

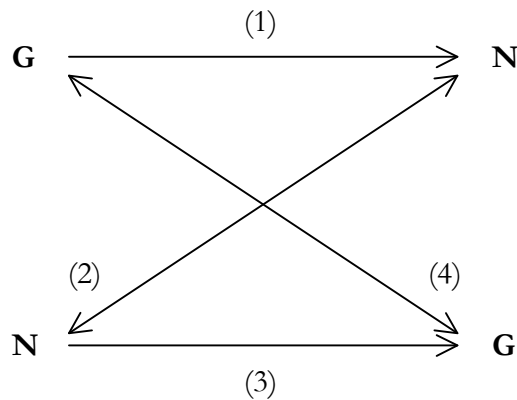
Prof. Dr. Alfred Toth

A polycontextural-semiotic model of the emergence of consciousness

We only know things by the modifications of our own consciousness, which they produce. Our world, therefore, consists of modifications of consciousness.

Charles Sanders Peirce (cit. ap. Bense 1975, p. 31)

1. Bernhard Mitterauer (2008) has delivered the possibly first attempt of a neurological model for intersubjective communication in the synapses of the brain by aid of polycontextural theory. In his following model, G stands for glia, N for neuronal component, \rightarrow for ordered relation, \leftrightarrow for exchange relation (cf. Günther 1976, pp. 336 ss.), and the numbers 1 ... 4 refer to a “cyclic sequence of relations” (Mitterauer 2008, p. 87):



The interaction between N and G “erfolgt auf der Basis einer zyklischen Prooemialrelation, welche als Bewusstsein erzeugende Funktion interpretiert wird” (“works on the basis of a cyclic prooemial relation, that is interpreted as a function which produces consciousness”, 2008, p. 90).

However, Max Bense had already shown in an early contribution, dedicated to the cybernetics of consciousness (Klement 1975), that “the real relation of consciousness has to be considered a potential triadic-trichotomic system of signs. Its possible semioses or retro-semioses, which can be determined by the complete semiotic matrix, represent the immediate epistemological connection of the perceiving “I” with the recognizable “World” (in the whole and in its parts)” (Bense 1975, p. 35). A few years after, Robert E. Taranto demonstrated that a semiotic theory of consciousness encompasses the whole semiotic system of the 10 sign classes and their 10 dual reality thematics (Taranto 1979).

Nevertheless, as I have shown, polycontextural theory does not deal with semiotics, since semiotics is based on monocontextural Aristotelian logic, especially on the classical laws of thought: the Law of Identity, the Law of Non-Contradiction, and the Law of the Excluded Middle (Toth 2001; cf. also Kaehr 2004, pp. 2 ss.). One may add the Principle of Sufficient Reason (cf. Günther 1991, pp. 231 ss.). Therefore, Mitterauer’s model of consciousness

functions, which are based on proemial relations, cannot be based on semiotics, as long as semiotics cannot provide proemial relations.

2. In a series of publications (cf., e.g., Toth 2003 and Toth 2008a), I have shown that the basic problem that is responsible for the incompatibility of semiotics and polycontextural theory, the lack of proemial relations in classical semiotics, can be avoided by introducing semiotic transpositions (Toth 2008a, pp. 159 ss.). Hence, to each of the 10 sign classes and their reality thematics, a set of 6 semiotic transpositions (T) is mapped. Now, let (3.a 2.b 1.c) be the abstract form of a sign class (SCI) and (c.1 b.2 a.3) the abstract form of its dual reality thematic (RTh), then we obtain

