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The pre-semiotic retrosemioses from quantity to quality

1. Bense introduced the notion of "effective" sign as opposed to "virtual sign" and defined an effective sign as a virtual sign embedded in a communicative situation. In other words, the transition from a virtual to an effective sign has to be recognized "as the embedding of the abstract triadic sign relation Z_v = R(M, O, I) in a concretely, both in space and in time fixed effective triadic relation Z_e = R(K, U, I_e) that results necessarily from the use and application situation as given by the environment of the sign" (Bense 1975, p. 94). K stands for channel, U for environment, and I_e for the external interpretant of the sign relation. In Toth (2008b), we have elaborated Bense's differentiation to the bases of a theory of pragmatic retrosemioses.

2. As we have found in Toth (2008c), the pre-semiotic sign relation PSR = (3.a 2.b 1.c 0.d) or R(M, O, I, Q), in which Q stands for Quality, includes the semiotic sign relation SR = (3.a 2.b 1.c) or R(M, O, I) only from a purely quantitative point of view. Since the basis function of the category 0 or Q is the connection of SR, belonging to the semiotic space, with the ontological space, PSR bridges quantitative semiotics and qualitative-quantitative polycontextural theory (kenogrammatics, morphogrammatics) and leads to a quantitative-qualitative polycontextural semiotics in the sense of Toth (2003).

In constructing PSR from SR, we notice first that in PSR, we have 15 pre-semiotic sign classes that correspond to the 15 numbers of the contexture T_4 of the polycontextural system of trito-numbers. Thus, obviously, the tetradic structure of the pre-semiotic sign scheme corresponds with the 4 basic kenograms 0, 1, 2, 3 in the quaternary system of trito-numbers (Kronthaler 1986, p. 34). Second, the 3 possible qualitative sub-signs in PSR apparently correspond to the 3 levels of polycontextural numbers (proto-, deutero- and trito-numbers). Third, as Peano-numbers are transformed into polycontextural numbers by fibering, and polycontextural numbers are re-transformed into Peano-numbers by "mono-contexturalization", SR is transformed into PSR by "fibering" of SR, and PSR is re-transformed into SR by semiotic monocontexturalization". Therefore, the Schadach theorems that are used to split the Peano-numbers into proto-, deutero- and trito-numbers (cf. Kronthaler 1986, p. 14 ss.) and that guarantee the "qualitative jump" from Peano- to polycontextural numbers, are paralleled by the mappings of the three qualitiative pre-semiotic categories (0.1, 0.2, 0.3) onto the sub-signs of the semiotic matrix in order to build the pre-semiotic sign classes and reality thematics and thus to bridge quantitative and qualitative semiotics.

3. In order to recognize the category theoretic structure of pre-semiotic sign classes and reality thematics, in addition to the usual quantitative semiotic morphisms (cf. Toth 1997, pp. 21 ss.), we have to introduce 3 new qualitative-semiotic morphisms. We will assign γ to (0. $\Rightarrow$ .1), δ to (0. $\Rightarrow$ .2) and $\delta\gamma$ to the composition (0. $\Rightarrow$ .3). Then we get the following pre-semiotic matrices:

	.1	.2	.3
0.	0.1	0.2	0.3
1.	1.1	1.2	1.3
2.	2.1	2.2	2.3
3.	3.1	3.2	3.3

≡

γ	δ	δγ
id1	α	βα
α°	id2	β
α°β°	β°	id3

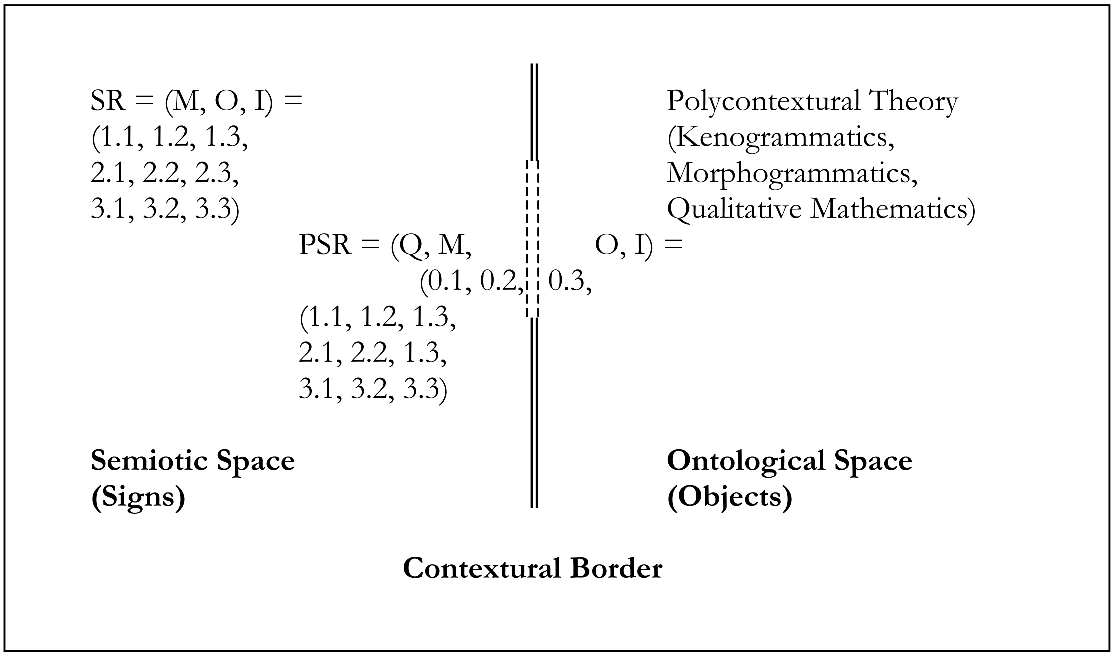
Thus, (1.0) ≡ γ°, (2.0) = δ°, (3.0) ≡ γ°δ°. Notice that the latter dual morphisms do not appear in the above pre-semiotic matrix, but only in sign classes, reality thematics, "dynamic" semiotic morphisms (cf. Toth 2008a, pp. 159 ss.) and retrosemioses.

We can now construct the 15 pre-semiotic sign classes and write them both in the numerical and category theoretic version:

1 (3.1 2.1 1.1 0.1) × (1.0 1.1 1.2 1.3) ≡ [[β°, id1], [α°, id1], [γ°, id1], [δγ, id1]]
2 (3.1 2.1 1.1 0.2) × (2.0 1.1 1.2 1.3) ≡ [[β°, id1], [α°, id1], [γ°, α], [δγ, α°]]
3 (3.1 2.1 1.1 0.3) × (3.0 1.1 1.2 1.3) ≡ [[β°, id1], [α°, id1], [γ°, βα], [δγ, α°β°]]
4 (3.1 2.1 1.2 0.2) × (2.0 2.1 1.2 1.3) ≡ [[β°, id1], [α°, α], [γ°, id2], [δγ, α°]]
5 (3.1 2.1 1.2 0.3) × (3.0 2.1 1.2 1.3) ≡ [[β°, id1], [α°, α], [γ°, β], [δγ, α°β°]]
6 (3.1 2.1 1.3 0.3) × (3.0 3.1 1.2 1.3) ≡ [[β°, id1], [α°, βα], [γ°, id3], [δγ, α°β°]]
7 (3.1 2.2 1.2 0.2) × (2.0 2.1 2.2 1.3) ≡ [[β°, α], [α°, id2], [γ°, id2], [δγ, α°]]
8 (3.1 2.2 1.2 0.3) × (3.0 2.1 2.2 1.3) ≡ [[β°, α], [α°, id2], [γ°, β], [δγ, α°β°]]
9 (3.1 2.2 1.3 0.3) × (3.0 3.1 2.2 1.3) ≡ [[β°, α], [α°, β], [γ°, id3], [δγ, α°β°]]
10 (3.1 2.3 1.3 0.3) × (3.0 3.1 3.2 1.3) ≡ [[β°, βα], [α°, id3], [γ°, id3], [δγ, α°β°]]
11 (3.2 2.2 1.2 0.2) × (2.0 2.1 2.2 2.3) ≡ [[β°, id2], [α°, id2], [γ°, id2], [δγ, id2]]
12 (3.2 2.2 1.2 0.3) × (3.0 2.1 2.2 2.3) ≡ [[β°, id2], [α°, id2], [γ°, β], [δγ, β°]]
13 (3.2 2.2 1.3 0.3) × (3.0 3.1 2.2 2.3) ≡ [[β°, id2], [α°, β], [γ°, id3], [δγ, β°]]
14 (3.2 2.3 1.3 0.3) × (3.0 3.1 3.2 2.3) ≡ [[β°, β], [α°, id3], [γ°, id3], [δγ, β°]]
15 (3.3 2.3 1.3 0.3) × (3.0 3.1 3.2 3.3) ≡ [[β°, id3], [α°, id3], [γ°, id3], [δγ, id3]]

