

# METALOGY: A COMMENTARY ON MIND, RECURSION AND TOPOLOGICAL INFERENCE

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## ABSTRACT

Alfred Korzybski's map-territory metaphor and his time-binding notion are presented here as a potential framework for the explanation of the role of recursion in biological processes of cognition. Korzybski's self-reflexiveness principle is related to Gregory Bateson's 'ecology of mind' and 'radical constructivism' in the work of Heinz von Foerster and Ernst von Glasersfeld. From this point the author postulates the possibility of *metalogy* as a recursive, topologically inspired model of the cognition in living systems. Cognition is understood as a self-referential, circular activity whose topological form avoids solipsism. Subsequently, the article considers the code-duality principle in biosemiotics of Jesper Hoffmeyer and Claus Emmeche. Second order code-duality serves as an explanatory principle for *self-as-other-coding*, where a 'self' is being established in ontogeny as a form of a dynamic stability of self- and other-reference on different logical levels, thus confirming the central role of recursion in the biological processes of cognitive development.

*Metalogy*: In-formation (organized complexity) could be considered an outcome of recursive processes of constructing and stabilizing of our own activities, which, in turn, serve for developing equilibration inside a biological cognitive system. If the process of in-formation production is based on heterarchy of logical levels, then, 'meta'-levels and recursion both are necessary pre-conditions to minding/mental processes. In this sense, *metalogy* frames what Bateson's *metalogues* were for - not only a means to discuss the problem but also to keep the structure of discussion relevant to the subject of 'heterarchy.' But can *metalogy* be given a topological representation? Or is this an appropriate question?

## 1. A MAP IS NOT...

People are the only known creatures who show an ability to express their experiences in a symbolic language. The language possessed by our species can be considered our exceptional characteristic, distinguishing us from other animals. We have not only an extremely well developed ability to communicate, but also an ability to meta-communicate and to form a fairly stable self through self-consciousness. We can infer from behaviors of different species of animals, especially some primates, e.g. gorillas or chimpanzees, that they possess some limited consciousness. However, they do not make such use of it as we do, neither do they possess such developed tools of self-expression in a symbolic, digital code as evident in human languages. These features of our species primarily shaped our cognitive processes and they explain the uniqueness of human *Umwelt*, in Jacob von Uexküll's terms.

People create their environments, which are not 'natural' any longer. Alfred Korzybski, Polish-American aristocrat and philosopher, famous for his metaphor "*A map is not the territory*", claimed, in a manner analogous to Jacob von Uexküll, that all human environments are meaningful to us in what they conserve and in their significance to an observer. To put it in Korzybski's words, all human environments are 'semantic environments'.

Korzybski also introduced a formulation of 'time-binding' as the defining characteristic of human beings. Time-binding means capacity to transfer accumulated achievements, knowledge and experience of past generation to the next generations through symbolizing. Human societies accumulate changes in their systems of beliefs, their organization, culture and technology and they maintain some of those changes in their educational processes. In Korzybski's words '*humans are time-binding class of life*' which means that we organize our living in social memory, i.e. history and mythology, preserving coded versions of experiences for ourselves and for generations to come.

Time-binding derives from on-going re-description of human experience, shared in social exchange processes, i.e. through communication. Re-description of experience, imitation of behavior and self-imitation in particular, plus levels of abstracting, form the main operational mechanisms of time-binding. Korzybski's map-territory metaphor and his principles of general-semantics (non-Aristotelian system) display three essential characteristics of the recursive or self-referential nature of re-description processes in human cognition (Korzybski 1994 [1933]: *passim*):

1. A map is not the territory it represents – the non-identity principle
2. A map covers not all the territory – the non-allness principle
3. A map is self-reflexive – the self-reflexiveness or self-reference principle

We might translate the map-territory metaphor (1) into modern parlance in the following way: any form of representation belongs to a different logical level than its object, as it is represented. Confusing a map and its territory is an error in logical typing, as Gregory Bateson rightly noticed in his comments on Korzybski's work (Bateson, 1979). What in fact we are confusing here is not the territory, but *its image* of our own production and its subsequent, verbal re-description on a different logical level. The error is made in two opposite - but - complementary ways: in the processes of mapping the phenomena onto tau-tology and in the processes of mapping verbal re-descriptions about the phenomena.

The non-allness principle (2) reveals the restricted nature of any form of coding and translation with their inevitable reduction, distortion and restructuring of information. Non-allness indicates also limitations of any re-description processes, which are inevitably partial and incomplete. No map covers the whole territory; we have always gaps in our knowledge. As Gregory Bateson wrote (Bateson and Bateson 1987:164):

There are gaps of detail between details. However fine the mesh of our net of description, smaller details will always escape description. This is not because we are careless or lazy but because in principle the machinery of description - whether it be a language or a halftone block-is digital and discontinuous, whereas the variables immanent in the thing to be described are analogic and continuous.

