

AN INVESTIGATION ON THE LOGICAL STRUCTURE OF MATHEMATICS (VII)¹⁾

SET-THEORETICAL CONTRADICTIONS

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1. Preliminaries

For an investigation on the foundations of mathematics to get an adequate mutual understanding, it is necessary to describe the generalities of the investigation with the parallel description of its particularities. Although one should obtain an exact and precise knowledge only through the latter, it is almost impossible, without the former, to get the underlying ideas and the fundamental principles, upon which the investigation is based.

A logical system was defined in Part (I) and, after studying the fundamental properties of the logical system, it was denoted by²⁾ UL (Universal Logic). Although some generalities were described in the introductions in Parts (I) and (II) it seems necessary to describe some information about the position of the investigation, specifically about the conception of the nature of set-theoretical paradoxes and about the way of formulating special branches of mathematics in UL. For, the position of the investigation has mainly developed by the consideration of these two subjects. In the following lines, therefore, I shall describe the generalities of UL in limiting the description to these two subjects.

Before doing this, it is to be remarked that the way of expression may be common to all such descriptions of generalities. Namely, we should use in them some words rather vaguely, relying on the traditional usage, association, and imagination, which the words are carrying; and other words in the precise sense of which the definitions are, however, given in detail in the description of the particularities of the investigation. Therefore, some inexactness or imperfection, however regrettable it may be, seems to be unavoidable, where the quick

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¹⁾ This is the Part (VII) of my papers with the same major title. The knowledge of Part (I) and (II) (Hamburger Abhandlungen and of Part (IV) (Nagoya Math. J. vol. 13 (1958)) are assumed.

²⁾ Cf. the beginning of the introduction in Part (II).