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# From systematic semiotic modelling to pseudointentional reference

**Anti Randviir**

Department of Semiotics,
University of Tartu
Jakobi 2, 51005 Tartu, Estonia
e-mail: randviir@ut.ee

**Abstract.** Societies as open social systems work through semiotic modelling systems. We view their relevance for shaping primary and secondary needs, as well as metaneeds that are conditioned in social systems. Through conditioning in socialization, semiotic reality can be naturalized up to a level where we can start speaking about not only unconscious, but also unintentional semiosic activity. By that, the very realm of indexicality will be questioned. If indexicality is conjoined with unintended referentiality, then unintentional semiosis means the blurring and fusion of realities far beyond the so-called simulacral semiotic spaces. It is especially acute in the context of the development of technological availabilities where the physical, the semiotic, and the purely virtual reality merge. That quite novel phenomenon is exemplified by semiotic insularization. What follows is that it is hard to define the research object, for the subject is fading away, the real and the virtual are intermingling also in terms of their inhabitants (biological humans, computer users, avatars, virtual identities). Thus the pragmatic dimension of semiotics is gradually becoming lost. Also, the referential reality is moving farther from the informational space created and represented in "traditional" discursive flows, rather becoming based on pseudoreferential clues of meaning making.

**Keywords:** semiotic theory; secondary modelling systems; needs; social semiotics; sociosemiotics; unintentional semiosis; virtual reality; X-reality

This article points out certain important consequences that are relevant for novel research perspectives for the web of terms and concepts such as 'modelling', 'sign systems', 'secondary modelling systems', etc. At the same time, the goal is not to offer a historiographical overview of these terms. I aim to work out a conceptual network that constitutes the backbone of the concept of semiotic systems or

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secondary modelling systems, taking into account two objectives. First, let me try to give a view on 'secondary modelling systems' that is somewhat broader than those usually associated with the Tartu-Moscow School (TMS). Second, I propose a possible alteration in the comprehension of 'secondary modelling systems' (as the meaning of the term is rather vague) as they can be seen in the actual realm of interaction. Third, I argue that in contemporary criss-crossing of referential realities (ontological, epistemical, computational, virtual), modelling systems and the faculties of their functioning (perception, cognition) have become merged.

It has become a commonplace to associate 'secondary modelling systems' with the TMS. Comprehensive overviews of this have been offered by, for example, Peter Grzybek (1994a, 1994b, 1999), or in a narrower case, by M. Lotman (2000). The very phrasing of the concept probably comes from the TMS, but the idea of diverse levels of modelling is widespread geographically, disciplinarily, and has long temporal history and numerous roots. Therefore, I will not focus specifically on the meaning of secondary modelling systems in the paradigm of the TMS, nor do I question the original trademark of the concept as such. Rather, let me take a closer look at how the idea of various orders of semiotization has been applied in a few modes of thinking about humans, culture, society and environment. Currently, these ways of thinking are usually associated with other disciplines, but I consider possibilities of seeing an overlap between these views, and will indicate how second-order sign systems or expressions with a similar meaning open up a way for a holistic study of humans, culture, environment and society. The topic of orders of semiotization obviously has to do with both the horizontal and the vertical dimensions. That is, on the horizontal axis, when selecting a modelling system for analysis, we are to solve the issue of its borders as having to do with its adjacent allies. For example, film is surrounded by theatre, music, literature and similar fields. On the other hand, the vertical adjacency of modelling may concern the inspection of how gestural sign systems are related with tactile perception, proxemics and verbal language. Thus, the vertical juxtaposition of modelling systems can concern the possible semiotic hierarchy of sign systems and the semiotic threshold.

One of the first questions when considering modelling is if we want to model the whole, so-to-speak suprasystemic object, or just parts of it? This is hardly an answerable question. In modelling everything is concerned with everything and everything is relative. The latter statement should not be seen as a mere common-language utterance, but the topic of modelling can, in the end, be reduced to building relations in all possible (semiotic and non-semiotic) fields of cognition and perception. Instead of hurriedly revising the concept of modelling and modelling systems over and over again, especially in the limited and extremely

conditional paradigm of cultural semiotics alone, we might make the effort to trace back the idea of modelling both historically and paradigmatically. Yet that would be an extensive, if not impossible, mission, because *modelling* and the process of modelling have been labelled by a variety of terms, and discussed in every line of thought that has touched the issue of human (or other) conglomerations and associations. Let us try to consider it possible that the concept of modelling and secondary modelling systems in the TMS cultural semiotics did not emerge out of the blue but was the result of a logical development of scholarly thought in general, on a global scale. There have been extensive discussions on what modelling systems might be, and what it is that they bring along on and for the metalevel of knowledge. But: what – if any – might have been their background and parallel paradigms for cultural semiotics? And if they manifest a theoretical history, what would it entail? Would any heuristic consequences for contemporary scholarship arise? As mentioned above, the present paper does not actually give proof of the sources or roots for the culturo-semiotic account of *modelling systems*, but it brings to the fore certain background circumstances and parallel conceptions, particularly as related to contemporary sociocultural communicative situations.

It is difficult to deny that everything that can be classified amongst artefacts or conceptual units could be a model *of* something or a model *for* something (Geertz 1973: 93ff). Since models *for* something also imply being models *of* something, the modelling of some dimension of the environment performed by a semiotic subject also encompasses self-modelling or, as this is more specifically termed, autocommunicative identity discourse. By studying modelling, an analysis of either some things or models of some things is implied. In general, there is not too big a difference stemming from the choice between the object level and the metalevel. Parallelism between the object level and the metalevel has been suggested by the TMS and its short phrase 'modelling systems'. There are no discrepancies in principle between systems that model something in cultures (possibly of diverse types) and models that are made of modelling on the level of (scholarly) description. This logic has also been applied throughout (American) cultural anthropology under a slogan according to which culture can be taken both as an abstraction and as a theory (for example, Geertz 1973; Goodenough 1970; Kluckhohn 1961; Schneider 1980).

Culture and metaculture, cultural codes and descriptive metalanguages, semiotic systems and semiotic metasystems are interrelated and bound. Culture as an object of study which is composed of cultural units of various scales can be analysed by several methods and angles like art, religion, science. That level of analysis must be seen as that of metaculture(s) in relation to culture as its object. Amongst other notable inferences that follow from here it is important that

cultures and metacultures may be viewed as conditional and basically dependent on purely evaluative circumstances, being potentially subject to change in their very status. In short, according to this concept of modelling systems, the object level and the metalevel are interrelated and interdependent, and the status and descriptive value of science, art, or religion is contextual, being at least time-dependent. For example, much of what was considered scientific during the Middle Ages is seen as a matter of religion or faith today, and like many artistic trends (symbolism, cubism, Dadaism, etc.) have aimed at disclosing the actual reality behind the screen of appearances, so will contemporary scholarship be retrospectively re-evaluated in the future.

## The agency of systems

Linking modelling with systems, be it systems with things or systems of things, attention should be paid to how modelling systems have been studied under different names in diverse lines of thought. By doing so, we must keep in mind that we are not actually dealing with dissimilar 'disciplines' or with labels of individual disciplines, but with *ways of thinking*. For example, besides 'modelling systems' and their contents, it should not be too much to ask what such notions as social units, cultural units, cognitive units, semiotic units, their other alternatives and larger conglomerations (e.g. the Mind, the Self) stand for. Also, some key characteristics of modelling systems must not be forgotten. For example, a frequent claim is that modelling systems *function*. Functioning may involve (e.g., in the case of texts and cultures) generation, storage and transmission of information (e.g., Lotman 1990: 11–19). These are notions and labels that can, with evident effortlessness, be replaced with terms of quite free choice. Besides, *functioning*, even if in an implicit – or default! – manner, discloses the nature of cultural semiotics not as a structuralist paradigm, but as a paradigm capable, at least in principle, of involving *also* the study of agency and processes. 'Functioning' is a notion which leads directly to a first parallel with the 'modelling systems' of the TMS. 'Parallel' here serves as an extremely mild term for an actually both historically and conceptually preceding line of thought for cultural semiotics. Of course, I hereby keep in mind systems theory, which at the same time actually is a mild option, for it can even be regarded as a vast parallel universe for semiotics in general.

The origins of systems theory can, at least in the present context, be associated with two names: Arthur Koestler (1967) and Ludwig von Bertalanffy (1968). Koestler's ideas of the *holon* (1967: 45–58, esp. 48) and of systems as non-summative wholes constitute not merely a predecessor of Lotman's poetic re-phrasing of

the impossibility of building up a calf out of veal-cutlets (Lotman 1984: 7). Their common share is much larger, because both 'holons' and 'systems' are inevitably and immanently concerned with modelling. At first glance, we can, by and large, compare systems theory to semiotics. But is it adequate to regard systems theory as a universe parallel to cultural semiotics? Or, rather, does cultural semiotics correspond to a re-phrasing paradigm for its historical predecessor? Can we actually draw a separating boundary between the 'systems' of (general) systems theory and the 'modelling systems' of cultural semiotics? In short, I consider this to be a misplaced boundary. As I explain in more detail below, the functionality of systems in these two paradigms is measurable by quite dissimilar mechanisms. In cultural semiotics, a 'modelling system' is:

> [...] a structure of elements and rules for their compilation that are in the state of fixed analogy all over the field of the object cognised, brought to consciousness, or arrangement. Therefore, the modelling system may be viewed as *language*. (Lotman 1967: 130)

On the other hand, the essence of modelling systems has to be understood in the light of their main feature, namely *functioning*. Here we can see a quite characteristic fog of controversy in the metalanguage of the TMS, for Lotman's 'analogical language', be it natural/primary or secondary, built on natural language, ought to be a means of communication and arrangement of information in a modelling system. The definition of natural language has been symptomatically avoided by members of the TMS. Yet sometimes its communicative function seems to have been presumed, for the language of a *socium*:

> […] on the one hand unites the given socium, making possible communication between its representatives, unified reactions to ongoing events. On the other hand, it organises the very information, forming the basis of selection of facts and establishing a specific connection between them: those not described in that "language" are as if not perceived by the social addressee, they simply fall out of its field of vision. (Uspenskij 1974: 119)

From here it stems that the TMS's notion of 'language' refers both to natural language, as belonging to primary modelling systems, and to cultural language, as a phenomenon of secondary modelling. Language can be a means of communication, but simultaneously, it is used to manipulate the sensory perception of the individual as a biological organism. It can be a tool in the paradigm of a modelling system, it can be a modelling system on its own and it can also be both a primary and a secondary modelling system. Likewise, the TMS's *language* can be both

individual and social. As it does not change the game (it is not worthwhile here searching for other (vague) trials of defining 'language' by the TMS scholars), we can consider that in the TMS's paradigm the three meanings of language (*langage*, *langue*, *parole*) are in use, but they also change places and blur into each other. This fusion of 'language' as taken sometimes as a modelling system, sometimes as a tool of a modelling system, and sometimes as something else (for example, a cultural code, set of generative regulations or grammar, etc.), should not be preferred in scholarly discourse. However, I argue that, currently, the sociocultural environment and the essence of humanity has changed radically from the times of the TMS's classic period, and the metalinguistic confusion mentioned actually already meets a similar confusion on the object level.

What are, then, 'systems' for systems theory? We ought to search for a logically comparable argument from areas dealing openly not with merely open systems as such, but with those open systems that lead to the societal and cultural spheres. One of the first scholars associated with using general systems theory to describe societies was Walter F. Buckley. Buckley, discussing 'complex adaptive systems' argued that:

> […] our adaptive system – whether biological, psychological, or sociocultural – must manifest 1) some degree of "plasticity" and "sensitivity" or *tension* vis-à-vis its environment such that it carries on a constant interchange with environmental events, acting and reacting to them; 2) some source of mechanism providing for *variety*, to act as a potential pool of adaptive variability to meet the problem of mapping new or more detailed variety and constraints in a changeable environment; 3) a set of *selective* criteria or mechanisms against which the "variety pool" may be sifted into those variations in the organization or system that more closely map the environment and those that do not; and 4) an arrangement for *preserving and/or propagating* these "successful" mappings. (Buckley 1967: 63)

Buckley, as Bertalanffy before him, apparently did not – at least not in the first order of priority – distinguish between 'social systems', 'open biological systems', 'open social systems', 'complex adaptive systems' or similar concepts. What matters for the present argument is that all of these designate systems that model something. Comparably, in Juri Lotman's culturosemiotic view, modelling activity as such lies in:

> […] man's activity in creating models. In order for results of this activity to be received as analogues of an object, they must be subject to certain (either intuitively or consciously set) rules of analogy, and therefore relate to one or another modelling system. (Lotman 1967: 130)

Although not of primary importance, Lotman's more specific object field of study (literary and cultural texts) is what facilitated the inclusion of the human factor into modelling activity. In parallel, Buckley's understanding of the operating of complex adaptive systems does not, at least at first glance, imply the existence of intentional consciousness. However, both arguments are concerned with the transformation of a certain 'objective reality' into a subjective version of it. Either a system, a modelling system, a social system, or any other kind of (open) system is a holon, separable from its environment(s). This implies interaction, or at least activity, between systems and environment(s), and, in the case of higher open systems, that systems as holons are provided with a central nervous system (cf. Searle 2000). Such interaction entails modelling activity that is at least available to consciousness, and is performed with some kind of intentionality or at least according to certain habits of inference, and has been oftentimes ascribed solely to the species of *Homo sapiens* (e.g. Cherry 1975: 269–282).

There is another relevant consideration for drawing evident parallels between culturosemiotic 'modelling systems' and 'systems' in the systems theory. Buckley's discourse is focused on open social systems or complex adaptive systems.This means that through the category of (free choice in) adaptation, the moment of intentionality is involved just as the human component is switched into the definition of modelling activity by J. Lotman. Social systems are open systems that adapt to the environment. This adaptation has several important nuances: (a) adaptation to the physical surroundings; (b) semiotization of the surroundings or transformation of the physical environment into *significant environment*; (c) adaptation to the significant environment. Thus adaptation goes for the modelling of both physical as well as semiotic reality.

The theoretical development of the systems theory towards being applied to social systems meant a simultaneous development of this paradigm of thought from the study of closed systems towards open systems, open social systems in particular. Two crucial side-effects of that progress are the movements in theorizing from closed systems adapting to their physiochemical environment to open social systems and the consideration of the sociocultural dimension. The enlarging surroundings of social systems meant the multiplication of the environment: the physical or physiochemical environment is accompanied by social, cultural, political, economic, linguistic ones, and so forth. The issue does not concern the choice between environments or unidirectional movement between diverse dimensions of the environment, but the multiplication and intermingling of the above-mentioned environmental perspectives. Closed systems (e.g. mechanical, physiochemical) operate through energy flows characterized by physical (mechanical, chemical) causality, i.e., they run on such environmental

causality where 'environmental' may be understood in common language. Open social systems function to a considerable extent on informational or semiotic causality (cf. Nauta's survey of information processes, Nauta 1972: 34). The movement from environmental to informational-semiotic causality means transfer from signal semiosis to symbol semiosis, whereby between closed systems and open social systems there is room for such open systems that operate with such energetic units. Importantly, the nature of those energetic units rather depends on the metainterpreter. Such systems are in principle separated from those available to human researchers by the qualities of potential signs used:

> An important difference between signal and symbol semiosis […] is that in signal semiosis the meaning aspects, and the related functional aspects (which are made explicit in semantics and pragmatics) are not related to the standard interpreter (as is the case with human language) but only to the scientific descriptor of the process, *i.e.* the meta-interpreter. (Nauta 1972: 42)

Action based on physical-environmental causality and signal semiosis supposes observable stimuli and responses. Such signals are perceptible forms of energy. Informational-semiotic causality brings along covert behaviour: carriers of informational energy are meaning carriers. At this point 'meaning carriers' are to be rendered in the info-semiotic context (e.g. Morris, Nauta), and not yet merged with the Uexküllian paradigm. Yet in the case of open social systems, the perceptual and the conceptual are equal in the sense of always being filtered through the mind. Thus energy and information obtain a semiotically very similar, if not equal status. Apparently, this was a favourable departure point for what has been called cybersemiotics or infosemiotics, in the purpose of analysing information processors as black boxes which receive stimuli and produce outputs (or effect). Differences between the original context of systems theory and more semiotically biased approaches emerge precisely in light of the latter's understanding of information as a form of energy forged into the shape of meaning carriers. Curiously, discrepancies between the original systems theory (Ludwig von Bertalanffy in the first place) and its later siblings (branching also into semiotics) bring along interesting problems as well as solutions to the interpretation of data processors as 'black boxes'. Compared with mechanical circuits or cybersemiotic feedback loops, that black box is fundamentally of a different character, depending on where we place it on the axis 'closed system – open social system'. It certainly is, and in reality has been, very tempting to treat all ecomapping units in a similar manner, and to view them as modelling systems. Amongst other things, such a universally oriented comprehension was exactly what led to (what can be termed) radical behaviourism. By this term I refer to approaches grounded in the understanding that transactions

between a *holon* and its environment follow the scheme 'input – black box – output'. By observing the output, or differences between the input and the output, inferences can be drawn about what is semiotically and psychically happening in a given "black box". These behaviourist approaches fall short in discriminating between signal semiosis and symbol semiosis, trends allowing meta-interpretation to translate interpretation of the object level on the terms of a meta-interpreter.

