Prof. Dr. Alfred Toth

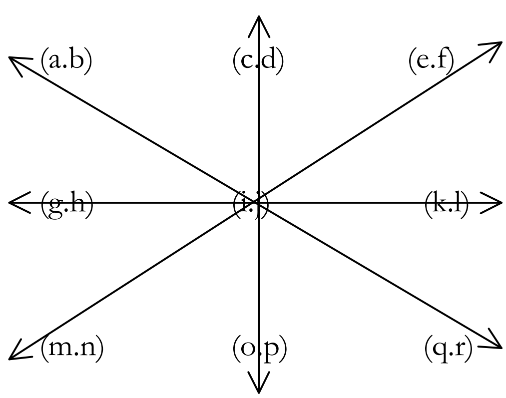
The semiotic wind rose

Du, Schulmeister, sagtest: "Du denkst nur in Worten,
Doch alle Worte sind Trug nur und Leid.
Du, du denkst nur in Worten, in Taten und Orten,
Da der Gott aller Wahrheit dein Reden bestritt,
Und der Unsinn den Weg alles Sinnens verschneit."
Ich denke nicht Worte und rede doch mit,
Und der Traum meines Daseins träumt Wahrheit und Traum.

"Schoolteacher, you said: "You think only in words,
But all words are but cheat and but pain.
You, you think but in words, in deeds and in places,
While the god of all truth denied your speech,
And the nonsense covered up the path of all sense by snow."
I don't think in words, though still have a say,
And the dream of my existence dreams truth and dream.

Jakob van Hoddis, "Indianisch Lied" (1958, p. 71)

1. In Toth (2008b), we had shown that semiotics is isomorphic to the whole system of discrete subgroups of the Euclidean group. From these investigations, it also follows, that sign classes and reality thematics can be rotated in steps of 45° about their middle dyadic sub-sign. Therefore, in a semiotic "wind rose", they can occupy 8 positions. We best show this using a semiotic 3 × 3 matrix whose entries we will denominate by pairs of variables (a.b), (c.d), (e.f), ... each pair standing for a sub-sign with a, b, c, ... ∈ {1, 2, 3}, thus the elements of the prime-signs:



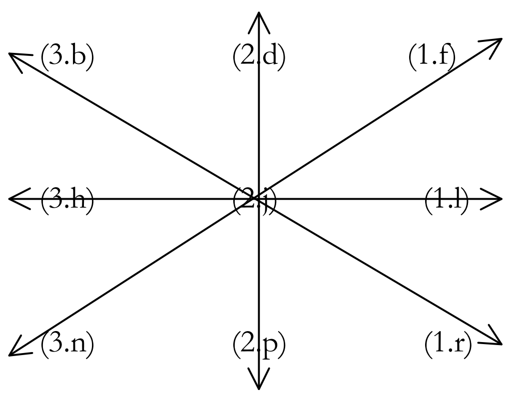
The 8 possible sign classes are:

1	(c.d i.j o.p)	5	(o.p i.j c.d)
2	(e.f i.j m.n)	6	(m.n i.j e.f)
3	(k.l i.j g.h)	7	(g.h i.j k.l)
4	(q.r i.j a.b)	8	(a.b i.j q.r)

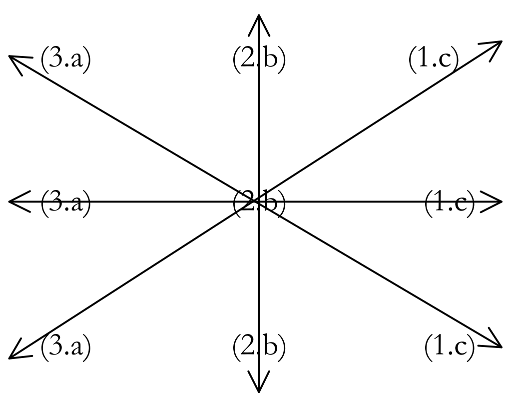
2. Now let (a.b c.d e.f) = (3.b 2.d 1.fc), that means, we assign

1. (a.), (c.), (e.) be pairwise different;
2. The order be retrosemiosic (decreasing).
3. (a.) = (3.), (c.) = (2.), and (e.) = (1.), i.e. (a.), (b.), (c.) with a, b, c ∈ {1, 2, 3};

