Summary

Hegel's notion of the „bad infinity", as developed in his „Science of Logic", is traditionally cited as an example of a conceptual obscurity that has nothing to contribute to the understanding of the infinite as elaborated and cherished in modern mathematics, particularly in the tradition of reformed calculus and its further grounding in set theory and mathematical logic. This anthology of texts, introduced by the editor's lengthy study, strives to prove the opposite: Against the background of the fundamental contributions to the subject, carefully selected so as to underline their most important argumentative links and points of disagreement, the reader shall see Hegel as a philosopher who not only clearly identifies the shortcomings of the traditional dichotomies, such as that of the actual and potential infinity, but who also provides a solution transcending these one-sided approaches by means of a logical analysis that goes deeper than the conventional methods of formal logics. As such, Hegel's comments on the "bad" foundations of Newton's infinitesimal calculus could also be applied to later mathematical phenomena, including Cantor's introduction of transfinite numbers (by entertaining the dialectical principle of setting and transcending the limit) and Gödel's incompleteness theorems (by stressing the necessary self-conscious and self-reflective aspect of knowledge and its development).

In order to achieve this one must, first, provide a partial reconstruction of Hegel's logical apparatus, starting with a revision of the concept of „badness" along the lines of the etymological kinship between the words „schlecht" and „schlicht", as is still reflected in words such as „schlechtweg" or „schlechthin". To say some infinity is bad pertains, then, to the claim of its provisional nature as based on its being formed by a „mere" negation from some finite distinctions in a similar way to which the concept of "bad" justice might arise from a simple negation of the injustice allegedly inherent to the earthly world by placing its alleged opposite in the afterlife. Hegel's analysis of the concept of the infinitesimal as a simple denial of finite quantity, as is typically given in the context of approximation by

quantities smaller than any given finite one, shows that the standard identification of Hegel's concept of bad infinity with the potential infinite – which makes him a proponent of the actualist approach – completely misses his point, which is in fact the basic semantic difference between the apparent and the real talk.

The anthology consists of three parts. The first of them contains the classical texts of Aristotle, Berkeley, Kant and Hegel; these set the stage for further discussions, with particular focus on those that concern the foundations of calculus. The second part gathers texts that more or less represent the mathematicians' point of view, including Bolzano's and Cantor's theories of actual infinity on the one hand and Poincaré's and Weyl's potentialist accounts on the other. Hilbert's and Lorenzen's contributions, though traditionally counted on the potentalists' (bad finitists') side, are instead reconsidered as a synthesis of the more one-sided approaches, along the Hegelian lines drawn in the introduction. In the third part of the book some newer philosophical reflections on the subject are to be found, starting with Russell's reconstruction of Zeno's and Kant's antinomies, Bergson's famous critique of the cinematographic concept of time, Peirce's original theory of continuity, Becker's hermeneutical approach to infinity in the spirit of the early Heidegger and Wittgenstein's contribution to the „grammar" of the „infinity" talk. Concluding the anthology is Stekeler's informed and detailed analysis of Hegel's philosophy of mathematics, with a particular focus on the translated passages of Hegel's calculus' critique.