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Predictability in semiotics

1. In logic, a sentence like "Tomorrow, it will rain" is neither true nor false, on the simple reason because logic has nothing to say about the future. And neither does semiotics. However, since each event, like every object, must fit into the frame of the semiotic system of the 10 sign classes and their dual reality thematics, we can establish a semiotic framework about any events and thus also those that may happen in the future. Therefore, we understand semiotic predictability as the semiotic space of sign classes, in which events have happened, happen and will happen. In other words, by calculating the **transitions** between two or more sign classes, we get a certain forecast of the semiotic system's state up to the degree of exactness given by the semiotic dual representation systems. Since a sign class is considered poly-affine because it represents a theoretically infinite number of real or virtual objects and events (cf. Bense 1983, p. 45; Toth 2008a), the exactness of semiotic predictability is bound by the vagueness inherent in poly-representative semiotic systems.

2. Roughly speaking, a two-dimensional semiotic space is spanned to its maximal distance by the pair of the sign-class with the lowest degree of semioticity (3.1 2.1 1.1) and the sign-class with highest degree of semioticity (3.3 2.3 1.1). The difference between (3.1 2.1 1.1) and (3.3 2.3 1.3) is therefore the **maximal semiotic distance** and the **maximal degree of semiotic predictability** that can be measured either by representation values (Rpv) or by category theoretic transition schemes (TS) (cf. Toth 2008b, pp. 139 ss.):

Rpv(3.1 2.1 1.1) = 9
Rpv(3.3 2.3 1.3) = 15, Δ(Rpv) = 6

(3.1 2.1 1.1) ≡ [[β°, id1], [α°, id1]]
(3.3 2.3 1.3) ≡ [[β°, id3], [α°, id3]], TS = [[ID, (ID1→ID3)], [ID, (ID1→ID3)]]

The transition schemes, however, are not to be understood – as the morphisms of the sign classes are – as representation schemes, but as ordered sets of operators that work on the input sign classes; e.g.

[[ID, (ID1→ID3)], [ID, (ID1→ID3)]](3.1 2.1 1.1) = (3.3 2.3 1.3).

However, since the input sign classes have always to be indicated, the specifications in the above category theoretic scheme are obsolete; we may therefore simply write them as [[ID, ID], [ID, ID]].

Now, in Toth (2008c), I had proposed a system of four category theoretic operators that are capable of producing each output sign class from every input sign class. Since these operators describe all possible transitions between sign classes and their dual reality thematics, they are semiotic functors:

1. ID: maps a morphism onto itself
2. D: dualization; turns a category into its dual category, i.e. $X \rightarrow X°$; $X° \rightarrow X$
3. A: adjunction: $X \rightarrow XY$, $Y \rightarrow YX$. For the difference between A and DA cf. $X = \alpha$, then $AX = \beta\alpha$, $DAX = \alpha°\beta°$; if $X = \beta$, then $AX = \beta\alpha$, $DAX = \alpha°\beta°$
4. S: substitution: $X \rightarrow Y$; $Y \rightarrow X$, whereby $X, Y \in \{\alpha, \beta\}$

The following random examples may illustrate the semiotic functors:

[id1, α], ... [id1, β]] _	[id1, β],	[id1, $\beta\alpha$]	[id1, $\alpha°\beta°$]
↓ID ↓D ↓ID ↓A _	↓ID ↓S	↓ID ↓D	↓ID ↓SD
[id1, $\alpha°$], ... [id3, $\beta\alpha$]]	[id1, α],	[id1, $\alpha°\beta°$]	[id1, β]

The system of the four semiotic functors is the smallest possible, although one could object, e.g. that a tansition like [β]→ [$\beta\alpha$] could be handled by substitution (S) alone. However, in this case, the composition of morphisms would turn obsolete; moreover, a transition like [$\beta\alpha$]→ [$\alpha°\beta°$] would have to be described as [SD] which would presuppose that [$\beta\alpha$] = [[β], α]] and [$\alpha°\beta°$] = [[$\alpha°$], [$\beta°$]], which is wrong. A more serious problem seems to be the lacking of the counterpart of A(djunction) which would be needed in a transition like [$\beta\alpha$]→ [β]; however, here, too, we have the problem that [$\beta\alpha$] ≠ [[β], [α]], but [[α], [β]], so that the introduction of an operation "De-Adjunction" would lead to nonsense.

Remains the question of the measuring of the semiotic distances and thus of the semiotic predictability by representation values. Here, we are quickly done, since the mapping of the representation values to sign classes and reality thematics is not bijective. We will thus restrict ourselves in presenting the fundamentals of semiotic predictability by using transition schemes of semiotic functors.