Between the more or less parallel universes of semiotics and systems theory we meet a fatal combination where they touch in the middle, simultaneously with their gradual parting in research principles: systems theory has mostly been centred on the output (or on comparing output with stimuli) of interpretative systems, while semiotics has rather been concerned with the inside of the "black box". This is the point of departure for semiotics and the original systems theory: for semiotics, the sphere of the actual research target lies inside the interpreting system (be it termed Mind, interpreter, person, individual, etc.). This difference between what Jerzy Pelc (1992: 26) called 'entities interpretable as signs' and signs proper is compatible with the understanding of overt and covert behaviour as not overlapping. Ignoring this difference was one of the seeds of radical behaviourism. Attention should be paid to the point that the varied terminology referring to these two completely different realms (signs and non-signs, semiotic and physical reality, signs and signals, etc.) does not cause confusion. It does not bring along any changes to the issue at hand. Comprehension of this principle boundary coincides with the boundary between the object-level and the metalevel and helps to demarcate the research domain of semiotics. This coincidence of the boundary between physiochemical and semiotic realities, on the one hand, and the object-level and the metalevel, on the other hand, has been well articulated by Doede Nauta. It should be mentioned, though, that Nauta's observation is concerned with drawing attention to the need of acknowledging differences between overt and covert behaviour, and signs and non-signs. Nauta's scheme of semiosis is a five-fold relation: $S(s, i, e, d, c)$, where $S$ stands for the semiotic relation (in our case, for semiosis); $s$ for sign; $i$ for interpreter; $e$ for effect ($e$ also being the interpretant or the disposition in $i$ to react in a certain way to $d$ under certain conditions); $d$ for denotatum and $c$ for context. He commented:

> If one treats *i* as a black box (an open system, whose inner structure is not specified) and *s* as its input, one has to be careful not to treat *e* as the output of *i*. As a matter of fact *e* is a change in the *inner state* of the black box, involving an alteration of the pattern of future outputs of *i*. (Nauta 1972: 28)

Nauta's formulation, as he admits, is actually an elaboration of Charles Morris' treatment of the interpretant as a realization of a psychical state:

> A 'psychical state,' or even a response, is not as such an interpretant but becomes such only in so far as it is a 'taking-account-of-something' evoked by a sign vehicle. (Morris 1938: 45)

Therefore, semiosis can happen through complex intertwined cognitive practises that, as we shall soon see, are proposed as present already in John Dewey's (1896) similar but much earlier definition of sign-processes. Regardless, if sign-processes, on this account, involve consciousness, they always are intentional. Inasmuch as semiosis is a cognitive phenomenon, the behaviourism associated with Morris concerns covert behaviour and cannot be reduced to recordable actions in the physical environment. On the other hand, Morris refers to sign-vehicles as functional by certain semantical rules (Morris 1938: 45). Reaching interpretants and conditionally concluding the cycle of semiosis is thus dependent on the recognition and application of (also conditionally) crystallized relations between sign-vehicles and things that are being "taken account of".

This understanding of components in the communication chain is purely semiotic and corresponds to transfer from closed systems to open social systems as the latter are based on informational or semiotic causality rather than purely physiochemical causality. Furthermore, this transfer can also be characterized as development from information carriers to meaning carriers and further to sign-vehicles and signs. In other words, the concepts of significant environment and modelling join together not only semiotics and systems theory, but, curiously, also the semiological and semiotic paradigms. It is not that important how signs are defined in their minute details or what terms are used to label the sign's ingredients. The most important aspect as concerns the present discussion is that signs as semiotic units are conceptual entities. Signs beget their contents in people's minds on a purely psychological level as per Saussure's terminology that will be examined below. The psychological level is the starting and re-starting point for speech circuit. From there, signs travel through the physiological to the physical level, and, via the physiological, back to the psychological level.

The topic apparently has to do with that of semiotic threshold and principally different realms of reference. The issue of primary and secondary sign systems as having to do with different levels of feedback loops is central in regard to behaviouristic views concerned with explaining both overt and covert behaviour as having to do with either concrete or abstract reference, or both. Feedback loops function in diverse (above-mentioned) environmental dimensions, and are linked with the semiotic threshold as connected also with different types of needs of organisms. On the one hand, this makes the subject more complex. On the other hand, needs as such enable us to centre at open social and open systems rather than closed systems as, for example, inorganic ones.

Socioculturally rational conduct in terms of both overt and covert behaviour that takes place in diverse dimensions of the environment through both primary and secondary sign systems, is obviously based on the value system given. This understanding is directly connected with Bronislaw Malinowski's treatment of basic and derived needs (Malinowski 1944: 85–131) that can equally generally be labelled as primary and secondary needs (Abraham Maslow's theory is useful in this regard as well, as I will argue below). There can be no dealing of the latter without the former, but primary needs can eventually be socioculturally manipulated by needs and values that have to do with the secondary level. Additionally, the satisfaction of needs critically depends on understanding (equals 'modelling' here) diverse kinds of environments. Primary needs, though, can be satisfied via the agenda or means associated with secondary needs; this statement should probably be confined to open social systems in particular. At this point it is relevant to think back to Ivan Pavlov and his work that was not aimed only at explaining overt physiological behaviour in terms of unconditioned and conditioned reflexes. Eventually, Pavlov also paid attention to how the satisfaction of diverse types of needs is connected (1) with first- and second-order sign systems, (2) with primary and secondary signs systems, and (3) also with relations between overt and covert behaviour as pertaining to different levels of the informational realm.

## First and second order signs and systems

In case of primary and secondary modelling systems, it is necessary to remember an important nuance that concerns the historical and conceptual background of these notions. Since these concepts entered wide circulation (which was probably connected with the publication of *Theses of Cultural Semiotics* at the beginning of the 1970s), they have and are being treated as the TMS's original terms as if rooted in a specific geographically and disciplinarily delimited environment. Nevertheless, they have a background and historical content that had been described before, and had been developing long enough (by the time cultural semioticians started to use them) in order to achieve a considerable level of interdisciplinarity, maybe even of transdisciplinarity.

It is inconceivable that cultural semioticians of the TMS were unaware of studies in fields like psychology, psychiatry, linguistics, anthropology, and other areas that were carried out in the Russian-language space of scholarship ever since the end of the 19th century. By the middle of the 20th century, in many departments of Soviet scholarship, notions such as 'primary' and 'secondary' had been used to denote levels of modelling for several decades already. Those departments must not be taken as separate fully developed disciplines, because during those times

sociocultural phenomena were rather addressed using complex analysis, or at least from a much wider perspective than that in contemporary specialized narrow disciplines. That was a transdisciplinary paradigm for which *Homo sapiens* was a complex and holistic subject, active in its diverse environments. Accordingly, primary and secondary phenomena and levels of cognition-perception were addressed in regard to neurological, psychological, linguistic and even essentially semiotic processes. Predecessors of culturosemiotic primary and secondary modelling systems are clearly seen in Pavlov's works which, as mentioned above, could not have been unknown to scholars of the TMS during the second half of the 20th century.

Principally, Pavlov's entire work was centred on relations between conditioned and unconditioned reflexes, or, in other words, on relations between primary and secondary levels. Primary and secondary systems clearly form the red thread in Pavlov's whole work. It is thus important to maintain an awareness that his main drive for research was not merely a supposed obsession with experiments with dogs. His aims were much more ambitious and relevant, probably since the very beginning of his research:

> Essentially only one thing in life interests us: our psychical constitution, the mechanism of which was and is wrapped in darkness. All human resources, art, religion, literature, philosophy and historical sciences, all of them join in bringing light in this darkness. But man has still another powerful resource: natural science with its strictly objective methods. This science, as we all know, is making huge progress every day. The facts and considerations which I have placed before you at the end of my lecture are one out of numerous attempts to employ a *consistent*, purely scientific method of thinking in the study of the mechanism of the highest manifestations of life in the dog, the representative of the animal kingdom that is man's best friend. (Pavlov 1904)[1]

Referring to conditioned and unconditioned reflexes, he usually called them primary and secondary sign systems only implicitly or in a roundabout manner, but there still are some concrete notions. For example, he mentioned primary and secondary signal systems (e.g. in Pavlov 1967: 162–165). Mutual relations between Pavlov's and the Pavlovian discourse, on the one hand, and cultural semiotics, on the other hand, deserve longer individual treatment. The association of Pavlov with strictly zoological-neurological studies is extremely superficial. His research having been based on animal tests does not alter the fact that one of Pavlov's

[1] Pavlov, Ivan Petrovitch 1904. Nobel lecture: Physiology of digestion. *Nobelprize.org*. Nobel Media AB 2014. Retrieved from http://www.nobelprize.org/nobel_prizes/medicine/laureates/1904/pavlov-lecture.html on 20 Dec. 2017.

goals was the description of relationships between the biological being and the environment in general and in principle. What could be the functioning of the higher nervous system of humans, how can results of experimental non-human animal tests be applied (but not extrapolated!) to the study of human animals? Such questions arise often in Pavlov's work, leading to discussions about sign systems characteristic of *Homo sapiens* only. We might recall an excerpt from Pavlov's argument that in a curious and significant manner links with Thomas A. Sebeok's (1988) similar thoughts on the grading of modelling systems:

> There arises in the developing human an extraordinary perfection, the signals of the second order, the signals of the primary signals in the form of words – the spoken, the heard, the seen word. (Pavlov 1967: 162)

The Pavlovian discourse is in principle important for culturo-semiotic conceptions, for it involves the topic of reflex behaviour including, for example, cultural automatisms, creativity, emergence and usage of stereotypes and the similar. In principle, there is a need to replenish the scientific and historical contents of primary and secondary modelling systems. For example, issues relating to the so-called primary and secondary needs, or animalistic and cultural needs, seem to have switched to being concerns rather belonging to the area of research of (cultural) anthropologists. Thus, this topic, which was dealt with by Malinowski, reinforces the link between the Pavlovian discourse and cultural semiotics. Malinowski acknowledged and referred to Pavlov's relevant works (e.g. Malinowski 1944: 133). Beyond cultural semiotics, it is clear that, once more, we face a line of thought leading to *relations* and *the Mind*. That is, when trying to describe relations between the semiotization of the world and (spatial-environmental) behaviour, these aspects and processes cannot be understood in a behaviourist interpretation of overt behaviour, but in the semiotic developments and changes that take place in the psychological faculties. It is exactly the semiotic behaviour and semiotization of the world for which the works on primarity and secondarity of, among others, Pavlov and Malinowski, form an important background that enables grasping the behavioural irrationality of individuals and societies or rather, comprehending the relativity and context-dependence of rationality up to the level of problems in intercultural communication.

The distinction between primary and secondary sign systems is much wider, older and more transdisciplinary than suggested by the Tartu-Moscow cultural semioticians. However, this does not mean that cultural semiotics would obtain the status of so-to-speak niche semiotics. Rather, even when adding a perspective on modelling systems of more than two levels, as done in Sebeok 1988, ideas on

the essence and levels of modelling connect perspectives in humanities and social sciences, while also disclosing ties between semiotic and semiological trends in the study of signs and sign systems. Clearly, these connections concern also such logic and levels of modelling that have been articulated in the concepts of umwelt, linguistic reality and semiotic reality. These three levels unite and possibly cohere semiotic activities on the biological, individual and sociocultural scales, having sometimes found synchronic treatment through concepts such as, for example, *Lebenswelt*, social reality, society, mundane reason, logical universe of discourse, semiosphere and others.

Although starting off from the sphere of physiological studies and the animal kingdom, Pavlov's efforts seem rather to have been aimed at vivisecting the human's *Mind* in its mental processes and functioning from the beginning. This can be confirmed on the basis of his lectures (Pavlov 1941), and was poetically articulated for the first time in Pavlov's Nobel lecture:

> It is not accidental that all phenomena of human life are dominated by the search for daily bread – the oldest link connecting all living things, man included, with the surrounding nature. (Pavlov 1904)

It would be enlightening to allow 'daily bread' to be interpreted in a wider perspective, maybe even to replace it with the notion of energy from systems theorizing. That provides a clear view of Pavlov's aspirations. From the viewpoint of the humanities or the social sciences, 'energy' may be associated with natural sciences or faculties distant from the social and cultural activity of humans. Yet that is definitely not the case, since 'energy' can be quite explanatory for describing the transformation of power into diverse types and shapes of *in*-formation. Energy does not consist in the kinetic dimension alone. Rather, it can have several. We agree with Richard Adams in that there is "no problem in conceiving of coal or petroleum as energy forms" (Adams 1988: 15). However, especially in a semiotic context, this article also agrees with his claim:

> […] we also regard human beings, human behavior, social groups, and assemblages of social interaction as energy forms. Similarly, mental processes located in the brain, writing on paper, and soundwaves in the air are also energy forms. […] Each has potential or kinetic energy. (Adams 1988: 15–16)

In this light, it is perhaps important to acknowledge that physical or chemical energy can be transformed into texts (written, behaved, pictured) that contain and produce information. That is, energy is altered into forms that are *in*-formative

in three senses: these forms both (1) contain and (2) produce information and, (3) as information bearers, they transmit information, obtaining again the status of energy that can be used for the production and maintenance of information. Therefore, primary and secondary sign systems are involved in and form informational circulation systems in terms of the transformative stages of energy. To put it bluntly: whenever primary sign systems, such as natural languages, are transformed into, for example, written texts, the latter prepare ground for the production of new information in natural languages on the level of primary sign systems. Not even too humorously, after such artefacts as texts on paper or on other material have been recycled, they obtain the form of energetic material that can, after physical and physiological consumption, be used for the production of yet another cycle of information generation on the level of physical and chemical energy as basis for (novel) sign systems. Hence, why not add such a perspective and its emotional aspect to the theme of book burning (since medieval times up to today) and demolition of artefacts or the Parsonian 'cultural objects' (e.g. destruction of ancient cities by the extremist group ISIS)?

This culturosemiotic view can be significantly more comprehensive on the level of sign systems as *sign* systems by extending it with a Pavlovian perspective. This will be aided by considering an even simplified understanding of conditioned reflexes. Physiological reflexes are reactions to forms of energy on the primary level as the potentiality of *in*-formation on the secondary level. On the primary level, food for a dog is a form of energy for the production of potential expectations associated with certain characteristics (smell, material, visual form) that may start influencing the dog's future behaviour both on the conscious and unconscious levels of intentionality. After having successfully been established as stimuli for conditioned reflexes, food's accompanying signals turn into secondary signs that work as representations of stimuli on the level of primary sign systems. This logic seems to be of utmost importance for *Homo sapiens* as well, especially when connecting conscious and unconscious, intentional and unintentional, individual and sociocultural behaviour, behavioural individualities and behavioural automatisms. In this line, Pavlov's explanation of (human) behaviour is related with communal behaviour in general, especially when keeping in mind totalitarian societies as such, and regarding not only administrative-political regimes, but also others (religious, cultural) that have to do with their impact on public informational space. This, however, remains outside the scope of the present article.

Thus, there are numerous links between the specifically culturosemiotic view on sign systems and Pavlov's conceptions. Besides aspects concerning the (elementary) levels of sign production, there also exist significant ties between

his ideas of the primary and secondary sign systems as having to do with the developmental levels of sign production as treated *both* in semiotics and psychology. In semiotics, or more exactly in semiology, it is common knowledge that sign processes are completed on three levels: the psychological, the physiological, and the physical (Saussure 1959: 9).

On the other hand, semiosis concerns the resolution of the semiotic potentiality on the levels of Firstness, Secondness, and Thirdness, as maintained by Peirce. This is a very interesting interplay of forms of energy and information on diverse levels. From the viewpoint of systems theory and informational semiotics (and cybernetics) decisive feedback loops are created on and in between these dissimilar semiosic levels. From the viewpoint that leads further and farther into the sphere of psychology, the strong semiotic basement of various treatments of human psychological development across numerous psychic levels is inferred. We can recall the roots of describing the shaping of the human social mind and psychological development in the original logic of Pierre Janet that was and has been developed by several scholars, most notably Jean Piaget.

Thirdly, or in parallel, if we would choose a manner of describing the development of the TMS from the original working notion and research object of *text* towards the notions of primary and secondary modelling systems, Piaget's description of movement from primitive concepts towards scientific concepts and explanations becomes particularly useful. Janet's and Piaget's (and their followers') understanding that such development can occur in a pre-established semiotic and social (and scientific) environment is remarkable. Yet while taking into account the very complex background of the TMS's primary and secondary modelling systems as linked with ideas of Pavlov and Malinowski, and binding that set with ideas about the ontological development of psychological skills, it is important to presume the intermingled essence of cognitive and sensory processes, semiotic and psychological departments of the Mind. Adding to these complex topics entailed in Sebeok's proposition of seeing levels of modelling in at least a threefold hierarchy, we probably should not rule out that all these issues are not only intermingled, but also mixed and even messed up, especially in the contemporary stage of the civiliographic development.

