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Connections of sub-signs in contextures

For 3-adic semiotics, we have as best choices for polycontextural semiotic matrices either the 3-contextural or the 4-contextural matrix (cf. Kaehr 2009a, b). Let us start with the 3-contextural matrix. As one sees, the contextures or inner environments are scramble the order of the sub-signs in the following matrix:

$$\begin{pmatrix} 1.1_{1,3} & 1.2_{1} & 1.3_{3} \\ 2.1_{1} & 2.2_{1,2} & 2.3_{2} \\ 3.1_{3} & 3.2_{2} & 3.3_{2,3} \end{pmatrix}$$

If we order horizontally only sub-signs, which lie in the same contexture, we get the following 3-level system:

K1	(1.1), (1.2)		(2.1), (2.2)		
K2			(2.2), (2.3)		(3.2), (3.3)
K3	(1.1),	(1.3)		(3.1),	(3.3)

There are three types of connections of the sub-signs in this scheme: First, the connections by inner environments (cf. Toth 2009):

(1.1), (1.2)
(2.1), (2.2)
(2.2), (2.3)
(3.2), (3.3)
(1.1), (1.3)
(3.1), (3.3)

Second, the connections by identical sub-signs (static via sub-signs and dynamic via their corresponding morphisms):

(1.1) (2.2) (3.3)

(1.1) (2.2) (3.3),

hence this kind of semiotic connection exists only between the genuine sub-signs, i.e. identitive morphisms.

Third, chiastic connections between pairs of converse sub-signs:

(1.2) × (2.1)
(2.3) × (3.2)
(1.3) × (3.1)

As one sees, both scheme and its types of connections are exhaustive, i.e. they are sufficient to describe the 3-contextural semiotic 3×3 matrix completely.

If we now proceed to the 4-contextural semiotic 3×3 matrix, we obtain

K1 (1.1), (1.2) (2.1), (2.2)

K2 (2.2), (2.3) (3.2), (3.3)

K3 (1.1), (1.3) (3.1), (3.3)

K4 (1.1), (1.2), (1.3), (2.1), (2.2), (2.3) (3.1), (3.2), (3.3)

Of course, this scheme is exhaustive too, but with an enormous accretion of structure in K4 and mediating level between K2 and K3, compared to the scheme of 3-contextural 3×3 matrix.

2. As a marginal note, it has to be pointed out that schemes 1 and 2 have nothing to do with polycontextural schemes of mediation by decomposition; cf. the following schema for 3-contextural 3-adic semiotic by Kaehr (2009b, p. 5):

The mediation scheme of $\text{Semiotics}^{(3,2)}$:

$$\text{mediation}\left(\text{Semiotics}^{(3,2)}\right) = \begin{bmatrix} (1.1)_1 \longrightarrow & (2.2)_1 & & \square \\ \square & \updownarrow & & \\ \square & (2.2)_2 & \longrightarrow & (3.3)_2 \\ | & & & | \\ (1.1)_3 \longrightarrow & \longrightarrow & & (3.3)_3 \end{bmatrix}$$

Chiastic structure

$$\textit{Order}\ \text{relations} = \left\{ \begin{array}{l} \square(1.1)_1 \longrightarrow (2.2)_1, \\ (2.2)_2 \longrightarrow (3.3)_2, \\ (1.1)_3 \longrightarrow (3.3)_3 \end{array} \right\},$$

$$\textit{Exchange}\ \text{relation} = \{(2.2)_1 \updownarrow (2.2)_2\},$$

$$\textit{Coincidence}\ \text{relations} = \left\{ \begin{array}{l} (1.1)_1 - (1.1)_3, \\ (3.3)_2 - (3.3)_3 \end{array} \right\}.$$

For systems, $m = 3$, $n = 2$, the $\text{matrix}^{(3,2)}$ and $\text{scheme}^{(3,2)}$ representation coincide.