3. Further, in this study, we will restrict ourselves to combinations of two sign classes, though the methodic framework presented here can be expanded without problems to distances between $n > 2$ sign classes and reality thematics. Between two of the 10 sign classes the following 55 combinations are possible:

1-1									
1-2	2-2								
1-3	2-3	3-3							
1-4	2-4	3-4	4-4						
1-5	2-5	3-5	4-5	5-5					
1-6	2-6	3-6	4-6	5-6	6-6				
1-7	2-7	3-7	4-7	5-7	6-7	7-7			
1-8	2-8	3-8	4-8	5-8	6-8	7-8	8-8		
1-9	2-9	3-9	4-9	5-9	6-9	7-9	8-9	9-9	
1-10	2-10	3-10	4-10	5-10	6-10	7-10	8-10	9-10	10-10

We will now examine all combinations of sign classes and reality thematics in numerical and category theoretical notations and indicate the transition classes of semiotic functors both for the sign classes and the reality thematics.

1-1 (3.1 2.1 1.1) × (1.1 1.2 1.3) ≡ [[β°, id1], [id1, id1]] × [[id1, α], [id1, β]]
(3.1 2.1 1.1) × (1.1 1.2 1.3) ≡ [[β°, id1], [id1, id1]] × [[id1, α], [id1, β]]
[[ID, ID], [ID, ID]] ‖ [[ID, ID], [ID, ID]]

The symbol " ‖ " emphasizes that the sets of semiotic functors of a sign class and its dual reality thematic are usually non-dual.

1-2 (3.1 2.1 1.1) × (1.1 1.2 1.3) ≡ [[β°, id1], [id1, id1]] × [[id1, α], [id1, β]]
(3.1 2.1 1.2) × (2.1 1.2 1.3) ≡ [[β°, id1], [α°, α]] × [[α°, α], [id1, β]]
[[ID, ID], [SD, S]] ‖ [[SD, ID], [ID, ID]]

1-3 (3.1 2.1 1.1) × (1.1 1.2 1.3) ≡ [[β°, id1], [id1, id1]] × [[id1, α], [id1, β]]
(3.1 2.1 1.3) × (3.1 1.2 1.3) ≡ [[β°, id1], [α°, βα]] × [[α°β°, α], [id1, β]]
[[ID, ID], [SD, SA]] ‖ [[SAD, ID], [ID, ID]]

1-4 (3.1 2.1 1.1) × (1.1 1.2 1.3) ≡ [[β°, id1], [id1, id1]] × [[id1, α], [id1, β]]
(3.1 2.2 1.2) × (2.1 2.2 1.3) ≡ [[β°, α], [α°, id2]] × [[id2, α], [α°, β]]
[[ID, S], [SD], ID]] ‖ [[ID, ID], [SD, ID]]

1-5 (3.1 2.1 1.1) × (1.1 1.2 1.3) ≡ [[β°, id1], [id1, id1]] × [[id1, α], [id1, β]]
(3.1 2.2 1.3) × (3.1 2.2 1.3) ≡ [[β°, α], [α°, β]] × [[β°, α], [α°, β]]
[[ID, S], [SD, S]] ‖ [[SD, ID], SD, ID]]

1-6 (3.1 2.1 1.1) × (1.1 1.2 1.3) ≡ [[β°, id1], [id1, id1]] × [[id1, α], [id1, β]]
(3.1 2.3 1.3) × (3.1 3.2 1.3) ≡ [[β°, βα], [α°, id3]] × [[id3, α], [α°β°, β]]
[[ID, SA], [SD, ID]] ‖ [[ID, ID], [SDAD, ID]]

1-7 (3.1 2.1 1.1) × (1.1 1.2 1.3) ≡ [[β°, id1], [id1, id1]] × [[id1, α], [id1, β]]
(3.2 2.2 1.2) × (2.1 2.2 2.3) ≡ [[β°, id2], [α°, id2]] × [[id2, α], [id2, β]]
[[ID, ID], [SD, ID]] ‖ [[ID, ID], [ID, ID]]

1-8 (3.1 2.1 1.1) × (1.1 1.2 1.3) ≡ [[β°, id1], [id1, id1]] × [[id1, α], [id1, β]]
(3.2 2.2 1.3) × (3.1 2.2 2.3) ≡ [[β°, id2], [α°, β]] × [[β°, α], [id2, β]]
[[ID, ID], [SD, S]] ‖ [[SD, ID], [ID, ID]]

1-9 (3.1 2.1 1.1) × (1.1 1.2 1.3) ≡ [[β°, id1], [id1, id1]] × [[id1, α], [id1, β]]
(3.2 2.3 1.3) × (3.1 3.2 2.3) ≡ [[β°, β], [α°, id3]] × [[id3, α], [β°, β]]
[[ID, S], [SD, ID]] ‖ [[ID, ID], [SD, ID]]

1-10 (3.1 2.1 1.1) × (1.1 1.2 1.3) ≡ [[β°, id1], [id1, id1]] × [[id1, α], [id1, β]]

(3.3 2.3 1.3) × (3.1 3.2 3.3) ≡ [[β°, id3], [α°, id3]] × [[id3, α], [id3, β]]
[[ID, ID], [SD, ID]] ‖ [[ID, ID], [ID, ID]]