The self-reflexiveness principle (3) demonstrates fundamental recursion (self-reference) of maps, or any possible description in general and, particularly, a description in a digital code. Descriptions or representations, in this regard, possess a built-in potential of self-replication, and they are produced in hierarchical logical levels. Therefore, descriptions may produce an infinite number of levels of derivative re-descriptions. These re-descriptions have both an 'inner and an 'outer' aspect, flowing in an inner world of a cognizing subject as well as in social networks of exchange in communication. This human capability explains the role of recursion as a founding mechanism of human adaptation and cognition.

Korzybski describes human cognition as moving in a circular pathway through different 'levels of abstracting', both 'top-down' and 'bottom-up'. This necessary circularity of cognition (recursion) is a very crucial explanatory notion in his general-semantics. For Korzybski shows that we create very subtle, abstract theories, 'far' from the object in order to see through things. Very sophisticated, abstract models let us discover phenomena in the outside world. Those models, like Einstein's relativity theory, permit discoveries which were unthinkable just a few decades before they were made. The circularity of cognitive

processes, based on the language, or more generally on digital coding, is the tool for learning about the world outside. Yet if you want to see, you need always to re-learn the way you watch.

Korzybski emphasized that human language serves as a tool for history-making because of its circular, re-descriptive potential. As humankind we conserve a special mode of representational exchange through a system of coding, which from an evolutionary perspective, is newly ‘invented’. Constant reorganization of a physical context, i.e. natural environment, in order to satisfy needs of a species seems the elementary adaptation mechanism for most animals, but in humans the effects of changes in physical contexts assume a significance beyond this. Intentional, organized modification of the environment, re-designing and creating it anew, profoundly extends our adaptation to a level where we may actually re-structure ourselves in a process of self-definition, as in plastic surgery.

Korzybski’s metaphorical distinction between ‘a map’ and its ‘territory’, or, in other words, a relation between ‘in-side’ and ‘out-side’ of a cognizing subject (observer, person, etc.) rests at the very heart of any exploration of the role of recursion in human cognition processes. There is however a different problem that we face in translating Korzybski’s exploration of the role of recursion in human cognitive processes into the field of biology. Indeed, Korzybski saw a clear division between human and animal world regarding cognitive mechanisms and saw the role of language as exclusively human achievement. Thus, the question arises whether we are able to place the ‘map-territory’ distinction of Korzybski in the ‘semiosphere’ of nature and return through this to the place of people in a recursive natural history. (Harries-Jones, personal communication). To achieve this aim is to locate mental process in a large context of biology, in a ‘pattern that connects’, far beyond internal human cognition. This evokes, again, thoughts and words of Gregory Bateson, and their extension and refinement in ‘radical constructivism’ and in ‘biosemiotics’. There, on biological/semiotic sur-/inter-/faces we may find realization of Korzybski’s distinction, freed from potential dualism and (probable) anthropomorphism.

## **2. TIME-BINDING, GREGORY BATESON AND THE QUESTION OF DUALISM**

Time-binding notions understood as the accumulation and restructuring of cultural changes found reverberations in Gregory Bateson’s ‘ecology of mind’. Two criteria of the mental process, introduced by Bateson in his *Mind and Nature* (1979), reverberate from Korzybski’s work, i.e. *self-reference* and *logical levels*, and these appear valuable explana-

tory principles in the clarification of a topologically understood model of cognition. The self-reflexiveness (self-reference) principle holds a position here as a built-in mechanism of any digital code. Bateson wrote: '*Mental process requires circular (or more complex) chains of determination*'. Therefore, self-reference can be understood both as multi-level feedback controls in its biological aspect and self-consciousness in its cognitive aspect. The role of self-reference cycles is to maintain a stable organization on a wide range of levels in a living system.

A theory of logical levels, in Bateson's far-reaching sense, also plays a central role as an explanatory principle in his 'ecology of mind'. The significance of the theory is stressed in last two criteria of mental process, namely (Bateson 1979:92):

1. In mental process, the effects of difference are to be regarded as transforms (i.e. coded versions) of events, which preceded them.
2. The description and classification of these processes of transformation disclose a hierarchy of logical types immanent in the phenomena.

The hierarchy of classes of description and classification, i.e. the presence of logical types, opens a way for understanding the Bateson concepts of emerging qualities, framing, levels of learning, paradoxes, double-bind, not to mention hierarchy of contexts for interpretation and meta-communication as exceptionally human features.

To bind time is human, for we construct ourselves as texts for the others, who can be us. Texts are potentially immortal and immortality as a topic, or as a desire, enters into human world with time-binding. Human culture is preserved in texts, culture being a form of text itself. If life can be compared to a time-machine, all living systems last in it by means of reproduction but only humans have learned how to 'control' it by means of symbolizing - but so far only in one direction. Preserving ourselves (our-selves) in time, and over time by means of culture, is another exclusively human achievement based on an extended recursion. This recursion refers to the human language with its built-in self-reflexiveness. Thus, to talk, in the sense of 'to re-describe,' is to be human.