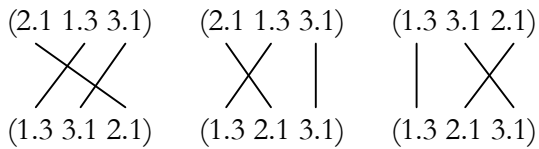
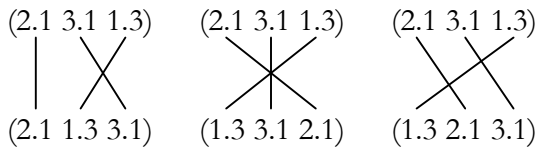
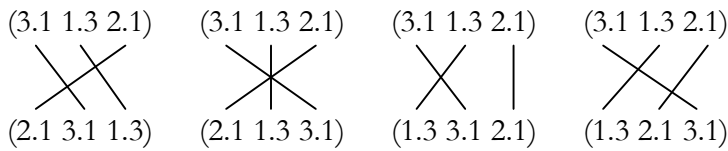
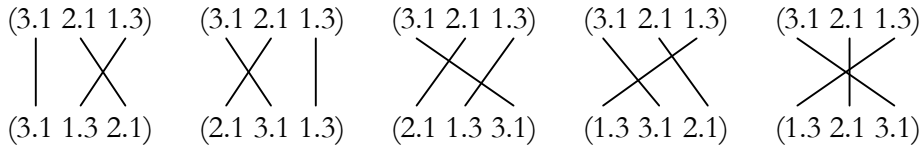
$$T_{SCI} = \{(3.a\ 2.b\ 1.c), (3.a\ 1.c\ 2.b), (2.b\ 3.a\ 1.c), (2.b\ 1.c\ 3.a), (1.c\ 3.a\ 2.b), (1.c\ 2.b\ 3.a)\}$$

$$T_{RTh} = \{(c.1\ b.2\ a.3), (b.2\ c.1\ a.3), (c.1\ a.3\ b.2), (a.3\ c.1\ b.2), (b.2\ a.3\ c.1), (a.3\ b.2\ c.1)\}$$

The total number of pair-wise combinations of the 6 transpositions is then calculated by

$$K = \frac{n!}{(n-p)! \cdot p!}$$

Since $n = 6$ and $p = 2$, we get $K = 720/(24 \cdot 2) = 15$ combinations of sign classes and 15 combinations of reality thematics. We restrict ourselves here to show the 15 possible combinations of the sign class (3.1 2.1 1.3):



3. If we have a closer look at the 6 transpositions of the sign class (3.1 2.1 1.3):

- | | |
|------------------|-------------------|
| 1. (3.1 2.1 1.3) | 4. (2.1 1.3 3.1) |
| 2. (3.1 1.3 2.1) | 5. (1.3 3.1 2.1) |
| 3. (2.1 3.1 1.3) | 6. (1.3 2.1 3.1), |

we recognize that no. 6 is the total reflection of no. 1:

$$R(3.1\ 2.1\ 1.3) = (1.3\ 2.1\ 3.1)$$

and that nos. 4 and 5 are partial reflections of nos. 2 and 3.

In Toth (2008a, pp. 177 ss.), I have further shown that $R(3.a\ 2.b\ 1.c) = (1.c\ 2.b\ 3.a)$ corresponds to the hetero-morphismic relation in a polycontextural diamond (cf. Kaehr 2007) and that it is possible, according to the 15 pairwise combinations of transpositions of a sign class or reality thematics displayed above, to construct 15 semiotic diamonds. Now, since polycontextural diamonds are based on the two proemial relations that can further be combined to cyclic proemial relations (cf. Toth 2008b, pp. 32 ss.), as Mitterauer (2008) and others did, semiotic diamonds transcend classical semiotics, insofar as the systems of semiotic transpositions take over the role of the polycontextural proemial relations. In other words, a semiotics, which is based on the systems of the semiotic transpositions, is a polycontextural semiotics, and we can present here the full system of reflections which turn a sign class (3.a 2.b 1.c) into its other transpositions:

$$\begin{array}{ll} R_{3,2,1}(3.a\ 2.b\ 1.c) = (c.3\ 2.1\ 3.1) & R_{1,3,2}(3.1\ 2.1\ 1.3) = (2.b\ 3.a\ 1.c) \\ R_{2,1,3}(3.a\ 2.b\ 1.c) = (3.a\ 1.c\ 2.b) & R_{3,1,2}(3.1\ 2.1\ 1.3) = (2.b\ 1.c\ 3.a) \\ R_{2,3,1}(3.a\ 2.b\ 1.c) = (1.c\ 3.a\ 2.b) & \end{array}$$

Reflection is a mirroring function, and we remember Nietzsche's prognostic words in his "Fröhliche Wissenschaft": "Wir könnten nämlich denken, fühlen, wollen, uns erinnern, wir könnten ebenfalls 'handeln' in jedem Sinne des Wortes: und trotzdem brauchte das Alles nicht uns 'in's Bewusstsein zu treten'. Das ganze Leben wäre möglich, ohne dass es sich gleichsam im Spiegel sähe" ("We could think, feel, want, remember; we could even 'act' in each sense of the word, and though, all this did not need to enter our consciousness. Our whole life would be possible without watching itself so-to-say in the mirror" (Nietzsche, ed. Colli/Montinari 1988, p. 590). I dare assuming that Lacan's "stade du miroir" (1986), in which a child is supposed to develop his self-consciousness by watching himself in the mirror, also goes back to Nietzsche.