2-2 (3.1 2.1 1.2) × (2.1 1.2 1.3) ≡ [[β°, id1], [α°, α]] × [[α°, α], [id1, β]]
(3.1 2.1 1.2) × (2.1 1.2 1.3) ≡ [[β°, id1], [α°, α]] × [[α°, α], [id1, β]]
[[ID, ID], [ID, ID]] ‖ [[ID, ID], [ID, ID]]

2-3 (3.1 2.1 1.2) × (2.1 1.2 1.3) ≡ [[β°, id1], [α°, α]] × [[α°, α], [id1, β]]
(3.1 2.1 1.3) × (3.1 1.2 1.3) ≡ [[β°, id1], [α°, βα]] × [[α°β°, α], [id1, β]]
[[ID, ID], [ID, A]] ‖ [[AD, ID], [ID, ID]]

2-4 (3.1 2.1 1.2) × (2.1 1.2 1.3) ≡ [[β°, id1], [α°, α]] × [[α°, α], [id1, β]]
(3.1 2.2 1.2) × (2.1 2.2 1.3) ≡ [[β°, α], [α°, id2]] × [[id2, α], [α°, β]]
[[ID, S], [ID, S]] ‖ [[SD, ID], [SD, ID]]

2-5 (3.1 2.1 1.2) × (2.1 1.2 1.3) ≡ [[β°, id1], [α°, α]] × [[α°, α], [id1, β]]
(3.1 2.2 1.3) × (3.1 2.2 1.3) ≡ [[β°, α], [α°, β]] × [[β°, α], [α°, β]]
[[ID, S], [ID, S]] ‖ [[S, ID], [SD, ID]]

2-6 (3.1 2.1 1.2) × (2.1 1.2 1.3) ≡ [[β°, id1], [α°, α]] × [[α°, α], [id1, β]]
(3.1 2.3 1.3) × (3.1 3.2 1.3) ≡ [[β°, βα], [α°, id3]] × [[id3, α], [α°β°, β]]
[[ID, SA], [ID, S]] ‖ [[SD, ID], [SDAD, ID]]

2-7 (3.1 2.1 1.2) × (2.1 1.2 1.3) ≡ [[β°, id1], [α°, α]] × [[α°, α], [id1, β]]
(3.2 2.2 1.2) × (2.1 2.2 2.3) ≡ [[β°, id2], [α°, id2]] × [[id2, α], [id2, β]]
[[ID, ID], [ID, S]] ‖ [[SD, ID], [ID, ID]]

2-8 (3.1 2.1 1.2) × (2.1 1.2 1.3) ≡ [[β°, id1], [α°, α]] × [[α°, α], [id1, β]]
(3.2 2.2 1.3) × (3.1 2.2 2.3) ≡ [[β°, id2], [α°, β]] × [[β°, α], [id2, β]]
[[ID, ID], [ID, S]] ‖ × [[S, ID], [ID, ID]]

2-9 (3.1 2.1 1.2) × (2.1 1.2 1.3) ≡ [[β°, id1], [α°, α]] × [[α°, α], [id1, β]]
(3.2 2.3 1.3) × (3.1 3.2 2.3) ≡ [[β°, β], [α°, id3]] × [[id3, α], [β°, β]]
[[ID, S], [ID, S]] ‖ [[SD, ID], [SD, ID]]

2-10 (3.1 2.1 1.2) × (2.1 1.2 1.3) ≡ [[β°, id1], [α°, α]] × [[α°, α], [id1, β]]
(3.3 2.3 1.3) × (3.1 3.2 3.3) ≡ [[β°, id3], [α°, id3]] × [[id3, α], [id3, β]]
[[ID, ID], [ID, S]] ‖ [[SD, ID], [ID, ID]]

3-3 (3.1 2.1 1.3) × (3.1 1.2 1.3) ≡ [[β°, id1], [α°, βα]] × [[α°β°, α], [id1, β]]

(3.1 2.1 1.3) × (3.1 1.2 1.3) ≡ [[β°, id1], [α°, βα]] × [[α°β°, α], [id1, β]]
[[ID, ID], [ID, ID]] ‖ [[ID, ID], [ID, ID]]

3-4 (3.1 2.1 1.3) × (3.1 1.2 1.3) ≡ [[β°, id1], [α°, βα]] × [[α°β°, α], [id1, β]]
(3.1 2.2 1.2) × (2.1 2.2 1.3) ≡ [[β°, α], [α°, id2]] × [[id2, α], [α°, β]]
[[ID, S], [ID, S]] ‖ × [[SD, ID], [SD, ID]]

3-5 (3.1 2.1 1.3) × (3.1 1.2 1.3) ≡ [[β°, id1], [α°, βα]] × [[α°β°, α], [id1, β]]
(3.1 2.2 1.3) × (3.1 2.2 1.3) ≡ [[β°, α], [α°, β]] × [[β°, α], [α°, β]]
[[ID, S], [ID, S]] ‖ [[S, ID], [SD, ID]]

