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Philosophical interlude on propositions

For what do the laws of logic hold?

1. Consider: 'The cat dances. The cat dances.'
How many sentences are there here?
There are two sentence tokens, but only one sentence type.

2. Consider Disjunctive syllogism:

P or Q
Not-P
Therefore Q

We have to substitute the same thing for P in both instances, and the same thing for Q in both instances.
We can't substitute the same sentence token, since that is impossible.
So, the laws of logic can't be about sentence tokens.
Perhaps what we want are sentence types.

3. Consider:

The cat either dances or sings.
She doesn't dance.
Therefore, she sings.

This seems to be an instance of disjunctive syllogism.
But there are different sentence types replacing P and different sentence types replacing Q.
(Specifically, the first premise isn't even of the form P or Q, on the surface. We can recast it in that form, as, say, 'The cat dances or the cat sings'. Then 'the cat sings' is what replaces Q in the first premise. But then, we substitute 'she sings' in the conclusion, which is still a different sentence type from 'the cat sings'. Similar remarks hold for what replaces P.)
It looks like disjunctive syllogism doesn't hold of sentence types, either.

4. Consider 'El gato baila'.
This expresses the same thing as 'the cat dances'.
What the two have in common are their meanings.
These are also called propositions: they are the meanings of sentence types.
They are abstract objects. We don't see or hear them, but learn of them via interactions with sentence tokens.
Compare with our knowledge of '2' and '2+2=4'.

5. Another example of why we deal with propositions, and not sentence types:
'Visiting relatives can be annoying.'
This is a single sentence type, but ambiguous between two propositions.
If we try to substitute a sentence type in a rule of inference, like disjunctive syllogism, we are liable to generate false inferences because of the ambiguity.
We must only substitute propositions, though, of course, we only write down tokens representing those propositions.