## Reflex – gesture – mindful behaviour

Semiotics, semiology, psychology, the main principles of systems theory and their intersections have all touched upon the issue of primary and secondary sign systems and the relevant stages or layers of semiotic development of open

systems and open social systems. Charles Morris could be regarded as an insightful addition to the treatment of hierarchical sign systems, even though his works have not been considered in this regard. He is a key figure for the institutionalization and legitimization of contemporary semiotics, as well as a facilitator of fundamental ideas of modern (developmental) psychology. He connected the semiotic and the psychological lines of thought (it was him who mediated George Herbert Mead to wider public), like the Eastern and Western paradigms of culturological and psychological ideas.

Describing most general working principles and areas of diverse types of signs, Morris discussed primary and secondary uses of signs and connected the topic with that of intentionality. Morris disclosed the nature of signs (specifically designators) in terms of their usage: "[…] over and above their primary and secondary uses they may have a number of individual and social effects or consequences which they are not intended to attain" (Morris 1946: 94). He introduced an illustration of systems – at the point of artifacts such as mechanical engines. Morris (1946: 94) tells us:

> Each type of engine has, further, certain functions which it is normally used to perform, and these are its primary uses. One type of engine may however under certain circumstances be used to perform the task for which another type of engine is normally employed, and this would be among its secondary uses. Other secondary uses would be to increase the income of the owner of the machine or to serve in an exhibit of various mechanical appliances.

Obviously the example can be extrapolated to other fields, including semiotic units as well. Morris (1946: 94) realized this:

> The case of signs is parallel: kinds of signs may be distinguished in terms of what they signify, their primary and secondary uses considered, and the effects of their existence upon the users of signs and the cultural complex in which they operate studied.

At least the following very important associations or consequences are to be observed hereby. First, in connection with intentionality, we really are to remember that primary and secondary uses of signs may be based on unintended behaviour. That is, communicative agents may not be aware, or may not be quite totally aware of the semiotic level or paradigm of meaning they are acting at. In the simplest words, communicators may not even be conscious of whether they use the denotative or the connotative level of the meaning of signs. In addition to the latter, other possible facets of signs may be involved when thinking of the

numerous diverse types of signs Morris himself distinguished (Morris 1946: 72–91). Both aspects are multiplied when we associate primary and secondary uses of signs with the Pavlovian discourse and the more or less unconscious level of behaving in terms of Pavlov's first order of signs as having to do with bio-physiological level, and his second order of signs that may involve also the factor of conscious behaviour.

The second inference comes from the first, and tells us that differentiation between primary and secondary uses of signs may not be that easy, for the "effects" resulting from semiotic behaviour should not necessarily be regarded as immediate or discernible in overt behaviour. This conclusion is in obvious accord with Peirce's concept of the interpretant (CP 2.228) as having to do with influence on the *semiotic* behaviour of people. The effect influences the generation of interpretants, and thus may concern merely covert, or additionally also overt behaviour. This has been noticed also in informational semiotics (e.g. Nauta 1972), and has important consequences for thinking of systems, especially open systems, as dynamic transformers of energy and information.

Third, when seeing cultural semiotics in the light of a historical ideative combination of systems theory, Pavlovian discourse, semiotics as transported to modernity largely by Morris, and maybe other ideas and thinkers, there appears an interesting nuance that goes beyond mere disjunction of cultural semiotics and rigid structuralism (structuralism as still a frequent association with cultural semiotics). Let me connect Morris's very lucid opinion on secondary uses of signs with a more general view on semiotic systems from the perspective of systems theory. This logic leads to viewing parts of a system as *functional* units that have been (and/or are) designed to contribute to achieving certain common or general goals. In terms of both systems theory and semiotics (including semiology), as well as eventually also of psychology (e.g. levels of development) this means movement towards conventionality or the arbitrary essence of parts of a system, as also of relations between both parts and the system and parts themselves. Parts of a system become replaceable with each other and possibly by imported units in the perspective of a specific function of the general system. This brings along a justified comparative quest in connection with relations between semiotics and systems theory: maybe Lotman's veal-cutlets can be integrated and reanimated as a calf after all?

The issue of first- and second-order use of signs as connected with intentionality concerns virtually all treatments of modelling and levels of modelling mentioned: where the lower limit of sign-processes is, and how we could detect it on the basis of overt behaviour, beginning from, for example, natural language. The interpretation and understanding of the semiotic threshold determines the

logical contents of signal processes and symbol processes and the relevant semiotic units. Therein lay also answers to relations and differences that concern inter-species specific communication and the nature of feedback-loops in different types of systems. And, of course, those answers also open opportunities for relevant semiotic studies that could overcome (conditional) boundaries between 'anthroposemiotics' (Wuketits 1997) and other fields of semiotics. Morris, in connection with Pavlov's idea of language as "a whole system of symbols for the more direct signals or conditioned reflexes", takes a different – at least at first glance – stand:

> […] since on our usage not all conditioned reflexes involve signals, Pavlov's view does not necessarily support the position that all language signs are symbols in the sense in which we have defined the term. (Morris 1946: 253–254)

Here the modifier 'necessarily' seems to deserve attention for more than just one reason. First of all, language signs do possess a physical form – either visual or vocal. Even on the purely psychological level of language signs where the combination of concepts and sound-images takes place, the latter have been embedded in the mind as a result of internalization of some external stimulus or stimuli. Relations between signals and symbols, conditioned reflexes and language signs concern results of resolving the semiotic potential in different energy forms. At this point it would be easy to sway into discussing terminological matters, relations between signs, signals, symbols, sign-vehicles and the like. These issues are of course important, but not essential at the moment. What is more important is the nature of the semiotic threshold, relations between energy and information, the essence of diverse forms of energy and information, relations between the physical and the internalized reality. Combining these issues and the intertwined paradigms of both the topics discussed and authors already mentioned, Mead's conception of *gestures* becomes relevant here:

> The gesture is that phase of the individual act to which adjustment takes place on the part of other individuals in the social process of behavior. The vocal gesture becomes a significant symbol (unimportant, as such, on the merely affective side of experience) when it has the same effect on the individual making it that it has on the individual to whom it is addressed or who explicitly responds to it, and thus involves a reference to the self of the individual making it. The gesture in general, and the vocal gesture in particular, indicates some object or other within the field of social behavior, an object of common interest to all the individuals involved in the given social act thus directed toward or upon that object. (Mead 1937: 46)

In the case individuals reach the level of successful trade of gestures, gestures become a language. Thereby, gestures are seen as somewhat elementary units in the communicative act, being – importantly – of (potentially) abstract nature. Gestures are separable elements in the social act and exist as such not only for a single individual, but are meaningfully valid in a certain communal setting. Also, gestures are subject to the process of learning, since their usage is repeatable and repeated, and again – in the social context. The gesture is social, activated in a communicative act, and by virtue of being repeatable, can simultaneously be drawn out of every singular interactional performance as an individual entity with (an abstract) meaning:

> What, as it were, takes the gesture out of the social act and isolates it as such – what makes it something more than just an early phase of an individual act – is the response of another organism, or of other organisms, to it. Such a response is its meaning, or gives it its meaning. The social situation and process of behavior are here presupposed by the acts of the individual organisms implicated therein. The gesture arises as a separable element in the social act, by virtue of the fact that it is selected out by the sensitivities of other organisms to it; it does not exist as a gesture merely in the experience of the single individual. The meaning of a gesture by one organism, to repeat, is found in the response of another organism to what would be the completion of the act of the first organism which that gesture initiates and indicates. (Mead 1937[1934]: 145–146)

Thus, gestures can also be seen as a transitory phase in the semiotic evolutionary range from mechanical-chemical energy to information of purely semiotic essence. It is important that the semiotic core of gestures depends on the social context – this leads logically to the ideative concept of culture and society, although it was discussed by Mead and other scholars under the notion of Generalized Other (Mead 1937: 152–164) that, amongst other things, is also "the seat of the self" (Mead 1938: 193). Evaluating and making decisions about the semiotic essence and the scale of the meaning of gestures, as well as other second-order signs, bring forth a highly interesting link between diverse semiotic systems that use 'conditioned units' as the target of study. While Pavlov's work is traditionally associated with the study of 'reflexes', Mead's logic of gestures is explanatory also for understanding Pavlov's own and the Pavlovian discourse in general as having the Mind for the eventual goal of research. Mead, of course, connects the notion of conditioned reflexes with the faculty of consciousness to reach human semiotic behaviour as symbolic:

> The symbol is thus more than a mere substitute stimulus – more than a mere stimulus for a conditioned response or reflex. For the conditioned reflex – the response to a mere substitute stimulus – does not or need not involve consciousness; whereas the response to a symbol does and must involve consciousness. Conditioned reflexes plus consciousness of the attitudes and meanings they involve are what constitute language, and hence lay the basis, or comprise the mechanism for, thought and intelligent conduct. (Mead 1937: 122)

Of course, it is a specific issue how consciousness and intentionality connect here with each other, but clearly human semiotic behaviour comprises conditioning reflexes both of first- and second-order sign systems. In so doing, also the individual and the social are combined, and in such habitual behaviour we must additionally take into account the human practise of self-conditioning as leading, in combination with sociocultural conditioning of symbolic and other conduct, to the Self as a result of reflexivity. Reflexivity, in this sense, fully deserves attention as a matter for heuristic word-play pointing both at first-order reflexes and intentional self-conditioning in the use of second-order signs such as symbols. Likewise, reflexivity points at the role of consciousness at self-conditioning as comprising also the conditioning of the Self.

Yet another remark should be made in connection with gestures. Gestures may be regarded as merely potentially semiotic units of communication, and they can also be seen as developed in the course of interaction. They can be taken to the level of abstractness that is connected with the societal scale, and logically also with the process of learning. That is another connection with the 'natural' and the 'cultural' sign systems, because in the vocabulary of systems theory, there comes forth a new fundamental ground for objective study of second-order signs (or secondary sign systems, semiotic systems, etc.) as related to the pretty much undisputed study of first-order sign systems as understood by Pavlov. That heuristic link can probably best be illustrated by the concept of anomic behaviour as brought to wider public by Émile Durkheim in 1897 (Durkheim 1966). Studying aberrant or deviant behaviour is usually seen as based on quite objective and observable facts that can be patterned and explained, and even repaired and re-socialized with practical considerations in mind. As a possible attempt of so-to-speak semiotic reverse engineering, it would be logical to try to apply a similar approach also to "gestures" of a diverse semiotic range.

Obviously, when looking at the several levels of the semiotic potential of gestures simultaneously with their character in terms of exchange (and change) of 'energy' and 'information', Saussure's soundwaves as forms of kinetic energy belong to the forefront of attention. If soundwaves as a form of kinetic energy bear semiotic information, they *also* serve as primary sign systems forming ground for further

solution of semiotic potentiality. This can, perhaps, be at simplest exemplified by cases of soundwaves that end at the psychological level as interpreted possibly differently from the addresser's intentions. Such misunderstanding that results from the interpretation of meaning-carrying energetic stimuli into entities of *different information* in the semiotic sense seems, however, to be one of the most innocent cases of discrepancies between the coding and decoding of messages. Much deeper issues lay behind the motivational background of gestures, and the dynamism that concerns them being either conditioned or not conditioned as responses to basic and derived drives in Bronislaw Malinowski's (1944) terms. Mead himself made it rather clear that gestures can be of diverse degree of semioticity, and Malinowski's view on basic needs and derived needs repeats the complicated nature of relations between behaviour in the umwelt and in the sociocultural reality, as it were. The road between the bodily and the cultural, between the conditioned and the unconditioned, between the perceptional and the cognitive, is bidirectional: "symbolism, in its essential nature, is the modification of the original organism which allows the transformation of a physiological drive into a cultural value" (Malinowski 1944: 132). Furthermore, or maybe just in different words, circulation between energy and information, and between different forms of energy and forms of information, seems to be in an evident connection with the Peircean discourse on levels or stages of semiosis (in terms of the '*-nesses*'; CP 3.422) as also with the very build-up of the 'ground' for sign-creation (see CP 1.551). Curiously, it seems that especially in today's global processes and diverse virtualities we eventually reach the situation in which it will be quite difficult to discriminate between energy and information as it used to be pretty habitual in the systems theory or informational/cybernetic semiotics.

## Crystallization

Primary and secondary sign systems or first- and second-order systems must, obviously, be handled in a certain coherence based on their logical affinity. In the context of semiotics, more specifically in cultural semiotics, secondary modelling systems are treated as those semiotic systems that are based on natural language. In the traditional semiotics of culture, it is hardly the case that explanations of *primary* modelling systems could be met. In the culturo-semiotic original usage, primary modelling systems do not exist in plural, since the foundation for secondary modelling is simply natural language, and the latter is not paid too much attention in semiotic terms other than as already connected with linguistics and linguistic semiotics in particular. Yet being hardly able to find other implicit

definitions of *the* primary modelling system as referring to natural language, one of the most straightforward characterizations of secondary modelling systems is the following:

> The systems that are founded on natural language and that obtain additional superstructures that form a second-order language, can conveniently be called secondary modelling systems. (Lotman 1967: 131)

Although being a third definition and the last in a row (the first two were published in 1965), it shortly and neatly sums up the culturosemiotic conception of hierarchical modelling. Any kind of understanding of semiosis and semiotic processes as describable on several levels obviously presumes some kind of connection between them and it can hardly be imagined how grading semiosis could avoid the concept of hierarchy (cf. Sonesson 2009). Connections between sign systems of diverse levels entail certain similarities of semiosic processes going on in them. Whereas the culturosemiotic approach merely speaks of secondary modelling systems as based on the primary one (natural language), Pavlov was very straightforward in his discourse which departed from the assumption that we can speak of first-order signs and second-order signs as reflexes and conditioned reflexes. It is clear that one of the main prerequisites making it possible to speak about cultural spaces or semiotic realities consists in connections and links between cultural sign systems, or secondary modelling systems in the language of the TMS. These links concern both the grammar (or regulations for using sign systems), the vocabulary available for expression, and semiotic units or conceptions available for the members of a socium. This understanding has been accepted and routinized in intertextual, intersemiosic cultural analysis dedicated to the wide palette of cultural activities.

Still another issue concerns connections between diverse *levels* of modelling. Hereby it is even not important how to name them – primary and secondary modelling systems, or primary, secondary and tertiary sign systems, or umwelt and *Lebenswelt*, or first- and second-order signs. Thinking about the formation of systems in general, one process in the set is crystallization. The term is usually associated with hard sciences where it is used to describe certain processes in nature. Generally put and in a common-sense understanding, the crystallization process consists of nucleation and crystal growth. The concept has been adopted in the study of humans, culture and society as well, and on a considerable scale. When thinking about systems that are semiotic in their essence, we cannot avoid the notion, and importance, of crystallization. Yet in the context of semiotics and other essentially semiotic ways of theorizing, the meaning of crystallization

becomes at least double. Perhaps firstly and mostly and most importantly, the concept of crystallization is used to describe relations between certain items or groups of items in a manner in which they so-to-speak confirm each other. First, in the process of crystallization relations between diverse realms merge and combine; crystallization fixes realities of different kinds. In most general terms, these realities may concern Karl Popper's three worlds and interaction between them (see e.g. Popper 1972: 153–165).

Second, mutual interdependent reasserting of and drawing on one another can also occur between environments of miscellaneous kinds, e.g. the social, the geographic, the cosmological and the cosmogonic, and so forth – as is the case with world-views following strict principles (e.g. anthropomorphism, Christianity). By and large, crystallization holds for different dimensions of semioticized realities, and first and foremost for issues of processes and levels of meaning-making itself. Sharing views on the logic of modelling involved in various treatments of man both as a biological and a cultural being, it is easy to see how levels of semiotization unite semiotics with systems theory even by Pavlov's idea of conditioned reflexes. The latter can be understood as simultaneously the foundation and prerequisite for crystallization of semiosic relations at any given level of semiotic systems.

