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## **The Overwhelming World: Functions of pleromatization in creating diversity in cultural and natural constructions**

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***... a thing in nature once endowed with the reacting property might so select its stimulations as to make its relations to its environment means to its own progress***

(James Mark Baldwin, 1894, p. 29)

***Par la mort nous participons à la tragédie cosmique, par la naissance nous participons à l'aventure biologique, par l'existence nous participons à la destinée humaine.*** (Edgar Morin, 2001, p. 42)

We inhabit an abundant universe. Both biological and semiotic worlds are overwhelming to anybody—yet we survive and flourish quite well within that illustrious ambience. The abundance of signs and species leaves any naïve layperson to wander in one's garden of life with never-ending awe, and it is only the few climbers of the golden mountain of knowledge who begin to theoretically grasp the complexity of bio- and semiospheres. It is a taunting task to make sense of the seemingly infinite phenomena of biological, psychological, and social ways of being.

To start our inquiry, we need to begin from the beginning-- how do we know that the world overwhelms us? Surely the environmental contexts of any organism are dynamic and rich—and beyond the control of the organism. Yet the adaptation tasks for any of the organisms can proceed without the self-awareness of the over-abundance of the environmental input. Our world “is overwhelming” only once we create the appropriate meaning—which itself is as indeterminate as the world it presents. Thus, semiotic mediation works along two parallel lines—***schematization*** and ***pleromatization***. My goal here is to

demonstrate how these two processes are mutually intertwined, and how at their intersection any extent of semiotic diversity can be generated. In short—the question is—how is semiotic (and in analogy—biological) diversity generated?

### Making simplicity and making complexity—by signs

Much of human effort has gone into making the variable, ungraspable, and overwhelming world of human experiencing into a simplified scheme. The abstracting and generalizing functions of the human language are major tools to achieve that end. Our striving for “encoding” the complexity we encounter into simple formal-logical categories that replace complexity with simplicity is cognitively economical and allows for the creation of prejudices, legal systems, and social norms that are assumed to be equally applicable to all. Through **schematization** the simplified human world becomes open to social control, and loses in its richness of affective and mental, personal and interpersonal, heterogeneity.

However, language signs—symbols—are only one of the forms of semiotic mediation. In contemporary semiotics we find a renewed interest in the functioning of iconic and indexical semiotic mediators. Through their use, the homogenizing role of language symbols is counter-acted by the heterogenizing role of the making and using complex pictorial signs. **Pleromatization**—the making and use of **pleromata**<sup>1</sup> – hyper-rich depictions of reality that stand for some other realities (or set up of irrealities)—acts in the direction opposite to schematization. As Mieczyslaw Wallis explained,

Schemata occur in the pictograms of many peoples, in traffic signs, in diagrams of scientific works, in children’s drawings, in the works of some modern painters such as Klee or Dubuffet. Pleromata occur in fifteenth century Dutch painting, in seventeenth century Dutch still lives, in paintings by the nineteenth century Naturalists or the twentieth century Surrealists, in many photographs and films. (Wallis, 1973, p. 487)

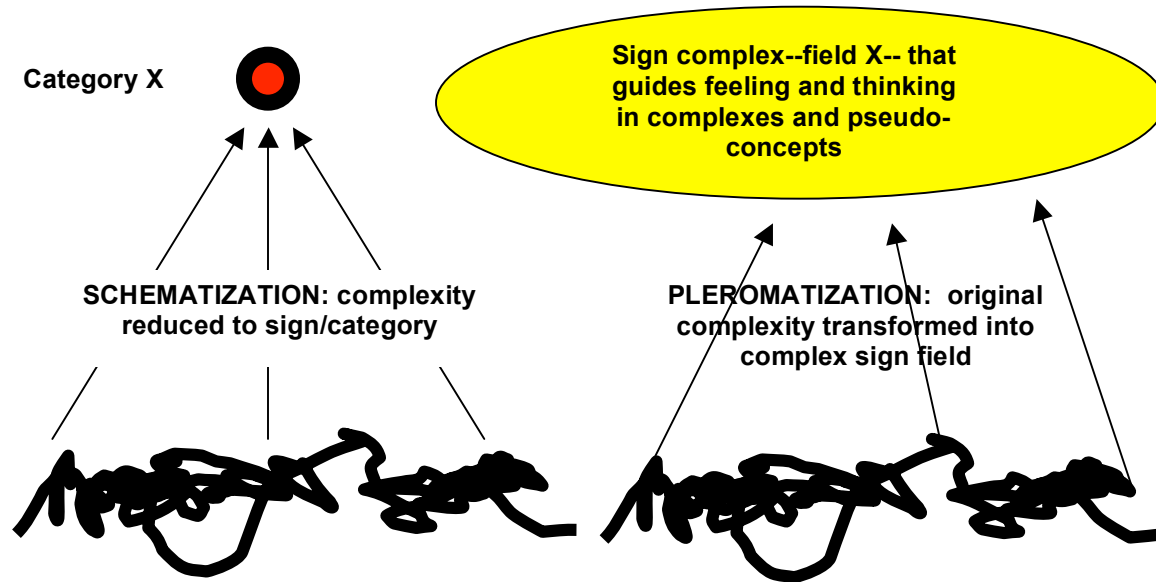
The immediate perception of an object can thus become either less rich in detail (schematizing) or more rich (pleromatizing) in detail than its original object, while becoming a complex sign—a hybrid of icon, index, and symbol. The pleromatic signs present a generalized concept of what is depicted by way of transcending the particular object that is depicted by the sign (see Figure 1). Pleromatic—in contrast to schematic—signs guarantee that all persons who come into contact with them can derive their particular interpretation of such signs in the direction suggested by the sign. The specific transformations of the pleromatic sign in new contexts by a person are not predictable. As long as the directional impact of the signs is achieved, the specific transformations do not matter, since it is the direction of human conduct that is at stake in most social negotiations of individual variability of actions.

