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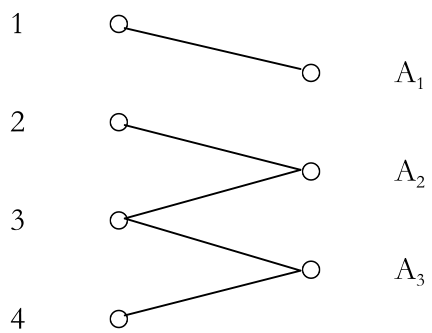
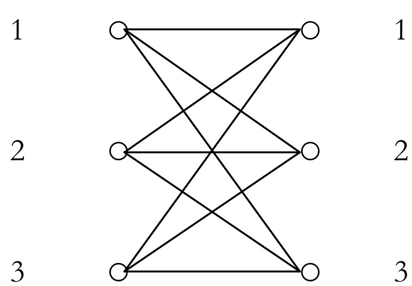
Transversals in semiotics

1. A transversal is a set containing exactly one element from each set of a family of sets. Thus it is a part-set of the quotient map induced by the family of sets (Mirsky 1971). Recently, transversals have been discussed especially in connection with matroid theory, where they form "systems of different representatives" (Läuchli 1998, pp. 81 ss.), and in graph theory, where they play a crucial role in matchings in bipartite graphs. A matching is a set M of independent edges in a graph G = (V, E). M is a matching of U $\subseteq$ V, if each vertex of U is incident with an edge of M (Diestel 1996, p. 31):



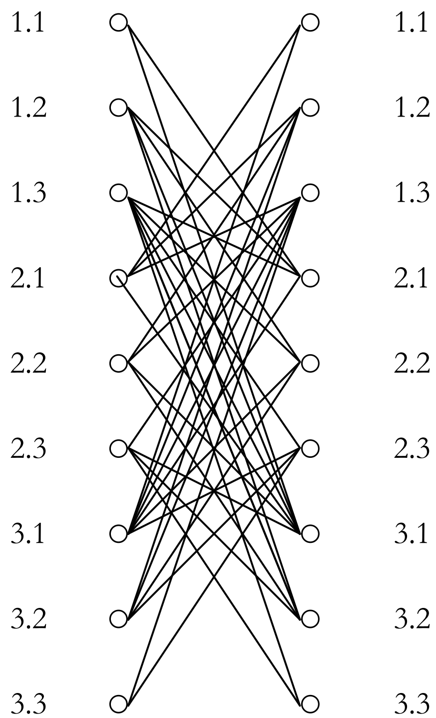
"A simple and concrete display of transversals is obtained by aid of bipartite graphs. If one takes on the one side the elements of E, on the other side the elements of A as points and connects an x $\in$ E by an edge with A iff x $\in$ A, then each matching defines in a pretty obvious manner a partial transversal. Thereby, a matching is understood as a sub-set of edges, which generates a sub-graph in which all points have a degree $\leq$ 1. In our case, the elements of E, which are incident with a matching-edge, build a partial transversal" (Läuchli 1998, p. 5).

2. Now we intend to show first that transversals can be used in semiotics to construct dyadic sub-signs from monadic prime-signs. For the sake of that, we assign X to the set of triadic prime-signs E = (1., 2., 3.) and A to the set of trichotomic prime-signs A = (.1, .2, .3):

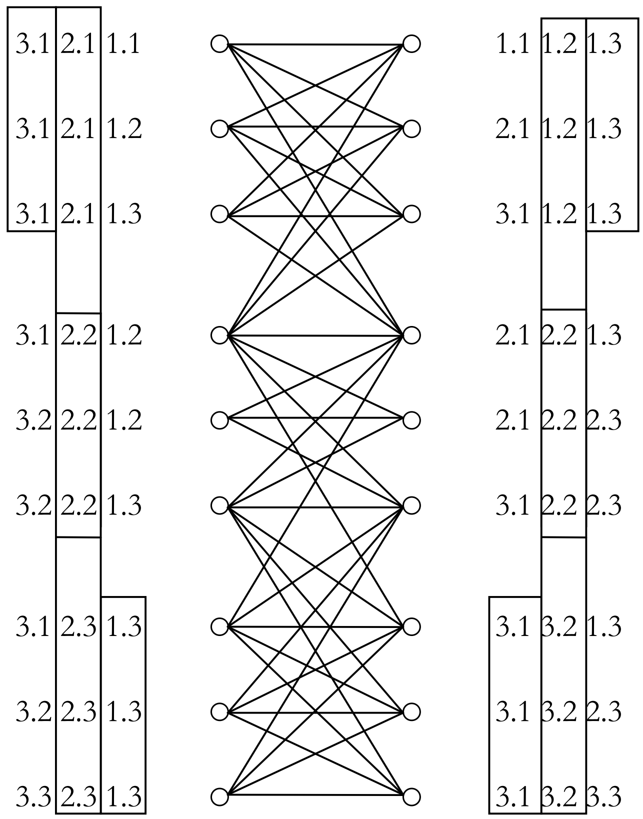


The result of the matchings are then exactly the 9 sub-signs from the semiotic matrix (1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3).

Second, we assign both E and A to the sets of dyadic sub-signs (1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3). The set of transversals from E and A is thus the graph whose edges connect only such vertices with one another that can enter a triadic sign relation (3.a 2.b 1.c) characterized by the semiotic order (a ≤ b ≤ c):



Third, and last, by transversal matroids, we can show in a very illuminating way the construction of the semiotic dual system of the 10 sign classes and 10 reality thematics as a system of Trichotomic Triads (found by Walther 1981, 1982). In this case, we assign E to the set of the 10 sign classes and A to the set of the 10 reality thematics. In order to show the connection between Walther's "Determinant-symmetric duality system" and the graph of transversals, we draw the semiotic connections, as given by Walther (1982, p. 18) into the graph:



Thus, if we transform the determinant-symmetric duality system into a set of transversals, the "determining" dual-identical sign class (3.1 2.2 1.3) that otherwise constitutes its own set and therefore cannot be displayed in the form of transversals, does not appear in the above graph, but is "hidden" in the graph that connects the eigenreal sign classes' monadic sub-relations (3.1), (2.2), and (1.3), so that we can also say that the symmetric relationship between the eigenreal sign class (3.1 2.2 1.3), its dual reality thematic (3.1 2.2 1.3) and their connection by at least one sub-sign with the other 9 sign classes and reality thematics is expressed in the above graph by its total-symmetric structure (cf. Toth 2008, pp. 144 ss).

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