3-6 (3.1 2.1 1.3) × (3.1 1.2 1.3) ≡ [[β°, id1], [α°, βα]] × [[α°β°, α], [id1, β]]
(3.1 2.3 1.3) × (3.1 3.2 1.3) ≡ [[β°, βα], [α°, id3]] × [[id3, α], [α°β°, β]]
[[ID, SA], [ID, S]] ‖ [[S, ID], [ADAD, ID]]

3-7 (3.1 2.1 1.3) × (3.1 1.2 1.3) ≡ [[β°, id1], [α°, βα]] × [[α°β°, α], [id1, β]]
(3.2 2.2 1.2) × (2.1 2.2 2.3) ≡ [[β°, id2], [α°, id2]] × [[id2, α], [id2, β]]
[[ID, ID], [ID, S]] ‖ [[S, ID], [ID, ID]]

3-8 (3.1 2.1 1.3) × (3.1 1.2 1.3) ≡ [[β°, id1], [α°, βα]] × [[α°β°, α], [id1, β]]
(3.2 2.2 1.3) × (3.1 2.2 2.3) ≡ [[β°, id2], [α°, β]] × [[β°, α], [id2, β]]
[[ID, ID], [ID, S]] ‖ [[S, ID], [ID, ID]]

3-9 (3.1 2.1 1.3) × (3.1 1.2 1.3) ≡ [[β°, id1], [α°, βα]] × [[α°β°, α], [id1, β]]
(3.2 2.3 1.3) × (3.1 3.2 2.3) ≡ [[β°, β], [α°, id3]] × [[id3, α], [β°, β]]
[[ID, S], [ID, S]] ‖ [[SD, ID], [SD, ID]]

3-10 (3.1 2.1 1.3) × (3.1 1.2 1.3) ≡ [[β°, id1], [α°, βα]] × [[α°β°, α], [id1, β]]
(3.3 2.3 1.3) × (3.1 3.2 3.3) ≡ [[β°, id3], [α°, id3]] × [[id3, α], [id3, β]]
[[ID, ID], [ID, S]] ‖ [[SD, ID], [ID, ID]]

4-4 (3.1 2.2 1.2) × (2.1 2.2 1.3) ≡ [[β°, α], [α°, id2]] × [[id2, α], [α°, β]]
(3.1 2.2 1.2) × (2.1 2.2 1.3) ≡ [[β°, α], [α°, id2]] × [[id2, α], [α°, β]]
[[ID, ID], [ID, ID]] ‖ [[ID, ID], [ID, ID]]

4-5 (3.1 2.2 1.2) × (2.1 2.2 1.3) ≡ [[β°, α], [α°, id2]] × [[id2, α], [α°, β]]
(3.1 2.2 1.3) × (3.1 2.2 1.3) ≡ [[β°, α], [α°, β]] × [[β°, α], [α°, β]]
[[ID, ID], [ID, S]] ‖ [[SD, ID], [ID, ID]]

4-6 (3.1 2.2 1.2) × (2.1 2.2 1.3) ≡ [[β°, α], [α°, id2]] × [[id2, α], [α°, β]]

$(3.1\ 2.3\ 1.3) \times (3.1\ 3.2\ 1.3) \equiv [[\beta°, \beta\alpha], [\alpha°, id3]] \times [[id3, \alpha], [\alpha°\beta°, \beta]]$
[[ID, S], [ID, ID]] ‖ [[ID, ID], [AD, ID]]

4-7 $(3.1\ 2.2\ 1.2) \times (2.1\ 2.2\ 1.3) \equiv [[\beta°, \alpha], [\alpha°, id2]] \times [[id2, \alpha], [\alpha°, \beta]]$
$(3.2\ 2.2\ 1.2) \times (2.1\ 2.2\ 2.3) \equiv [[\beta°, id2], [\alpha°, id2]] \times [[id2, \alpha], [id2, \beta]]$
[[ID, S], [ID, ID]] ‖ [[ID, ID], [SD, ID]]

4-8 $(3.1\ 2.2\ 1.2) \times (2.1\ 2.2\ 1.3) \equiv [[\beta°, \alpha], [\alpha°, id2]] \times [[id2, \alpha], [\alpha°, \beta]]$
$(3.2\ 2.2\ 1.3) \times (3.1\ 2.2\ 2.3) \equiv [[\beta°, id2], [\alpha°, \beta]] \times [[\beta°, \alpha], [id2, \beta]]$
[[ID, S], [ID, S]] ‖ [[SD, ID], [SD, ID]]

4-9 $(3.1\ 2.2\ 1.2) \times (2.1\ 2.2\ 1.3) \equiv [[\beta°, \alpha], [\alpha°, id2]] \times [[id2, \alpha], [\alpha°, \beta]]$
$(3.2\ 2.3\ 1.3) \times (3.1\ 3.2\ 2.3) \equiv [[\beta°, \beta], [\alpha°, id3]] \times [[id3, \alpha], [\beta°, \beta]]$
[[ID, S], [ID, ID]] ‖ [[ID, ID], [S, ID]]

