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Pre-semiotic replicas

1. Replicas play a crucial role in the local and temporal determination of signs, since "each realization of a legi-sign is always a concretization or individualization. To put it differently: Each realized legi-sign is, in respect to its occurrence or appearance 'here and now', a sin-sign" (Walther 1979, p. 88). Therefore, one can say that replicas localize those signs in trichotomic secondness whose trichotomic value belongs to thirdness. Localization for the sake of spatial and temporal deixis by replicas is thus a categorial reduction. After we had shown the types and mechanisms for semiotic replicas in Toth (2008b, pp. 164-165), we shall show here the types and mechanisms for pre-semiotic replicas and the categorial relations between semiotic and pre-semiotic replicas.

2. Karl Herrmann (1990, p. 97) had found the following system of displaying the 10 semiotic sign classes (of SR_3) together with their replica classes, without any redundancy:

I   (3.1 2.1 1.1)

II   (3.1 2.1 1.2) $\leftarrow$ (3.1 2.1 1.3)

III   (3.1 2.2 1.2) $\leftarrow$ (3.1 2.2 1.3) $\leftarrow$ (3.1 2.3 1.3)

IV   (3.2 2.2 1.2) $\leftarrow$ (3.2 2.2 1.3) $\leftarrow$ (3.2 2.3 1.3) $\leftarrow$ (3.3 2.3 1.3)

Thus, the system of the 10 semiotic sign classes has 4 levels of replica classes. The 1st level contains 1 sign class and 0 replica. The 2nd level contains 2 sign classes, 1 of which is a replica. The 3rd level contains 3 sign classes and 2 replicas, out of which the 2nd is a replica of the 3rd, and the 1st is a replica of the 2nd. Finally, the 4th level contains 4 sign classes and 3 replicas, whereby the 1st is a replica of the 2nd, the 2nd is a replica of the 3rd, and the 3rd is a replica of the 4th. If we set S for sign class and R for replica (class), we can schematize the replica-system of SR_3 as follows:

m S_n
m+1 $S_n = R(S_{n+1})$, S_{n+1}
m+2 $S_n = R(S_{n+1})$, $S_{n+1} = R(S_{n+2})$, S_{n+2}
m+3 $S_n = R(S_{n+1})$, $S_{n+1} = R(S_{n+2})$, $S_{n+2}, = R(S_{n+3})$, S_{n+3}

Therefore, the operation of replication (R) works apparently as a certain semiotic analogue to mathematical derivation, so that one could say that $R(S_{n+1}) = S_n$ is a **semiotic derivation**, and each S_{n+x} (x = 1, 2, 3, ..., n) with exception of (3.1 2.1 1.1) is a **semiotic derivative**.

3. Although $SR_{4,3}$ with its 15 pre-semiotic sign classes is not a direct continuation of SR_3 with its 10 sign classes (which would be $SR_4 = SR_{4,4}$ with its 35 sign classes; cf. Toth 2008a, pp. 179 ss.), Herrmann's system of arranging the 10 sign classes together with their replica classes without redundancy seems to work for $SR_{4,3}$, too. We can therefore arrange the 15 pre-semiotic sign classes in the following pre-semiotic replica-system with 5 levels:

I   (3.1 2.1 1.1 0.1)

II   (3.1 2.1 1.1 0.2) ← (3.1 2.1 1.1 0.3)

III   (3.1 2.1 1.2 0.2) ← (3.1 2.1 1.2 0.3) ← (3.1 2.1 1.3 0.3)

IV   (3.1 2.2 1.2 0.2) ← (3.1 2.2 1.2 0.3) ← (3.1 2.2 1.3 0.3) ← (3.1 2.3 1.3 0.3)

V   (3.2 2.2 1.2 0.2) ← (3.2 2.2 1.2 0.3) ← (3.2 2.2 1.3 0.3) ← (3.2 2.3 1.3 0.3) ←
         (3.3 2.3 1.3 0.3)

For the sake of comparison (cf. Toth 2008b, pp. 164s.), we write it in category theoretical form, too:

I'   [[β°, id1], [α°, id1], [γ°, id1]]