What Gregory Bateson did in his 'ecology of mind' was to go beyond Korzybski's map-territory distinction in the sense of removing the limitations Korzybski had made about the distinction applying solely to human beings. Living entities, Bateson's (Jung's) *Creatura*, do not experience the physical world, *Pleroma*, as such, whatever 'it' is. 'It' is not even 'it,' as 'it' belongs to us and was invented by us. We experience our own ways of knowing, as a result of our circular re-presentation, re-working, repetition and re-construction of on-going cognizing, knowing, etc., however we name it. According to the psychological discoveries

of Jean Piaget and his colleagues, any cognitive stability of an object as a form of representation, that is, as an inner cognitive construction, results from the ever-lasting processes of cognitive equilibration which I may know only through results – relation products or ends. Relation products are the relation between ‘me’ and what is ‘not-me’, as I distinguished it (‘it’). This is reminiscent of Korzybski’s formulation of the non-identity principle. Indeed, we encounter ONLY maps of our own production as any territory ‘escapes’ into maps. This is the necessary moment in the world of mental processes expressed ‘ecologically.’

Bateson argues that the process of construction of cognitive images is not and cannot be conscious, otherwise we could not rely on those images in our everyday activities. They must be created in a way, which is habitual and transparent to us in order to achieve their stability. Therefore, we construct images *as if* they were objects themselves, when they are still *our* images-constructs. The recursive processes inside an organism and, through structural coupling (Maturana) outside it or heterarchy of inner feedback (recursive, circular) cycles together serve for the images’ construction. Here lies the radical recursion of our cognition. How then do we explain the emergence of dualism and dualistic thinking? As Ernst von Glasersfeld, one of the fathers of radical constructivism, explains (von Glasersfeld 1983: 53):

The world we live in’ can be understood also as the world of our experience, the world as we see, hear, and feel it. This world does not consist of ‘objective facts’ or ‘things-in-themselves’ but of such invariants and constancies as we are able to compute on the basis of our individual experience. [...]

The world we live in, from the vantage point of this new perspective, is always and necessarily the world as we conceptualize it. ‘Facts,’ as Vico saw long ago, are made by us and our way of experiencing, rather than given by an independently existing objective world. But that does not mean that we can make them as we like. They are viable facts as long they do not clash with experience, as long as they remain tenable in the sense that they continue to do what we expect them to do.

From von Glasersfeld we may conclude that the problem of the dualism derives from a dialectical cut between structural unity of organism with its surroundings, a process of continuous, mutual exchange (air, water, etc.), and an organizational autonomy of a body as a closed system. How can I be one and the same with my environment, when I experience my borders, when I touch MY skin? Making a distinction of oneself as a separate, autonomic

entity, which is a necessary, healthy and obvious stage in our ontogenetic development, can be regarded an indirect source of every form of dualism, the mind-body dualism included.

We should mention here that Gregory Bateson saw the dilemma of dualism in a broader perspective than ‘radical constructivism.’ His clear distinction between *Creatura* and *Pleroma* as two different modes of organizing objects did not mean a difference in *substance*, but rather in modes of organization and self-organization. While *Pleroma* signifies all matter-energy of the universe, *Creatura* is its integral part with some extra, unique properties. Self-organization (recursion) in *Creatura* makes possible self-creation of information, communication and mind, all of which are based on, embedded in and therefore, possible within, arrangements of matter, that world of *Pleroma*. I will quote here Bateson’s explanation of this point *in extenso* (Bateson and Bateson 1987:18)

Although there is an apparent dualism in this dichotomy between *Creatura* and *Pleroma*, it is important to be clear that these two are not in any way separate or separable, except as levels of description. On the one hand, all of *Creatura* exists within and through *Pleroma*; the use of the term *Creatura* affirms the presence of certain organizational and communicational characteristics, which are themselves not material. On the other hand, knowledge of *Pleroma* exists only in *Creatura*. We can meet the two only in combination, never separately. The laws of physics and chemistry are by no means irrelevant to the *Creatura*—they continue to apply—but they are not sufficient for explanation. Thus, *Creatura* and *Pleroma* are not, like Descartes’ ‘mind’ and ‘matter’ separate sub-stances, for mental processes require arrangements of matter in which to occur, areas where *Pleroma* is characterized by organization which permits it to be affected by information as well as by physical events.

Here we touch an important problem of the interface between *Pleroma* and *Creatura* as well as interfaces between different subsets and different (logical) levels of *Creatura* as persons, communities, societies and ecosystems. We will focus then on human world of cognitive processes but, hopefully, not limit the world of mental process to humans only. The interface between *Pleroma* and *Creatura* is probably the most general example of the difference between ‘map’ and ‘territory’ and the discovery of that difference is the first, primary act of distinguishing, thus the invention of epistemology. This first step of separation of the world of the living *within* the inanimate material world, in which Bateson follows Jung instead of Cartesian separation of ‘mind’ *from* ‘matter,’ forms also a healthy, non-dualist solution. Nevertheless, a framework for its topological representation is another problem.