Third, for semiotics, crystallization has also been about relations between semiotic realities and relationships between sign-users. That is, between the social and the individual share of sign systems and the usages of the latter. Saussure, one of the founders of contemporary semiotics, treated crystallization in depth, although he quite rarely used the exact term. For him, the essence of crystallization was the following:

> Among all the individuals that are linked together by speech, some sort of average will be set up: all will reproduce – not exactly of course, but approximately – the same signs united with the same concepts. (Saussure 1959: 13)

Such a somewhat levelled, institutionalized view on semiotic competence of associating sound-images and concepts in a socium can be seen as the fourth aspect of crystallization important for the present context. Asking questions such as how the social crystallization of language comes about, or which parts of the circuit are involved (Saussure 1959: 13), Saussure's logical conclusion was that the responsible faculties concern natural language and its active use in speech communities. The essence and structure, the grammar of a language can be studied through the speech circuit which was one possible elementary research unit for semiology. It is (maybe one of) the elementary unit(s) of which and

from which semiology can obtain data through actual observership (notice, of course, an apparent comparison to the 'pragmatic dimension' of semiotics), allowing semiology to diverge explicitly from merely philosophical theorizing, and to approach social sciences, maybe even sciences in general. Of course, this is arguable in the sense that semiotic research *is* essentially scientific, as opposed to philosophizing – in principle, has been so ever since the beginning. So again – for Saussure, the speech circuit consisted of three main levels or stages, from among which the psychological one was the most important. It is exactly the psychological level on which the construction of signs takes place. So again there emerges the conviction that *all begins in the Mind* where in Saussure's view sound images and concepts become glued together in the process of sign-building. The associative and coordinative "faculty plays the dominant role in the organization of language as a system" (Saussure 1959: 13). Thus speech circuit can be seen as a kind of an earlier reflex arc (cf. Dewey's reflections on this below), or now a societal method and practice to crystallize second-order signs and sign systems in systemic processes of interpersonal (and also autocommunicative) conditioning.

Crystallization is exactly what makes a modelling system distinct and what makes a modelling system a detectable unit or a *holon* in terms of systems theory. Crystallization is essential for maintaining the stability of sign systems, while an important feature of those systems is them being institutions with significant inertia. Amongst other nuances, this means that crystallization is a process responsible for the formation of signs, and – to recall the scientific aspect of crystallization – also for the establishment of paradigms of denotative and connotative relations between concepts. The third moment hinted at the importance of crystallization of the semiotic reality and articulation devices as sign systems – this is what binds individuals into societies with ideas about common communicative reality and manners of communication.

Interestingly, there is also a fifth aspect concerning crystallization. This is simultaneously a separate nuance, a feature binding the first three aspects together that also has an impact in the sense in which Popper treated a certain unity, or at least a communal strive for unity, between the three worlds of the human meaningful realm. Vilfredo Pareto, as one of the founding fathers of contemporary humanities, social sciences and sciences who has largely been forgotten by now, treated the process of crystallization as determining relations between sign systems and the external reality, so to speak. More exactly he was concerned with the relations between languages, metalanguages and facts, basically preceding Popper's above-mentioned discourse for decades. Talking about relations between words and facts in theorems, Pareto (1935: 60–61) says:

> Ordinary language crystallizes and preserves them, and it is there that we can recover and use them, but always with the reservation that, roughly approximative and true only within certain limits (which as a rule are unknown to us), they become false outside those limits […]. Such theorems are theorems of words rather than of things […].

It is clear that whilst the problem of crystallized relations between concepts, words and things already concerns metalanguage, it is even more acute on the level of natural language as a modelling and expression device in societies themselves. The nature of natural language as misleading in its inherent proposals for treating diverse environments extends the realm of linguistic units and also applies to the unification of social, economic, cosmological, geographical and many other realities. The unification of meaningful environments and enlargement of the areas of their semiotic overlap indeed increases the coherence of the semiotic reality, but also of the latter and the geographical and biological reality. However, unfortunately it oftentimes does not mean expansion of the three worlds (the physical, the mental and the representational-theoretical) in Popper's sense, but leads exactly to the state Pareto warned us about: the worlds of signs, things and objects get mixed up. At the milder end of the scale self-referential loops of the so-to-speak reality-pseudo-check might then occur that may be built on the diverse dimensions and spheres of sociocultural reality, while at the more severe end of the axis there quite weird examples can be found of trying to adjust the physical world to the theoretical, or even to the more individual mental world. Adventurous undertakings from recent history can serve as examples here, e.g. the attempts by the Spanish conquistadors to drain Lake Guatavita in order to reach El Dorado in the 16th century; or the so-called Four Pests Campaign in China; or even "improving nature" by the Soviets when they realized the "uselessness" of Siberian rivers flowing into the Arctic Ocean with no economic benefit and made plans to reverse the flow of those rivers.

Another aspect of crystallization of ties between concepts and sound-images extends the level of signs themselves and goes for utterances, predicates and predicate subjects. There exists an effect that has been ascribed to natural language and is called systematic misleadingness which means the fusion of reference targets that has, by default, as if been suggested by natural language itself. That is, in the expression of opinions, evaluations, "facts", we oftentimes witness self-reference and self-characterization of the utterer(s) instead. However, our problems are not limited only to that "the world is no longer the world of our immediate sensations"; nor only that "it is as if language were a great seducer disguising "reality"" as suggested by Floyd Merrell (Merrell 1995: 30; 30ff). Besides evident cases of

bending the discourse and the sphere of reference by connotation or modalization, joking, irony or other techniques that mostly depend on the communicational context, the very syntactic and even lexical dimension of language follows much more hidden and devious paths. We are not any more in the realm of argument concerning correspondence between references, facts and expressions, or that of truth and falsity, or that of deceit and fiction reaching back to Augustine (for the latter, see Gramigna 2018: 145–193). Fusion of the ontologically objective and subjective, epistemically objective and subjective, and purely virtual references nevertheless starts off from the level of natural language. One of the best-known authors who started to treat this subject, Gilbert Ryle, describes systematically misleading expressions via examples in which, while seemingly speaking about the world (including both physical phenomena and cultural units), we are actually often speaking about ourselves or several other possible predicate(d) subjects – about everything else but the explicitly seeming target itself. Ryle discloses the fusion of reference spheres by cases like "Jones is popular", which is not about the predicate subject appearing in the utterance, but rather describes those people and their evaluation standards amongst whom Jones is popular (Ryle 1992: 98). Of course, much more devious circumstances are involved with the so-to-speak artificially created reference objects. The latter, however, appear oftentimes as taken for granted in daily discourse and include probable objects and fictional or artificial constructs such as 'devil', 'capitalism', 'communist', 'fake hero', 'unicorn' and the like. Cases of higher complexity apply to differentiating between real facts, probable facts, impossible facts or objects. These have to do with matters where logic, linguistics, social reality and cultural logic intersect; these issues have found treatment throughout social sciences and humanities and can at present be found already in quite foundational works. For example, Pareto, when he discussed John Doe's ability – and the relevant linguistic and logical rates of possibility – to dine with his head cut off, was speaking of virtual movements exactly in the sense of how powerful natural language's impact is on social facts in terms of determining 'classes of possible things' and 'classes of impossible things' as they appear in logical and non-logical conduct (see Pareto 1935: 69).

The systematically misleading nature of natural language and the logic of the creation of social facts means that crystallization appears in the management of the semiotic reality in daily speech and behaviour. We bind the representamens we use not only with objects (at least seemingly) objective, but also with the more or less determined interpretants. This binding, in turn, means that we are tied to the realities of the sign systems we use and, by this, crystallization goes hand-in-hand with the logic of self-reference. Crystallization and self-reference do not only make communication possible, but support also economization of communication. Yet

a side effect is cutting off the semiotic bloodstream of societies from the outer environment and other semiotic communities and even realities: enhanced internal semiotic flows cannot in principle cope with fighting against entropy, at least not in the long run.

## Integration of out(-there-ness): non-pathological deviance

Clearly, crystallization of sign systems as combined with self-referentiality cohering, yet simultaneously dooming, sociocultural systems has to do with the inherent prerequisite of semiosis in sociocultural systems as being infinite, in Charles S. Peirce's explanation (now, instead of Peirce, see Tomaselli 1999: 131–136). Thus, just as regularities in the process of infinite semiosis can be seen as mere stop-overs in the overall long-term semiosic activity, there must be ways of breaking the crystallized structure and self-referentiality in sign systems as such and in general.

Aside from the unification function, the – mildly spoken – stabilizing effect of self-reference for sociocultural systems has been expressed in the work of Claude Lévi-Strauss (e.g. Lévi-Strauss 1968[1963]) who pointed at the principle of crystallization on a wider scale. Diverse sociocultural spheres and topics can be in structural, often isomorphic, correspondence. Thus the inertia that makes semiotic systems socially stable and usable as institutions sometimes finds embodiment in the organization of artefacts up to the level of settlement organization. There are institutions and structures that "offer an opportunity to study social and mental processes through objective and crystallized external projections of them" (Lévi-Strauss 1968[1963]: 292). Furthermore, in Lévi-Strauss's studies we can witness spatial structures of settlements representing understandings of a socium of its various social divisions like gender, age, labour, marital status, physi(ologi)cal state. Likewise, nutrition and food preparation habits could be in correspondence with the structure of a village. In semiotically even stronger expression, Lévi-Strauss claimed that spatial structure is the crystallization of a society's sociocultural reality: the social, cultural, cosmological, cosmogonic and other often potentially purely semiotic structures have been articulated in spatial structures. The positive correlation between mental processes, be it either on the social level or on that of the individual, and the physical environment the given socium has shaped, applies to both a settlement's general plan as well as the architecture of individual buildings and houses (see Lévi-Strauss 1968[1963]: 292ff; for relevant spatial studies see Lagopoulos 1986).

Curiously though, seen from another angle, crystallization is a phenomenon and concept that unites diverse levels of integration described by Pitirim Sorokin (1957). Without crystallization there can be no communicative interaction between individuals, and without communication and communization of reality social conglomerations proper cannot form. Negotiation of reality and semiotic reality, just as continuous making and remaking of agreements on the *proper* use of sign systems, is the core of sociocultural systems as integrated wholes. Creation of *out-there-ness* (Potter 1996: 150–175) can be treated as a process leading to stable, even stagnant semiotic realities, but the possible element of innovation in this practice should be kept in mind as well. Negotiation of what is "really out there" is not merely concerned with the so-called distanced footing of one's position on the creation and presentation of *facts*, but should also involve the presentation of what is really out there as discovered by the members of a socium. Such discoveries and re-discoveries may hold for diverse kinds of entities physically both inside and outside a given society, culture and their environment. In the era of modern information technology and global information networks, also taking into account the impact of marketing in consumer society, "out-there-ness" probably also implies the creation of several pseudorealities. Those can entail, for example, realities that react to current affairs in market situations, and apply both to virtual realities in the sense of postmodern simulacra, and to virtualities created in the virtual realm of computers and the internet; we can even think of 'the Internet of things' – what, truthfully, ought to be taken as its referent? Obviously, the case is no more about simply dealing with gadgets switched into communicative networks, virtual monetary systems, gadgets generating messages in networks without direct human help, or crossing realities (x-realities). In this sense it cannot be presumed by default any longer that semiotic units can be divided into sets such as object – representament – interpretant, signifier – signified, or signs and referents, where, according to Göran Sonesson's five-point summary of the properties of the sign, "the referent is more indirectly known than any part of the sign" and the sign as a whole is "relatively independent of that for which it stands (the referent)" (Sonesson 2009: 138). The problem is that we are no more dealing with the logic of unlimited semiosis (CP 1.339) as based on interplay between the interpretant and the representamen, but we are faced with a situation where components of the sign have blended and fused into each other to the point at which the so-called objective reality (or the realm of objects) and the semiotic reality are not distinguishable any more.

Interestingly, these issues that seemingly exist at the core of the semiotic level and the heart of the functioning of semiotic systems as such, have been treated as realities in sociocultural integration processes where social and cultural

layers collide and combine. In turn, understanding the nature of integration and integration processes helps to grasp the formation principles and essence of modelling *systems* as holons. Holons as conceptual entities conjoining the holistic and the atomistic points of view point out two developmental tendencies of sign systems: self-preservation or maintenance on the one hand, and innovation or text-generative potential in a culturosemiotic vocabulary on the other hand. The former aspect concerns crystallization in its stabilizing impact on sign systems that have their logical end in submission to entropy:

> When the unifying force, X, is quite considerable, and the force Y – the trend toward innovation – is very weak or non-existent, we get the phenomena of instinct in animals, and something like the situation in Sparta, a state crystallized in its institutions. (Pareto 1935: 95)

Thus, crystallization as a prerequisite for communal communication that might be seen in the light of achieving a holistic semiospherical reality simultaneously presents a highest danger for sign systems. A solution for this grand Catch-22 can be seen in the concept of habit (CP 1.390) as the key to understanding (unlimited) semiosis that is taking place in sign systems. Habit is the button for stops in the chains of unlimited semiosis – necessary in order to enable the exchange of messages, but also demanding occasional breaking in order to go beyond regularities and the boundaries of the semiotic reality both in innovation and discovery. In the study of social systems, development can still be seen in processes balancing centripetal and centrifugal forces, and holding them in the so-called zone of proximal development (as the latter was famously defined in Vygotsky 1978: 86). Regarding social systems, and in comparison with Lev Vygotsky, a perhaps better-fitting notion can be found to describe the key element in fighting against entropy – 'non-pathological deviance' that was coined by Walter Buckley:

> […] A requisite of sociocultural systems is the development and maintenance of a significant level of non-pathological deviance manifest as a pool of alternate ideas and behaviors with respect to the traditional, institutionalized ideologies and role behaviors. (Buckley 1969: 495)

Interestingly, non-pathological deviance can consequently be used as a connector of diverse levels of institutions beginning from sign systems up to sociocultural systems. Without entering contradictions with the Saussurean principle of crystallization as a prerequisite of communication, non-pathological deviance offers a way out of entropic tendencies in combination with the Peircean *ground* of semiosis as both the principle of founding and alternating the path of semiosic

logic. Depending on the ground of semiosis, sets of paradigmatic relations can be fitted for extremely diverse syntagmatic chains – and this is exactly what non-pathological deviance is all about. In this sense, it is perhaps important to note that non-pathological deviance does not imply the area of complete unpredictability. Instead, the normal and the non-pathologically deviant are comparable to human ontological advancement as seen by Vygotsky:

> The actual developmental level characterizes mental development retrospectively, while the zone of proximal development characterizes mental development prospectively. (Vygotsky 1978: 86–87)

Needless to say, besides the impact of education on individual development and societal influences on individual semiosic habits, prospective development of sociocultural mentality can be guided in the zone of proximal development by administrative aid from propaganda to more substantial physical means. So, the creation of innovative connections between traditional elements in traditional semiotic paradigmatic sets on a logical ground still comprehensible for a given socium, is a possibility of extending the boundaries of a given semiotic reality. Examples can be given from across the whole faculty of arts, simple word-play, but also entire new paradigms in the Kuhnian sense extending from the field of scholarship up to the establishment of grotesque social formations and totalitarian statehoods.

Relations between systems and their environment, or systems and their outside, are crucial for not only the developmental potential, but also for their mere existence in terms of overcoming entropic forces. It seems that a distinction can be made between at least two major angles for treating relationships of systems and their outside. On the one hand, there is the so-called thinking outside the system as it concerns non-pathological deviance. On the other hand, there obviously are examples of classifying certain phenomena themselves as belonging to the outside of a given system. By the latter we can think of things and behaviours that are deviant. Remarkably, inasmuch as these are real borderline phenomena here, it seems that we can consider both *things* and *objects* at this point, as the distinction was emphasized by John Deely (1994: 11), whilst a sharp line between them is starting to fade. It means that the reality of the 'real' and the 'experienced real' becomes highly questionable – also in terms of defining semiotic research objects on the metalevel.

Hereby it is important that in the case of open systems, deviant behaviour concerns such open behaviour the deviance of which can be measured, at least in the Darwinian sense. The success of behaviour can be seen in terms of feedback

loops beginning from daily feeding as leading to self-preservation or death up to the success of organisms as species. In the case of open social systems, a very important aspect of deviance is added: behaviour that is considered, judged or labelled as deviant. That means: we are already dealing with deviance not strictly in the frame of the evolutionary paradigm, but as with a characteristic of behaviour socioculturally cognised and judged. Yet in that case deviance is quite openly observable in the face of institutions beginning from norms and laws up to special institutions as prisons or asylums. Both aspects of deviant behaviour point out that it can be detected more easily than non-pathological deviance. Pathological deviance can be observed more effortlessly, and is of high value for the description of structures and processes in the given system. At the same time it can obtain diverse forms, and thus be detected in pretty dissimilar walks of life. Hereby we can think of extremely versatile fields that, one way or another, have to do with normative behaviour. Perhaps even more vividly than the description of the formation of a cultural tradition (Eliot 1920), we witness the recognition and demarcation of anomic behaviour in societal circumstances. Deviant behaviour is traditionally sanctioned and thus clearly visible in societal institutions, whether the latter exist in a physical form and as legalized institutions, or stand in semiotic formations starting from written grammars of sign systems to negotiated default behavioural patterns and social control. Such behaviour is recognized in society and is acted upon in one way or another, because it has clearly anomic features that are perceived as leading to social or cultural alienation, i.e. to the disintegration of the sociocultural organization. Non-pathological deviance, on the other hand, does not necessarily even have to be identified as such.