We can now easily see that the system of semiotic reflections forms a symmetric cyclic group (Toth 2008d):

Sign class	Total reflection	Partial Inversions
(3.a 2.b 1.c)	(1.c 2.b 3.a)	(3.a 1.c 2.b) (2.b 3.a 1.c) (2.b 1.c 3.a) (1.c 3.a 2.b)

Reality thematic	Total reflection	Partial Inversions
(c.1 b.2 a.3)	(a.3 b.2 c.1)	(c.1 a.3 b.2) (b.2 c.1 a.3) (b.2 a.3 c.1) (a.3 c.1 b.2)

4. In Toth (2008c, pp. 44 ss.), I have given an explanation of the transpositions of the sign classes and reality thematics as “objects” and “ghosts” in the sense of modern topological cosmology. “The unique image of the object which lies inside the fundamental cell and thus coincides with the original object, is called ‘real’ ” (Lachièze-Rey 2003, p. 76). In other words: In topological cosmology, reality is defined as closeness to the observer. However, since the observer can change his standpoint, every object closest to him is real while all other objects observed or observable by him are automatically turned into ghost images of this object. Hence, in semiotics, each of the 6 transpositions of a sign class or reality thematic can either be “object” or “ghost”, and whatever transposition is chosen to be object because of its closeness to the observer, turns the other 5 transpositions into ghosts of this object.

As it is shown below, there are exactly 6 possible types of symmetric cycles for a system of 6 transpositions, which can be summed up into 3 Semiotic Circles. From the standpoint of topological cosmology, these cycles thus describe all possible semiotic processes that hold between an object and its ghosts (cf. Toth 2008d):

1st Semiotic Cycle

1. (3.a 2.b 1.c) → **(1.c 2.b 3.a)** → (3.a 2.b 1.c).
2. (3.a 1.c 2.b) → (2.b 1.c 3.a) → (3.a 1.c 2.b) → ∞.
3. (2.b 3.a 1.c) → (1.c 3.a 2.b) → (2.b 3.a 1.c) → ∞.
4. (2.b 1.c 3.a) → (3.a 1.c 2.b) → (2.b 1.c 3.a) → ∞.
5. (1.c 3.a 2.b) → (2.b 3.a 1.c) → (1.c 3.a 2.b) → ∞.
6. **(1.c 2.b 3.a)** → (3.a 2.b 1.c) → **(1.c 2.b 3.a)** → ∞.

2nd Semiotic Cycle

1. (3.a 2.b 1.c) → (2.b 1.c 3.a) → (1.c 3.a 2.b) → (3.a 2.b 1.c).
2. (3.a 1.c 2.b) → **(1.c 2.b 3.a)** → (2.b 3.a 1.c) → (3.a 1.c 2.b) → ∞.
3. (2.b 3.a 1.c) → (3.a 1.c 2.b) → **(1.c 2.b 3.a)** → (2.b 3.a 1.c) → ∞.
4. (2.b 1.c 3.a) → (1.c 3.a 2.b) → (3.a 2.b 1.c) → (2.b 1.c 3.a).
5. (1.c 3.a 2.b) → (3.a 2.b 1.c) → (2.b 1.c 3.a) → (1.c 3.a 2.b).
6. **(1.c 2.b 3.a)** → (2.b 3.a 1.c) → (3.a 1.c 2.b) → **(1.c 2.b 3.a)** → ∞.