### 3. THE PROBLEM OF TOPOLOGICAL REPRESENTATION

A topologically inspired prototypical model of (biological) cognition, which I postulate here, derives from the sources mentioned above, human cognitive systems in Korzybski's general-semantics, Maturana's *autopoiesis*, 'radical constructivism' on the one hand and the broad, biological perspective of Bateson's ecology of mind. To the latter I will add the bio-semiotics of the Copenhagen group. In Bateson's ecological perspective, mind does not have any substance in ontological sense – mind is 'no-thing'. Mind, or mental processes in the broadest sense, ARISES as a relation between the behavior of a living organism and its perceived results. This view goes far beyond the notion of mind in Korzybski's general-semantics. A view analogical to Bateson's position is also maintained in autopoiesis theory. As Humberto Maturana and Francisco Varela, its founders, have put it: '*knowing is doing and doing is knowing*' (Maturana & Varela 1998 [1987]). The non-substantial, epistemological status of mind means that when we locate it and look for it in any physical or biological place, we stand on fundamentally false premises. Mind 'grows' on the material basis that is the neural network, but is not equal, in the sense of coincident, to it.

Simplifying the point we might say that mind can be described as a product of the nervous system, but in such sense as it is also a product of the whole organism-in-environment. Thus, in the broadest sense, mind is a recursive, cognitive product through which a living organism enacts its adaptation in entirely circular, self-reflexive activity. Structural coupling with the outside world, described by autopoiesis theory as a mechanism of mutual adaptation of an organism and its niche, can also serve as a component of that recursive product. This suggests that in a topologically inspired model of cognition, cognitive processes would not have any internal or external sides. The cognition in a living system is one-sided or rather **no-sided, uni-substantial activity**, identical with itself, the one and the same. Therefore, the cognition of a living system is not referential, in any possible, objective sense, but only self-referential, circular and recursive. The use of a topological model can help explain relations between 'interior' and 'exterior', 'ins' and 'outs.' understood as the difference established (and continually being established) by a cognizing subject. The relation between an observer and its environment can be presented in the Möbius strip form, the simplest example of one-sided surface, as is the case with Rosen's article above (SEED 4 (1)). We may notice that local double-sidedness, implied by non-global perception of a fragment of the strip, is eliminated, when we investigate the whole strip.

The topological properties of the Möbius strip, we notice, denies obvious, common-sense, assumptions, with which we begin our investigation of it. If we start with the dualist



presumption that it has got two sides, which happens to be true in a local, fragmented way, we can easily show, and then ‘prove,’ it has got ‘two sides.’ However, it is not difficult to go on and demonstrate that we have not two, but just one side. The very same approach is embedded in Glasersfeld's constructivist way of thinking about our cognitive processes. If we approach the topological analysis of constructivism still immersed in our commonsense, dualist beliefs, then we will not be able to understand its sense at all. According to the old Buddhist saying first you have to empty your cup to pour anything into it, because it is not reasonable to pour anything into a full cup.

The Möbius strip as a metaphor of the cognition of living entities demonstrates that cognitive processes do not have different sides, ‘this’ and ‘that,’ ‘here’ and ‘there,’ and that the distinction between internal and external side of the cognition holds in one and the same organism. Here we come across the most difficult moment in our critical reflection. Self-consciousness, understood as knowledge about oneself, is based on the ability to differentiate about the process of differentiation. The very experience of ‘me’ as a separate being, which is one of the earliest, founding human experiences, the discovery that we are ‘something’ different than the world outside, leads often to an unconscious, pre-assumptive statement, that we have to be different also in the substance we are built of. From this moment, in our self-reflection, we are forced into a kind of psycho-physical dualism, the most consistent explanation of the ‘fact’ of difference. Dualism is much easier to grasp and become accepted as a common sense philosophy than any non-dualist position, because it appears so obvious to (self) conscious mind at its very first, investigative moment.

By contrast, an observer in the language of *autopoiesis theory*, that is a picture of a cognizing subject looking out, belongs to the very same logical level; it is ‘the other/the same’ side of the cognitive processes taking place in an organism. We do not have to entangle ourselves in ambiguous solutions, in any form of dualism, as we do not have any contradictions here. The picture belongs to the observer (me, you, etc.) and this is the only venue where it can be understood. Using a Kantian terminological frame we might say, topologically and formally, that a RE-PRESENTATION describes an ‘inside,’ an internal organization of an observer, i.e. a subject-organism, a PERCEPTION describes ‘surface,’ borders, *interfaces*, still one-sided surface, and REALITY (*Dinge-an-sich*) reflects ‘outside,’ i.e. place re-cognized as ‘no-inside.’ If we employ thinking in topological categories for the explanation of biological cognitive processes, we will notice, that from the point of view of a cognizing agent, in the closed area of his/her body, s/he has got no means to distinguish an illusion from perception of something ‘real.’ What is real or what we present ourselves as real, is a result of constant, recursive co-ordinations between different areas of nervous

system and behavior (afferent-efferent activity of an organism), recognized as such by the very same system. Actually, we do not have any natural tools, except for dualistic rhetoric, to verify the certainty of our cognition.