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<sup>1</sup> From Greek pleroma, or fullness



**Figure 1. Semiotic homogenization (schematization) and heterogenization (pleromatization)**



A realist painting does not seem abstract, yet it is an iconic pleromatic sign that operates as a sign-field (Valsiner, 2007, chapter 7). Such field-like signs have the function of “total capturing” of the affective and cognitive domains of the human mind. Here the affective irradiation is primary in relation to the fixedness of thought pattern. Human values—and conduct based on such values—are organized through the internalization/externalization of such field-like signs. Yet as such there is no direct social control over those values—any social institution that attempts to “control the human mind” needs to obtain the “collaboration” of these minds themselves.

In the public domain we therefore encounter a plethora of complex signs all oriented towards the social guidance of internalization/externalization of hyper-generalized fields of signs (Figure 2). Not only are our urban visual environments filled with pictorial materials of sign functions—billboards, TV screens, etc—but also altered architectural objects can be made to function in this capacity. Monuments can be made out of everything in our environment.

**Figure 2. *Gedächtniskirche* in Berlin: guiding internalization/externalization by combining iconic, indexical, and symbolic means**



Figure 2 is an example of **purposeful ruins** in the middle of a thriving urban commercial environment. Purposefulness of these ruins is evident both in the making of them—and in their maintenance. The Berlin ***Gedächtniskirche*** was devastated in World War II, and after the war was left standing as a testimony of the destruction of the war—in the middle of otherwise re-built city.

As it presents the history of devastation, the ***Gedächtniskirche*** acts as a generalized indexical sign—for the devastation of war in general, not just merely as a sign denoting the particular bombs that half-demolished the church. As a

ruin<sup>2</sup> of church it stands as an iconic sign representing all churches and adding to that idea the notion of damage. In its iconicity, it is an example of a pleromatic sign.

The ruin of a church here is not merely a ruin—but a result of purposeful destruction of an architectural object in the course of a war. After such destruction, the result is purposefully maintained as a ruin to generate a new pleromatic sign with indexical, iconic, and symbolic features unified within that complex sign. Its indexical function points to the history of horrors of the impact of the bombs that destroyed the long-term standing symbolic building -- the church. In contrast, the same air attack destroyed buildings next to that church—which were demolished as ruins to build new buildings in their stead. Likewise, other symbolic buildings—such as the Berlin Castle—equally damaged in the war—were not turned into a war memorial (symbolic sign) through their unity of iconicity (“castle-ness” given by its architecture before the bombings) and indexicality (indicating the impact of the bombs). The Berlin Castle was demolished—and the parliament building of former German Democratic Republic built up on the same spot<sup>3</sup>.

However, the semiotic use of the church does not end in its generalized presentation of the horrors of the past or of the heavenly promises of the particular architectural object. Its centrality in the public life of the city makes it a place for presenting the future pleasures – in the form of large-size advertisements attached to the side of the church (see Figure 2). The cosmetics advertisement is in itself a combination of iconic (picture of woman), indexical (the impact of the cosmetics on her skin) and symbolic functions of the new sign attached to the architectural sign. The merging of features of a new symbolic complex onto a previous architectural form constitutes a symbolic takeover of the semiotic mediation system. The hybrid of Byzantine and Islamic symbolism in the center of Istanbul—Hagia Sofia—is a testimony of the conquest of the symbolic world through iconicity and indexicality.

