Prof. Dr. Alfred

Permutations of sign classes and of inner semiotic environments

1. In Toth (2008a, pp. 177 ss.), I introduced permutations of sign classes into semiotics. In classical, semiotics, a sign class always appears in the following order of its triads:

SCl = (3.a 2.b 1.c), i.e. I, O, M,

while its dual reality thematics appears in the converse order

Rth = SCl° = (c.1 b.2 a.3), i.e. M, O, I.

However, in Bense (1971, pp. 38 ss.) semiotic communication schemata obeying the order

CoSch = (2.b 1.c 3.a), i.e. OMI

and in Bense (1976, pp. 110 ss.) semiotic creation schemata obeying the order

CrSch = (3.a 1.c 2.b), i.e. IMO

have been introduced. Thus, together with the converse relation of CoSch and CrSch,

CoSch° = (a.3 c.1 b.2), i.e. IMO
CrSch° = (b.2 c.1 a.3), i.e. OMI,

we have all 6 order types of triadic semiotic relations:

(3.a 2.b 1.c)	×	(c.1 b.2 a.3)	IOM × MOI (1)
(3.a 1.c 2.b)	×	(b.2 c.1 a.3)	IMO × OMI (2)
(2.b 1.c 3.a)	×	(a.3 c.1 b.2)	OMI × IMO (2°)
(2.b 3.a 1.c)	×	(c.1 a.3 b.2)	OIM × MIO (3)
(1.c 3.a 2.b)	×	(b.2 a.3 c.1)	MIO × OIM (3°)

and thus all possible permutations of a sign class and its reality thematic.

2. According to Kaehr (2009, p. 8), the main diagonal of the 3-contextural semiotic matrix is

$(3.3_{2,3}\ 2.2_{1,2}\ 1.1_{1,3})$

and the main diagonal of the 3-contextural semiotic matrix as a fragment of a 4-contextural matrix is

$(3.3_{2,3,4}\ 2.2_{1,2,4}\ 1.1_{1,3,4})$.

Therefore, we have to redefine a sign class with inner semiotic environments as

SCl+ = $(3.a_{a,b,c}\ 2.b_{d,e,f}\ 1.c_{g,h,i})$, with a, ..., i ∈ {∅, 1, 2, 3, 4}

However, in addition to the 6 permutations of a sign class, we get now 6 permutations of each sub-sign of each sign class:

$(x.y)_{a,b,c}$
$(x.y)_{a,c,b}$
$(x.y)_{b,a,c}$
$(x.y)_{b,c,a}$
$(x.y)_{c,a,b}$
$(x.y)_{c,ba,}$

with x, y ∈ {1, 2, 3} and a, b, c ∈ {∅, 1, 2, 3, 4}.

Since each of the 3 sub-signs of a sign class can appear in 6 permutations, we get, purely theoretically, 6^3 = 216 permutations of inner semiotic environments per sign class. However, only the genuine sub-signs (identitive morphisms) (1.1), (2.2), (3.3) have 3 indices unequal to, and they appear only in the following 6 sign classes:

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

so that we have a total of 6 times 216 = 1'296 sign classes. Further, the remaining 4 sign classes have 2 indices, so they can appear in only 6 times 2^3 = 48 combination, which yields 4 times 48 = 192 sign classes. Thus, the total is 1'296 + 192 = 1'488 combinations of permutations of sign classes plus inner semiotic environments. If we further add the dual reality thematics, we have at the end 2'976 combinations of semiotic dual systems, which of course go far beyond the representative power of the system of the classical 10 Peircean sign classes.

3. Let us take, for the sake of simplicity, as an example the 4-contextural Peircean sign class

$(3.1_{3,4}\ 2.1_{1,4}\ 1.3_{3,4})$.