Once we have begun to use the framework of the observer in autopoiesis, then the correspondence theory of truth that has accompanied natural science for ages, seems to be based on delusive and naïve assumptions that we can compare our judgments with ‘reality,’ and postulates the impossible condition of stepping outside ourselves, i.e. crossing our borders, ‘exiting from oneself’, to look onto events from the extra-personal point of view or the God’s point of view (Nagel, 1986). This illusion shows how strong is the temptation of totality in metaphysical cognition, the transgression of one’s cognitive limitations, in taking the position reserved exclusively for ‘God.’

At this point we can begin to think of *Metalogy*: in-formation understood as an outcome of recursive processes of constructing and stabilizing of our own activities, which, in turn, serve for developing equilibration inside a biological cognitive system. The dilemma is that we present ourselves every continuity or process through discontinuous, unchanging elements. Any change can be perceived only on the background of some solid, fixed points, which have their origin in the history of living organism, the history of process included. A biopsy, a picture, a snapshot are not relations themselves – they are motionless states of the processes they represent, a cut through the process. The cut through the process is not only ‘elsewhere,’ in sense of coding, but also ceases to be contemporary to the process at the moment it appears. It belongs to another logical level, however related to the process. Through it, we always discover the momentary past of the process, i.e. changed by us into a state through a form of digital coding. Sometimes the past concerns hundredths of a second, and sometimes billion years, as in the case of the light from distant galaxies.

#### **4. AVOIDING SOLIPSISM: FROM METAPHYSICS TO METALOGY**

A topological, recursive solution to the dilemma of solipsism can be found in Gregory Bateson's analysis of logical levels or levels of abstraction as a source of tools for perception and behavior coordination. As he argued in *Angels Fear* metaphysics searches for what is ‘beyond,’ ‘above’ (Greek *meta*) physics, i.e. supernatural, over-whelming explanation of existence as such. We need to jump out of metaphysics straight into ... ourselves. We escape from the ‘meta’ in metaphysics to explain the necessary circularity in our cognition but not, at the same time, to find ourselves embraced by solipsism. We search for the explanation of how recurring, cyclic re-working of our experiences creates new discoveries in

our perception, which are based on what is already known, moving up and down different logical levels. We do not need ‘meta’-physics, but rather a step ‘beyond’ or ‘above’ *Logos*, outside the naming game of language. When a dialogue is turned into a metalogue, Bateson’s invention, we find ourselves in a situation when knowing (talking) is doing, which is going beyond what knowing (doing) is (about). Thus, I call for metaphysics *a rebours*, which is a contravention of the previous ones. I call for *metalogy*.

If the process of in-formation production is based on heterarchy of logical levels, then, ‘meta’-levels and recursion are both necessary pre-conditions to minding/mental processes. In this sense, *metalogy* frames what Bateson’s *metalogues* were for: not only a means to discuss the problem but also to keep the structure of a discussion as a whole relevant to the subject of ‘heterarchy.’. Metalogy is based on the temporality of adaptation in which contextual-based stability at a given time creates the delusion of appropriate adaptability at another time, when hidden assumptions based on stability do not hold any longer in a new context. Metalogy implies never-ending transgression, a circular walk on the one-sided surface of the Möbius strip where one finds understanding solely by walking - not after reaching a goal.

Cognitive structures as patterns (arrangements) of relations or biological forms always belong to a different logical level than their objects or events, to which they refer. It means that any cognitive structure is never identical to what it describes, so as a name is never the thing, to which it is given, a map is never the territory it represent (Korzybski), and, as discussed below, this has important implication for our conception of genetic structure, a gene is not DNA (Hoffmeyer, 1996). Cognitive structures are never ‘exact’ or ‘true’ – they can be no more than useful. At the same time a structure is never what it describes, but the structure is everything, what we may know and we can only get to know is the structure, the only content of any possible knowledge. As Bateson wrote (Bateson and Bateson 1987:161):

Insofar as the name is never the thing named and the map is never the territory, ‘*structure*’ is never ‘*true*’ [...] ‘Structure’ is always a somewhat flattened, abstracted version of ‘truth’- but structure is all that we can know. The map is never the territory, but it is sometimes useful to discuss how map differs from hypothetical territory. That is as near as we can get to the ineffable, the unsayable.

The statement, that a structure, more properly a form, is the only content of knowledge reminds one at first of an Aristotelian notion of form. This seeming similarity can be very misleading. Aristotle was the essentialist, the seeker of this SOMETHING in things, and

here, in areas at least declaratively constructivist, any form of essentialism is absurd or even epistemologically dangerous. The essence would have to be contained immanently in the things, but then how can we find the essence out? If the essence would have to be in our cognition, then it would not be a thing, because the human mind this no-thing, no-something. As Korzybski indicated, in the human mind things are not present in any other way than as ‘things,’ as symbols, always in quotes. And the essence is not THERE. Therefore, as well as for some other logical reasons, he called his system Non-Aristotelian.