4-10 $(3.1\ 2.2\ 1.2) \times (2.1\ 2.2\ 1.3) \equiv [[\beta°, \alpha], [\alpha°, id2]] \times [[id2, \alpha], [\alpha°, \beta]]$
$(3.3\ 2.3\ 1.3) \times (3.1\ 3.2\ 3.3) \equiv [[\beta°, id3], [\alpha°, id3]] \times [[id3, \alpha], [id3, \beta]]$
[[ID, S], [ID, ID]] ‖ [[ID, ID], [SD, ID]]

5-5 $(3.1\ 2.2\ 1.3) \times (3.1\ 2.2\ 1.3) \equiv [[\beta°, \alpha], [\alpha°, \beta]] \times [[\beta°, \alpha], [\alpha°, \beta]]$
$(3.1\ 2.2\ 1.3) \times (3.1\ 2.2\ 1.3) \equiv [[\beta°, \alpha], [\alpha°, \beta]] \times [[\beta°, \alpha], [\alpha°, \beta]]$
[[ID, ID], [ID, ID]] ‖ [[ID, ID], [ID, ID]]

5-6 $(3.1\ 2.2\ 1.3) \times (3.1\ 2.2\ 1.3) \equiv [[\beta°, \alpha], [\alpha°, \beta]] \times [[\beta°, \alpha], [\alpha°, \beta]]$
$(3.1\ 2.3\ 1.3) \times (3.1\ 3.2\ 1.3) \equiv [[\beta°, \beta\alpha], [\alpha°, id3]] \times [[id3, \alpha], [\alpha°\beta°, \beta]]$
[[ID, A], [ID, S]] ‖ [[SD, ID], [AD, ID]]

5-7 $(3.1\ 2.2\ 1.3) \times (3.1\ 2.2\ 1.3) \equiv [[\beta°, \alpha], [\alpha°, \beta]] \times [[\beta°, \alpha], [\alpha°, \beta]]$
$(3.2\ 2.2\ 1.2) \times (2.1\ 2.2\ 2.3) \equiv [[\beta°, id2], [\alpha°, id2]] \times [[id2, \alpha], [id2, \beta]]$
[[ID, S], [ID, S]] ‖ [[SD, ID], [SD, ID]]

5-8 $(3.1\ 2.2\ 1.3) \times (3.1\ 2.2\ 1.3) \equiv [[\beta°, \alpha], [\alpha°, \beta]] \times [[\beta°, \alpha], [\alpha°, \beta]]$
$(3.2\ 2.2\ 1.3) \times (3.1\ 2.2\ 2.3) \equiv [[\beta°, id2], [\alpha°, \beta]] \times [[\beta°, \alpha], [id2, \beta]]$
[[ID, S], [ID, ID]] ‖ [[ID, ID], [SD, ID]]

5-9 $(3.1\ 2.2\ 1.3) \times (3.1\ 2.2\ 1.3) \equiv [[\beta°, \alpha], [\alpha°, \beta]] \times [[\beta°, \alpha], [\alpha°, \beta]]$
$(3.2\ 2.3\ 1.3) \times (3.1\ 3.2\ 2.3) \equiv [[\beta°, \beta], [\alpha°, id3]] \times [[id3, \alpha], [\beta°, \beta]]$
[[ID, S], [ID, S]] ‖ [[SD, ID], [S, ID]]

5-10 $(3.1\ 2.2\ 1.3) \times (3.1\ 2.2\ 1.3) \equiv [[\beta°, \alpha], [\alpha°, \beta]] \times [[\beta°, \alpha], [\alpha°, \beta]]$

$(3.3\ 2.3\ 1.3) \times (3.1\ 3.2\ 3.3) \equiv [[\beta°, id3], [\alpha°, id3]] \times [[id3, \alpha], [id3, \beta]]$
$[[ID, S], [ID, S]] \parallel [[SD, ID], [SD, ID]]$

6-6 $(3.1\ 2.3\ 1.3) \times (3.1\ 3.2\ 1.3) \equiv [[\beta°, \beta\alpha], [\alpha°, id3]] \times [[id3, \alpha], [\alpha°\beta°, \beta]]$
$(3.1\ 2.3\ 1.3) \times (3.1\ 3.2\ 1.3) \equiv [[\beta°, \beta\alpha], [\alpha°, id3]] \times [[id3, \alpha], [\alpha°\beta°, \beta]]$
$[[ID, ID], [ID, ID]] \parallel [[ID, ID], [ID, ID]]$

6-7 $(3.1\ 2.3\ 1.3) \times (3.1\ 3.2\ 1.3) \equiv [[\beta°, \beta\alpha], [\alpha°, id3]] \times [[id3, \alpha], [\alpha°\beta°, \beta]]$
$(3.2\ 2.2\ 1.2) \times (2.1\ 2.2\ 2.3) \equiv [[\beta°, id2], [\alpha°, id2]] \times [[id2, \alpha], [id2, \beta]]$
$[[ID, S], [ID, ID]] \parallel [[ID, ID], [SD, ID]]$