The 6 permutations with constant semiotic environments are

$(3.1_{3,4}\ 2.1_{1,4}\ 1.3_{3,4})$ $(2.1_{1,4}\ 1.3_{3,4}\ 3.1_{3,4})$
$(3.1_{3,4}\ 1.3_{3,4}\ 2.1_{1,4})$ $(1.3_{3,4}\ 3.1_{3,4}\ 2.1_{1,4})$
$(2.1_{1,4}\ 3.1_{3,4}\ 1.3_{3,4})$ $(1.3_{3,4}\ 2.1_{1,4}\ 3.1_{3,4})$

Now, each of these 6 permutations can be permutated again to 2^3 = 8 combinations of inner semiotic environments:

$(3.1_{3,4}\ 2.1_{1,4}\ 1.3_{3,4})$ $(3.1_{4,3}\ 2.1_{1,4}\ 1.3_{3,4})$
$(3.1_{3,4}\ 2.1_{4,1}\ 1.3_{3,4})$ $(3.1_{4,3}\ 2.1_{4,1}\ 1.3_{3,4})$
$(3.1_{3,4}\ 2.1_{1,4}\ 1.3_{4,3})$ $(3.1_{4,3}\ 2.1_{1,4}\ 1.3_{4,3})$
$(3.1_{3,4}\ 2.1_{4,1}\ 1.3_{4,3})$ $(3.1_{4,3}\ 2.1_{4,1}\ 1.3_{4,3})$

$(3.1_{3,4}\ 1.3_{3,4}\ 2.1_{1,4})$ $(3.1_{4,3}\ 1.3_{3,4}\ 2.1_{1,4})$
$(3.1_{3,4}\ 1.3_{3,4}\ 2.1_{4,1})$ $(3.1_{4,3}\ 1.3_{3,4}\ 2.1_{4,1})$
$(3.1_{3,4}\ 1.3_{4,3}\ 2.1_{1,4})$ $(3.1_{4,3}\ 1.3_{4,3}\ 2.1_{1,4})$
$(3.1_{3,4}\ 1.3_{4,3}\ 2.1_{4,1})$ $(3.1_{4,3}\ 1.3_{4,3}\ 2.1_{4,1})$

$(2.1_{1,4}\ 3.1_{3,4}\ 1.3_{3,4})$ $(2.1_{1,4}\ 3.1_{4,3}\ 1.3_{3,4})$
$(2.1_{4,1}\ 3.1_{3,4}\ 1.3_{3,4})$ $(2.1_{4,1}\ 3.1_{4,3}\ 1.3_{3,4})$
$(2.1_{1,4}\ 3.1_{3,4}\ 1.3_{4,3})$ $(2.1_{1,4}\ 3.1_{4,3}\ 1.3_{4,3})$
$(2.1_{4,1}\ 3.1_{3,4}\ 1.3_{4,3})$ $(2.1_{4,1}\ 3.1_{4,3}\ 1.3_{4,3})$

$(2.1_{1,4}\ 1.3_{3,4}\ 3.1_{3,4})$ $(2.1_{1,4}\ 1.3_{3,4}\ 3.1_{4,3})$
$(2.1_{4,1}\ 1.3_{3,4}\ 3.1_{3,4})$ $(2.1_{4,1}\ 1.3_{3,4}\ 3.1_{4,3})$
$(2.1_{1,4}\ 1.3_{4,3}\ 3.1_{3,4})$ $(2.1_{1,4}\ 1.3_{4,3}\ 3.1_{4,3})$
$(2.1_{4,1}\ 1.3_{4,3}\ 3.1_{3,4})$ $(2.1_{4,1}\ 1.3_{4,3}\ 3.1_{4,3})$

$(1.3_{3,4}\ 3.1_{3,4}\ 2.1_{1,4})$ $(1.3_{3,4}\ 3.1_{4,3}\ 2.1_{1,4})$
$(1.3_{3,4}\ 3.1_{3,4}\ 2.1_{4,1})$ $(1.3_{3,4}\ 3.1_{4,3}\ 2.1_{4,1})$
$(1.3_{4,3}\ 3.1_{3,4}\ 2.1_{1,4})$ $(1.3_{4,3}\ 3.1_{4,3}\ 2.1_{1,4})$
$(1.3_{4,3}\ 3.1_{3,4}\ 2.1_{4,1})$ $(1.3_{4,3}\ 3.1_{4,3}\ 2.1_{4,1})$