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<sup>2</sup> See Georg Simmel's account of the meaning of ruins :

“The aesthetic value of the ruin combines the disharmony, the eternal becoming of the soul struggling against itself, with the satisfaction of form, the firm limitedness, of the work of art. For this reason, the metaphysical-aesthetic charm of the ruin disappears when not enough remains of it to let us feel the upward-leading tendency. The stump of the pillars of the Forum Romanum are simply ugly and nothing else, while a pillar crumbled—say, halfway down—can generate a maximum of charm”. (Simmel, 1959b, p. 265)

<sup>3</sup> The location itself carries symbolic function—replacement of one symbolic building by another on the same spot is known to lead to centuries-long frictions between different communities, and at times erupt to violent clashes—as the history of Babri Masjid in Ayodha (Uttar Pradesh, India.) showed in 1992.

Figure 3. An entrance (Santiago de Compostela)



## Encountering pleromatic signs

Human beings encounter their worlds in movement—they act in relation to their environments, and mark the different trajectories of their movement by pleromatic signs (see Figure 3). As pleromatic signs are function through capturing the peripheral field of vision as the organism moves within one's environment, they are most likely to mark relevant transitions within space and time. Thus, the abundance of particular kinds of objects within a specified field of action (e.g. tombstones in a cemetery, products displayed in a supermarket or shop windows) which may be of temporary character (a large crowd of people gathered in some city square) marks the meaning of the given place (at the given time) in terms of its meaning—cemetery, place of trade, or place/time of some political dispute or a fiesta. This abundance can also take the form of exaggeration of size of the objects (e.g., the places of religious worship—, mosques, or temples—are often built up to dominate the surrounding other architectural constructions in height or/and massive nature of the walls). Likewise, such abundance is encoded into the timetables of various rituals—which may entail very long periods of enactment of cultural meanings through symbolic actions<sup>4</sup>. If in ordinary life actions can be performed quickly and efficiently, then in the contexts of rituals we may observe slow, exaggerated forms of actions, as well as their presentation with high redundancy.

Entrances are important for marking such movement trajectories—hence we find pleromatic marking of those on many occasions. People move towards such entrances (or pass by them) by constant input of the pleromatic sign into the peripheral visual field. The flow of the semiotically set visual patterns is “looming upon” the person in movement towards the entrance into a church or a temple by way of the person's own moving towards it. For a pilgrim, the movement from the first sight of the object of the pilgrimage from the distance to the actual arrival in the place is a semiotically guided experience.

**Symbols within pleromatic signs.** As said before, pleromatic signs are hybrids that can include a combination of iconic, indexical, and symbolic features within one Gestalt. When moving around, we encounter objects that by their symbolic content catch our attention (see Figure 4—comparing the real—upper part—with its mirror image in the lower part ).

The historically established affective field evoked by the right-handed swastika in the lower part of the figure (which is a photographic left/right reversal of the original photo) can be contrasted with the original (upper part). The shrine is found on the side of an old city street in Kyoto. For an European traveler it creates an ambiguous semiotic input as the right-handed version of the swastika has acquired negative affective loading in the European social history of the 20<sup>th</sup> century—quite contrary to the meaning of it in the original.

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<sup>4</sup> For example, the Merina male circumcision ritual for toddlers—1-2 years of age-- (Bloch, 1986) is documented to take time from 7 pm to 3 am, filled with dances and songs performed by the whole community, while the circumcision procedure of the boys itself takes seconds.



Figure 4. A shrine in the street (Kyoto) and its mirror reversal



## The medium is made through the (rich) message

Here I make an assertion opposite to the often accepted idea of McLuhan—the medium is not the message—but it is created through it. The message maker creates it through the symbolic resources available.

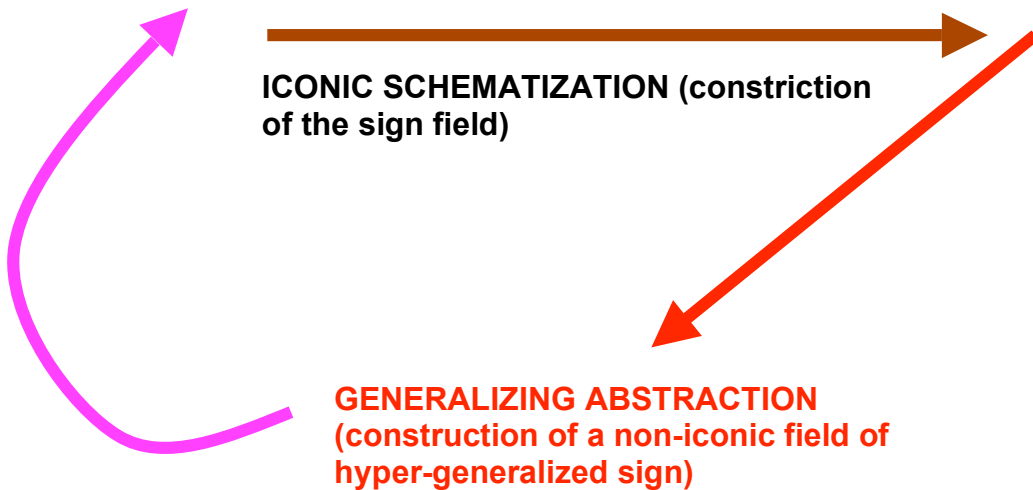
By this move I restore the focus on the agent to the message constructor—the person who creates signs to regulate one’s own (and others’) psychological worlds. This feature of bi-directional “culture transfer” (Valsiner, 2000) sets up the necessary generation of variability both in the range of signs maintained in our environments, and the range of their transformations in our personal cultures. Signs in public places are markers of transitions for the navigating persons. The temples, churches, monuments, sacred forests, graveyards stand in the places where they are set up—while persons migrate to visit them, to pass by, to vandalize them, etc. The cultural messages encoded in the environment through such signs are for guiding the conduct of persons-on-their-way(s), rather than for persons within a particular place. The public domain includes person on the move—not in their state of static being. The signs that are encountered on these journeys are better set up in pleromatic ways—rather than in homogenized (schematized) forms. Pleromatic signs are the vehicle of redundant social regulation of personal-cultural uncontrollable psychological processes (see below)

