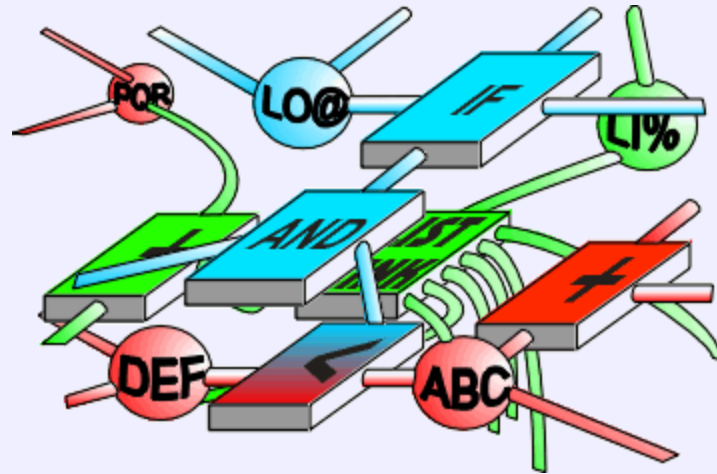


Logical Surface



We have a statement

$$\mathbf{a = b + c}$$

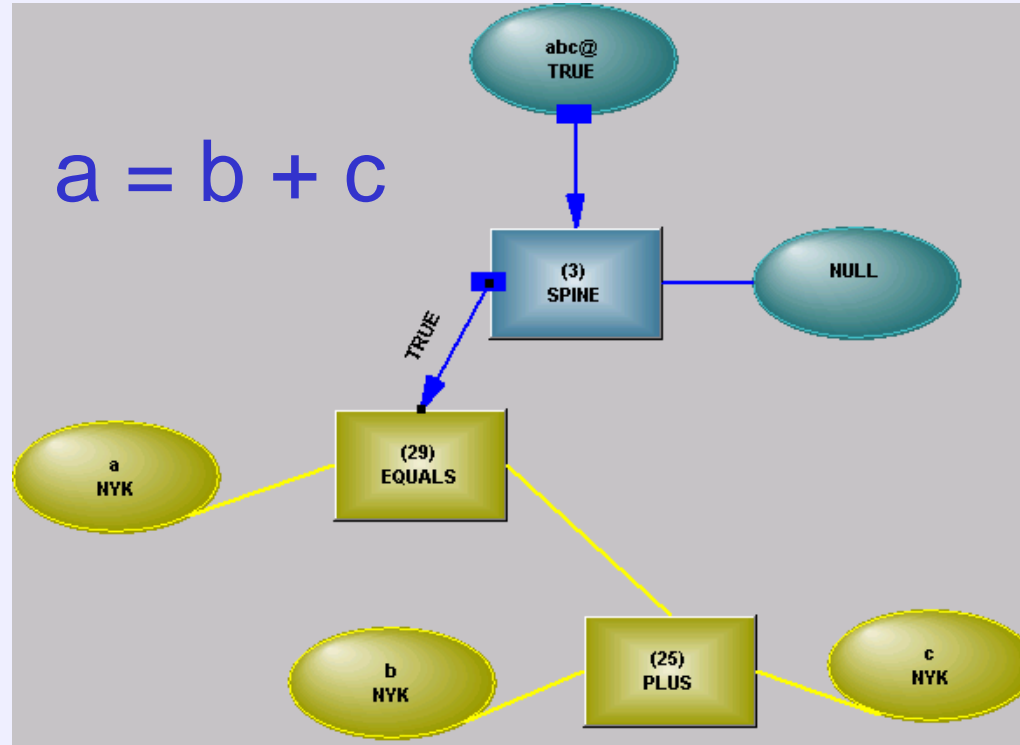
What does the EQUALS represent?