$(1.3_{3,4}\ 2.1_{1,4}\ 3.1_{3,4})$ $(1.3_{3,4}\ 2.1_{1,4}\ 3.1_{4,3})$
$(1.3_{3,4}\ 2.1_{4,1}\ 3.1_{3,4})$ $(1.3_{3,4}\ 2.1_{4,1}\ 3.1_{4,3})$
$(1.3_{4,3}\ 2.1_{1,4}\ 3.1_{3,4})$ $(1.3_{4,3}\ 2.1_{1,4}\ 3.1_{4,3})$
$(1.3_{4,3}\ 2.1_{4,1}\ 3.1_{3,4})$ $(1.3_{4,3}\ 2.1_{4,1}\ 3.1_{4,3})$

However, these 48 permutations of the original sign class $(3.1_{3,4}\ 2.1_{1,4}\ 1.3_{3,4})$ must be assigned a semiotic interpretation, since, unlike, e.g., in the case of the negation cycles in polycontextural logic, in semiotics, we deal with meaning and sense and not exclusively with the sign as a medium. In order interpret the combinations of inner semiotic environments, we can recur to Günther's logical-semiotic triadic sign model (1976, pp. 336 ss.), in which we have the following correspondences:

M ≡ (.1.) → objective subject (oS)
O ≡ (.2.) → objective object (oO)
I ≡ (.3.) → subjective subject (sS)

Additionally, in Toth (2008b, *passim*), the still lacking combination of subjective object was ascribed to the "quality" of Zeroness (for motivation cf. Kronthaler 1992):

Q ≡ (.0.) → subjective object (sO)

In Kaehr's contextuated semiotic matrix (2009, p. 8), Fourthness (.4.) stands for what we have introduced as Zeroness (.0.). Therefore, if we use the above abbreviations for the logical-semiotic functions, we can rewrite our 48 combinations of the sign class $(3.1_{3,4}\ 2.1_{1,4}\ 1.3_{3,4})$ as follows:

$(3.1_{sS, sO}\ 2.1_{oS,sO}\ 1.3_{sS,sO})$	$(3.1_{sO, sS}\ 2.1_{oS,sO}\ 1.3_{sS,sO})$
$(3.1_{sS,sO}\ 2.1_{sO, oS}\ 1.3_{sS,sO})$	$(3.1_{sO, sS}\ 2.1_{sO, oS}\ 1.3_{sS,sO})$
$(3.1_{sS,sO}\ 2.1_{oS,sO}\ 1.3_{sO\ sS})$	$(3.1_{sO, sS}\ 2.1_{oS,sO}\ 1.3_{sO\ sS})$
$(3.1_{sS,sO}\ 2.1_{sO, oS}\ 1.3_{sO, sS})$	$(3.1_{sO, sS}\ 2.1_{sO, oS}\ 1.3_{sO, sS})$
$(3.1_{sS,sO}\ 1.3_{sS,sO}\ 2.1_{oS,sO})$	$(3.1_{sO, sS}\ 1.3_{sS,sO}\ 2.1_{oS,sO})$
$(3.1_{sS,sO}\ 1.3_{sS,sO}\ 2.1_{sO, oS})$	$(3.1_{sO, sS}\ 1.3_{sS,sO}\ 2.1_{sO, oS})$
$(3.1_{sS,sO}\ 1.3_{sO, sS}\ 2.1_{oS,sO})$	$(3.1_{sO, sS}\ 1.3_{sO, sS}\ 2.1_{oS,sO})$
$(3.1_{sS,sO}\ 1.3_{sO, sS}\ 2.1_{sO, oS})$	$(3.1_{sO, sS}\ 1.3_{sO, sS}\ 2.1_{sO, oS})$
$(2.1_{oS,sO}\ 3.1_{sS,sO}\ 1.3_{sS,sO})$	$(2.1_{oS,sO}\ 3.1_{sO, sS}\ 1.3_{sS,sO})$
$(2.1_{sO, oS}\ 3.1_{sS,sO}\ 1.3_{sS,sO})$	$(2.1_{sO, oS}\ 3.1_{sO, sS}\ 1.3_{sS,sO})$
$(2.1_{oS,sO}\ 3.1_{sS,sO}\ 1.3_{sO\ sS})$	$(2.1_{oS,sO}\ 3.1_{sO, sS}\ 1.3_{sO, sS})$
$(2.1_{sO, oS}\ 3.1_{sS,sO}\ 1.3_{sO, sS})$	$(2.1_{sO, oS}\ 3.1_{sO, sS}\ 1.3_{sO, sS})$
$(2.1_{oS,sO}\ 1.3_{sS,sO}\ 3.1_{sS,sO})$	$(2.1_{oS,sO}\ 1.3_{sS,sO}\ 3.1_{sO, sS})$
$(2.1_{sO, oS}\ 1.3_{sS,sO}\ 3.1_{sS,sO})$	$(2.1_{sO, oS}\ 1.3_{sS,sO}\ 3.1_{sO, sS})$
$(2.1_{oS,sO}\ 1.3_{sO, sS}\ 3.1_{sS,sO})$	$(2.1_{oS,sO}\ 1.3_{sO, sS}\ 3.1_{sO, sS})$
$(2.1_{sO, oS}\ 1.3_{sO, sS}\ 3.1_{sS,sO})$	$(2.1_{sO, oS}\ 1.3_{sO, sS}\ 3.1_{sO, sS})$
$(1.3_{sS,sO}\ 3.1_{sS,sO}\ 2.1_{oS,sO})$	$(1.3_{sS,sO}\ 3.1_{sO, sS}\ 2.1_{oS,sO})$
$(1.3_{sS,sO}\ 3.1_{sS,sO}\ 2.1_{sO, oS})$	$(1.3_{sS,sO}\ 3.1_{sO, sS}\ 2.1_{sO, oS})$
$(1.3_{sO, sS}\ 3.1_{sS,sO}\ 2.1_{oS,sO})$	$(1.3_{sO, sS}\ 3.1_{sO, sS}\ 2.1_{oS,sO})$
$(1.3_{sO, sS}\ 3.1_{sS,sO}\ 2.1_{sO, oS})$	$(1.3_{sO, sS}\ 3.1_{sO, sS}\ 2.1_{sO, oS})$
$(1.3_{sS,sO}\ 2.1_{oS,sO}\ 3.1_{sS,sO})$	$(1.3_{sS,sO}\ 2.1_{oS,sO}\ 3.1_{sO, sS})$
$(1.3_{sS,sO}\ 2.1_{sO, oS}\ 3.1_{sS,sO})$	$(1.3_{sS,sO}\ 2.1_{sO, oS}\ 3.1_{sO, sS})$
$(1.3_{sO, sS}\ 2.1_{oS,sO}\ 3.1_{sS,sO})$	$(1.3_{sO, sS}\ 2.1_{oS,sO}\ 3.1_{sO, sS})$
$(1.3_{sO, sS}\ 2.1_{sO, oS}\ 3.1_{sS,sO})$	$(1.3_{sO, sS}\ 2.1_{sO, oS}\ 3.1_{sO, sS})$

Bibliography

Bense, Max, Zeichen und Design. Baden-Baden 1971

Bense, Max, Vermittlung der Realitäten. Baden-Baden 1976

Günther, Gotthard, Beiträge zur Grundlegung einer operationsfähigen Dialektik. Vol. 1. Hamburg 1976

Kaehr, Rudolf, Sketch on semiotics in diamonds. In: http://www.thinkartlab.com/pkl/lola/Semiotics-in-Diamonds/Semiotics-in-Diamonds.html

Kronthaler, Engelbert, Zahl – Zeichen – Begriff. In: Semiosis 65-68,. 1992, S. 282-302
Toth, Alfred, Semiotische Strukturen und Prozesse. Klagenfurt 2008 (2008a)
Toth, Alfred, Semiotics and Pre-Semiotics. 2 vols. Klagenfurt 2008 (2008b)

15.3.2009