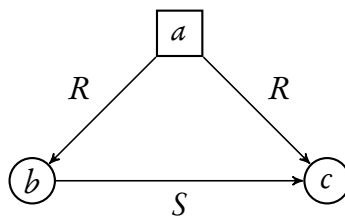


STRUCTURALISM

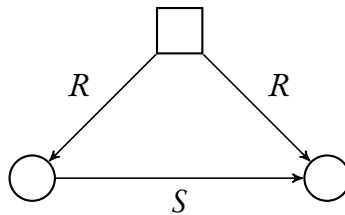
Ted Sider
Structuralism seminar

Structuralism: “patterns” are primary; “nodes” are secondary

A structure is a network of features had by some entities:



The “nodes” are the entities with the features (a, b, c) , and the “pattern” is what you get when you abstract away from the nodes and just consider the features:



- What the “nodes” and “features” are varies from case to case
- Sometimes (though not always) the “features” are restricted to relations
- “Primary” and “secondary” remain to be clarified

Example of a modally formulated structuralist thesis:

Semantic holism Sentence-meanings cannot vary independently of semantic relationships. That is: for any languages L_A and L_B (perhaps in different possible worlds), containing sentences A_1, A_2, \dots and B_1, B_2, \dots , respectively, if the pattern of semantic relations amongst A_1, A_2, \dots is the same as amongst B_1, B_2, \dots , then each sentence A_i has the same meaning as the corresponding sentence B_i .

Supervenience (schematic) No variation in A without variation in B (the base). For example, to say that the mental supervenes on the physical (in one sense) is to say that it's impossible for there to be two things that are exactly similar in physical respects but differ mentally.

Natural numbers:

0 1 2 ...

Mathematics cares only that the natural numbers are structured thus:

• • • ...

- There is a certain ordering relation between natural numbers
- There is a *first* object (in the ordering)
- Every object is immediately followed by exactly one object
- Every object other than the first has only finitely many predecessors

Thus mathematics doesn't care whether or not 0 is a person, or a spacetime point, etc. Some then say that *all there is* to the natural numbers is that they are appropriately structured. But what does that mean?

Mathematical structuralism, modal version For any two possible worlds, if the pattern of instantiation of the mathematical relationship successorhood is the same in those worlds, then all the purely mathematical facts about natural numbers are the same in these worlds.

This is trivially true if all purely mathematical facts are necessary.

So we seem to need a postmodal formulation of mathematical structuralism.

Many postmodalists will demand this in general. Possible reasons:

- Necessities of certain sorts always have postmodal explanations.
- The arguments in favor of structuralism only support postmodal theses