In decomposition schemes like the one above, each of the (3, 2) partial sets of the (3, 3) full set does not contain the full amount of sub-signs necessary to construct not only the complete set of the 10 Peircean sign classes, but even one single sing class, provided that the semiotic law holds that every sign class must consist of 3 sub-signs which are pairwise different.

3. However, schemes like the two presented here, based on polycontextural semiotics, show some similarity to the so-called "scheme of sign-intern superization", based on monocontextural semiotics and presented by Bense (cf. Walther 1979, p. 120). Let us first have a look at the scheme from the standpoint of 3-contextural semiotics:

$$\begin{array}{ccccccccc}
 & (1.1) & & & & & & & \\
 & \swarrow & & & & & & & \\
(1.2) & \Vert\!\!\rightarrow & (1.3) & \Vert\!\!\rightarrow & (2.3) & & & & \\
 & & & & \swarrow & & & & \\
 & & & (2.2) & \rightarrow & (2.1) & \Vert\!\!\rightarrow & (3.1) & \\
 & & & & & & & \Vert\!\!\swarrow & \\
 & & & & & & (3.2) & \rightarrow & (3.3)
\end{array}$$

Provided the scheme is based on a 3-contextural semiotics, there are the following contexture borders:

$(1.2_1 \parallel 1.3_3)$

$(1.3_3 \parallel 2.3_2)$

$(2.1_1 \parallel 3.1_3)$

$(3.1_3 \parallel 3.2_2)$

However, by transgressing into a scheme with 4 contextures, they are eliminated, since then we have

$(1.2_{1,4} \nparallel 1.3_{3,4})$

$(1.3_{3,4} \nparallel 2.3_{2,4})$

$(2.1_{1,4} \nparallel 3.1_{3,4})$

$(3.1_{3,4} \nparallel 3.2_{2,4})$.

Therefore, if we use $\mathfrak{C}(x)$ for “the set of sub-signs lying in contexture x”, we get for the 3-contextural 3×3 matrix:

$\mathfrak{C}(1.1) = ((1.1), (1.2), (1.3), (2.1), (2.2), (3.1), (3.3))$

$\mathfrak{C}(1.2) = ((1.1), (1.2), (2.1), (2.2))$

$\mathfrak{C}(1.3) = ((1.1), (1.3), (3.1), (3.3))$

$\mathfrak{C}(2.1) = ((1.1), (1.2), (2.1), (2.2))$

$\mathfrak{C}(2.2) = ((1.1), (1.2), (2.1), (2.2), (2.3), (3.2), (3.3))$

$\mathfrak{C}(2.3) = ((2.2), (2.3), (3.2), (3.3))$

$\mathfrak{C}(3.1) = ((1.1), (1.3), (3.1), (3.3))$

$\mathfrak{C}(3.2) = ((2.2), (2.3), (3.2), (3.3))$

$\mathfrak{C}(3.3) = ((1.1), (1.3), (2.2), (2.3), (3.1), (3.2), (3.3))$,

and we have

1. $\mathfrak{C}(a.b) = \mathfrak{C}((a.b)°)$
2. $\cap\mathfrak{C}(a.b) = \varnothing$
3. $\cup\mathfrak{C}(a.b) = \mathbf{S}$ ($\mathbf{S}$ = set of sub-signs)
4. $\max|\mathfrak{C}(1, 2, 3, ..., n)| = (n-2)$.

Bibliography

Kaehr, Rudolf, Toth's semiotic diamonds. http://www.thinkartlab.com/pkl/lola/Toth-Diamanten/Toth-Diamanten.pdf (2009a)

Kaehr, Rudolf, Interactional operators in diamond semiotics. http://www.thinkartlab.com/pkl/lola/Transjunctional%20Semiotics/Transjunctional%20Semiotics.pdf (2009b)

Toth, Alfred, Connections of inner semiotic environments. In: Electronic Journal of Mathematical Semiotics, http://www.mathematical-semiotics.com/pdf/NETS3.pdf (2009)

Walther, Elisabeth, Allgemeine Zeichenlehre. 2nd ed. Stuttgart 1979

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