Edmund Leach has phrased it succinctly—“the jumble is the message” (Leach, 2000, p. 126). By asking the simple question—why are entrances (and outsides) of architectural religious signs (temples, cathedrals, et) often illustrated by abundance of iconic decorations that go far beyond the grasp of human perceptual analysis, his answer is to find the function of that abundance in itself. While making sense of how the abundant richness of the temples of Khajuraho reliefs (see Figure 5 left side) are organized, he points out the holistic field of the meaningful actions depicted in the scenes:

What is really characteristic of such imagery is the jumble: ladies adorning themselves, deities and princes at their devotions, naked women, couples in sexual embrace, a dancer taking a thorn from her foot, a serpent goddess (*nagini*) with cobras providing her halo, a confusion of the natural and the supernatural. (ibid., p. 127)

The schematizing mind pays attention—aided by others or driven by one’s one orientation—only to some sub-part of this hyper-rich Gestalt jumble. For the eyes of Western tourists visiting Khajuraho (and aided by tourist guides—see Gillespie, 2007) it is usually of the kind depicted on the right side of Figure 5.

**Figure 5. Iconic schematization based on pleromatic sign-field and its hyper-generalization as a formless promoter sign**



The crucial emergent feature of this schematization by the person is not merely the attention to some—rather than other—details from the pleromatic sign, but its further generalizing abstraction into a promoter sign (Valsiner, 2004, 2007). That promoter sign is field-like, hyper-generalized, and formless<sup>5</sup>—instead of an iconic depiction we find now a semiotically mediated feeling that operates as a higher-order Gestalt (von Ehrenfels, 1988) organizing further encounters of the person with her or his world. Depending upon the direction of generalization the orientation, that formless promoter sign may be describable (translation of hyper-generalized field into a category) as “divine”, “pornographic”, “immoral”, “beautiful”, “educational” or in many other ways.

### **The range of impact of pleromatic signs**

The pleromatized semiotic universe we inhabit matches with our abductive generalization readiness (see Magariños de Morentin, 2005) and operates through a socialized—socially suggested and personally internalized— non-verbal level of making sign hierarchies. At the latter, it feeds into the highest levels of semiotic regulation—that of hyper-generalized semiotic fields (Valsiner, 2005). As can be seen from Figure 6, pleromatic signs have a wider range of functional use than schematized signs.

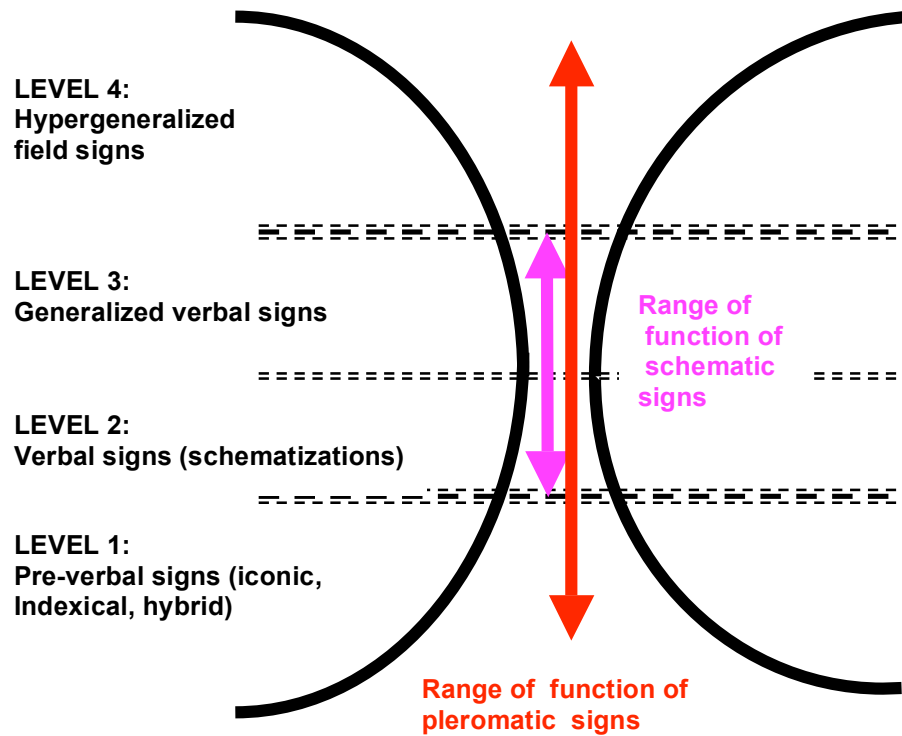
Such wider role of pleromatic signs is not a surprise for psychologists—it supports the mental processes of differentiation and de-differentiation (Werner, 1957) as a means of constant pre-adaptation to the demands of ever uncertain personal worlds. Such uncertainty is the name of the game—given the constant variability within life experience:

...the child begins to learn in addition the fact that persons are in a measure individual in their treatment of him, and hence that individuality has elements of uncertainty or irregularity about it. This growing sense is very clear to one who watches an infant in its second half-year. Sometimes the mother gives a biscuit, but sometimes she does not. Sometimes the father smiles and tosses the child; sometimes he does not. And the child looks for signs of these varying moods and methods of treatment. Its new pains of disappointment arise directly on the basis of that former sense of regular personal presence upon which its expectancy went forth. (Baldwin, 1895, p. 123)

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<sup>5</sup> Interestingly, the need to return to formless forms of semiotic kind parallels the efforts in early 20<sup>th</sup> century “Würzburg School” to conceptualize “imageless thought”. The concept of everyday use that functions in many social worlds is that of “meaningful nothingness” as highest state of human existence.

**Figure 6. Levels of semiotic mediation and the impact ranges of schematic and pleromatic signs.**



The pleromatic signs have a wider range of applicability to the semiotic self-regulation system than the schematized (verbal) signs. Verbal—symbolic—encoding of the presented reality is not the highest level of human psychological functioning, but an intermediate one. The highest level of semiotic mediation—the level of hypergeneralized signs (Level 4) functions without verbal expression—and in terms of fullness of its insistence.

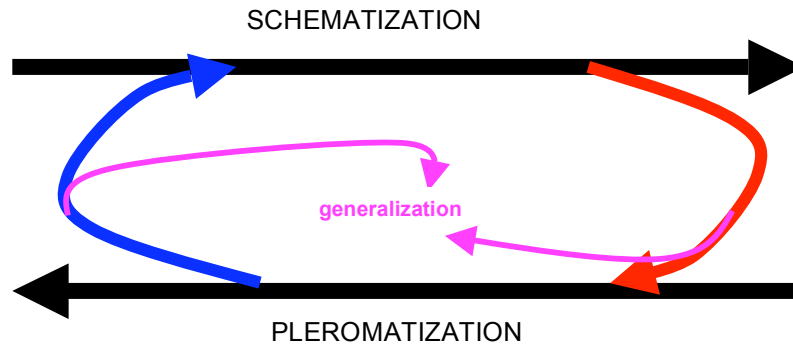
If we consider semiosis as a process closely linked with actions (Rosa, 2007) it becomes clear that pleromatic signs have wider functionality than their schematic counterparts. Pleromatic signs allow for making sense at an instant about complex social and personal matters (Level 4 in Figure 6) without the mediation of words, or of verbal auto-dialogue. Self-reflections like “This just makes sense!” are translations of the instances of such Level 4 phenomena into Level 3 verbalizations. Likewise, pleromatic signs allow for the immediate intuition (Level 1 phenomena) to operate prior to the possibility of verbal

categorization of the experience. The richness of a holistic memory image of a past encounter with a similar situation can operate as a pleromatic sign at Level 1 without the need of verbal (symbolic) mediation. Words are, of course, important for a human being – who may eloquently describe the “wise” actions of his or her pet dogs “who knows me”—yet the behavior thus described would lack Level 2 (or 3) semiotic mediation possibilities for the dog oneself. Still, the behavior of the dog is real—the relationship with the dog owner is more than a history of formation of conditional or associative reflexes (Sarris, 1931). While accepting the intention to look for semiotic processes at the biological level (Hoffmeyer, 2003) it would not be unfeasible to grant the “wise dog” actually the status of Level 1 semiotic functioning. The dog’s semiosis comes to share with its owner’s through pleromatic signs.