4. Now the pragmatic retrosemiosis (I ⇒ M) indicates the use-function of a sign (Bense 1975, p. 94). But the M occurring in the respective semiotic relations is already a selected medium of a pre-given repertory. Thus, the repertory itself belongs to the ontological space (Bense 1975, p. 65), but after having selected as a sign-carrier out of the ontological space, M has turned into a relation and thus belongs to the semiotic space. Hence, the semiotic operation of selection is nothing else than a "trans-operation" (cf. Toth 2003, pp. 36 ss.) between the two contextures and on the level of semiotic firstness. However, if we now look at the retrosemiosis (I ⇒ Q), then we have a pre-semiotic relation between the interpretant, belonging to the semiotic space, and the Quality, belonging to the ontological space. In other words: While the semiotic use-function (I ⇒ M) is purely quantitative and a relation **inside**

of the semiotic space, the pre-semiotic function ($I \Rightarrow Q$) is a “mixed” quantitative-qualitative function and a relation **between** the semiotic and the ontological space in the sense of Bense (1975, p. 65). Therefore, the quantitative-qualitative pre-semiotic function ($I \Rightarrow Q$) shows the relation between the “effective” sign and its bonds beyond its virtual abstract sign scheme, i.e. beyond the contexture border between semiotics and polycontextural theory and thus deeper than the purely quantitative-semiotic relation of firstness of firstness (1.1):



We can now group the 15 pre-semiotic sign classes according to their quantitative-qualitative retrosemioses ($I \Rightarrow Q$):

1 $((3.1\ 2.1), (2.1\ 1.1), (1.1\ 0.1), (\boxed{3.1\ 0.1})) \rightarrow [[\beta^\circ, id1], [\alpha^\circ, id1], [\gamma^\circ, id1], [\boxed{\gamma^\circ\delta^\circ, id1}]]$

2 $((3.1\ 2.1), (2.1\ 1.1), (1.1\ 0.2), (\boxed{3.1\ 0.2})) \rightarrow [[\beta^\circ, id1], [\alpha^\circ, id1], [\gamma^\circ, \alpha], [\boxed{\gamma^\circ\delta^\circ, \alpha}]]$

4 $((3.1\ 2.1), (2.1\ 1.2), (1.2\ 0.2), (\boxed{3.1\ 0.2})) \rightarrow [[\beta^\circ, id1], [\alpha^\circ, \alpha], [\gamma^\circ, id2], [\boxed{\gamma^\circ\delta^\circ, \alpha}]]$

7 $((3.1\ 2.2), (2.2\ 1.2), (1.2\ 0.2), (\boxed{3.1\ 0.2})) \rightarrow [[\beta^\circ, \alpha], [\alpha^\circ, id2], [\gamma^\circ, id2], [\boxed{\gamma^\circ\delta^\circ, \alpha}]]$

3 $((3.1\ 2.1), (2.1\ 1.1), (1.1\ 0.3), (\boxed{3.1\ 0.3})) \rightarrow [[\beta^\circ, id1], [\alpha^\circ, id1], [\gamma^\circ, \beta\alpha], [\boxed{\gamma^\circ\delta^\circ, \beta\alpha}]]$

5 $((3.1\ 2.1), (2.1\ 1.2), (1.2\ 0.3), (\boxed{3.1\ 0.3})) \rightarrow [[\beta^\circ, id1], [\alpha^\circ, \alpha], [\gamma^\circ, \beta], [\boxed{\gamma^\circ\delta^\circ, \beta\alpha}]]$