6-8 $(3.1\ 2.3\ 1.3) \times (3.1\ 3.2\ 1.3) \equiv [[\beta°, \beta\alpha], [\alpha°, id3]] \times [[id3, \alpha], [\alpha°\beta°, \beta]]$
$(3.2\ 2.2\ 1.3) \times (3.1\ 2.2\ 2.3) \equiv [[\beta°, id2], [\alpha°, \beta]] \times [[\beta°, \alpha], [id2, \beta]]$
$[[ID, S], [ID, S]] \parallel [[SD, ID], [SD, ID]]$

6-9 $(3.1\ 2.3\ 1.3) \times (3.1\ 3.2\ 1.3) \equiv [[\beta°, \beta\alpha], [\alpha°, id3]] \times [[id3, \alpha], [\alpha°\beta°, \beta]]$
$(3.2\ 2.3\ 1.3) \times (3.1\ 3.2\ 2.3) \equiv [[\beta°, \beta], [\alpha°, id3]] \times [[id3, \alpha], [\beta°, \beta]]$
$[[ID, S], [ID, ID]] \parallel [[ID, ID], [S, ID]]$

6-10 $(3.1\ 2.3\ 1.3) \times (3.1\ 3.2\ 1.3) \equiv [[\beta°, \beta\alpha], [\alpha°, id3]] \times [[id3, \alpha], [\alpha°\beta°, \beta]]$
$(3.3\ 2.3\ 1.3) \times (3.1\ 3.2\ 3.3) \equiv [[\beta°, id3], [\alpha°, id3]] \times [[id3, \alpha], [id3, \beta]]$
$[[ID, S], [ID, ID]] \parallel [[ID, ID], [S, ID]]$

7-7 $(3.2\ 2.2\ 1.2) \times (2.1\ 2.2\ 2.3) \equiv [[\beta°, id2], [\alpha°, id2]] \times [[id2, \alpha], [id2, \beta]]$
$(3.2\ 2.2\ 1.2) \times (2.1\ 2.2\ 2.3) \equiv [[\beta°, id2], [\alpha°, id2]] \times [[id2, \alpha], [id2, \beta]]$
$[[ID, ID], [ID, ID]] \parallel [[ID, ID], [ID, ID]]$

7-8 $(3.2\ 2.2\ 1.2) \times (2.1\ 2.2\ 2.3) \equiv [[\beta°, id2], [\alpha°, id2]] \times [[id2, \alpha], [id2, \beta]]$
$(3.2\ 2.2\ 1.3) \times (3.1\ 2.2\ 2.3) \equiv [[\beta°, id2], [\alpha°, \beta]] \times [[\beta°, \alpha], [id2, \beta]]$
$[[ID, ID], [ID, S]] \parallel [[SD, ID], [ID, ID]]$

7-9 $(3.2\ 2.2\ 1.2) \times (2.1\ 2.2\ 2.3) \equiv [[\beta°, id2], [\alpha°, id2]] \times [[id2, \alpha], [id2, \beta]]$
$(3.2\ 2.3\ 1.3) \times (3.1\ 3.2\ 2.3) \equiv [[\beta°, \beta], [\alpha°, id3]] \times [[id3, \alpha], [\beta°, \beta]]$
$[[ID, S], [ID, ID]] \parallel [[ID, ID], [SD, ID]]$

7-10 $(3.2\ 2.2\ 1.2) \times (2.1\ 2.2\ 2.3) \equiv [[\beta°, id2], [\alpha°, id2]] \times [[id2, \alpha], [id2, \beta]]$
$(3.3\ 2.3\ 1.3) \times (3.1\ 3.2\ 3.3) \equiv [[\beta°, id3], [\alpha°, id3]] \times [[id3, \alpha], [id3, \beta]]$
$[[ID, ID], [ID, ID]] \parallel [[ID, ID], [ID, ID]]$

8-8 $(3.2\ 2.2\ 1.3) \times (3.1\ 2.2\ 2.3) \equiv [[\beta°, id2], [\alpha°, \beta]] \times [[\beta°, \alpha], [id2, \beta]]$

(3.2 2.2 1.3) × (3.1 2.2 2.3) ≡ [[β°, id2], [α°, β]] × [[β°, α], [id2, β]]
[[ID, ID], [ID, ID]] ‖ [[ID, ID], [ID, ID]]

8-9 (3.2 2.2 1.3) × (3.1 2.2 2.3) ≡ [[β°, id2], [α°, β]] × [[β°, α], [id2, β]]
(3.2 2.3 1.3) × (3.1 3.2 2.3) ≡ [[β°, β], [α°, id3]] × [[id3, α], [β°, β]]
[[ID, S], [ID, S]] ‖ [[SD, ID], [SD, ID]]

8-10 (3.2 2.2 1.3) × (3.1 2.2 2.3) ≡ [[β°, id2], [α°, β]] × [[β°, α], [id2, β]]
(3.3 2.3 1.3) × (3.1 3.2 3.3) ≡ [[β°, id3], [α°, id3]] × [[id3, α], [id3, β]]
[[ID, ID], [ID, S]] ‖ [[SD, ID], [ID, ID]]