II'   [[β°, id1], [α°, id1], [γ°, α]] ← [[β°, id1], [α°, id1], [γ°, βα]]

III'   [[β°, id1], [α°, α], [γ°, id2]] ← [[β°, id1], [α°, α], [γ°, β]] ←
         [[β°, id1], [α°, βα], [γ°, id3]

IV'   [[β°, α], [α°, id2], [γ°, id2]] ← [[β°, α], [α°, id2], [γ°, β]] ←
         [[β°, α], [α°, β], [γ°, id3]] ← [[β°, βα], [α°, id3], [γ°, id3]]

V'   [[β°, id2], [α°, id2], [γ°, id2]] ← [[β°, id2], [α°, id2], [γ°, β]] ←
         [[β°, id2], [α°, β], [γ°, id3]] ← [[β°, β], [α°, id3], [γ°, id3]] ←
         [[β°, id3], [α°, id3], [γ°, id3]]

Therefore, for $SR_{4,3}$, we get the following types of replicas:

1.   (0.2 ← 0.3) ≡ [δ ← δγ]
2.   (1.2 ← 1.3) ≡ [α ← βα]
3.   (2.2 ← 2.3) ≡ [id2 ← β]
4.   (3.2) ← (3.3) ≡ [βα ← id3]

Types nos. 2.-4. exist in SR_3, too (cf. Toth 2008b, pp. 164). In $SR_{4,3}$, the newly appearing type no. 1 exclusively concerns localization for pre-semiotic sign classes and thus the recon-struction of the embeddedness of a sign in the quality (Q, zeroness) of the ontological space out of which it originally had been selected as an available medium (O° ⇒ M°) in order to

become a relational medium ($M° \Rightarrow M'$), cf. Toth (2008b, pp. 166ss.). In other words, while the above types nos. 2-4 show replicas as derivatives strictly **inside** of the semiotic space, the replication type no. 1 discloses a type of pre-semiotic derivation **between** semiotic and ontological space and thus crossing the polycontextural border between object and sign.

As an example, we show the graph of the twofold pre-semiotic replication

(3.1 2.1 1.2 0.2) ← (3.1 2.1 1.2 0.3) ← (3.1 2.1 1.3 0.3), i.e.

[[β°, id1], [α°, α], [γ°, id2]] ← [[β°, id1], [α°, α], [γ°, β]] ←
[[β°, id1], [α°, βα], [γ°, id3]
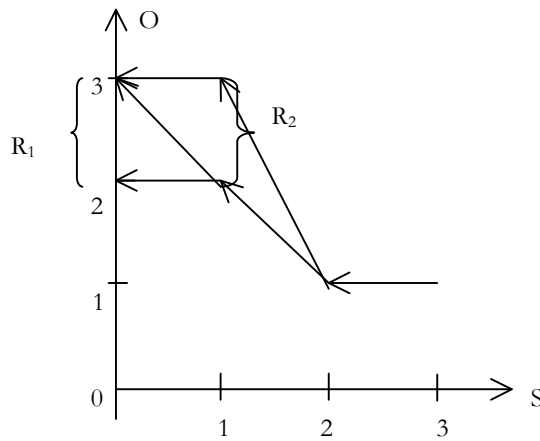
Thus, we have R_1(3.1 2.1 1.3 0.3) = (3.1 2.1 1.2 0.3), and R_2(3.1 2.1 1.2 0.3) = (3.1 2.1 1.2 02), or, if we use a mathematical convention: (3.1 2.1 1.3 0.3)' = (3.1 2.1 1.2 0.3), and (3.1 2.1 1.2 0.3)' = (3.1 2.1 1.2 0.2), or most simply: (3.1 2.1 1.3 0.3)'' = (3.1 2.1 1.2 0.2).

Since the semiotic functions of $SR_{4,3}$, unlike the semiotic functions of SR_3, are defined for x = 0 (i.e. the triadic position of pre-semiotic sign classes can take the semiotic value 0), the notion of **semiotic differentiation** has to be investigated in further mathematical-semiotic studies.

Bibliography

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