We want every possible inference



Logical Structure

Statements are written on a logical surface



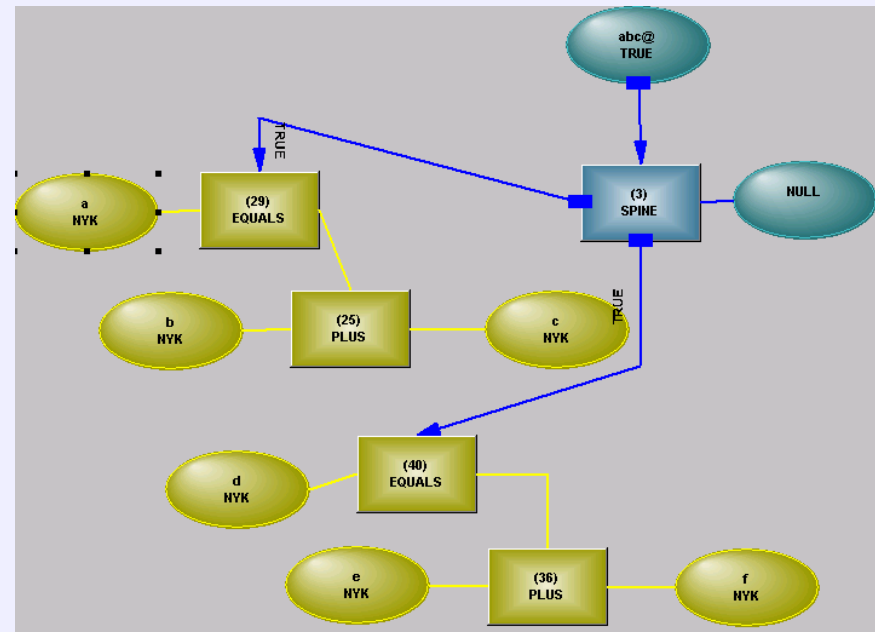
We have two statements

$$a = b + c$$

$$d = e + f$$

They are related somehow

They hang off the same spine



We have a statement

IF $a = b + c$ THEN $d = e + f$

The EQUALS expressions look the same, but there is nothing obviously linking the statement to its environment



Sentential Logic

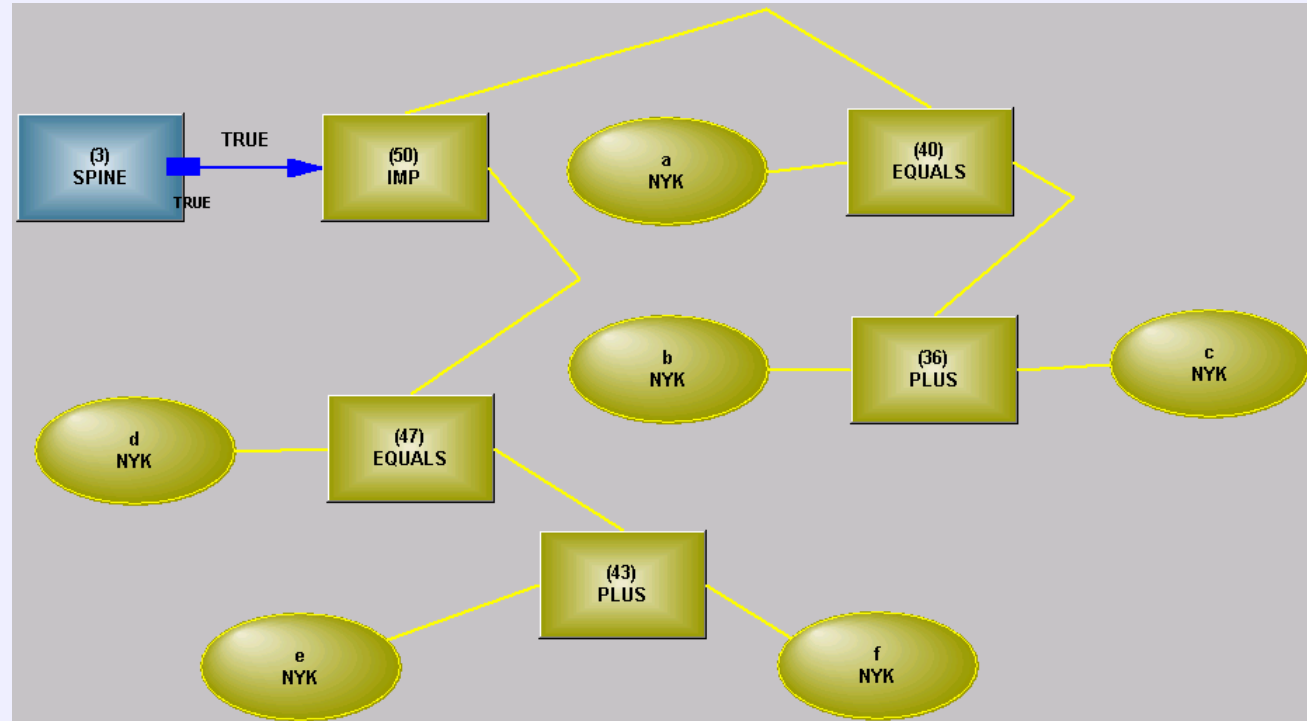
When Plato wrote down the rules for propositional logic, he wasn't inventing something, he was trying to write down how we reason - why don't we use those rules to drive the IF...THEN...