In a similar vein—the whole research domain of teaching different forms of language to higher primates that has been in the center of attention since the 1970s is an experimental exercise of coordination of the work of pleromatic and schematic signs. More precisely—as higher primates in their natural habitats can be assumed to develop their *Umwelt*-specific pleromatic signs, the question of ways in which schematic sign use could be built upon the pleromatic signs is actually what has been addressed in the various chimpanzee language learning projects. Interestingly, these projects—after teaching chimpanzees and bonobos sign language or graphic languages—end up demonstrating how general understanding of human speech is advanced through these experimental successes (Segerdahl et al, 2005). In terms of the relationship of schematic and pleromatic sign systems these results demonstrate the enhancement effect of alternative Level 2 artificial language training (establishment of a schematic sign system) on the pleromatic understanding of another (verbal) schematic system. An utterance of human speech—while it consists of schematic signs (words) constitutes a pleromatic whole.

In general terms, the relation between schematic and pleromatic semioses could be depicted as a mutual feed-forward loop of two interdependent and oppositely oriented processes (see Figure 7). The increasing richness of experience leads to the formation of over-abundant pleromatic signs—with the need to cope with that richness through schematization. The generalizing abstraction of the schematized kind leads to the emergence of new richness of experiential side—leading further to new pleromatic signs, which feed into further abstraction from that semiotic richness through schematization. As a result of such mutual feed-forward loop both the schematization (abstract understanding through generalized categories—Level 2 phenomena in Figure 6) and pleromatization (Level 4 abstracted field-like nonverbal semiosis of Figure 6) develop within the same semiotic agent.

**Figure 7. Interdependence of schematization and pleromatization**



### How meanings are made?

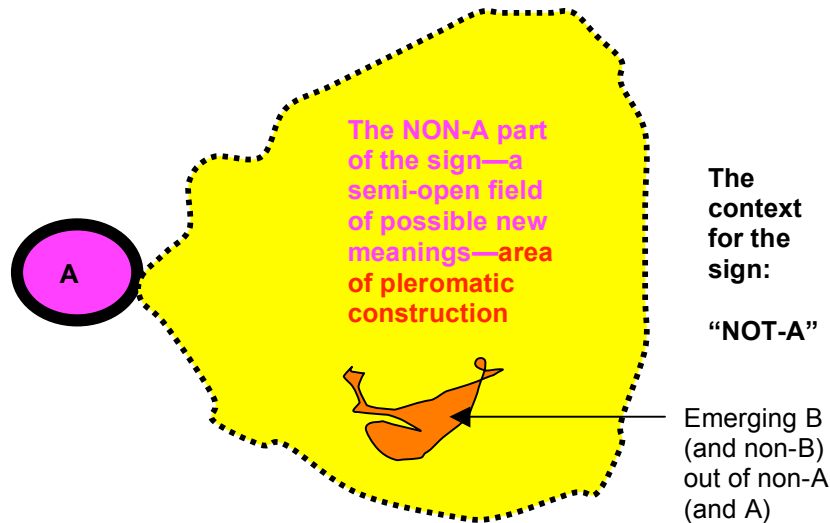
The unity of schematization and pleromatization is guaranteed by the uncertainty of organisms' functioning at the border of their future and their past<sup>6</sup> within the irreversibility of time. The person is constantly on the border of what is known (e.g. my system of personal sense—subjective meanings based on my life experiences up to now) and what is not yet known personally, but socially suggested by others through their use of semiotic devices.

We can observe the intertwined processes of schematization and pleromatization in the process of meaning making. Following the ideas of Alexius Meinong, we have posited that meaning arises in the form of complexes of united opposites, (Josephs, Valsiner, & Sorgan, 1999). It is that opposition between the meaning and its opposite that is the basis for further change. The meaning is a complex sign characterized by duality of the process of meaning-making and takes the form of a point (or a circumscribed field) united with a quasi-open field (see Figure 8.). Within that dual sign, the schematization operates on one pole (A), while enabling the pleromatic growth at its counterpart (non-A). As a result of the latter—in the direction of schematization—a new meaning (B <> non-B) emerges from the pleromatization process within the non-A field.

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<sup>6</sup> Which is the present. In case of the reality of biological and psychological systems that present is infinitely small moment between the past and the future (a point well made by C. S. Peirce). In the subjective reflection about the present the picture is precisely the reverse—the present is extended outwards from the actual moment of being both to the past (narratives of life history of the same person—“I am” becomes depicted through “I was”) and to the future (“I am” becomes depicted through “I will become”). The notion of *identity* is a schematic generalization that feeds into pleromatic reconstructions of “being in the past” and “being in the future”

**Figure 8. The general structure of the sign (A <> non-A)**



This theoretical depiction of the sign in Figure 8 is purely structural—it merely visually highlights the focus on asymmetry in the relationships of the two parts of the sign (A is “visible”, the semi-open corresponding field of “non-A” is indeterminate because of its open boundaries, and is always in a state of quasi-differentiation. Its function is to provide the ill-determined opposite for dialogical transformation of the A.

