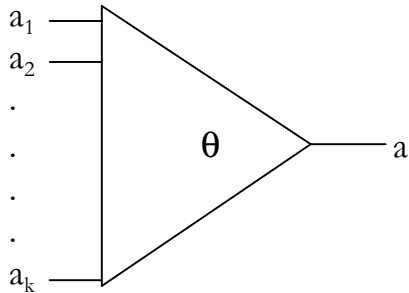


Prof. Dr. Alfred Toth

Semiotic multi-categories

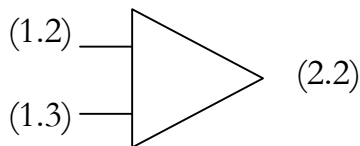
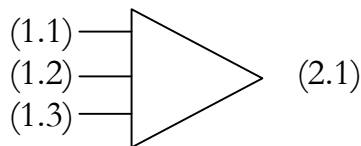
1. In this brief note, I want to point out that multi-categories, introduced into category theory by Tom Leinster (2003), have at least two functions in semiotics, one of them is polycontextural.

2. A multi-category “consists of objects a, b, \dots , arrows θ, φ, \dots , a composition operation, and identities, just like an ordinary category, the difference being that the domain of an arrow is not just a single object, but a finite sequence of them” (Leinster 2003, p. vi):



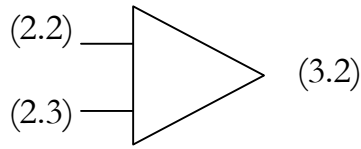
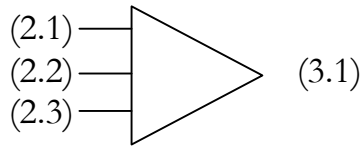
2.1. First, it is possible to describe the mapping of semiotic monads to dyads on the one side and of dyads to triads on the other side by aid of semiotic multi-categories:

2.1.1. $(M \Rightarrow O)$



However, the mapping of $(1.3) \Rightarrow (2.3)$ is a 1-category.

2.1.2. (O \Rightarrow I)

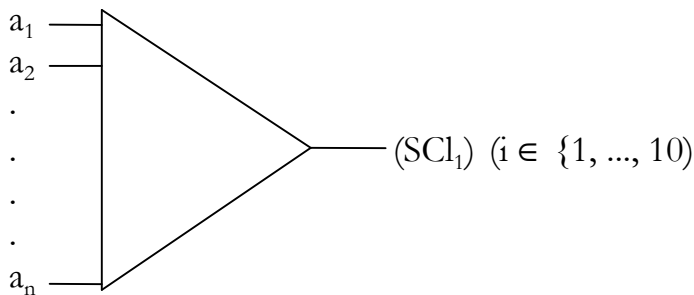


However, the mapping of (2.3) \Rightarrow (3.3) is also a 1-category.

3. A polycontextural application of multi-categories is Bense's "poly-representativity" of signs (Bense 1983, p. 45). Informally, poly-representativity means that there are functors S that map objects a_1, \dots, a_n onto one of ten sign classes according to a semiotic model theory which lies in the description of the 9 sub-signs of the semiotic matrix:

$$S: (a_1, \dots, a_n) \rightarrow (SCL_1 \dots SCL_{10}),$$

so that each of the 10 sign classes represent more than 1 object and is thus poly-representative:



Bibliography

Bense, Max, *Das Universum der Zeichen*. Baden-Baden 1983
 Leinster, Tom, *Higher Operads, Higher Categories*. Glasgow 2003

4.4.2009