Both pathological and non-pathological deviance serve as weapons to overcome entropic processes – they both import new energy (also in the form of information) into the system. Obviously, the crucial issue for sociocultural systems is to recognize the threshold, beginning from which the system ceases to exist and either withers away, collapses, or enters another formation, i.e. becomes another system. One of the key methods for the analysis of the danger level of deviance has to do with feedback loops. Evaluating the success of individual and social behavioural acts in terms of measuring the adequacy of interaction between the social system (beginning from the individual) and its environment may at first glance seem quite mundane and uncontroversial. In this respect, principles of semiotics and systems theory appear equal: from both perspectives, the coherence of sociocultural systems and relations between these systems with their environment can be assessed in terms of interactional relevance. Yet taking into account the importance and the actual tendency of feedback loops in the case of sociocultural systems becoming autocommunicative, the preference for semiotic

methods of treating the coherence of behaviour on the level of sign systems and diverse types of texts is explicit. It means that the longitudinal delay of feedback loops between societies and their environments is oftentimes merely virtual, being autocommunicative instead. Thus "systems" as such are rather composed of social and cultural entities and institutions, and lack the environmental component. Systems theory cannot evaluate the efficacy or adequacy of actions by such systems, because of their self-contained nature – the only environment or background of action is the ideological frame or past of the system itself. In these cases of undeniable self-referentiality it seems that semiotic approaches are preferable in order to describe the logic and adequacy of sociocultural action, for they allow conceptualization of the context of action by the means of the systems themselves. For example, individual or group activities can be set into perspective in the framework of more general public opinion, or thought of in the formation of the so-called cultural tradition or cultural text.

It has to be recognized that when speaking about communication and autocommunication, or feedback loops and autocommunicative feedback loops, it is not always disclosed what is actually kept in mind. In actual communicative situations, it is not always a clear-cut issue whether communicative or autocommunicative circulations are meant. The boundary between them is time-dependent, and the latter is crucially related to dimensions or vectors of the environment. Obviously, the environment of sociocultural communication splits into very diverse domains, e.g. the social, the geographical, the cultural, the biological, and so on; and it is oftentimes quite difficult to pinpoint differences or boundaries between them. The definition of autocommunication is case-dependent and has to do with the longitudinal characteristics of communication in sociocultural systems. Frequently, it is hard to demarcate what pertains to interaction with the environment and what has to do with intrasystemic communication, because the subject matter of communication is reflected in feedback only in long-term processes. Examples can be given from fields such as economy (how to decide which is the best or most sustainable economic model), or matters concerning the survival of the entire human race (like, for example, decisions concerning global warming). Unfortunately, the circle of such feedback loops is extremely extended; even worse – in most cases, the future input or environmental reaction to sociocultural action can only be negative. This is because in case of a positive reply from the environment, there would not be any reason for the given society to change anything in its behaviour. This means that a given feedback loop could not even be complete before a recognizable (negative) signal from the environment is given to the system acting. In this line, open social systems cannot but become more and more entropic. On the other hand,

such extended feedback loops as, for example, in the case of human action in the context of global warming, are logically completed by negative response signals, and the adequacy of human action can only be assessed *post factum* by the "last man standing", so-to-speak. Environmental reply to sociocultural action is often postponed until such future so that sometimes there is even no other possibility than to construct informational space on the basis of intersystemic sociocultural communication. At first glance, both from the view of semiotics and systems theory, this may be perceived as a huge controversy, but on a closer look there is none. To put it simply, the issue may be solved by reminding of the ingredients of the communicative situation as described by Parsons: social, physical, and cultural objects may alternate their statuses (Parsons 1952: 4). While Parsons suggested that cultural objects can become symbolic units of identity, that is – cultural objects can essentially turn into social objects, the relevant dynamism does not end there, but goes for all three main types of objects in the communicative situation. Obvious examples can be given most easily from any kind of totalitarian regimes such as the phenomenon of personality cult, or objectification of communication partners by stereotypes or in the situation of warfare. The potential of non-logical conduct to take over the pathways of semiosic habits in a society so as the latter ought to put semiotic systems and their environments into tangible relationships measurable by the efficiency of feedback loops, seems to guide us to semiotic (and not, for example, systems-theoretical) keys to describe the regularities of sociocultural semiotic behaviour. How communicative situations are constructed, how the interplay between categories of objects in those situations is socially and culturally organized, what are the relations and ratios between feedback loops proper and autocommunication – these are issues that seem solvable through semiotic analysis of information circulation in public space.

## Crystallization and self-referentiality

Obviously, communication is a contextual interpretative activity, and the context of communicative situations as defined by the three kinds of Parsonian objects of orientation is itself forged through that very interpretative activity. Interpretation in the course of semiosis shows the path to Unlimited Semiosis as seemingly the freest activity of the Mind. At the same time, as claimed already long ago by Charles Horton Cooley, the Mind is social (Cooley 1909), and should therefore follow certain regularities of the logic of meaning production. In the most general terms, it would thus seem natural that semiosis as a logical act comprising interpretation requires that, when dealing with its evolutionary development, we

rather ask "how the first forms of logic used by living beings emerge from the world of non-logic" (Kull 2018: 136). Yet, if – and whether or not – "semiosis is interpretation" (Kull 2018: 137), there nevertheless are *limits of interpretation* that can measure the rate of falsity (not quite that of correctness) of interpretation as discussed by Umberto Eco (1990). In the case of seeming intentionality and seeming referentiality, especially when taking into account the possibility of conditioned perception, cognition and action, there is a high chance we are not facing semiosis proper, but some sort of pseudosemiosis or activity only seemingly semiosic. This is not the place to ask whether or not semiosic freedom occurs in species other than *Homo sapiens*, but it is worthwhile keeping this quest in mind in the background, when intentionality confronts the topic of instinctive behaviour. In case of the latter, there is a wide area open for discussing the limits of interpretation and whether, for example, behaviour that is unsuccessful for a biological organism is the result of choice or a failure to respond to stimuli in terms of meeting requirements of instincts. Even though semiosic freedom hereby is probably not used quite in the sense as semiotic freedom was treated by Jesper Hoffmeyer (Hoffmeyer 2010), but rather as Nauta outlined a number of advancing types of semiosic processes (Nauta 1972), closed, open, and open social systems connect here in an interesting manner. Namely, if semiosis is interpretation, then interpretation must follow certain established meaning-making pathways in order to fit into any given semiotic reality. Semiosic freedom and interpretation are confined to a semiotic environment that must possess the quality of certain stability in order to make communication possible. That environment is shared by parties of communication, but communicative and semiosic unity probably extends also to the realm of referential reality in the dimensions of both cognition and perception. This unity between agents, processes and structures engaged in semiosis and communication has oftentimes been described through the notion of crystallization.

Whereas for Saussure, crystallization was clearly an extremely important aspect for the functioning of the speech circuit – keeping in mind both individual and social communication, it thus has to do not only with the possibly covert semiosic processes, but also with what is described by the word and concept of *communication*. Here surfaces another flashback for cultural semiotics in its treatment of culture (text, subject, etc.) as a modelling system operating through the two main data-transfer mechanisms: communication and autocommunication. Basically, in the TMS's culturosemiotic ideas on autocommunication and communication Saussure's language at its individual and social level is at stake. These levels are firmly connected through crystallization.

From another viewpoint, autocommunication and communication connect cultural semiotics – through crystallization – again with systems theory. The issue at point has to do with understanding changes that occur in movement from closed systems to open social systems. A major difference between systems at each end of the axis has to do with the nature of feedback loops between the system and its environment. Closed systems (e.g. mechanical, geological, etc.) connect with their environment through such feedback loops in which referentiality lies in checking the system's reaction to certain stimuli in terms of preserving the physical existence of that system. In the case of closed systems, feedback can be analysed in terms of correctness: if a system responds to a certain stimulus in an inadequate manner, it simply would appear unsuccessful in its adaptation to the environment and would cease to exist. Obviously, the shortness of timeline for such a reality check plays a role as well, also if we follow a different logical trail – probabilities for "correcting" response(s) to stimuli are extremely limited for closed systems. For example, in the case of "wrong answers", a zoological specimen or even species would simply become extinct. In other words, in the case of closed systems, only communication and referentiality that hold between a system and its environment appear as relevant.

A major point of interest and concern has to do with relations between referentiality and intentionality. Evidently, there is a requirement for referentiality of actions of closed systems (as also biological systems) in terms of reality check of the correctness of responses to stimuli (e.g. survival as mentioned). Such referentiality may or may not be intentional, and/or that intentionality may be both conscious and unconscious. From the semiotic viewpoint the issue is of utmost importance, since it is, amongst other things, a factor to determine the subject matter of semiotics – the question concerns the semiotic threshold. Not all behaviour that can be rendered as referentially targeted is intentional and thus not all "indexically correct" links between systems, their actions and environments are necessarily semiotic. Instead, they can be mechanical, physical, chemical or other relations qualifiable as correct, but nevertheless belonging to the sphere of the so-called brute facts or mere things. On the other hand – not all relations between systems and their environments must necessarily be strictly referential in indexical terms, but may merely be symbolic. This means that besides situations involving unintentional correct indexical relations between systems and their environs, there can be other cases as well. Those are, for example, intentional sign processes that are built on somehow incorrect referential relations that result in false indexicality. It is of utmost importance that the latter cases not be reduced to merely being mistaken or lying, because the age of the virtualization of reality has taken us to entirely novel semiotic relations between systems and their surroundings, as well

as to completely new structural logic in the build-up and behaviour of systems as such. Today one cannot any more talk about three kinds of factoriality (proper parts, properties, and perspectives) defining conceivable objects and forming the ground of indexicality as proposed by Sonesson (2009: 147). This is due to not only the fusion of the semiotic reality with what 'is out there', but also because what could be listed in the categories of the three factors can in principle change its very status. One reason for this is a fundamental modification of relations between intensional and extensional relations and hierarchies. The wider an extensional set is, the more possible it is to modify intensional properties: what previously could be defined as *parts* by their status, can become *properties* (e.g. Donald Trump as a member of society and Trumpness as a distinctive feature; the modern Prometheus, etc.). Complex issues between referentiality and intentionality, conscious and unconscious behaviour, indexical and symbolic relations sometimes blur the boundaries between closed and open systems, especially between closed systems and open social systems.

Building correct referential relations between the system and its environment is a developmental inevitability for biological systems, and the accuracy of such referentiality can be verified regardless of its potential intentional component. Sebeok discussed the issue of indexical reality check by the example of the movement patterns of the bacterium *Escherichia coli*, and used exactly the phrase 'seeming intentionality' (Sebeok 1990: 14) to raise the question of whether correct indexical clues that form a coherent referential reality can be associated with intentionality as stepping over the semiotic threshold. The topic becomes exceedingly more interesting when we add another argument and quest: if there exist coherent referential realities as for example umwelten in the case of biological systems, then the accuracy of feedback loops must logically somehow relate to the realm of memory. In the case of intentional open systems it is clear that one of their *holon*-construction components is memory. From another viewpoint it is also clear that we can talk about the so-called muscle memory (in a fairly broad sense of the word as being a form of procedural memory) in the actions of systems that cannot be described in terms of intentionality on the level of their overt behaviour.

However, once we have stepped over the threshold of semiosis, there must be certain – possibly isomorphic – similarities of semiosic institutions of different levels and/or domains of semiotic systems. The elementary units of the latter depend on our definition of the semiotic threshold, but in the case of sociocultural institutions they extend from sign systems to social organizations, from the individual to sociocultural systems. It seems important that the multiplication of levels/domains of semiosis probably should not bring along the multiplication of semiosic processes themselves on those levels, although there can be several

(limited) types of logic of semiosis at each of these levels. Novel levels and domains of semiosis may be discovered, but the semiosic process(es) remain essentially the same, even if not universal. The semiosic process(es) may be called by diverse names, for example iconic, indexic, and symbolic schemes of building relations with the environment(s).

The idea of seeming intentionality raises a most interesting question: can indexes be conditional as well? Or, in other words, if second-order signs, e.g. conditioned reflexes produce a coherent semiotic reality in terms of referential correctness, do they necessarily exceed the semiotic threshold from the viewpoint of intentionality? Or yet from another angle: when the referential reality produced through conditioning ceases to satisfy the functional circle of an umwelt, can intentionality be the measure of evaluating the correctness of the referential reality? Can intentionality be a key to deciding on the effectiveness of feedback loops between systems and their environments? Or vice versa: can efficacy be a key to the judging of conscious intentionality guiding purposeful behaviour? Evidently, these issues apply both to biological as well as sociocultural systems, in the latter case regarding, for example, sentiments and automatisms as bonds of sociocultural reality. It is clear that Pavlov's second-order signs were conditioned units, and it is clear that secondary modelling systems are conditioned semiotic systems as well, depending largely on natural language and also on lower sign systems on the biological level. Let me rephrase these notifications to reach the understanding that gestures of a different order or levels in Mead's sense are based on semiotic relations where indexicality is based on conditioning. Therefore, the boundaries between the physical and the semiotic become blurred, and it is almost impossible to distinguish between the referentially accurate and the referentially incorrect behaviour, because in the process of conditioning the factor of intentionality has a high probability of becoming lost or set into the default background of automatic behavioural patterns. Indeed, it is quite difficult to outline the boundaries and structures of the umwelt (at least in the case of the contemporary *Homo sapiens*) as based on the logic of Uexküll's functional circle, since even *Merkwelt* and *Wirkwelt* have largely become undistinguishable.

If indexes can be (also) conditional, then the functioning, even more – the quality of functionality of secondary modelling systems as moderators of the semiotic reality – is under attack. Needless to mention that the functionality of feedback loops in the case of open social systems to which the logic of secondary modelling applies, differs from closed systems and also from biological systems. The case in point lies – in our context – both in a short timeline and what I basically a set of multiple choices that establish quite rigid limits to responses from the side of closed systems. On the other hand, moving on towards open systems,

all the more open social systems, the notion of feedback acquires quite another nature. And here the concepts of communication and semiosis blend already fundamentally. Namely, in the case of open social systems a move has been made from physical causality to informational causality in a purely semiotic sense. This means that referentiality in the case of open social systems tends to incline towards self-referentiality (Table 1).

*Table 1*. From closed systems to open social systems: alteration of reference.

| **System** | **Closed** | **Open** | **Open social** |
|---|---|---|---|
| **Causality** | mechanical, physical, chemical | physiological, biological | informational-semiotic |
| **Feedback loops** | law-obedient (nature, author, divinity, etc.) | referential | referential and seemingly referential |
| **Input-output relevance** | pre-determined | determined, developable | conditioned-determined, developable, downgradeable |
| **System's sustainability depends on communication** | system-environment | system-environment | system-environment<br><br>system-system |

Self-referentiality indicates that a given system is sustainable, or more correctly – is maintained by such energy (energy that can have diverse forms – physical energy, information, etc.) management that does not have to be checked against the environmental background system, at least not at short intervals. Self-referentiality holds both for the system, e.g. a society, as a *holon*, as well as its parts at diverse levels such as social groups, families, individuals. In this sense the notion of the sociocultural system acquires a clarifying significance: culture forms an environment for social systems, and this environment may be understood as such *text of culture*, as a *tradition* that constitutes a major pillar of the identity discourse of social units. Thus, culture becomes an important measure of behavioural competence, as also a major source of input to the sociocultural stock of knowledge at all societal levels. Cultural competence and behavioural adequacy are much more strongly linked than individual or societal behaviour and the surrounding (physical) environment. Obviously, the logic of such feedback loops leads from the concept of self-referentiality to the notion of cultural resistance that

more clearly characterizes open social systems in their predisposition to incline towards ignorance of environmental stimuli. Cultural resistance, here, points at the tendency of sociocultural systems (ranging from individuals to societies) to become resistant to systems other but themselves.

## Semiotic insularization from sign systems to sociocultural systems

Seeming referentiality and cultural resistance hint at the paradox that sociocultural systems that ought to be open systems *par excellence* oftentimes turn out to be closed as such in several meanings. First of all, of course what strikes the eye and was treated above the most is that we are dealing with individual and sociocultural institutions practising inadequate or indifferent responses to environmental stimuli – this primarily goes for autocommunicative feedback loops. Second, the need for coherence between modelling systems forming the semiotic reality may lead to uniformity of these semiotic systems, and we end up with a certain homology between them. For example, the literary, the musical, the theatrical and other codes that originally have been characteristic of specific areas of cultural activity or individual masterpieces that have been born in a specific culture field, may turn into intersemiosic and transmedial wholes or cultural topics (e.g. 'Hamlet', 'redemption', 'Stalinism', 'love') that can be described as macrosignifieds (for the latter see Danesi, Perron 1999: 294). Also, homological dynamism between culture core and the periphery has been noticed, for example, in the process of the creation and eventual withering of subcultures as self-contained systems (e.g. Hebdige 1979: 113–117). Third, by crystallization on the elementary level of sign systems, that is, at the formation of associative ties between sound-images and concepts, sign systems become as inert as apt for stagnation. Fourth, we can recall Marshall McLuhan's famous statement of the medium being the message: "[…] the "content" of any medium is always another medium" (McLuhan 1965: 8). It is noteworthy that McLuhan uses interpolation: "content" links with our topic and discourse by hinting at autocommunicative feedback loops that do not even have to have anything to do with any content whatsoever. Instead, autocommunicative feedback loops can possibly end up being completely redundant in terms of overcoding messages that circulate in the public informational space (e.g. memes like 'the Russian soul' that lose actual reference by becoming highly undefinable).