Georg Simmel, writing about love, has captured the central theoretical issue involved here:

To regard love and hate as exact polar antitheses, as if it were necessary only to transpose the one into the opposite key in order to have the other, is completely mistaken. This misconception results from the fact that some externally practical consequences of the one appear to be direct antithesis of the consequences of the other. But even this appearance is hardly exact. I wish one person good fortune and another sorrow. The presence of one person delights me, that of another is painful to me. But happiness and sorrow are not logical antitheses. Even the fact that love relatively often turns into hate proves nothing as regards their logical correlation. The opposite of love is not-love—in other words, indifference. If hate appears instead of indifference, this stems from completely new positive causes. It may be the case that these causes are secondarily connected with love: for example, the



intimate relationship with the other person, the pain caused by the fact that one has deceived himself or allowed himself to be deceived, the grief due to lost opportunities for happiness, and so on. (Simmel, 1984, p. 164, added emphases)

Simmel's "not-love" maps onto non-A in Figure 8. There are multiple possible growth of new schematizations possible from the "non-love" opposing field, of which "hate" is but only one possible direction.

### **From semiospheric perturbations to biospheric diversity**

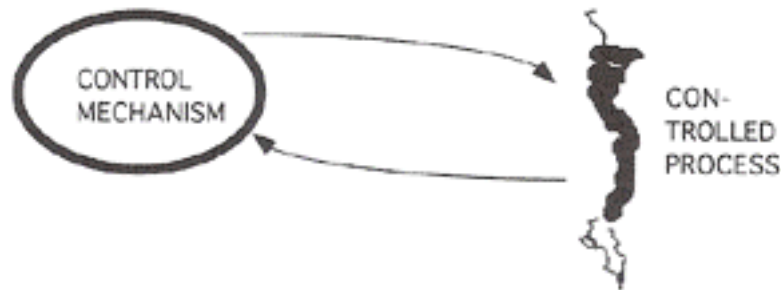
I have tried to demonstrate how semiotic diversity is a necessary phenomenon in the context of experiencing. Meaning construction entails the unity of schematization and pleromatization as parts of the same system—resulting in the abundance of constructed signs of various kinds—and in the abandonment of most of them once they no longer are needed. That general principle on non-economical organization exists similarly in the biological systems where the guarantees for survival cannot be given by minimization of costs with optimization of product. Instead, the general principle of redundant control operates in all biological and semiotic systems. Redundancy is the strategy for facing uncertain futures.

**Redundancy makes pre-adaptation possible.** The notion of future-oriented adaptive readiness was a natural outgrowth from the theoretical context of the organic evolution theory of C. Lloyd Morgan, James Mark Baldwin, and Henry Osborn. The central issue is the focus of selection—before some outcome of biological development could be selected "in" (to survive) or "out" (to be made extinct) by the evolutionary process it needed to emerge in the first place. And in such emergence is the adaptation value of abundance—biological systems create high varieties of emerging forms, only some of which survive in their lifetime and produce offspring.

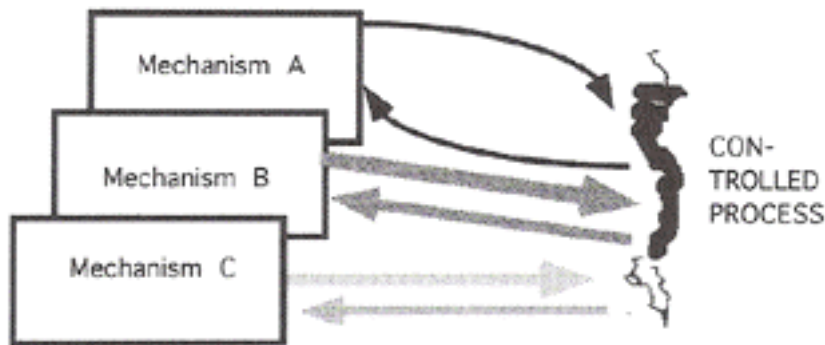
The relevance of redundancy was reflected in the constructive evolutionism of Henri Bergson. A central concept upon which Bergson's developmental thought was based was the notion of adaptation. That concept--popular as it was (and is), can carry different meanings. First, it has been seen as direct reaction to the conditions that are causing change--- either "positive" (by way of giving rise to new variations) or "negative" (elimination of misfitting emerged variations). This version of selection operates on outcomes, rather than processes, of organism/ environment relationships.