Then, we get:



and since for the trichotomic values, there are only three possible prime-signs, we have:



so that we finally obtain:

1	(3.a 2.b 1.c)	5	(2.b 2.b 2.b)
2	(1.c 2.b 3.a)	6	(3.a 2.b 1.c)
3	(1.c 2.b 3.a)	7	(3.a 2.b 1.c)
4	(1.c 2.b 3.a)	8	(3.a 2.b 1.c)

Since for a, b, c ∈ {1, 2, 3}, we get a total of $3^3 = 27$ combinations, 10 out of which obey the trichotomic inclusion order for (regular) sign classes:

4. (3.a 2.b 1.c) with a ≤ b ≤ c

In other words: All 10 sign classes and their 10 dual reality thematics can be ordered according to the semiotic wind rose.

3. The easiest way to show that all 10 sign classes and reality thematics be can ordered according to the semiotic wind rose is to construct an abstract semiotic matrix based on the abstract sign relation (a.b c.d e.f) with the triadic prime-signs (a., c., e.) as rows and the trichotomic prime-signs (.b, .d, .f) as columns. Then we get the following 9 sub-signs in their abstract form:

	.b	.d	.f
a.	a.b	a.d	a.f
c.	c.b	c.d	c.f
e.	e.b	e.d	e.f

Since (a.b) ≠ (a.d) ≠ (a.f), etc., i.e. the Cartesian products must be pairwise different, we can set all sub-signs from (1.1) to (3.3) for (a.b) and then continue according to increasing (or decreasing) semiotic order, i.e. (1.1) (1.2) (1.3), (1.2 1.3 2.1), (1.3 2.1 2.2), ..., or (1.1 3.3 3.2), (1.2 1.1 3.3), (1.3 1.2 1.1), etc. In doing so, we get only 9 semiotic matrices of cyclic groups, but we can use the fact that the matrices can be rotated either clockwise or counter-clockwise (0° = 360°, 90°, 180°, 270°) and the rotations also form cyclic groups (cf. Wolf/Wolff (1956, pp. 7 ss.). In this way, we get 4 · 9 = 36 semiotic matrices. Finally, we also win the "lacking" rotations about 45°, 135°, 225°, and 315° from the SW-NE and NW-SE diagonals of the 36 matrices:

$$\begin{pmatrix} 1.1 & 1.2 & 1.3 \\ 2.1 & 2.2 & 2.3 \\ 3.1 & 3.2 & 3.3 \end{pmatrix} \begin{pmatrix} 3.1 & 2.1 & 1.1 \\ 3.2 & 2.2 & 1.2 \\ 3.3 & 2.3 & 1.3 \end{pmatrix} \begin{pmatrix} 3.3 & 3.2 & 3.1 \\ 2.3 & 2.2 & 2.1 \\ 1.3 & 1.2 & 1.1 \end{pmatrix} \begin{pmatrix} 1.3 & 2.3 & 3.3 \\ 1.2 & 2.2 & 3.2 \\ 1.1 & 2.1 & 3.1 \end{pmatrix}$$

$$\begin{pmatrix} 1.2 & 1.3 & 2.1 \\ 2.2 & 2.3 & 3.1 \\ 3.2 & 3.3 & 1.1 \end{pmatrix} \begin{pmatrix} 3.2 & 2.2 & 1.2 \\ 3.3 & 2.3 & 1.3 \\ 1.1 & 3.1 & 2.1 \end{pmatrix} \begin{pmatrix} 1.1 & 3.3 & 3.2 \\ 3.1 & 2.3 & 2.2 \\ 2.1 & 1.3 & 1.2 \end{pmatrix} \begin{pmatrix} 2.1 & 3.1 & 1.1 \\ 1.3 & 2.3 & 3.3 \\ 1.2 & 2.2 & 3.2 \end{pmatrix}$$

$$\begin{pmatrix} 1.3 & 2.1 & 2.2 \\ 2.3 & 3.1 & 3.2 \\ 3.3 & 1.1 & 1.2 \end{pmatrix} \begin{pmatrix} 3.3 & 2.3 & 1.3 \\ 1.1 & 3.1 & 2.1 \\ 1.2 & 3.2 & 2.2 \end{pmatrix} \begin{pmatrix} 1.2 & 1.1 & 3.3 \\ 3.2 & 3.1 & 2.3 \\ 2.2 & 2.1 & 1.3 \end{pmatrix} \begin{pmatrix} 2.2 & 3.2 & 1.2 \\ 2.1 & 3.1 & 1.1 \\ 1.3 & 2.3 & 3.3 \end{pmatrix}$$