The closer the system works to the way our reasoning works, the easier it should be to understand and to interface with.



Logical Connections

The numerical statements now become part of a larger logical statement, also anchored to the spine and controlled by it. All the inferences are alive and well.



IF $a = b + c$ THEN $d = e + f$



Object Existence

When dealing with objects, their existence takes the place of sentential logic

Existence logic is controlling the objects, while sentential logic controls the relations among objects and the operations on numbers

The logical surface becomes multi-dimensional, as only a logical surface can, as it follows and supports the logic of the problem



Relation Logical Surface

A text document has its own logical surface – a discourse. Some relations support their own discourse or logical surface – “John thinks...” introduces a new discourse level, where a logical value from the ToThink relation provides control to everything hung off it. This kind of clausal logic can be overridden without error:

John thinks Fred is guilty, but he is wrong

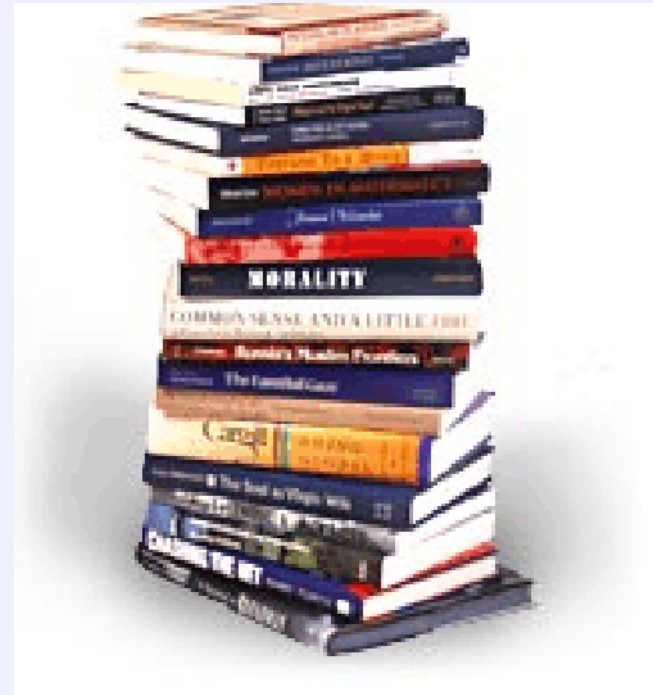
John still thinks that Fred is guilty, so that part is true. It is more complicated than that, as part or all of the discourse may not exist – “Section 9 is void” – so existential control is also provided for the discourse.



An Active Surface

A book has a name, a spine, chapters and sections - it has a logical, but passive, structure. It is intended to be read by an active structure, a person, which can subsume it.

The model needs a logical structure - but one that is active and many-layered, as there is no other active structure to read it.



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