Whilst McLuhan dealt with seeming referentiality mostly in the context of mass media, then even nowadays it is worthwhile asking about seeming referentiality as connected with the somewhat pseudo-semiotic field of activity related to the

build-up of mass culture in the light of globalization. It is commonly taken for granted that globalization is a phenomenon opening channels, realms of reference, sign systems to unlimited number of communicators. Yet we can see how mass culture has taken the advantage of the logic of *cultural production* that has been initiated in cultural peripheries by launching specific subcultures that then have been developed into mass-cultural movements. Examples that are not to be confused with some culturally central phenomena could be provided by big mass production companies that aim at covering the whole pyramid of needs of people. Indeed, the logic how cultural periphery has borrowed or hijacked elements and culture topics from the mainstream, shows the ease how novel (sub)cultural realities can be artificially created and turned into oftentimes pseudoreferential realms where the referential logic between signs, objects and things becomes vague. This blurring of boundaries between the core and the periphery, between the sociocultural reality and subcultural (often virtual) reality, and eventually between the referential and the pseudoreferential reality is nowadays supported by virtual communities and global computational facilities. One might just think of the 'World of Coca-Cola' and the like from these several aspects, starting from furnishing one's life literally and semiotically with items provided by a single company, to the formation of global subcultural communities that are largely virtual, but still based on a shared imaginary culture topics (think of, for example, Santa Claus and Christmas). On the other hand – globalization itself is so tightly connected with the technological availabilities of individuals and communities that it leads to the formation of informational or semiotic islands that tend to become rather isolated.

These two topics, especially semiotic insularization, are too vast to be developed in depth here, but at the moment it is important that they describe semiotically (or administratively) totalitarian regimes that build themselves up on such a high level of autocommunicativity that they become self-referential, largely at the same time just seemingly referential. It is such open social systems in particular regarding which we meet the paradoxical situation of open systems becoming closed in terms of systems theory. And it is especially worthy of attention that virtual communities become similar to closed totalitarian regimes: instead of relating themselves to a potentially infinite number of other semiotic communities they rather cut off alternative information flows into their own semiotic sphere, and turn themselves into semiotic islands. This process seems to be supported by advancing from acknowledging the medium as a message to an even more explicit mixture of mediating and practising. As we know, contemporary understanding of how to use sign systems to establish – not only to mediate – reality (not only semiotic reality), can be associated with the speech act theory (Austin 1962). Today, technologies and semiotic technologies are mixed, and this mixture extends

to the fusion of mediating reality and practising in and with reality. In this process, the traditional components of the communicative chain (e.g. sender, receiver, channel, context, noise, message) also seem to become merged, as they all blend with the very notion of communication itself as well. Both technical and semiotic coding, decoding, and amending of meanings in messages entail certain rearrangements of the very structural components of the referential reality (or realities). For example, in the computerized social media and in virtual sociocultural networks, we can see how

> […] discourses transform the components of social practices (participants, activities, times, locations, presentation styles, performance models, and eligibility conditions) through additions, deletions, substitutions and rearrangements. (Djonov, Leeuwen 2018: 660)

In this sense, it should be asked "how particular [social] media technologies restructure the activities and practices that make up social communication" (Poulsen *et al*. 2018: 594).

In semiotic islands, informational feedback loops rather tend to be founded on the so-to-speak closed circuits in which the "reality check" is based on the historical, social and cultural traditions of the given community itself. We can recall suitable examples from history (e.g. the Roman Empire, Czarist Russia), as well as from today in all the relevant political, cultural and social aspects (again, totalitarian regimes as vividly represented by, for example, North Korea). Likewise, cultural resistance is exemplified by the collapse of the culture of the Easter Island as caused largely by extensive "cultural activity" that ignored informational (and other energetic) input from the natural environment. Problems similar with the latter can be noticed in the contemporary discussion about the need to continue "modern sociocultural and economic development" as set in the context of global warming. 'Global warming' is an example of a culture topic in public informational space that should, in principle, excellently show links between the semiotic system of a social organization and its physical environment. It is considered as the most important topic of discussion and action in contemporary world, and still the humanity has not yet reached a verdict of *correct* activities to be undertaken. Solutions foreseen are opinion-based and cannot be subjected to reality check because the feedback loop with environment is extremely stretched in time. As already mentioned above, the accuracy of relevant activities can be evaluated only too late, *post factum*: whether mankind's environmental behaviour has been and will be correct in terms of sustaining both the social semiotic system and the environmental system can literally be decided by the last man standing.

Therefore, probably instead of securing the social system in its natural environment, the cultural topic of global warming is built up through discursive feedback loops. Individual discursive activity (and thus physical activity as well) gets input from public information space and adds its output to that very same informational space, and indeed: we are dealing with autocommunicative feedback loops. From the individual's viewpoint this is likely and even expected, for her/his survival in contemporary society primarily depends on social and cultural factors. Essential distancing of oneself from mainstream discursive standpoints – whether these support or deny the specific idea of global warming is of no importance here – would mean positioning oneself outside the prevailing evaluative and semiotic public space. That, in turn, puts the individual in much more perceivable survival danger than global warming as an environmental process. Getting ridiculed in public space for one's diverging opinion, obtaining the status of a semiotic outlaw or losing one's job thereafter has a much more realistic effect on daily life than global warming as a so-called "brute fact". Thus it is even expected that many cultural topics that are connected with environmental issues or other themes not directly linked to the given community, and that should be arranged in logical feedback relations with environments, other cultures or societies, become autocommunicative instead. Feedback loops rather function between the individual subject and its sociocultural body, not directly between a semiotic subject and the biological-geographic environment it lives in. These arrangements can be described through the notion of cultural resistance, but not so as to question or combat a dominant power. Rather, I have in mind how the world is viewed and conceived through the rose-coloured glasses of culture (that do not hold merely for Medieval times), oftentimes disregarding inconvenient items, processes, phenomena that can be stumbled upon in the environment. In such examples, cultural resistance usually follows the Münchhausen style of self-sustainability that will most likely lead to eventual deep discrepancies between a given system and its environment(s). The denial of environmental changes – in whatever kind of environment – truly leads to pulling oneself out of the swamp of culture by one's own hair. However, the air above that swamp still contains just the semiotic units and informational space of that very same semiosphere...

Thus, on the one hand, crystallization is an unavoidable necessity for undertaking possible interpersonal – and therefore also intercultural – communication. On the other hand, crystallization, when combined with or necessarily leading to semiotic routinization of a certain degree, directs to cultural resistance in the meaning described above. This means that in order to function as open systems in the sense of symbolic (symbols as contrasted to signals) management of information and allowing open communication between parts of such systems, as well

as open intersystemic communication, such modelling systems need a certain degree of crystallization on the level of sign systems. And, as already suggested, crystallization, in the end, may probably lead to both semiotic and physical closure, and in a paradoxical manner, open social systems are liable to become closed.

And yet there is another aspect or explanation of this paradox. An escape was offered already by Pareto in his treatment of human conduct as essentially, or at least mostly, non-logical. Even if the non-logical nature of behaviour could be pinpointed by individuals or larger social bodies, it is transformed into the logical by description and explanation (Pareto 1935: 88ff), and the predominance of non-logical action in the given social organization is assured by varnishing it with logic. It is vital to grasp non-logical individual and societal action as neither irrational nor completely illogical. The non-logical has to do with what can, through systems theory, be associated with self-referentiality and the (seemingly) paradoxical self-sustainability that in the end is actually the type of conduct and discourse forming the backbone of sociocultural identity of social open systems. In the case of open social, or open sociocultural, systems the case is not about their *being* in the so-to-speak ordinary state. Instead, it is about open social systems forming sociocultural systems in the way they are based on semiosic crystallization. Exactly that leads to Pareto's 'non-logical conduct' which is still apt in logic, since that kind of social behaviour is not 'illogical' (Pareto 1935: 77). 'Non-logical' does not equal with behaviour without logic or rationality; non-logical conduct, in Pareto's terms, does not equal with irrational behaviour. If we recall the topic of trying to measure the efficacy of social systems by sustainability and tie the latter term with normal, deviant and non-pathologically deviant behaviour, then we shall probably find ourselves in a dead end, because in the light of the concept of non-logical conduct, the degree of deviance in terms of efficiency or pathology of sustainable development loses all meaning.

The 'non-logical' nature of societal behaviour is fundamentally connected with developments and semiotic changes that occur with the alternation of the nature of systems when we proceed from the mechanical (or physical-chemical) systems to the biological, and then to psychological and sociocultural, systems. Moving from systems operating via feedback loops initiated by environmental stimuli (in the physical, mechanical, chemical sense) to informational or semiotic causality, systems become looser in their connection with physical events, and feedback loops tend to be built on information exchange and intra-systemic semiotic relations. From here it is already easy to see such relations between societal and cultural entities that are built on the principle of self-referentiality. Self-referentiality has, of course, diverse aspects, but in order to connect with Pareto's argument, it is useful to see sociocultural modelling systems in their

autocommunicative functioning (in the culturosemiotic sense). The latter should be taken in the light of culture's self-generation as described by T. S. Eliot in his treatment of culture as tradition (Eliot 1920: 42–53) to which social agents adapt themselves. It is noteworthy that Eliot's concept of culture as tradition was not only the origin for postmodern philosophizing about the Death of the Author, but can also be seen as a component in the description of actual sociocultural systems as based on integration and dynamism between the social and the cultural counterparts (e.g. Sorokin 1957; Ruesch 1972). This really provides a key to understanding the essence of 'modelling systems' as founded on and acting in 'social systems'.

Modelling, communication and interaction go on not only between human beings, social groups or societies, these processes also describe relations between cultural and social units of different scales. This means that sociocultural systems are genuinely semiotic, and not even describable merely in terms of societal or cultural theories alone. The apparent essence of the Peircean paradigm lying in relations and in the Mind has been discussed so extensively that it is not reasonable to stop over it again at the moment. Nevertheless, looking back from Peirce at Saussure, the connection of the pragmati(ci)st semiotics and cultural semiotics can be noticed. Just as Peirce and Saussure are related in comprehending the location of semiosis in the Mind, they stage semiosis at multiple levels such as the creation of the sign, transformation of signs afterwards in neural or communicative systems, forming signs and sign systems as establishments and institutions. How else could the process be called when associations of signs are transmitted and usually transformed in this transmission to levels other than the Mind, in any other way than having to do with dissimilar modelling systems?

Looking at cultural semiotics from the pragmatist view (especially Cooley and Mead), we can see other connections, especially when using filters such as Piaget, and all the more Vygotsky. Through Piaget, we can see the connection of the TMS modelling systems and Peirce's logic of the semiosic development: Piaget proposed to describe human cognitive stages as logically following and built on each other semiotically sequentially. It is not by chance that ideas usually associated with developmental psychology about stages of modelling basically overlap with semiotic ideas about sign systems. Piaget named those main stages using such terms as 'sensorimotor stage', 'preoperational stage', 'concrete operational stage', 'formal operational stage', going back even to the actual development of children (Piaget 1959). Similarly to so many other scholars, Piaget's scheme involves movement from simple reflexes, first habits and primary circular reactions to abstract thought and metacognition in the end. This logic seems to be in coherence with movement from reactions of a biological system to reflexes and second

order signs, and seeming referentiality as an institutionalized and legitimized paradoxical principle of the semiotic reality. It is important that semiosic circuits in second-order (or as those named otherwise, but still built on umwelt-making semiotic arcs) sign systems do not imply only movement to semiotic causality, but also transfer from unidirectional logic to fuzzy logic or abductive logic. The latter seem to connect exactly with what Pareto kept in mind by not comparing non-logical conduct to illogical behaviour.

## Semiosic circuit: Coordinated and conditioned

Already John Dewey spoke up for recognizing the holistic nature of different behavioural departments when he started an argument against the 'reflex arc' more than a century ago. Dewey claimed that stimulus and response, sensation and motion are not to be viewed "as separate and complete entities in themselves, but as divisions of labor, functioning factors" (Dewey 1896: 358), and thus "the so-called response is not merely *to* the stimulus; it is *into* it" (Dewey 1896: 359). Experience and acting are connected with expectation and recognition, the ability to receive stimuli. He gives the example of seeing a potentially dangerous source of light and heat (candle) when we should speak of "seeing-of-a-light-that-means-pain-when-contact-occurs" (Dewey 1896: 360). Dewey's main argument at the time of publishing this quite ground-breaking article was against the concept of the reflex arc which, according to him, was to be replaced by understanding human behaviour rather as a circuit governed by a coordinative agency that would holistically bind together sensation and movement, stimulus and response. Aside from this proposal which is important in itself as a conceptualization of systemic interaction – whether between people, or people and the environment – that preceded general systems theory by decades, there are a few other things to be learnt from him.

Certainly and firstly, Dewey's idea of coordinated behavioural circuits is parallel to many of his contemporaries and successors (James, Saussure, Pareto, Mead, Vygotsky, even Uexküll, etc.): understanding behaviour started to move from action to interaction, the individual became an increasingly more social and semiotic member of the socium. Next, behaviour is to be seen as a system in a wider sociocultural system, and these systems are indeed systematic by nature. It is not necessary to enter the fairly childish discussion about accusing Dewey of (social) behaviourism, for another consequence from his idea of coordinated behavioural circuits is that only a part of them is overt, and it is highly questionable if that observable fragment is of decisive value for the analyst. This notification hints at

another important nuance to be seen in his claim that the participating faculties in coordinated circuits are not to be taken as entities, but as functioning factors: instead of (observable) structures in behaviour and in structures responsible for those observable entities, we should target processes in behaviour and in the mind. The latter is obviously that latent agency responsible for coordinating the functioning factors. Amongst other eventualities, we can see here a forerunning paradigm for the 'Self', 'Mind', or whatever the individuality of the semiotic subject be called afterwards. Also, the very obvious default idea of 'functioning factors' leads, by way of later 'socialization' that is present in Dewey's thought, through the faculty of expectation responsible for the formation of stimulus, to the fundamental formulation of the role of sign systems in sociocultural institutions. At the same time, the latter are explanatory for the factors to become functional in the coordinated circuits, so to speak.

Although Dewey was speaking about a coordinated circuit of reconstructing and a reconstructed circuit of coordination governing consciousness and (inter)action, by outlining different functions or functioning factors in them, he still seems to have basically remained at the description of stages in the reflexive arc, albeit in an extended formula. The logical question follows if modelling systems indeed are psychological and semiotic, and they still possess different levels of functioning, can the coordinative agency be influenced or altered by intervention on each or several of those levels? And even though in Dewey's treatment his 'primary' and 'secondary' functioning faculties are sometimes interchangeable – coordination sometimes applies to 'sensori-motor' operations, sometimes to reconstructing operations in/of consciousness, and sometimes primary faculties go for sensations, sometimes for movements (Dewey 1896: 358–360) – a link with the issue of the logic of functioning of modelling systems as such is obvious. Additionally – the link seems to be in correspondence with the very idea of dismissing the 'arc' for the 'circuit'. By the essence of socialization and internalization of sign systems the latter can be modified, and by the logic of circuits of coordination, they can be modified at diverse levels of acts of the individual. Of course, the situation has changed dramatically by today: Dewey and his arc are taking place in far more conditioned circumstances: experience is organized so much earlier and to such an extent prior to actual contact with actual reference that personal contacts do not count any more for the reflex arc.

Likewise, whilst the secondary (and further) level(s) of modelling evidently are grounded on the primary level, the influence can also be reversed. This is obvious in case of more contemporary ideas of the hypothesis of linguistic relativity and also those of the metaneeds. For example, as we remember from Abraham Maslow:

> Metamotives are, therefore, no longer only intrapsychic or organismic. They are equally inner and outer. The metaneeds, insofar as they are inner, and the requiredness of all that is outside the person are each both stimulus and response to each other. And they move toward becoming indistinguishable, that is, toward fusion. (Maslow 1993[1971]: 301)

Experience was mediated already for Dewey (1896: 358–363), and thus (inter)action based on coordination – motivated (Dewey 1896: 358–370). Whereas Pavlov made it fairly clear how to arrange action on the primary level in the case of conditioned reflexes, we should also be concerned with how to describe, or intervene in, interaction on more complex levels that begin at what Dewey called "anticipatory sensation, an image, of the movements that may occur, together with their respective values, before attention will go to the seeing to break it up" (Dewey 1896: 358–368) into particulars. The importance of this notice applies to both innovative, regular, as well as automatic behaviour and behavioural patterns. Coordination of cognitive and sensori-motor operations in behavioural circuits encompasses both biological and culture-genetic faculties. This means that, in Pavlovian terms, conditioning can function both ways, and the so-called innate or primary needs and metaneeds can switch their positions of influencing each other. Although Maslow himself sometimes seems to hesitate about the locus of his A-needs and B-needs, we can but agree with his opinion that:

> […] the basic needs and metaneeds that I have described are also in the strictest sense biological needs […]. It is for this reason that I have used the invented term "instinctoid" to indicate my firm belief that these data have already proven sufficiently that these needs are related to the fundamental structure of the human organism itself […]. (Maslow 1993[1971]: 22)

Obviously, behaviour in terms of secondary modelling systems largely occurs by default, and it is by the so-called breaching experiment (Garfinkel 1967: 35–75) that we can bring the principles of their functioning most radically and effectively to light. Otherwise a large part of sociocultural behaviour would remain on the level of conditioned coordinative agencies that do not necessarily have to be conscious of/in their acts. This is because experience is mediated by institutions (already for Dewey 1896: 358–363), whether these are primary or secondary sociocultural organizations, or sign systems.