When thinking in terms of metalogy, we notice that any ‘given’ information (data) might be considered a product of recursive processes of constructing and stabilizing of our own activities. Those activities, in turn, serve for growing cognitive (self-)stability inside the system (Piaget, von Foerster). People create their own experiences, but they tend to perceive them as external events. Those events are recognized as such (objective, external) in their own experiences, which do not have to be conscious, and hardly ever are. Cognitive structures as such always involve relations, which they describe, contain or create. However, we should keep in mind that those structures are embedded (and recognized) in a system of relations both in biological and social sense. Yet the illusion of separation between ‘internal’ and ‘external’ events, ‘insides’ and ‘outsides’, is preserved in our dualistic language. Generally, Indo-European languages possess a built-in mechanism, which allows for description of *Separable Things* (Bateson and Bateson, 1987; Whorf, 1956; Korzybski, 1994 [1933]). The privileged role of the nouns as content carriers ends up in becoming arrested by descriptions of results of relations and states of processes, instead of relations and processes as such. Noun-based languages usually emphasize fixed states much better than processes leading to them. They describe rather what IS than what HAPPENS. The emphasis is put on the effects, the end points of relation as places of stabilization, products, *the relata* in Gregory Bateson’s terminology (Bateson and Bateson 1987: 161)

‘Human languages-especially perhaps those of the West-are peculiar in giving undue emphasis to Separable Things. The emphasis is not upon ‘relations between’ but upon the ends of relationship, the relata. This emphasis makes it difficult to keep clearly in mind that the word ‘structure’ is reserved for discussion of *relations*.’

We never get to know relations, including ourselves, as processes, i.e. relations in such sense, in which information in a book, for example, is a relation between me and ‘it’, which is not ‘only’ in the book (objective idealism), nor it is ‘only’ in me (solipsism), but in-between. Even a direct, factual description of a relation is not a process, but a state, because it contains discrete, separate units, such as letters, words and sentences. A report, a description always has to contain some discontinuity, some ‘fixed’ points, which are intermittent

and discrete due to digital form of coding. We are immersed in the network of on-going translations, as re-descriptions from  $map_1$  to  $map_2$  to  $map_3$ , etc., indefinitely in never-ending recursion, in practically immortal time-binding process. As Roman poet Horace said *Non omnis moriar*, and apparently he was right, still alive in words after two thousand years. This memory is possible only because we are able to maintain recursively our descriptions in digital codes, among which natural language is the most important.

## 5. METALOGY IN THE CONTEXT OF THE GENETIC CODE

Two Danish biologists, Jesper Hoffmeyer and Claus Emmeche, on the basis of Bateson's work, wrote about the role of self-reference in the context of genetic code (Hoffmeyer and Emmeche 1991: 124-125):

Self-reference clearly depends on some kind of re-description. The system must be able to construct a description of itself [...]. This description furthermore must stay inactive in-or at least protected from-the life-process of the system, or else the description will change-and ultimately die with the system. In other words, the function of this description is to assure the identity of the system through time: The memory of the system. In all known living systems this description is made in the digital code of DNA (or RNA) and is eventually contributed to the germ cells.

I assume that distinction of two different sides in human cognitive processes, i.e. the internal-subjective and the external-objective side, results from the uniqueness of human cognition as such and it cannot be understood as an ontological fact in any respect, but as a necessary product of this epistemological uniqueness. As Gregory Bateson expressed it, we are those who create such a distinction (Bateson and Bateson 1987), enacting perception-differentiation-definition processes as a part of our living, or behavior, as living entities. To state that I am one and the same with anything else, I need first to 'discover' myself as a distinctive unity. Still, I find myself already related to somebody else. Concurrent separation and relationship between a person and her/his environment, combines on different logical levels, to make a systemic unity in an ecosystem of mutual co-production. A person belongs to an ecosystem as its subsystem, which draws its own boundaries. This is an inevitable logic of making difference, i.e. creating information.

Hoffmeyer and Emmeche introduced in 1991, in biosemiotic context, a notion of code-duality, which indicated an important dichotomy between two different, yet complementary modes of description or sign production (re-production). Digital and analog codes cover all information activities in living systems as two necessary sides of sign-processes: analog

codes for action (behavior) and digital codes for memory, to repeat the authors. They put fundamental processes of coding in the middle of biosemiotic thinking, following a path indicated by Gregory Bateson and developed by Anthony Wilden (Wilden, 1987a, 1987b) in communication studies. Life wonder is ‘the wonder of code’ and that indeed is a core explanatory principle in any explanation of mental process in living systems.

Sign activities taking place on surfaces in living systems rely on coding. If coding is understood primarily as semiotic activity – as something standing for something else to somebody in some respect (which is C.S. Peirce’s perspective on which Hoffmeyer and Emmeche draw), then any re-description means conservation of description on a level at least one step apart from the phenomena. Therefore, a map as a form of re-description in a biologically based code has to be generated on a different level than the phenomena itself. This move from the phenomena to their coded version seems to be an inevitable characteristic of coding processes. That’s what is the ‘meta’ for. The move in semiosis chains is not only apart, but also above, when we consider the combination of digital and analog coding. Digital re-description makes not only a form of memory, but also a descriptive preservation of (partial) organization implemented or embodied in an analog context. The dialectics of these two integrated side of coding creates a condition *sine qua non* for a development of growing semiotic sophistication of the living.

