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A semiotics from tetradic prime-signs

1. Multi-dimensional semiotics can be constructed in several ways that exclude or complement one another, cf. my two volumes “Mehrdimensionale Semiotik” (Klagenfurt 2008). For example, it is possible to construct a 3-dim semiotics out of 2-adic or 3-adic prime-signs, a 4-dim semiotics out of 3-adic or 4-adic prime-signs (cf. the “tower” in Toth 2008b). Generally, a 1-dim semiotics is a line that contains the three fundamental categories. A 2-dim semiotics is the Peirce-Bensean semiotics which is constructed from the 2-adic prime-signs ((1.1), (1.2), (1.3), ..., (3.3)). An example for a 3-adic semiotics is Stiebings “sign cube”, based on 3-adic prime-signs. However, instead of starting with 4-dimensional prime-signs of the form ((a.b) (c.d) (e.f) (g.h) and construct over them either a hypercube or the already mentioned “tower”, we will start with the identification of semiotic contextures of the degree n, n-adic sign relations and 4-dimensional sign relations (cf. Toth 2009).

0	1, 2, 3	1-dim semiotics
00	(1.1), (2.2), (3.3)	
01	(1.2)/(2.1), (1.3)/(3.1), (2.3/(3.2)	2-dim semiotics
000	(1.1.1), (2.2.2), (3.3.3)	
001	(1.1.2), (1.1.3), (2.2.1), (2.2.3), (3.3.1), (3.3.2)	
010	(1.2.1), (1.3.1), (2.1.2), (2.3.2), (3.1.3), (3.2.3)	3-dim semiotics
011	(1.2.2), (1.3.3), (2.1.1), (2.3.3), (3.1.1), (3.2.2)	
012	(1.2.3), (1.3.2), (2.1.3), (2.3.1), (3.1.2), (3.2.1)	

2. If we now continue this list, we get the following table of the 15 trito-signs of the contextures of contexture and the

0000	(0.0.0.), (1.1.1.1) (2.2.2.2), (3.3.3.)
0001	(0001), (0002), (0003)
0010	(0010), (020), (0030)
0011	(0011), (0022), (0033)
0012	(0012), (0013), (0,14)
0100	(0100), (0200), (0300)
0101	(0101), (0202), (0303),

0102	(0102), (0103), (0203), (0204), (0302), (0304)
0110	(0110), (0220), (0330)
0111	(0111), (0222), (0333)
0112	(0112), (0113), (0221), (0223), (0331), (0332)
0120	(0120), (0130), (0210), (0230), (0310), (0320)
0121	(0121), (0131), (0212), (0232), (0313), (0323)
0122	(0122), (0133), (0211), (0233), (0311), (0322)
0123	(0123), (0132), (0213), (0231), (0312), (0321)

Thus, we obtain 18 qualitative numbers with 3 semiotic choices, 8 with 4 semiotic choices, and 48 with triadic choices, thus 74 qualitative tetradic sub-signs.

3. A tetradic sign class built from these tetradic sub-signs, lacks evidence of the first sight, but it is a necessary formal development out of 3-a semotics. A 3-adic semiotic is restricted by two laws: 1. The law of tradicity, i.e., in a 3-adic semiotics all three positions are assigned three values (1, 2, 3) which must be pairwise different. 2. The trichotomic inclusion order: For any sign class (3.a 2.b 1.c), there is a ≤ b ≤ c.

4. Every n-adic sign class has n! permutations (cf. Toth 2008a). Therefore has any 4-adic sign class built according to the semiotic laws 3. 24 permutations.

5. As already pointed out in Toth (2009), it is possible to ascribe each of the tetradic sub-signs contextural indices, i.e. inner semiotic environments – although we are based here on a semiotic system, in which n.th contexture = n.th dimension. The following oversight over the 4-adic semiotic (numeric and categorical) matrices is taken off a recent by Rudolf Kaehr):

Numeric binary matrix

$Sem^{(4,1)} \times Sem^{(4,1)} =$

$\left[\left(Sem^1 \; x \; Sem^1\right), \left(Sem^2 \; x \; Sem^2\right), \left(Sem^3 \; x \; Sem^3\right), \left(Sem^4 \; x \; Sem^4\right)\right]:$