$$\begin{pmatrix} 2.1 & 2.2 & 2.3 \\ 3.1 & 3.2 & 3.3 \\ 1.1 & 1.2 & 1.3 \end{pmatrix} \begin{pmatrix} 1.1 & 3.1 & 2.1 \\ 1.2 & 3.2 & 2.2 \\ 1.3 & 3.3 & 2.3 \end{pmatrix} \begin{pmatrix} 1.3 & 1.2 & 1.1 \\ 3.3 & 3.2 & 3.1 \\ 2.3 & 2.2 & 2.1 \end{pmatrix} \begin{pmatrix} 2.3 & 3.3 & 1.3 \\ 2.2 & 3.2 & 1.2 \\ 2.1 & 3.1 & 1.1 \end{pmatrix}$$

$$\begin{pmatrix} 2.2 & 2.3 & 3.1 \\ 3.2 & 3.3 & 1.1 \\ 1.2 & 1.3 & 2.1 \end{pmatrix} \begin{pmatrix} 1.2 & 3.2 & 2.2 \\ 1.3 & 3.3 & 2.3 \\ 2.1 & 1.1 & 3.1 \end{pmatrix} \begin{pmatrix} 2.1 & 1.3 & 1.2 \\ 1.1 & 3.3 & 3.2 \\ 3.1 & 2.3 & 2.2 \end{pmatrix} \begin{pmatrix} 3.1 & 1.1 & 2.1 \\ 2.3 & 3.3 & 1.3 \\ 2.2 & 3.2 & 1.2 \end{pmatrix}$$

$$\begin{pmatrix} 2.3 & 3.1 & 3.2 \\ 3.3 & 1.1 & 1.2 \\ 1.3 & 2.1 & 2.2 \end{pmatrix} \begin{pmatrix} 1.3 & 3.3 & 2.3 \\ 2.1 & 1.1 & 3.1 \\ 2.2 & 1.2 & 3.2 \end{pmatrix} \begin{pmatrix} 2.2 & 2.1 & 1.3 \\ 1.2 & 1.1 & 3.3 \\ 3.2 & 3.1 & 2.3 \end{pmatrix} \begin{pmatrix} 3.2 & 1.2 & 2.2 \\ 3.1 & 1.1 & 2.1 \\ 2.3 & 3.3 & 1.3 \end{pmatrix}$$

$$\begin{pmatrix} 3.1 & 3.2 & 3.3 \\ 1.1 & 1.2 & 1.3 \\ 2.1 & 2.2 & 2.3 \end{pmatrix} \begin{pmatrix} 2.1 & 1.1 & 3.1 \\ 2.2 & 1.2 & 3.2 \\ 2.3 & 1.3 & 3.3 \end{pmatrix} \begin{pmatrix} 2.3 & 2.2 & 2.1 \\ 1.3 & 1.2 & 1.1 \\ 3.3 & 3.2 & 3.1 \end{pmatrix} \begin{pmatrix} 3.3 & 1.3 & 2.3 \\ 3.2 & 1.2 & 2.2 \\ 3.1 & 1.1 & 2.1 \end{pmatrix}$$

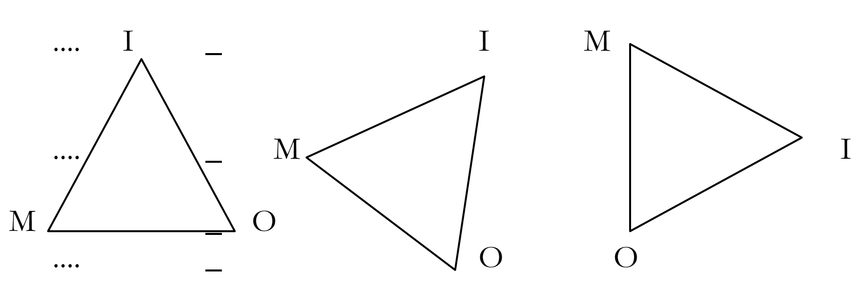
$$\begin{pmatrix} 3.2 & 3.3 & 1.1 \\ 1.2 & 1.3 & 2.1 \\ 2.2 & 2.3 & 3.1 \end{pmatrix} \begin{pmatrix} 2.2 & 1.2 & 3.2 \\ 2.3 & 1.3 & 3.3 \\ 3.1 & 2.1 & 1.1 \end{pmatrix} \begin{pmatrix} 3.1 & 2.3 & 2.2 \\ 2.1 & 1.3 & 1.2 \\ 1.1 & 3.3 & 3.2 \end{pmatrix} \begin{pmatrix} 1.1 & 2.1 & 3.1 \\ 3.3 & 1.3 & 2.3 \\ 3.2 & 1.2 & 2.2 \end{pmatrix}$$