**Figure 9. The principle of redundant control**

A. Non-redundant control mechanism



B. Redundant control mechanisms



In case of uncertainty of the future survival, the notion of economic “fit” of the newly emergent biological forms into their current ecological niches makes no sense. Accordingly, Bergson (Bergson, 1911, p. 63) called for seeing adaptation in the process of emergence of novel mechanisms in ways coordinated with context demands (but not “molded” or “shaped” by those). The biological systems are “adventurous” in their approach towards the future— creating abundance in order to survive, and being prepared for a variety of changes within the ecological niche.

It is here where biological, psychological, and social worlds of phenomena demonstrate their similarity-- development of new functions leads to the emergence of new organizational forms that make it possible for the organisms to encounter new—previously unknown-- possible conditions in the future. This notion is opposed to the idea of “fitting in” with the environmental demands at the present. Adaptations are organic (systemic) growths, oriented towards a set of future possibilities (which, as those do not exist in present, cannot be precisely defined). In case of creative adaptation, the organizational forms that emerge in

adaptation go beyond the "fit with" the present state of the survival conditions, and set the basis for facing the challenges of the possible future demands. All biological, psychological, and social systems are open systems—depending upon exchange relationships with their environments. Their existence within irreversible time sets up the strict demand for adapting to the conditions that are anticipated—rather than currently present. This condition sets up the basis for semiosis—hence it is no surprise that sign-processes can be projected to the functioning of organisms at the cellular levels (Hoffmeyer, 2003). At the level of embryogenesis, development

...is a semiotic process whereby the fertilized egg cell interprets the genome as a series of complex signs representing the ontogenetic trajectory defining the construction of an organism (Hoffmeyer, 2003, p. 2262)

The notion of *interpretation* here is central for understanding the constructive regulation of the over-abundant biological basis for movement from potential to actual development. The genome in its full complexity can be viewed as “overwhelming” (in a metaphoric sense) for the fertilized egg in ways analogous to the person’s being overwhelmed by the infinity of pleromatic signs of the socio-psychological world. The genome does not determine the construction of the organism, but sets up supportive constraints based on which the organism constructively creates its own developmental trajectory (Gottlieb, 2003).

The biological organism has to survive under the uncertainty of ever new transformations of the environmental agents. It needs to utilize its own history while being open to novel challenges. Hence the function of interpretation—by the organism of its immediate setting—is crucial for its survival. The key in that interpretation process is the functioning of the immune system:

As a memory device, the immune system needs to obey certain constraints: it should be sensitive enough to change attractor under the influence of antigen. It should not be too sensitive and over react when antigen is present at very low doses. The immune system should also discriminate between self-antigens and foreign antigens. Finally, it should be robust—memories of previously presented antigens should not be lost when a new antigen is presented. Thus, in some sense, the system should be able to generate independent responses to many different antigens. (Weisbruch, 2006, p. 22)

The functioning of the immune system is thus the closest analogue to that of the psychological system—both operate in real time at the intersection of the past and the future, moving from the former into the latter. Interpretation is thus

not merely *re*-presenting any status quo, but *pre*-senting the immediate future based on the life trajectory of the organism. Biological interpretation leads to the growth (or extinction) of the interpreting organism. Psychological interpretation leads to the construction of new meanings on the basis of the altered state of person/environment interaction. Both interpretations are of semiotic nature, and both are necessary because of the need for the organism/person to construct one way of being out of the high abundance of input materials (biological or cultural). Thus, in general—the overwhelming (abundant) nature of our life-worlds leads to semiosis as a process of solving the problem of reduction of the uncertainty to a manageable response by creating new biological or psychological forms.

Thus, semiosis is a reaction to the overwhelming nature of the world. As such, it becomes a tool for handling of that world—and making it even more overwhelming (cf. the Baldwin quote, in the beginning). By actively coping with the abundance of the input we generate actions that increase the abundance beyond bounds, leading to further need for interpretation, etc.

### **General Conclusion: Unity of biospheric and semiospheric abundance**

As I have tried to show, the biological and semiotic versions of viability involve making the survival of the organism dependent on its world being overwhelming.

“Being overwhelmed” is of course a metaphoric transfer of personal subjective notion to the generic process of bio- and semio-geneses. What we are interested in is the question of biological and cultural mechanisms of the organism and of the person that transforms the uncertainty of the future with the help of the current abundance into a workable life solution—acting, feeling, thinking—as the future moves into the past through the miniscule moment of the present.

The notion of pleromatic signs seems an appropriate focus to look at such translation process. By turning the rich environmental structure into a presentational sign the pleromatic sign abstracts from the immediate reality while maintaining semblance to it. Through semiotic increase of that abundance the process of pleromatization leads to its opposite—schematization—which allows for the reduction of the abundance by semiotic means. At the intersection of these processes, generalized understanding of the overwhelming world emerges. It has been my intention to show how that happens both at cultural (personal) and biological levels of organization. We need the abundant, overwhelming worlds so as to overcome them—and make new ones.

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