9-9 (3.2 2.3 1.3) × (3.1 3.2 2.3) ≡ [[β°, β], [α°, id3]] × [[id3, α], [β°, β]]
(3.2 2.3 1.3) × (3.1 3.2 2.3) ≡ [[β°, β], [α°, id3]] × [[id3, α], [β°, β]]
[[ID, ID], [ID, ID]] ‖ [[ID, ID], [ID, ID]]

9-10 (3.2 2.3 1.3) × (3.1 3.2 2.3) ≡ [[β°, β], [α°, id3]] × [[id3, α], [β°, β]]
(3.3 2.3 1.3) × (3.1 3.2 3.3) ≡ [[β°, id3], [α°, id3]] × [[id3, α], [id3, β]]
[[ID, S], [ID, ID]] ‖ [[ID, ID], [SD, ID]]

10-10 (3.3 2.3 1.3) × (3.1 3.2 3.3) ≡ [[β°, id3], [α°, id3]] × [[id3, α], [id3, β]]
(3.3 2.3 1.3) × (3.1 3.2 3.3) ≡ [[β°, id3], [α°, id3]] × [[id3, α], [id3, β]]
[[ID, ID], [ID, ID]] ‖ [[ID, ID], [ID, ID]]

4. Yet, besides the combinations of 2 sign classes with one another, we have also to look at the semiotic predictability in the combinations of the transpositions of sign classes (cf. Toth 2008b, pp. 223 ss.). Since we have already shown combinations of 2 identical sign classes and reality thematics, we give here as an example the 6 possible transpositions of the sign class (3.1 2.1 1.1) and its dual reality thematic (1.1 1.2 1.3):

3.1 2.1 1.1	3.1 1.1 2.1	2.1 3.1 1.1	2.1 1.1 3.1	1.1 3.1 2.1	1.1 2.1 3.1
1.1 1.2 1.3	1.2 1.1 1.3	1.1 1.3 1.2	1.3 1.1 1.2	1.2 1.3 1.1	1.3 1.2 1.1

The respective category theoretic representation schemes are:

For SCl(3.1 2.1 1.1): [[β°, id1], [α°, id1]], [[α°β°, id1], [α, id1]], [[β, id1], [α°β°, id1]], [[α°, id1], [βα, id1]], [[βα, id1], [β°, id1]], [[α, id1], [β, id1]]

For RTh(1.1 1.2 1.3): [[id1, α], [id1, β]], [[id1, α°], [id1, βα]], [[id1, βα], [id1, β°]], [[id1, α°β°], [id1, α]], [[id1, β], [id1, α°β°]], [[id1, β°], [id1, α°]]

Generally, if a sign class has the structure (3.a 2.b 1.c) and its reality thematic has the structure (c.1 b.2 a.3), then the two systems of transpositions are as follows:

SCl(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)
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)

Therefore, the set sets of semiotic morphisms for the general sign class structure is:

[[3.2, a.b], [2.1, b.c]], [[3.1, a.c], [1.2, c.b]], [[2.3, b.a], [3.1, a.c]], [[2.1, b.c], [1.3, c.a]],
[[1.3, c.a], [3.2, a.b]], [[1.2, c.b], [2.3, b.a]]

and the set of semiotic morphisms for the general reality thematic structure is:

[[c.b, 1.2], [b.a, 2.3]], [[b.c, 2.1], [c.a, 1.3]], [[c.a, 1.3], [a.b, 3.2]], [[a.c, 3.1], [c.b, 1.2]],
[[b.a, 2.3], [a.c, 3.1]], [[a.b, 3.2], [b.c, 2.1]]

From this way of notation, we also see that the following semiotic morphisms in their respective positions in the semiotic functors are constant:

SCl: [[β°, a.b], [α°, b.c]], [[α°β°, a.c], [α, c.b]], [[β, b.a], [α°β°, a.c]], [[α°, b.c], [βα, c.a]],
[[βα, c.a], [β°, a.b]], [[α, c.b], [β, b.a]]

RTh: [[c.b, α], [b.a, β]], [[b.c, α°], [c.a, βα]], [[c.a, βα], [a.b, β°]], [[a.c, α°β°], [c.b, α]],
[[b.a, β], [a.c, α°β°]], [[a.b, β°], [b.c, α°]]

Now, we can combine first all transpositions of a sign class with one another; then all transpositions of a reality thematics; then all transpositions of a sign class with the transpositions of a reality thematics and finally the sign classes and reality thematics as shown above (3.) with all transpositions of the sign classes and of the reality thematics. One sees easily that the very great number of possible combinations will result in a huge wealth of semiotic structures (cf. Toth 2008d, pp. 28 ss.).