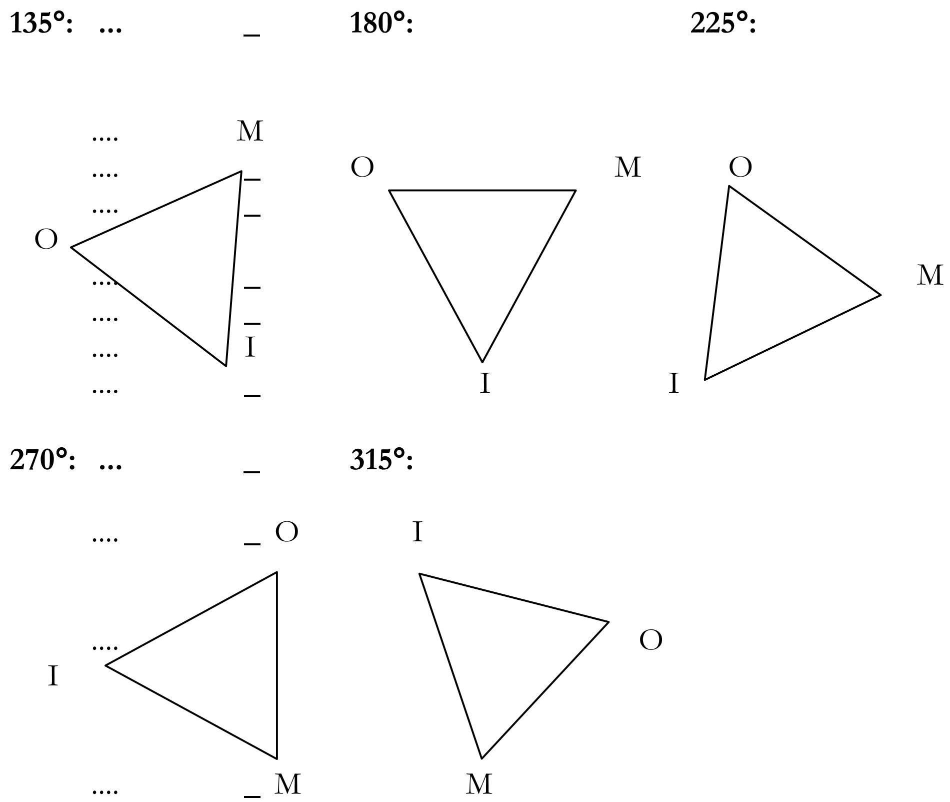
$$\begin{pmatrix} 3.3 & 1.1 & 1.2 \\ 1.3 & 2.1 & 2.2 \\ 2.3 & 3.1 & 3.2 \end{pmatrix} \begin{pmatrix} 2.3 & 1.3 & 3.3 \\ 3.1 & 2.1 & 1.1 \\ 3.2 & 2.2 & 1.2 \end{pmatrix} \begin{pmatrix} 3.2 & 3.1 & 2.3 \\ 2.2 & 2.1 & 1.3 \\ 1.2 & 1.1 & 3.3 \end{pmatrix} \begin{pmatrix} 1.2 & 2.2 & 3.2 \\ 1.1 & 2.1 & 3.1 \\ 3.3 & 1.3 & 2.3 \end{pmatrix}$$

Thus, the 36 semiotic matrices contain all 10 sign classes, their 10 dual reality thematics and their $2 \cdot 6 \cdot 10 = 120$ possibilities of assignments of the abstract sign relation (a.b c.d e.f) by the semiotic values 1, 2, 3.