6 $((3.1\ 2.1), (2.1\ 1.3), (1.3\ 0.3), (\boxed{3.1\ 0.3})) \rightarrow [[\beta^\circ, id1], [\alpha^\circ, \beta\alpha], [\gamma^\circ, id3], [\boxed{\gamma^\circ\delta^\circ, \beta\alpha}]]$

8 $((3.1\ 2.2), (2.2\ 1.2), (1.2\ 0.3), (\boxed{3.1\ 0.3})) \rightarrow [[\beta^\circ, \alpha], [\alpha^\circ, id2], [\gamma^\circ, \beta], [\boxed{\gamma^\circ\delta^\circ, \beta\alpha}]]$

9 $((3.1\ 2.2), (2.2\ 1.3), (1.3\ 0.3), (\boxed{3.1\ 0.3})) \rightarrow [[\beta^\circ, \alpha], [\alpha^\circ, \beta], [\gamma^\circ, id3], [\boxed{\gamma^\circ\delta^\circ, \beta\alpha}]]$

10 $((3.1\ 2.3), (2.3\ 1.3), (1.3\ 0.3), (\boxed{3.1\ 0.3})) \rightarrow [[\beta^\circ, \beta\alpha], [\alpha^\circ, id3], [\gamma^\circ, id3], [\boxed{\gamma^\circ\delta^\circ, \beta\alpha}]]$

11 $((3.2\ 2.2), (2.2\ 1.2), (1.2\ 0.2), (\boxed{3.2\ 0.2})) \rightarrow [[\beta^\circ, id2], [\alpha^\circ, id2], [\gamma^\circ, id2], [\boxed{\gamma^\circ\delta^\circ, id2}]]$

12 ((3.2 2.2), (2.2 1.2), (1.2 0.3), (3.2 0.3)) → [[β°, id2], [α°, id2], [γ°, β], [γ°δ°, β]]
13 ((3.2 2.2), (2.2 1.3), (1.3 0.3), (3.2 0.3)) → [[β°, id2], [α°, β], [γ°, id3], [γ°δ°, β]]
14 ((3.2 2.3), (2.3 1.3), (1.3 0.3), (3.2 0.3)) → [[β°, β], [α°, id3], [γ°, id3], [γ°δ°, β]]

15 ((3.3 2.3), (2.3 1.3), (1.3 0.3), (3.3 0.3)) → [[β°, id3], [α°, id3], [γ°, id3], [γ°δ°, id3]]

As we recognize, there are 6 groups of quantitative-qualitative (I ⇒ Q) relations:

$$(3.1 \nearrow 0.1),\ (3.1 \rightarrow 0.2),\ (3.1 \searrow 0.3) \qquad (3.2 \rightarrow 0.2),\ (3.2 \searrow 0.3) \qquad (3.3 \rightarrow 0.3)$$

which parallel the structural groups of pragmatic retrosemiosis (Toth 2008a) in which the 6 (I ⇒ M) relations are (3.1 ⇒ 1.1), (3.1 ⇒ 1.2), (3.1 ⇒ 1.3); (3.2 ⇒ 1.2), (3.2 ⇒ 1.3); (3.3 ⇒ 1.3). Since (0.1) combines with (1.1), (0.2) with (1.1) and (1.2), and (0.3) with (1.1), (1.2) and (1.3) and thus (1.1) combines with all three qualities (0.1), (0.2), (0.3), we can see here again that the respective pre-semiotic dyads and sign classes parallel the fibering of Peano-numbers to polyontextural numbers. Generally, the following pre-semiotic mappings:

(1.1) ⇒ (0.1)		
(1.1) ⇒ (0.2)	(1.2) ⇒ (0.2)	
(1.1) ⇒ (0.3)	(1.2) ⇒ (0.3)	(1.3) ⇒ (0.3)

or

id1 ⇒ γ		
id1 ⇒ δ	α ⇒ δ	
id1 ⇒ δγ	α ⇒ δγ	βα ⇒ δγ

correspond to the Schadach mappings of Peano-numbers to proto-, deutero- and trito-numbers and localize the quantitative sign classes and reality thematics of SR in the quantitative-qualitative pre-semiotic representation systems of PSR.

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