

The trouble with ‘incomplete symbols’

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Goedel’s theorem is OK

It seems to me that we do not know in what appears to be a formula of [Principia Mathematica](#) whether the incomplete symbols can be eliminated. I had an idea that this might have an effect on [Goedel’s](#) result. I can now find nothing wrong with [Goedel’s](#) result. [Goedel](#) did not represent the incomplete symbols – as they can theoretically be eliminated. But we use them in practice, and do not have an adequate understanding of how to do this. Or how [Whitehead](#) and [Russell](#) would have done it in [Principia Mathematica](#).

Goedel on the incomplete symbols: “Russell’s Mathematical Logic” in [The Philosophy of Bertrand Russell](#), ed [Paul Arthur Schilpp](#). P.126.

“Syntactical considerations are omitted (talking about [Principia Mathematica](#)) even in cases where they are necessary for the cogency of the proofs, in particular with the ‘incomplete symbols.’ These are introduced not by explicit definition, but by rules describing how sentences containing them are to be translated into sentences not containing them. In order to be sure, however, that (or for what expressions) this translation is possible and uniquely determined and that (or to what extent) the rules of inference apply also to the new kind of expressions, it is necessary to have a survey of all possible expressions, and this can be furnished only by syntactical considerations. The matter is especially doubtful for the rule of substitution and of replacing defined symbols by their definiens...”

Carnap on the incomplete symbols.

[Carnap](#) discusses the [Principia Mathematica](#) notation for classes in [Meaning and Necessity](#), pp. 147-150.

I will only quote part of it:

“It is true that Russell warns repeatedly that the class expressions are incomplete and have no meaning in isolation. On the other hand, the notation has been constructed with this aim in mind: The class expressions should be such that they can be manipulated as if they were names of entities; and Russell seems to assume that this aim has been reached. Our result makes this assumption doubtful.”

The derivation of the result is too lengthy to reproduce here, but is on pages 148-149 of [Meaning and Necessity](#), by [Rudolf Carnap](#).

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