In a later publication Hoffmeyer (2001) indicated three features of digital coding, which play a crucial role in what I have termed metalogy, a topologically inspired model of cognition:

1. *Freedom from the constraints of nature*

Digital coding is based on relative independence of the code itself and message it carries. Therefore, digital codes make possible paradox, contradictory messages. This capacity of digital codes allow for practically infinite productivity and freedom. Incredible flexibility of living systems, creativity, imagination, illusions and art production in humans altogether are results of this independence.

2. *Objectivity and temporality*

A shared convention of digital codes makes possible their objectivity or externalization, i.e. a message somewhere ‘outside’ communicating agents, mediated by a code (=convention). At the same time, digital codes are inert, relatively stable and potentially eternal. Temporal, stable nature of digital codes serves for evolution a conservation factor, as evolution needs any form of memory.

### 3. *Abstraction*

Possibility of different logical levels gives a syntactic freedom to digital coding. This feature allow for creation of meta-messages as messages necessary for interpretation of other messages. Abstraction here resembles to some extent the self-reflexiveness principle of Korzybski's general-semantics: we are able to produce copies of copies, descriptions of description, moving up the ladder of syntactic sophistication.

Hoffmeyer also introduced a notion of a second order code-duality or 'meta'-code-duality, as a mechanism of our, specifically human, development in symbolization. The concept of levels of code-duality combines logical levels, in Bateson's interpretation, with the framework of digital/analog codes. Transitions in human modes of coding can be pictured as a spiral model made by two movements: codes and logical levels. In Hoffmeyer's biosemiotic perspective, an established, semi-stable combination of self-reference and other-reference distinguishes living entities from non-living objects. Transition of code-duality to a higher (meta-)level opens humans to symbolic interpretation and self-interpretation as leading mechanisms of specifically human communication. Thus, we gain and dispose our own digital code, which in turn shapes us through our own actions. Have we got a digital code or has it got us? Both.

It is time for the next step to the very human world.

Animal populations generate emerging patterns of coding of their internal feedback systems. However, animals do not know they are 'selves' and do not behave accordingly, though some mammals, like dolphins, seem ready for such competence as we might infer from their behavior. In humans meta-code-duality makes place for externalization of a person, but only in a sense of a message. This process of cognitive externalization in symbolic tools, different forms of co-operation, creating mind 'out there', in-between interacting people, enhanced social memory systems and gave an extraordinary speed to cultural evolution in the human world. Still, if cloning of people were ever possible, we would copy a body, but not a person.

A person in his/her embodied figure operates as a social/communication unit of population-as-a-system and his/her history, i.e. ontogeny, itself is a history of his/her embodiment. Therefore, disembodied cognition is as impossible as a complete separation of digital and analog coding, which holds true both in the genetic and symbolic contexts. In a social aspect of this process, we might notice that a person does not develop, does not even exist as a person, if he/she is not embedded in a network of interpersonal relationships which nur-

ture and form him/her concurrently. There we step to inter-relational becoming of persons in self-stabilizing relation between self-reference and other-reference, a connection of recursion occurring on different logical levels of social (eco)systems.

## 6. THE RESOLUTION OF 'INTERFACE'

Every sensible human epistemology based on recursion should accept our 'physical housing' in a body, in biology, in the alive me, you, etc. When we accept this point we are sent back to the analysis of *interfaces*, surfaces, on which the 'I' ends, the 'I' experienced physically. My 'I' existence, in any apparent, organized and intentional activity, belongs itself to the world, but the world, which is nothing else, but the projection of me. I discover myself ('I am') at the very end of the long road, which I have left behind. I stand on the mountain, which I have created myself, but I forgot about it during the process. The image creation process is veiled – what I know is already an image, not a painting-in- process, but the ready-made picture.

We may assume here that growing complexity of coding in early humans resulted in the social invention of 'a person' though a larger unit, the population's self-organizational processes. Our bodies serve as carriers, but not as agents. To avoid any metaphysics we will emphasize an organizational character of agency. A system of communications in human population creates, constructs, and establishes itself in interactions, and only through inter-relations. Following Niklas Luhmann's explanation of self-reference in social systems (Luhmann, 1990) we would assume that through the interaction with another, I establish myself as a separate being, i.e. to become myself I need to be related. Discovery of myself as 'some-body' else, is a kind of evidence that I am different than 'the rest,' 'not-me,' and leads directly to an illusory conviction, that my otherness belongs to a different category than 'not-me.' A paradox of any unsubstantial, topologically inspired model of cognition derives from the discovery that we have to perceive two different sides before we find it is just 'one side.' The separation itself is our own invention, because in the systemic context, which we assume here, 'to be' is 'to be related'.

Embodiment of a person implies a subject production. Establishing oneself in a network of exchange with others, in relations within any local population and its environment, results, gradually, ontogenetically, in self-discovery of myself as a person. Intentionality of mutual perceptions and evaluation of status of the species membership ('same/different') seem to be conditions *sine qua non* of all possible communication in animal world. What



appears with an advent of language is socially constructed, inter-relational self, embodied in communication practices in populations as networks of exchange. We might claim that language exchanges produce and re-produce both a person and a social system. Embodiment of a person gives an analog context, a background to tacit knowledge for all kinds of symbolic communication.

