

109. *Some Remarks on the Finitary Method*

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In this paper the present writer intends to make inquiries about the 'finitary' method employed by formalists on the basis of the results attained in his last attempt.¹⁾

1. The Problems Propounded. Formalism is undoubtedly a very strong standpoint in the foundations of mathematics, and the finitary method adopted by its adherents also is so effectual that its validity seems almost irrefutable. It is true that the method in question has been chosen as the purest and most unquestionable one in the course of a persistent pursuit of accuracy. But when we consider carefully why it has been called in, what concepts it mobilizes, and how it is applied to actual cases, we suspect that it is susceptible of some questioning. Again, when it is put to practical use in metamathematical speculation within the boundaries of formalism, there seems to be a subtle problem in the relations between the thinking and its object. The following pages are devoted to a discussion of these issues,²⁾ and not to an all-round and exhaustive study of the finitary method.

2. A Survey of Formalism as a Preliminary Step. As is well known, in formalism the fundamental concepts appearing in the mathematical system which it treats of and the hypotheses needed for the evolution of the system, including the 'Schluss-schemata', are symbolized and formalized in 'Zeichen ohne Zeigen', and actual reasoning is carried on from the finitary standpoint. This actual speculation is called 'metamathematics' or a 'Beweistheorie' in contradistinction to formalized mathematics. In metamathematics is allowed free use of mathematics based on the finitary standpoint, especially of the results attained by the finitary natural number theory. The finitary standpoint consists in a way of reasoning, independently of axiomatic hypotheses, by means of an 'inhaltliche Gedankenexperiment' which directly concerns itself with an object

1) S. Nakazima: "Foundation" and Formalism, Proc. Japan Acad., **37**, 452-456 (1961).

2) The present writer thinks that opinions may be divided on the very significance of such a discussion and that the very possibility of a variety of views on this point is a proof of the peculiar position the foundations of mathematics holds among the branches of mathematics.

Cf. 1) and The Foundations of Mathematics and Philosophical Point of View.