermedia, intermedia, virtual reality) intended for general use.

In this connection, one cannot help remembering the joke of a famous synesthesia researcher of the 1930s, A. Wellek: “Trying to find any regularities of intersensory connections on the basis of clinical synesthetes’ evidences is the same as putting the question of ghosts’ reality to the vote in a mad-house” [22].

In my opinion, the rules of poly-modal multimedia synthesis would be more successfully established using synesthetic analogies supplied by language and art practice. If the mechanism of their formation in the human psyche remains unknown, they should be taken simply as “black box output.” It is obvious that if certain cultural synestheses are bound to serve the purpose of inter-personal communication, they should be based on some most common, general laws of the human psyche. As for the accidental, purely personal associations, they would simply fall away, unable to stand the test of practice. That is to say, solving problems of the cognitive kind (including those in the sphere of art) is by no means a prerogative of “cognitive fossils.”

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