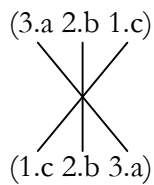
3rd Semiotic Cycle

1. (3.a 2.b 1.c) → (1.c 3.a 2.b) → (2.b 1.c 3.a) → (3.a 2.b 1.c).
2. (3.a 1.c 2.b) → (2.b 3.a 1.c) → (**1.c 2.b 3.a**) → (3.a 1.c 2.b) → ∞.
3. (2.b 3.a 1.c) → (**1.c 2.b 3.a**) → (3.a 1.c 2.b) → (2.b 3.a 1.c) → ∞.
4. (2.b 1.c 3.a) → (3.a 2.b 1.c) → (1.c 3.a 2.b) → (2.b 1.c 3.a).
5. (1.c 3.a 2.b) → (2.b 1.c 3.a) → (3.a 2.b 1.c) → (1.c 3.a 2.b).
6. (**1.c 2.b 3.a**) → (3.a 1.c 2.b) → (2.b 3.a 1.c) → (**1.c 2.b 3.a**) → ∞.

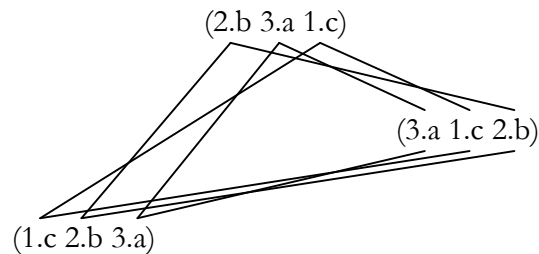
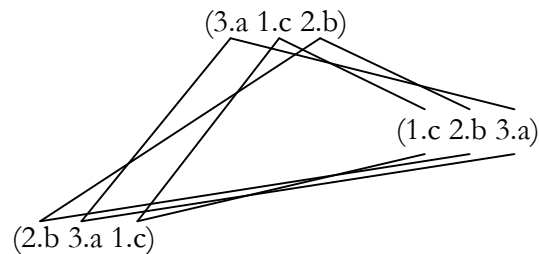
The totally reflected sign classes are in bold. Since they are semiotic mirror functions, which are considered to be responsible for the emergence of consciousness by Nietzsche (1988), Lacan (1986) and others as well as by the theory of interplay between morphisms and hetero-morphisms and thus cyclic proemial relations in polycontextural diamond theory (Kaehr 2007), we find that the three above polycontextural-semiotic cycles are the semiotic equivalents of cyclic proemial relations in polycontextural theory.

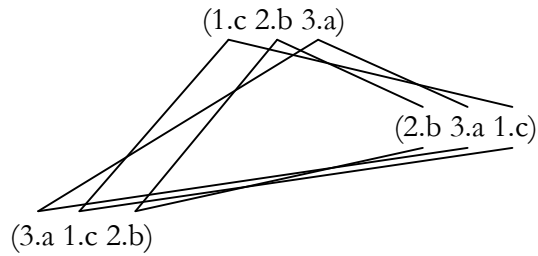
If we write all full semiotic cycles as graphs, we get the following representative systems:

1st Semiotic Cycle

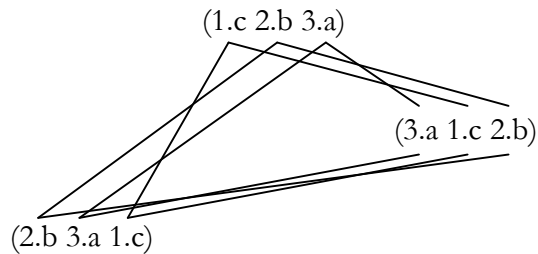
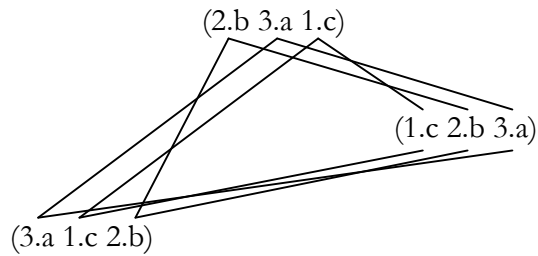
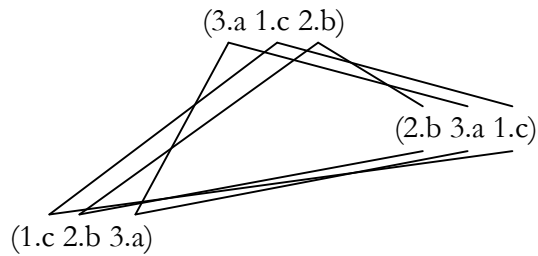