The point to be taken from the concept of the reflex arc as a circuit has to do with its very obvious conceptual relations with Uexküll's functional circle, Pavlov's conditioned reflexes, and feedback loops in open social systems. Alongside these, connections can be seen between these ideas of processual circles in the

production of signs of different types and in the developing stages of both semiotic and psychological levels of modelling. Summing up some of the perceptual and cognitive faculties of sign-processes and sign-processing mentioned above and to be mentioned below, I propose to speak of the cycle of semiosis in terms of quite concrete analytic units. Thus, the semiosic cycle can be described as: (a) recognition of meaningfulness, (b) application of (conditioned) crystallized relations between (c) sign-vehicles, (d) objects and (e) things that are (f) being taken into account.

Accepting the reality of semiotic circuits and levels of modelling, issues will obviously arise pertaining to the concrete analysis of these phenomena in specific social – and probably also cultural – actualities. This is where semiotic studies oftentimes have come to a stall or standstill, for the application of these ideas in actual fieldwork has posed the question as to what entities, which actual things and/or objects we should study then? It seems that this discourse ought to be connected with the treatment of institutions in societal studies, because that helps to circumscribe the research object most clearly and concretely, beginning, for example, from the individual and ending with the society. The combination of processual circles, modelling levels and institutions helps to tackle a key research question: how effective or correct are both physical and semiotic activities of a semiotic subject in its environments? This is in a most direct connection with measuring the efficacy of semiotic realities in terms of their degree of seeming indexicality. It is important that such a view and setting of the research problem will largely make it possible to avoid issues concerning intentionality and consciousness, and later to assemble the latter into a complex analysis of modelling systems of diverse types, beginning from the so-to-speak instinctoid essence (in Maslow's sense) of individuals.

## Conditioned logic: System's integration

In case of meaning-handling systems, modelling is at stake both in identity discourse and in making sense of the environment or, more correctly – making sense of diverse so-to-speak necessary environments that are called significant environments in systems theory. It is about defining diverse needs, values, aims of functioning and semiotization of other similar systems, just as the general whole to which our given system belongs or feels as belonging to. Needless to say, suchlike semiotization or modelling involves a degree of subjectivity and culture-genetic semiotic activity. To put it shortly, systems – both suprasystems and subsystems as *holons* – can be defined by the degree of integration. Integration, of course, is about

the nature and density of diverse interactional relations between systems. In the case of semiotic systems, the dimension of subjectivity entails that when we talk about relations, we can basically talk only about significant relations. Integration of systems can be achieved via communication. Viewing sociocultural systems or cultures, communication is again – so fittingly for the current treatment – about conditioning. As Pitirim Sorokin (1957: 2) has put it, human culture is created by "the conscious or unconscious activity of two or more individuals interacting with one another or conditioning one another's behavior". Sociocultural systems, including individuals, communicate in and about diverse environments and on multiple levels. Therefore, conditioning can be about interaction on "lower" levels, as also having to do with purely semiotic systems and the semiotic reality. The connection with the Pavlovian discourse is certainly evident here, but it should not come as a surprise, because Sorokin was a student of Pavlov. Interaction and its specific features determine the type of integration and, according to Sorokin, there are four of these: (1) spatial or mechanical adjacency; (2) association due to an external factor; (3) casual or functional integration, and (4) internal or logico-meaningful unity (Sorokin 1957: 4). It is important to note that whilst for Pavlov the formation of conditioned reflexes or the shaping of a conditioned umwelt was a very physical and real process to study, the same can be said about the integration process as explained by Sorokin. Interaction itself can be measured, its goals defined, its impact on the clarity and density of the borders of the given system calculated. Thus the type and degree of interaction and integration can be, or at least should be, verifiable.

There is one crucial nuance to keep in mind when describing the functioning of sociocultural systems by integration processes. That nuance entails the factor of subjectivity and means that the correlation between overt and covert behaviour can be both positive and negative. Subsystems working together "for the greater good" of a suprasystem can form a positive functional *holon* in terms of systems theory, but they may also have quite dissimilar goals of action. For example, people living in a shared administrative unit may have dissimilar ideals of action and behaviour, but work together for financial or economic reasons; that is – they may seem to have reached a logico-meaningful level of integration, whilst the actual integration is based on the functionality at best. This has been described by Jurgen Ruesch in his extensive study of integration from the viewpoint of acculturation of social groups in the general society of the United States (Ruesch 1972: 173–226). There obviously exist frequent cases in which communication partners have divergent hypotheses about the level of integration on which communication is based. For instance, when one communication partner takes the stand of working together on at least the functional level of integration and eventually aims at the

logico-meaningful, and the other one positions him- or herself on merely the spatial adjacency, we can witness eventual conclusive claims like "the death of the multi-culti", recognition of "terrorist activity", "internal sabotage" or the similar.

Another aspect of the subjectivity factor also has to do with the semiotization of both individual and social action, and with how action is made positively meaningful. This, however, concerns quite a different angle of attention: how to assess actions on a scale spanning from spatial adjacency to logico-meaningful integration? The problem lies in how the objective and the logical are connected, and how evaluations can be made on the level of integration on the basis of behaviour if its overt and covert sides can possibly differ significantly. In other words, or perhaps even from another viewpoint: are there gaps between the systemic and the semiotic aspects of *holons*, or are there none? Are sociocultural systems still systems if they lack logico-meaningful coherence, or do they obtain the status of closed systems as mechanical ones that are based on spatial-mechanical adjacency? Do sociocultural actions have to possess the dimension of meaning, or may they simply remain on the level of survival efficacy in terms of efficient feedback loops between the system and its environments?

Evidently, these are extremely fundamental issues, as they do not only concern disciplinary relations between semiotics and systems theory, but also shape the research object. Perhaps one of the clearest examples of the meeting of systems theory and semiotics in the study of institutions beginning from the conventional level of organizations to sign systems in practical analysis comes from Pareto and his general sociology. Pareto described meaningful conduct, or sociocultural use and management of modelling systems, in a scheme comprising the individual psychic state, rites of worship or the sociocultural tradition, sociocultural theory of sense-making behaviour, and concrete conduct in a concrete communicative situation (Pareto 1935: 88ff). An individual behavioural act is a result of cognitive activity which is influenced by the public theory or communal stock of knowledge, but still primarily guarded or conditioned by traditional behavioural patterns. This means that meaning is primarily inserted into action by action itself for which there exist pre-established evaluation standards. As Pareto (1935: 90) puts it, people do not that much do things because they believe in something, but rather they believe in something because they do certain things. Furthermore: the efficacy of individual action in terms of its logical value (i.e. the means meet the ends) predominantly depends on the public opinion and the communal sociocultural knowledge. For example, when global economy collapses and falls into recess, in the public space of argument it does not mean that there are faults in the system itself, but rather that certain individuals have made mistakes or committed corruptive deeds, causing the system to malfunction. Or, following

an example from Pareto (1945: 77), "sacrifices to Poseidon and rowing with oars were equally logical means of navigation" in ancient Greece. That is, if an ancient Hellenic fisherman happened to be unlucky, then reasons for that were first to be sought in conducting an incorrect sacrificial ceremony before the voyage and communication with the gods, rather than in human inexperience or disregard of weather conditions. This means that sociocultural systems and cultural behavioural traditions tend to be regarded by mainstream (i.e. usually decisive) public opinion as faultless, and systems are sometimes seen as broken down by individual misbehaviour or malfunctioning. Explanation of failures of systems in terms of inefficient feedback loops with their environments as resulting from individual misconduct is therefore a tool in the service of turning open social systems into closed systems.

Evaluation of the efficacy of behaviour by actual feedback loops between systems and environments is brought to an even more complex level, if we link Pareto's argument with the idea of the semiotic essence of society and with the concept of the Self or the Mind. This brings also historical and even fictional characters, as well as those who exist somewhere in-between (Christ, aliens, the noble inhabitants of Atlantis), to the evaluation of the sanity of the behaviour of the spatio-temporally present community members. The community of appraisers of the value and logic of action is multiplied by semiotic subjects, as it is also multiplied by the numerous roles of physically existing individuals. At the same time, the importance of the latter largely depends on how close they appear to the microphone, so-to-speak; and thus the influence of some semiotic subjects physically *in absentia* may overpower that of those bodily present.

## A semiotic deadlock?

The potentially infinite number of evaluators and goal-keepers of logical action is, however, still to be seen as limited and thus liable to scholarly analysis. It is not possible to engage casual semiotic subjects in the control mechanism of semiospherical action: the structure and limits of the semiotic reality are watched and maintained by diverse sociocultural institutions ranging from the macro (e.g. administrative organizations) to the micro (sign systems). These institutions oftentimes possess more or less legitimized articulations as texts that are institutions themselves. And inasmuch as those sociocultural institutions are managed and upheld by physically existing individuals, we can still discern at least the conditional or *possible* limits of the semiotic reality. In this light views on culture and society as conglomerations of texts as they have conceptually been

developed in, for example, New Criticism or cultural semiotics, are not merely hypothetical or metaphorical, but quite usable in the analysis of the structure and functioning of sociocultural open systems. In the sociocultural textual body accounts and arguments have settled concerning the logical measure and value of action as those accounts have matured in public informational space. And whilst the paradoxical tendency of open sociocultural systems becoming more and more closed hampers the analysis of the efficacy of action in terms of feedback-loops between systems and their environments from the viewpoint of the systems theory, a semiotic angle seems to offer solutions as permeating the logic of the semiotic reality. In this sense it is not possible to agree with Winfried Nöth who sees systems theory as a powerful aid to semiotics in "disclosing isomorphisms between *presemiotic* (e.g. physical or biological) and semiotic systems" (Nöth 1990: 542). Although Nöth put this forward at the beginning of the 1990s, this opinion must be opposed not only from the viewpoint of the contemporary age of virtual reality. The prevailing non-logical conduct in open social systems as functioning largely through self-referential feedback loops draws a very clear boundary between presemiotic and sociocultural systems. The lack of univocal logic of sociocultural action means that it is exactly the semiotic toolkit that ought to be used for analysing the probability of the correctness of that action as discussed and reflected in public informational space. The rationality guiding social activity depends not that much on the structure of the traditional pyramid of needs, because that pyramid can be turned upside down by the management of metaneeds, and the key to rationality can only be found in sociocultural texts and discourses. Sociocultural rationality is not compatible with the rationality associated with, for example, satisfying primary needs, for sociocultural needs are not rational in the sense of being objective and objectively measurable as following the biological functional circle. It is difficult to agree with Nöth in that "both the biological and cybernetic systems only react to their environment according to their inner needs, that is their desired state" (Nöth 1990: 544). If taking sociocultural systems as cybernetic, it is clear that their inner needs and their desired state are culture topics in informational space and therefore non-logical and oftentimes unconscious by principle and essence.

All (meaningful) behaviour occurs in a complex of integration and is conditioned and finally crystallized in a logico-meaningful-experi(m)ental nexus that extends from the level of the Mind and the psychic state to the knowledge embedded in social and cultural institutions (and legitimized therein), being thereby simultaneously objectivated and objectified. Obviously, when thinking more deeply about the levels of integration, they should not be separated, but rather taken as facets of processes similar to the various kinds of crystallization

discussed above. Meanings get integrated in sociocultural systems (becoming eventually crystallized) through conduct in social situations. Thus, understanding sociocultural institutions as modelling systems brings together trends which might seem far apart at first glance. The common ground for approaches represented by Pareto, Parsons, Sorokin, Lévi-Strauss and many other eminent researchers is – in the logical end – formed by the (seemingly?) parallel universes of systems theory and semiotics. A glance from another perspective suggests comprehending not only social or cultural assemblages as institutions, but including sign systems in the latter as well. Sign systems are institutions with social and cultural dimensions shaping people's world-view and directing their operating with both the physical and the semiotic environment. They are formed, developed and maintained by social and cultural and, in the end, sociocultural agents. By bringing together the social, cultural and individual, sign systems as institutions point to the proximity of semiotics, semiology, and systems theory. This means that the above-mentioned authors can be logically linked with argumentation presented by Saussure, Pavlov, Piaget, and numerous representatives of the microinteractionist discourse.

Clearly, such a holistic view on humans, society, culture, and environment has also been represented by the very conditional labels for research trends proposed by several classics: for example, Saussure and semiology and 'general (social) psychology', Peirce and 'logic as semiotics', Pareto and his 'general sociology', Morris and 'unified science', even Piaget's 'genetic epistemology'... As noted before by many authors (e.g. Sonesson 2008), such holism concerns a very essential unity of sign systems used by the individual in society and by social groups in wider social conglomerations. It also creates coherence in the cultural system by intersemiotic and intersemiosic connections between the diverse walks of culture, it generates such cohesion between cultural and social units that we can talk about sociocultural systems. Intersemiotic processes in sociocultural systems demand that we abandon inspecting culture and society by separate segments (e.g. semiotics of cinema, literature, media, gender, etc.) as fields in a pie chart. Unfortunately, the cohesion of sign systems on the object level is in a curious discordancy with the metalevel, where we can witness the existence of subdomains of semiotics dedicated to minute segments of analysis, to say nothing of taking for granted such areas of study as sociosemiotics, cultural semiotics, biosemiotics, semioethics, spatial semiotics and so forth.

Whilst the division of a human into the biological and the cultural being takes us way back in history, we should remember: that 'human' still remains the very same *Homo sapiens*, and that integral unity should also be kept in mind on the metalevel. It is not by the diverse kinds and types of cultural, biological, or societal phenomena we should approach man, culture and society, but by the semiotic

procedures and processes that take place in the various spheres of activities of *Homo sapiens*. The general metalevel approaches proposed by people, some of whom were mentioned above, have exactly the same common presumption if interpreted using a semiotic vocabulary: meaning making is a universal process, it has universal logical formulas and it is more or less limited in those formulas.

At the same time semiosis comes around on different levels of development that concern ontogenetic individual development and also phylogenetic development in the wide sense as described by Walter Koch through his conception of evolutionary cultural semiotics (see esp. Koch 1986: 53–63). Of course, if we study human behaviour in the sociocultural and environmental context, we have to admit certain semiotic synergy that holds between semiosis at the individual, social and cultural levels that also have to rise successfully to environmental challenges. This synergy is clearly visible in such concepts as socialization, internalization, accommodation and the like when used to describe how the individual grows into a member of a society and a culture, while learning also adaptation to a specific natural environment. We also know about the importance of natural language for the development of individual semiotic skills in the web of cultural (secondary) modelling systems. Yet as mentioned above, curiously the synergy and even the frequent homology not only of sign systems, but the very mechanism of semiosis is often forgotten. At the same time, taking into account the very complex background of the TMS's primary and secondary modelling systems as linked with the ideas of Pavlov and Malinowski, and binding that set with ideas about the ontological development of psychological skills, it is perhaps useful to presume the intermingled essence of cognitive and sensory processes, semiotic and psychological departments of the Mind. And, adding to that complex topics entailed by Sebeok's proposition of seeing levels of modelling in at least a threefold hierarchy, we probably should not rule out that all these issues are not only intermingled, but also mixed and even messed up, especially at the contemporary stage of civiliographic development.