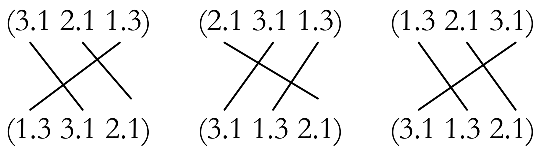
Therefore, the semiotic predictability inherent in transpositions of sign classes and reality thematics reduces to the variables for sub-signs in the above representations schemes. Naturally, transpositions of sign classes and reality thematics have the same representation values like their respective sign classes and reality thematics. If we have again a look at the category theoretic schemes of the transpositions of a general sign class:

[[β°, a.b], [α°, b.c]], [[α°β°, a.c], [α, c.b]], [[β, b.a], [α°β°, a.c]], [[α°, b.c], [βα, c.a]],
[[βα, c.a], [β°, a.b]], [[α, c.b], [β, b.a]],

we recognize immediately, that the greatest semiotic distance is between those pairs of transpositions in which the order of the sub-signs of the original sign class or reality thematic is maximally scrambled:

(3.1 2.1 1.3) (2.1 3.1 1.3) (1.3 2.1 3.1)
(1.3 3.1 2.1) (3.1 1.3 2.1) (3.1 1.3 2.1), etc.

From the logical-semiotic viewpoint, these are thus those pairs of transpositions in which all sub-signs stand in chiastic relation to one another (cf. Toth 2008b, pp. 191 ss.). A look at our three examples from above shows, too, that these are precisely those transpositions in which one pair of semiotic connections is parallel:



However, generally speaking, the maximal degree of semiotic predictability holds again – like between sign classes and reality thematics – between the transpositions of the sign class with the lowest and the transpositions of the sign class with the highest degree of semioticity. If we restrict ourselves again to combinations of 2 transpositions, then the following 78 combinations are possible:

a-a											
a-b	b-b										
a-c	b-c	c-c									
a-d	b-d	c-d	d-d								
a-e	b-e	c-e	d-e	e-e							
a-f	b-f	c-f	d-f	e-f	f-f						
a-g	b-g	c-g	d-g	e-g	f-g	g-g					
a-h	b-h	c-h	d-h	e-h	f-h	g-h	h-h				
a-i	b-i	c-i	d-i	e-i	f-i	g-i	h-i	i-i			
a-j	b-j	c-j	d-j	e-j	f-j	g-j	h-j	i-j	j-j		
a-k	b-k	c-k	d-k	e-k	f-k	g-k	h-k	i-k	j-k	k-k	
a-l	b-l	c-l	d-l	e-l	f-l	g-l	h-l	i-l	j-l	k-l	l-l

In order to show some examples for maximal semiotic predictability, let us again take our above examples:

$(3.1\ 2.1\ 1.1) \equiv [[\beta^\circ, id1], [\alpha^\circ, id1]]$
$(1.1\ 3.1\ 2.1) \equiv [[\beta\alpha, id1], [\beta^\circ, id1]]$
[[DA, ID], [S, ID]]

$(2.1\ 3.1\ 1.1) \equiv [[\beta, id1], [\alpha^\circ\beta^\circ, id1]]$
$(3.1\ 1.1\ 2.1) \equiv [[\alpha^\circ\beta^\circ, id1], [\alpha, id1]]$
[[AD, ID], [S, ID]]

$(1.3\ 2.3\ 3.3) \equiv [[\alpha, id3], [\beta, id3]]$
$(3.3\ 1.3\ 2.3) \equiv [[\alpha^\circ\beta^\circ, id3], [\alpha, id3]]$
[[AD, ID], [S, ID]]

$(3.3\ 2.3\ 1.3) \equiv [[\beta^\circ, id3], [\alpha^\circ, id3]]$
$(1.3\ 3.3\ 2.3) \equiv [[\beta\alpha, id3], [\beta^\circ, id3]]$
[[DA, ID], [S, ID]]

$(2.3\ 3.3\ 1.3) \equiv [[\beta, id3], [\alpha^\circ\beta^\circ, id3]]$
$(3.3\ 1.3\ 2.3) \equiv [[\alpha^\circ\beta^\circ, id3], [\alpha, id3]]$
[[DA, ID], [S, ID]]

$(1.3\ 2.3\ 3.3) \equiv [[\alpha, id3], [\beta, id3]]$

$(3.3\ 1.3\ 2.3) \equiv [[\alpha°\beta°, id3], [\alpha, id3]]$
[[DA, ID], [S, ID]]

Summing up, we have gotten two results:

1. The greatest semiotic predictability holds between the transpositions of the sign class with the lowest (3.1 2.1 1.1) and the sign class with the highest degree of semioticity (3.3 2.3 1.3).

2. From the standpoint of the transpositions, the greatest semiotic predictability holds between those pairs of transpositions in which all three semiotic connections are chiastic.

From this, it follows:

3. The lowest semiotic predictability holds between those transpositions of the sign class with the lowest degree of semioticity, i.e. (3.1 2.1 1.1), which do not contain any chiastic semiotic connection. The highest degree of semiotic predictability holds between the transpositions of the sign class with the highest degree of semioticity, i.e. (3.3 2.3 1.3), which contain exclusively chiastic semiotic connections.

With this semiotic axiom, we have also given a new definition of semiotic space as the space of semiotic predictability, based on sign classes, their transpositions, their representation values and the semiotic connections between them.

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