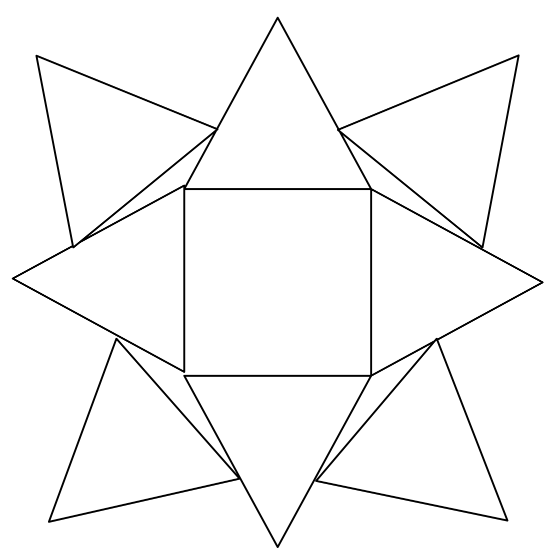
4. Using the framework of General Sign Grammar (Toth 2008a), we can display the 8 possible rotations of the semiotic triangle, representing the abstract sign relation (a.b c.d e.f), as follows:

0° (360°): **45°:** **90°:**

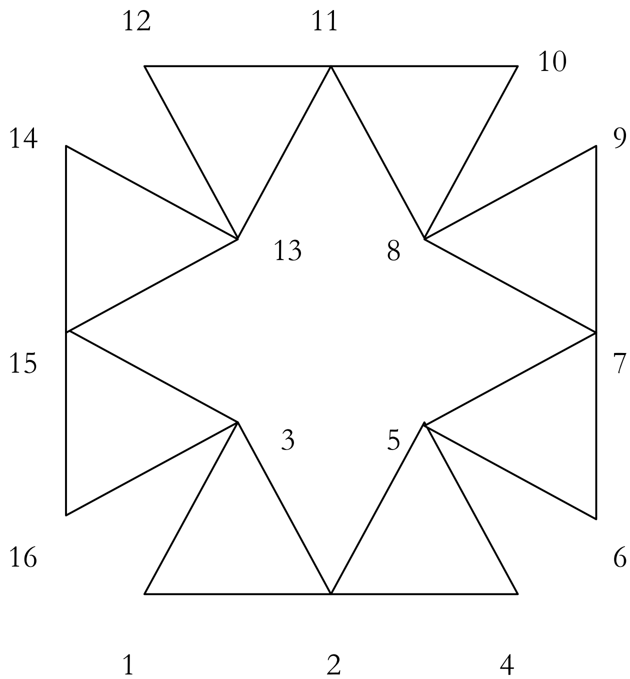




If we now let the sign relation (a.b c.d e.f) or any sign class, achieved by assigning the elements of the set of prime-signs {1, 2, 3} to the variables, rotate about an imaginary center (which appears in the following graphs as a square, representing semiotic "never-land"), through all the stages of rotation, then we get the following semiotic star (cf. Toth 2007):



From a previous article (Toth 2008b), it follows that the above semiotic rotational star is isomorphic to the following rotation “star”, in which the in-between rotations between the single steps of 90° rotations had been replaced by simple semiotic adjunction (cf. Bense 1971, p. 52 ss.):



1 = M
2 = O ≡ O’
3 = I ≡ I’’’’’’
4 = M’
5 = I’ ≡ I’’
6 = M’’
7 = O’’ = O’’’
8 = I’’’ ≡ I’’’’
9 = M’’’
10 = M’’’’
11 = O’’’’ ≡ O’’’’’
12 = M’’’’
13 = I’’’’ ≡ I’’’’’
14 = M’’’’’
15 = O’’’’’ ≡ O’’’’’’
16 = M’’’’’’

Bibliography

Bense, Max, Zeichen und Design. Baden-Baden 1971
Toth, Alfred, Die Geburt semiotischer Sterne. In: Grundlagenstudien aus Kybernetik und Geisteswissenschaft 48/4, 2007, pp. 183-188
Toth, Alfred, Discrete Subgroups of the semiotic Euclidean group. Ch. 60 (2008a)
Toth, Alfred, Entwurf einer allgemeinen Zeichengrammatik. Klagenfurt 2008 (2008b)
van Hoddis, Jakob, Weltende und andere Dichtungen. Zurich 1958
Wolf, K. Lothar/Wolff, Robert, Symmetrie. 2 vols. Münster and Köln 1956