One of the most important conclusions we can draw from the above seems to be that in sociocultural systems public informational space is shaped and manipulated by the creation and arrangement of diverse types of texts and culture topics. Interpretation of texts is moulded through interaction and sociocultural feedback loops in specifically constructed time and space, as it is also shaped by other sociocultural contextual factors. However, even more importantly we should pay attention to how hypothetical objective reality, sociocultural and semiotic reality, interpretation of texts and other semiotic behaviours are regulated by the conditioning of semiotic reflexes and crystallization of (semiotic) institutions. The identity and both internal integration and integration of social bodies with

external environments is largely driven by interaction. The latter can proceed via sign systems that, beginning at the level of natural language, are examples of second (and higher) order(s) of modelling. Considering that modelling is a societal activity, we can see how interaction crystallizes principles of meaning making and realms of reference. It is this conventionality of the socializing process that introduces humans to conventional links with diverse environments and that points at the at least twice-conditioned essence of referential reality and, alongside with contemporary technical and technological advancements, drives us to the phenomenon of not only pseudoreferential reality, but, what is more, pseudointentional semiotic activity. Yet this should not lead us to semiotic desperation, for even if the reality be pseudoreferential and semiosis pseudointentional, the semiotic essence of sign systems nevertheless remains the same and provides us with objective material of analysis. The replacement of the physical environment as the ground for reference by a semiotic environment does not change the fact that learning is still environmental and in this sense objectively based. There is just a curious nuance added: whilst sign systems imply that humans capable of abstracting and generalizing relations with the environment, and, for example, replacing signals from the environment with conditioned signs in communication, it largely remains unnoticed that the environment itself is not that original "objective reality" any more, but a conditioned informational space instead. As crystallization binds the numerous levels and fields of the semiotic reality together, it can be seen as the key to modelling activity, for it is the very source of stability and inertia of sign systems as institutions and (e.g. social, formal, administrative) institutions as sign systems. This means that it is probably no longer even the actual behaviour that we ought to see as our research object, but the structure, dynamism, and potential contents of flows of information in the space of the conditioned reference of semiotic reality.[2]

## References

Adams, Richard 1988. *The Eighth Day: Social Evolution as the Self-Organization of Energy*. Austin: University of Texas Press.

Austin, John L. 1962. *How to Do Things with Words*. (The William James Lectures delivered at Harvard University in 1955.) Oxford: The Clarendon Press.

Bertalanffy, Ludwig von 1968. *General System Theory: Foundations, Development, Applications*. New York: George Braziller.

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Buckley, Walter 1967. *Sociology and Modern Systems Theory*. (Prentice-Hall Sociology Series). Englewood Cliffs: Prentice-Hall.

Cherry, Colin 1975[1957]. *On Human Communication: A Review, a Survey, and a Criticism*. (Studies in Communication.) Cambridge: The MIT Press.

Cooley, Charles Horton 1909. *Social Organization: A Study of the Larger Mind*. New York: Charles Scribner's Sons.

CP = Peirce, Charles S. 1931–1958. *Collected Papers of Charles Sanders Peirce*. (Vols. 1–6, Hartshorne, Charles; Weiss, Paul, eds., 1931–1935; vols. 7–8, Burks, A. W., ed., 1958.) Cambridge: Harvard University Press. [In-text references are to CP, followed by volume and paragraph numbers.]

Danesi, Marcel; Perron, Paul 1999. *Analyzing Cultures: An Introduction and Handbook*. (Advances in Semiotics.) Bloomington: Indiana University Press.

Deely, John 1994. *The Human Use of Signs: Or Elements of Anthroposemiosis*. Lanham: Rowman and Littlefield.

Dewey, John 1896. The reflex arc concept in psychology. *The Psychological Review* 3(4): 357–370.

Djonov, Emilia; Van Leeuwen, Theo 2018. Social media as semiotic technology and social practice: The case of ResearchGate's design and its potential to transform social practice. *Social Semiotics* 28(5): 641–664.

Durkheim, Émile 1966. *Suicide: A Study in Sociology*. (Simpson, George, ed., intr.; Spaulding, John A.; Simpson, George, trans.) New York: Free Press.

Eco, Umberto 1990. *The Limits of Interpretation.* (Advances in Semiotics.) Bloomington, Indianapolis: Indiana University Press.

Eliot, T. S. 1920. *The Sacred Wood: Essays on Poetry and Criticism*. London: Methuen.

Garfinkel, Harold 1967. *Studies in Ethnomethodology*. Englewood Cliffs: Prentice-Hall.

Geertz, Clifford 1973. *The Interpretation of Cultures: Selected Essays*. New York: Basic Books.

Goodenough, Ward H. 1970. *Description and Comparison in Cultural Anthropology.* (The Lewis Henry Morgan Lectures 1968.) Chicago: Aldine Publishing Company.

Gramigna, Remo 2018. *Augustine and the Study of Signs and Signification*. (Dissertationes Semioticae Universitatis Tartuensis 28.) Tartu: University of Tartu Press.

Grzybek, Peter 1994a. Bemerkungen zum Modellbegriff in der Semiotik (unter besonderer Berücksichtigung der Moskauer/Tartuer Schule) In: Bernard, Jeff; Neumer, Katalin (eds.), *Zeichen, Sprache, Bewußtsein*. (Österreichisch-Ungarische Dokumente zur Semiotik und Philosophie 2.) Wien: ÖGS/ISSS, 117–138.

– 1994b. The concept of 'model'. *Soviet Semiotics. Russian Literature* 36(3): 285–300.

– 1999. Sowjetische und russische Konzepte der Semiotik In: Jachnow, Helmut (ed.), *Handbuch der sprachwissenschaftlichen Russistik und ihrer Grenzdisziplinen*. (Slavistische Studienbücher 8.) Wiesbaden: Harrassowitz, 1274–1305.

Hebdige, Dick 1979. *Subculture: The Meaning of Style*. (New Accents.) London: Routledge.

Hoffmeyer, Jesper 2010. Semiotic freedom: An emerging force. In: Davies, Paul; Gregersen, Niels Henrik (eds.), *Information and the Nature of Reality: From Physics to Metaphysics*. Cambridge: Cambridge University Press, 185–204.

Kluckhohn, Clyde 1961. *Mirror for Man: A Survey of Human Behavior and Social Attitudes*. Greenwich: Fawcett.

Koch, Walter A. 1986. *Evolutionary Cultural Semiotics: Essays on the Foundation and Institution of Integrated Cultural Studies*. (Bochum Publications in Evolutionary Cultural Semiotics 6.) Bochum: Brockmeyer.

Koestler, Arthur 1967. *The Ghost in the Machine*. London: Hutchinson.

Kull, Kalevi 2018. On the logic of animal umwelten: The animal subjective present and zoosemiotics of choice and learning. In: Marrone, Gianfranco; Mangano, Dario (eds.), *Semiotics of Animals in Culture: Zoosemiotics 2.0*. (Biosemiotics 17.) Cham: Springer, 135–148.

Lagopoulos, Alexandros P. 1986. Semiological urbanism: An analysis of the traditional Western Sudanese settlement. In: Gottdiener, Mark; Lagopoulos, Alexandros P. (eds.), *The City and the Sign: An Introduction to Urban Semiotics*. New York: Columbia University Press, 259–287.

Lévi-Strauss, Claude 1968[1963]. *Structural Anthropology*. (Jacobson, Claire; Grundfest Schoepf, Brooke, trans.) London: Allen Lane The Penguin Press.

Lotman, Juri M. 1967. Tezisy k probleme "iskusstvo v ryadu modeliruyuschih sistem". *Sign Systems Studies* 3: 130–145. [Лотман, Ю. М. 1967. Тезисы к проблеме "искусство в ряду моделирующих систем"./Theses on the problem "Art in the line of modelling systems". *Труды по знаковым системам* 3: 130–145.]

– 1984. O semiosfere. *Sign Systems Studies* 17: 5-23. [Лотман, Ю. М. 1984. О семиосфере./ On the semiosphere. *Труды по знаковым системам* 17: 5–23.]

– 1990. *Universe of the Mind: A Semiotic Theory of Culture*. (Shukman, Ann, trans.; Eco, Umberto, intr.) London: I. B. Tauris & Co Ltd.

Lotman, Mihhail 2000. A few notes on the philosophical background of the Tartu School of Semiotics. *European Journal for Semiotic Studies* 12: 23–46.

Malinowski, Bronislaw 1944. *A Scientific Theory of Culture and Other Essays*. (Cairns, Huntington, preface.) Chapel Hill: The University of North Carolina Press.

Maslow, Abraham H. 1993[1971]. *The Farther Reaches of Human Nature*. (An Esalen Book.) New York: Penguin, Arkana.

McLuhan, Marshall 1965. *Understanding Media: The Extensions of Man*. New York: McGraw-Hill Book Company.

Mead, George Herbert 1937[1934]. *Mind, Self and Society from the Standpoint of a Social Behaviorist*. (Morris, Charles W., ed., intr.) Chicago: The University of Chicago Press.

Mead, George Herbert 1938. *The Philosophy of the Act*. (Morris, Charles W., ed., intr.) Chicago: The University of Chicago Press.

Merrell, Floyd 1995. *Semiosis in the Postmodern Age*. West Lafayette: Purdue University Press.

Morris, Charles W. 1938. *Foundations of the Theory of Signs*. (International Encyclopedia of Unified Science 1/2.) Chicago: The University of Chicago Press.

– 1946. *Signs, Language, and Behavior*. New York: George Braziller, Inc.

Nauta, Doede, Jr. 1972. *The Meaning of Information*. (Approaches to Semiotics 20.) The Hague: Mouton.

Nöth, Winfred 1990. Systems theory and semiotics. In: Koch, Walter (ed.), *Semiotics in the Individual Sciences. Part II*. (Bochum Publications in Evolutionary Cultural Semiotics.) Bochum: Universitätsverlag Dr. Norbert Brockmeyer, 536–557.

Pareto, Vilfredo 1935. *The Mind and Society*. (Livingston, Arthur, ed.; Bongiorno, Andrew; Livingston, Arthur, trans.; 4 vols.) New York: Harcourt, Brace and Company.

Parsons, Talcott 1952. *The Social System*. London: Tavistock Publications.

Pavlov, Ivan Petrovitch 1941. *Lectures on Conditioned Reflexes. Twenty-Five Years of Objective Study of the Higher Nervous Activity (Behaviour) of Animals. Vol. 1.* (Gantt, W. Horsley, ed., trans.) New York: International Publishers.

– 1967[1941]. *Conditioned Reflexes and Psychiatry*. (Lectures on Conditioned Reflexes 2.) (Gantt, W. Horsley, ed., trans., intr.) New York: International Publishers.

Pelc, Jerzy 1992. The methodological status of semiotics: Sign, semiosis, interpretation and the limits of semiotics. In: Balat, Michel; Deledalle-Rhodes, Janice, eds.; Deledalle, Gérard, gen. ed., *Signs of Humanity: Proceedings of the IVth International Congress, International Association for Semiotic Studies, Barcelona/Perpignan, March 30–April 6, 1989 = L'homme et ses signes: actes du IVe Congrès mondial, Association internationale de sémiotique / Homme et ses signes*. (Approaches to Semiotics 107.) Berlin: Mouton de Gruyter, 23–34.

Piaget, Jean 1959. *The Language and Thought of the Child*. London: Routledge & Kegan Paul Ltd.

Popper, Karl R. 1972. *Objective Knowledge: An Evolutionary Approach*. Oxford: The Clarendon Press.

Potter, Jonathan 1996. *Representing Reality: Discourse, Rhetoric and Social Construction*. London: Sage.

Poulsen, Søren Vigild; Kvåle, Gunhild; Leeuwen, Theo van 2018. Special issue: Social media as semiotic technology. *Social Semiotics* 28(5): 593–600.

Ruesch, Jurgen 1972. *Semiotic Approaches to Human Relations*. (Approaches to Semiotics 25.) The Hague: Mouton.

Ryle, Gilbert 1992. Systematically misleading expressions. In: Rorty, Richard M. (ed.), *The Linguistic Turn: Essays in Philosophical Method: With Two Retrospective Essays*. Chicago: University of Chicago Press, 85–100.

Saussure, Ferdinand de 1959. *Course in General Linguistics*. (Bally, Charles; Sechehaye, Albert, eds.; Baskin, Wade, trans.) New York: Philosophical Library.

Schneider, David M. 1980. *American Kinship: A Cultural Account*. Chicago: University of Chicago Press.

Searle, John R. 2000. Consciousness. *Annual Review of Neuroscience* 23: 557–578.

Sebeok, Thomas A. 1988. In what sense is language a "primary modeling system?" In: Broms, Henri; Kaufmann, Rebecca (eds.), *Semiotics of Culture: Proceedings of the 25th Symposium of the Tartu-Moscow School of Semiotics, Imatra, Finland, 27th–29th July, 1987*. Helsinki: Arator, 67–80.

Sebeok, Thomas A. 1990. Indexiality. *American Journal of Semiotics* 7(4): 7–28.

Sonesson, Göran 2008. Beyond methods and models. Semiotics as a distinctive discipline and an intellectual tradition. *Signs: International Journal of Semiotics* 2: 277–319.

– 2009. New considerations on the proper study of man – and, marginally, some other animals. *Cognitive Semiotics* 4: 133–168.

Sorokin, Pitirim A. 1957. *Social and Cultural Dynamics: A Study of Change in Major Systems of Art, Truth, Ethics, Law and Social Relationships*. Boston: Porter Sargent Publisher.

Tomaselli, Keyan G. 1999[1996]. *Appropriating Images: The Semiotics of Visual Representation*. Højbjerg: Intervention Press.

Uspenskij, Boris 1974. *Historia sub specie semioticae*. In: Lotman, Juri (ed.), *Materialy Vsesoyuznogo simpoziuma po vtorichnym modeliruyushchim sistemam* I(5). [Успенский, Б. А.

1974. *Historia sub specie semioticae.* In: Лотман, Ю. М. (ред.), *Материалы Всесоюзного симпозиума по вторичным моделирующим системам* I(5).] Tartu: Tartu State University, 119–130.

Vygotski, Lev S. 1978. *Mind in Society: The Development of Higher Psychological Processes*. (Cole, Michael; John-Steiner, Vera; Scribner, Sylvia; Souberman, Ellen, eds.) Cambridge: Harvard University Press.

Wuketits, Franz M. (1997). Anthroposemiose. In: Posner, Roland; Robering, Klaus; Sebeok, Thomas A. (eds.), *Semiotik: Ein Handbuch zu den zeichentheoretischen Grundlagen von Natur und Kultur. Vol. 1*. Berlin: Walter de Gruyter, 532–548.

## От систематического семиотического моделирования до псевдоинтенциональной референции

Общества как открытые социальные системы действуют через семиотические системы моделирования. Мы рассматриваем их роль в формировании (обусловливании) первичных и вторичных потребностей, а также метапотребностей, обусловленных социальными системами. Проводимое посредством социализации обусловливание позволяет натурализировать семиотическую реальность до уровня, где мы сможем говорить не только о неосознанном, но также и о неинтенциональной семиозисной деятельности. Тем самым сфера индексальности будет подвергнута сомнению. Если индексальность соединена с неинтенциональной референцией, то неинтенциональный семиозис означает размывание и слияние разных реальностей гораздо дальше границ семиотических пространств, называемых симулякрами. Особенно остро это ощущается в контексте новых технологий, где смешиваются физическая, семиотическая и чисто виртуальная реальности, что приводит к появлению семиотической инсуляризации. При этом становится трудно определить объект исследования, поскольку сам субъект рассеивается: реальное и виртуальное смешиваются также с точки зрения их обитателей (биологические люди, пользователи компьютера, аватары, виртуальные личности). Таким образом, прагматическое измерение семиотики постепенно теряется. Кроме того, референциальная действительность удаляется от информационного пространства, созданного и представленного в «традиционных» дискурсах, основываясь все более на псевдоинтенциональном семиозисе.

## Süstemaatilisest semiootilisest modelleerimisest pseudointentsionaalse viitelisuseni

Ühiskonnad kui avatud sotsiaalsed süsteemid toimivad semiootiliste modelleerimissüsteemide kaudu. Vaatleme viimaste rolli primaar-, sekundaar- ja metavajaduste kujundamisel (*tingimisel*) sotsiaalsetes süsteemides. Sotsialiseerimise kaudu sooritatav tingimine võimaldab semiootilist reaalsust loomulikustada selle määrani, kus me ei räägi ainult mitteteadvustatud, vaid ka mitteintentsionaalsest märgiloomelisest tegevusest. Seekaudu muutub kogu indeksiaalsusvaldkond küsitavaks. Kui indeksiaalsus on seotud mitteintentsionaalse viitelisusega, siis tähendab mitteintentsionaalne märgiloome eri reaalsuste ähmastumist ja segunemist

hoopis kaugemale nende semiootiliste ruumide piiridest, mida nimetatakse simulaakrumideks. See on eriti päevakohane uute tehnoloogiliste võimaluste puhul, kus füüsiline, semiootiline ja puhtvirtuaalne reaalsus segunevad. Seda küllaltki uut nähtust iseloomustab semiootiline saarestumine. Sellega kaasuvalt on veidramgi, et uurimisobjekti on raske määratleda, sest juba subjektki hakkab hägustuma: reaalne ja virtuaalne segunevad ka oma asunike (bioloogiline inimene, arvutikasutaja, avatar, virtuaalne identiteet) osas. Nii hakkab semiootika pragmaatiline mõõde kaotsi minema. Ka viitereaalsus liigub eemale sellest inforuumist, mida loodi ja kajastati "traditsioonilistes" diskursuse vooludes, ja põhineb pigem pseudoviitelisel tähendusloomel.