$\left(Sem^1 \; x \; Sem^1\right) = \left(1, 2, 3, x\right) x \left(1, 2, 3, x\right)$

$\left(Sem^2 \; x \; Sem^2\right) = \left(x, 2, 3, 4\right) x \left(x, 2, 3, 4\right)$

$\left(Sem^3 \; x \; Sem^3\right) = \left(1, 2, x, 4\right) x \left(1, 2, x, 4\right)$

$\left(Sem^4 \; x \; Sem^4\right) = \left(1, x, 3, 4\right) x \left(1, x, 3, 4\right)$

$$sem^1 \; x \; sem^1 = \begin{pmatrix} MM & 1 & 2 & 3 & 4 \\ 1 & 1.1_{1} & 1.2_{1} & 1.3_{1} & 1.4 \\ 2 & 2.1_{1} & 2.2_{1} & 2.3_{1} & 2.4 \\ 3 & 3.1_{1} & 3.2_{1} & 3.3_{1} & 3.4 \\ 4 & 4.1 & 4.2 & 4.3 & 4.4 \end{pmatrix}$$

$$sem^2 \; x \; sem^2 = \begin{pmatrix} MM & 1 & 2 & 3 & 4 \\ 1 & 1.1_{1} & 1.2_{1} & 1.3_{1} & 1.4 \\ 2 & 2.1_{1} & 2.2_{1.2} & 2.3_{1.2} & 2.4_{2} \\ 3 & 3.1_{1} & 3.2_{1.2} & 3.3_{1.2} & 3.4_{2} \\ 4 & 4.1 & 4.2_{2} & 4.3_{2} & 4.4_{2} \end{pmatrix}$$

$$sem^3 \; x \; sem^3 = \begin{pmatrix} MM & 1 & 2 & 3 & 4 \\ 1 & 1.1_{1.3} & 1.2_{1.3} & 1.3_{1} & 1.4_{3} \\ 2 & 2.1_{1.3} & 2.2_{1.2.3} & 2.3_{1.2} & 2.4_{2.3} \\ 3 & 3.1_{1} & 3.2_{1.2} & 3.3_{1.2} & 3.4_{2} \\ 4 & 4.1_{3} & 4.2_{3.2} & 4.3_{2} & 4.4_{3.2} \end{pmatrix}$$

$$sem^4 \; x \; sem^4 = \begin{pmatrix} MM & 1 & 2 & 3 & 4 \\ 1 & 1.1_{1.3.4} & 1.2_{1.3} & 1.3_{1.4} & 1.4_{3.4} \\ 2 & 2.1_{1.3} & 2.2_{1.2.3} & 2.3_{1.2} & 2.4_{2.3} \\ 3 & 3.1_{1.4} & 3.2_{1.2} & 3.3_{1.2.4} & 3.4_{2.4} \\ 4 & 4.1_{3.4} & 4.2_{3.2} & 4.3_{2.4} & 4.4_{2.3.4} \end{pmatrix}$$

4 – contextural semiotic matrix

$$Sem^{(4,2)} = \begin{pmatrix} MM & 1 & 2 & 3 & 4 \\ 1 & \mathbf{1.1_{1.3.4}} & 1.2_{1.3} & 1.3_{1.4} & 1.4_{3.4} \\ 2 & 2.1_{1.3} & \mathbf{2.2_{1.2.3}} & 2.3_{1.2} & 2.4_{2.3} \\ 3 & 3.1_{1.4} & 3.2_{1.2} & \mathbf{3.3_{1.2.4}} & 3.4_{2.4} \\ 4 & 4.1_{3.4} & 4.2_{3.2} & 4.3_{2.4} & \mathbf{4.4_{2.3.4}} \end{pmatrix}$$

Semiotic reduction matrix :

$$Sem^{(4,2)} = \begin{pmatrix} MM & 1 & 2 & 3 & 4 \\ 1 & 1.1 & 1.2 & 1.3 & 1.4 \\ 2 & 2.1 & 2.2 & 2.3 & 2.4 \\ 3 & 3.1 & 3.2 & 3.3 & 3.4 \\ 4 & 4.1 & 4.2 & 4.3 & 4.4 \end{pmatrix}$$

Null

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