2nd Semiotic Cycle





3rd cycle:



Therefore, these 3 semiotic cycles have to be understood, in correspondence with Mitterauer (2008), as **the polycontextural-semiotic functors that produce consciousness**. Furthermore, we get the respective schemes for the functors that generate **self-consciousness** in accordance with Bense (1992) by assigning the eigenreal sign class (3.1 2.2 1.3) in the above cycles for the abstract sign relation (3.a 2.b 1.c). However, the polycontextural-semiotic cycles are much more complex and much more differentiated than the proemial cycles in Mitterauer's above reprinted purely chiasmic scheme, which is strictly based on an early work of Kaehr (1978). Moreover, as cycles of sign relations, these polycontextural-semiotic cycles include, to point it out again, **meaning and sense**. A model of consciousness that is reduced to pure polycontextural theory which is fully independent

not only from meaning and sense, but also from all classical logic relations on which our whole cognition and volition is based, must appear frighteningly underdetermined.

Bibliography

- Bense, Max, Bewusstseinstheorie und semiotische Erkenntnistheorie. In: Klement (1975), p. 31-36
- Bense, Max, Die Eigenrealität der Zeichen. Baden-Baden 1992
- Günther, Gotthard, Beiträge zur Grundlegung einer operationsfähigen Dialektik. Vol. 1. Hamburg 1976
- Günther, Gotthard, Idee und Grundriss einer nicht-aristotelischen Logik. 3rd ed. Hamburg 1991
- Klement, Hans-Werner, Bewusstsein. Baden-Baden 1975
- Kaehr, Rudolf, Materialien zur Formalisierung der dialektischen Logik und der Morphogrammatik. Appendix to: Günther, Gotthard, Idee und Grundriss einer nicht-aristotelischen Logik. 2nd ed. Hamburg 1978
- Kaehr, Rudolf, Skizze eines Gewebes rechnender Räume in denkender Leere. Glasgow 2004.
http://www.vordenker.de/ggphilosophy/kaehr_skizze_36-120.pdf
- Kaehr, Rudolf, Towards Diamonds. Glasgow 2007.
http://www.thinkartlab.com/pkl/lola/Towards_Diamonds.pdf
- Lacan, Jacques, Das Spiegelstadium als Bildner der Ichfunktion. In: id., Schriften. Vol. 1. Weinheim and Berlin 1986, pp. 61-70
- Lachièze-Rey Marc, Cosmic topology. 2003.
<http://citeseer.ist.psu.edu/cache/papers/cs/13261/httpzSzzSzotokar.troja.mff.cuni.czzSzvedazSzgr-qczSz96zSz05zSz9605010.pdf/cosmic-topology.pdf>
- Mitterauer, Bernhard, Intersubjective communication in the synapses of the brain. In: Grundlagenstudien aus Kybernetik und Geisteswissenschaft 49/2, 2008, pp. 84-90
- Nietzsche, Friedrich, Kritische Studienausgabe, ed. Giorgio Colli and Mazzino Montinari. Vol. 3. Munich 1988
- Taranto, Robert E., Semiotisches System-Modellm und Bewusstseins-Prozesse. PhD dissertation, University of Stuttgart, 1979
- Toth, Alfred, Semiotischer Beweis der Monokontextualität der Semiotik. In: Grundlagenstudien aus Kybernetik und Geisteswissenschaft 42/1, 2001, pp. 16-19
- Toth, Alfred, Die Hochzeit von Semiotik und Struktur. Klagenfurt 2003
- Toth, Alfred, Semiotische Strukturen und Prozesse. Klagenfurt 2008 (2008a)
- Toth, Alfred, In Transit. A mathematical-semiotic theory of decrease of mind, based on polycontextural Diamond Theory. Klagenfurt 2008 (2008b)
- Toth, Alfred, Semiotic Ghost Trains. Klagenfurt 2008 (2008c)
- Toth, Alfred, Cyclic groups of semiotic transpositions. Ch. 8 (2008d)

©2008, Prof. Dr. Alfred Toth