We might regard a body as something given or pre-defined in genetic sense and a person as somebody being defined in social sense. Both a body and (its) person, as one organism, one entity, have to be formed into a mature version in ontogeny. To discover oneself as a person in an embodiment, means also to create different perspectives on 'the same' event. Therefore, embodiment is not only about learning from our own experience, but constructing oneself from the very same source. Knowing as an effective action is not only what we do, but also what we are made of, as dreams, desires, etc. In such meaning knowing goes beyond the cognizing subject. Knowing is in-between, in equilibration of relations, in which the 'I' finds stability in significant inter-relational web of interaction with others. The relations that we are embedded in are defining preconditions for any mature 'self' to come about. In other words, self derives it-self out of the network of already existing and developing relations.

Any self starts with another. 'Me' is possible, in ontological sense, because there is another. 'I' always derive from the other, usually called mother. Now, my subjective existence starts with temporality (= sense of time) and separation (= alienation, non-coincidence), that which we may find in Maurice Merleau-Ponty writings. Yet if Gregory Bateson was right, everyone is also his/her central metaphor. And for the 'self' to be a metaphor is to be juxtaposed with somebody/something that is not me. Therefore, there is a contrast with and a relation to another. I am, I exist through another and because of another. Self creates itself in relation to another and itself is a relation. Thus, we may conclude that any self knows itself only as non-self. This is a paradox of self-consciousness: I can only know myself through separation from myself. More simply, to know a subject we have to put 'it' in a position of an object.

And how not be a dualist?

The relational nature of a subject means that we need both self-reference and other-reference to construct ourselves, our selves. In this regard we are a metaphor not only for ourselves but also for the larger system we are rooted in. Relations to another, the other-reference, produce relations, bonds to a source of our identity. Both self-reference and other-reference are forms of recursion on different logical levels. Thus, self-reference lets

us confirm our subjectivity, a separation from the other and, hence, our autonomy. We invent ourselves through the eyes of the other who makes me possible as a person, similar, yet different, related, but distant, connected, but in a separation. This existential situation of each of us I call *self-as-other-coding*.

Self-as-other-coding denotes a process of narrative production of self in identification relation to another. This hypothesis claims that the self is being established as a product of reflection of the other in mutual-relational-recursive on-going exchanges. To establish oneself as a subject is to find the other as having the same features. A child socialization process is based on a gradual recognition of the other as a being, who is alive (in infancy period), intentional (at the age of one year) and intelligent (possessing internal mind states), perception of which is achievable at the age of four (Tomasello 1999). From a reversed viewpoint, on the level of self-reference, self-perception and self-creation, these processes lead to the construction of one-self as having similar features, but as somebody different.

A child invention of intersubjectivity is a result of practical realization and objectification of oneself as an 'object' and a 'subject' of its own experience. Inevitably, this lets a child to form a solution in an individuation process and to build an identity as 'someone'. However, a subject remains divided forever. To be the same 'I' need(-s) to be different. But with the discovery of self, in a (metaphorical) mirror, or through the mirror, still inside, each of us starts his/her actual participation in human culture. From the moment of the 'self'-discovery I know myself as individual, similar, yet different. This is the Rubicon for each of us: whenever we are ready to do it, we cross the border between animal and human world. We did it in our natural history as a species and we are forced to repeat the same move individually in our ontogeny, to become human. Furthermore, there is no other way to join the human world.

'Self'-discovery processes in cultural frames of dominating individualism and dualism, characteristic for Western and Christian thinking, may hold up maturation processes towards individuation in a person or even in whole societies from responsibility towards our own ecosystems. Gregory Bateson warned us against the negative consequences of epistemological individualism drawn from the cult of the ego in Western world. The ego as individual can be at the same time a source of autonomy as it is a source of disembodied, Cartesian-like mind. In Western culture, like in Western science, we find ourselves haunted by egotistic individualism, a dangerous step beyond somewhat misinterpreted autonomy. We need to remember that it's us who draw the lines of limitations with or against any large system, i.e. the world we belong to. Therefore, whatever we do to the world, we do it, inevi-

tably, to ourselves. And here we approach deep ecological dimension of the metalogy. 'Beyond' does not equal 'outside'.

The increase of cognitive sophistication of humans comes from establishing a form of a dynamic stability or equilibration, in Piaget's understanding (Piaget 1977: 8), of self- and other-reference on different logical levels, both equally important and equally necessary. 'Equilibration' is being continually established also in the realm of relations with the large world of *Creatura* within/both with *Pleroma*. An oscillation between levels of self- and other-reference enables temporary preservation of an individual identity within both society and the environment together. A presentation of those two indispensable sides, a process and a state, can be found in Bateson's model of 'structure *versus* process' as the tool of abduction. I know myself as a product of relations with another and in relations with the world, in which I am 'not-the-other' part, still being an integral part of the world, physically, socially and ecologically. I am a map of my territory, but the map is not... But is not a map more about the map-maker than about the territory? But then is not the map-maker the territory? But this is just another('s) story.

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