

Preface

The logic of Leibniz¹ is assuredly that part of his system that has been most neglected by historians of philosophy and mathematics. Philosophers, understandably seduced by his metaphysics, have accorded little attention to his purely logical doctrines and have barely studied his project for a universal characteristic—no doubt because of the mathematical form it assumed. Mathematicians, on the other hand, have looked to Leibniz primarily as the inventor of the differential and integral calculus and have been engaged neither by his general theories on the value and importance of the mathematical method nor by his attempts at applying algebra to logic, which they have contemptuously dismissed as metaphysics. As a result, neither group has fully grasped the principles of his system, nor have they been able to reach the source from which both the infinitesimal calculus and the *Monadology* flow.

There is, of course, the excuse that Leibniz's logical essays have been published only slowly and very incompletely. Even today they are scattered piecemeal among various partial editions, most notably the two in which Gerhardt has so unfortunately separated the mathematical and philosophical writings,² as if one could slice up the work of an encyclopedic savant whose philosophy was nourished by the study of all the sciences and in turn inspired all of his scientific discoveries. If there is one thinker whose thought cannot be divided with impunity in this way, it is certainly the one who said, "My metaphysics is entirely mathematical"³ or again, "Mathematicians have as much need to be philosophers as philosophers have to be mathematicians."⁴ This artificial and arbitrary division between contemporaneous works that mutually depend on and illuminate one another has had the result of concealing the unity of the system and of hiding its true principles. Thus the absurd and deplorable schism between letters and sciences not only compromises the future of philosophy, but also falsifies its history and renders its past unintelligible by isolating it from the scientific speculations where it has always taken root. One sees readily that Leibniz's philosophy was bound to suffer more than any other, and within this philosophy his logic, precisely because it is the center of, and the bond between, his metaphysical speculations and his mathematical inventions.⁵ Not only are

¹ We have adopted the spelling 'Leibniz' in accordance with the philosopher's customary signature (cf. Klopp, IX, 51).

² [Here cited as *Math.* and *Phil.*, respectively.] In *Phil.*, there are letters and even some essays with a mathematical content, such as the letter to Malebranche of 4 August 1679 (*Phil.*, I, 342) and *An Anagogical Essay* (*Phil.*, VII, 270; filed in the manuscripts as LH XXXV 7, Bl. 5). On the other hand, there are in the mathematical writings numerous letters and fragments of great philosophical interest, notably the correspondence with Tschirnhaus and several small works on the philosophy or logic of mathematics (see Chap. 6, §7; Chap. 9, §4).

³ Leibniz to L'Hospital, 27 December 1694 (*Math.*, II, 258).

⁴ Leibniz to Malebranche, 13/23 March 1699 (*Phil.*, I, 356). Cf. Leibniz to the Electress Sophie, 12 June 1700 (quoted p. 262, n. 1). Concerning his correspondence with Arnauld, which he planned to publish, Leibniz himself said: "There will be a curious mix of philosophical and mathematical thoughts which will perhaps in places have the virtue of novelty." Letter to Basnage de Beauval, 3/13 January 1696, P.S. (*Phil.*, IV, 499).

⁵ The close connection between the infinitesimal calculus and Leibniz's metaphysics is expressly affirmed and clearly defined in a letter to Fardella of 3/13 September 1696: "Perhaps it would not be unprofitable if you were to mention in the preface of your work something about our infinitesimal analysis,

the existing editions of Leibniz incomplete and one-sided, but the logical works have been particularly neglected in them. Without a doubt, Raspe, then Erdmann, and finally Gerhardt have each in turn bestowed upon us some fragments; but for every one they have published, they have left twenty by the wayside that are just as important and just as polished, if not more so. What is most unbelievable is that they have passed over nearly all the *dated* fragments. One cannot account for such negligence except to say that Leibniz's editors have understood nothing of these fragments and have not been able to appreciate their value. In order to complete our work, therefore, we have had to investigate the manuscripts preserved in the library at Hanover and to extract from them the most interesting fragments, which we shall soon publish.⁶ We would have thought that after so many editors there would be nothing more to glean, but we have brought back so rich a harvest of new documents that we have been obliged to recast our book entirely and to rewrite certain chapters completely.⁷

Nevertheless, however important these documents may be because of their number, scope, and interest, they have not in the least required us to modify our plan or even to correct our chronological conjectures; they have served merely to fill some gaps and to confirm our interpretation. They have chiefly provided a supplementary proof of the essential conclusion of our work: that Leibniz's metaphysics rests solely on the principles of his logic and proceeds entirely from them.⁸

This conclusion, sufficiently justified by works already published, is corroborated by, among others, a wonderful unpublished fragment in which Leibniz summarizes in four pages his entire metaphysics by deducing it from the *principle of reason*. This he formulates rigorously as follows: In every true proposition, universal or singular, necessary or contingent, the predicate is contained in the subject; in other words, every truth is reducible to an identical proposition and must be demonstrable *a priori* by analysis of its terms.⁹ From this, Leibniz first deduces the principle of symmetry and the principle of indiscernibles, and then a series of metaphysical consequences: There are no purely extrinsic denominations; the complete concept of an individual substance includes all of its predicates—past, present, and future—and as a result the entire universe, with all of its successive states; all created substances are only different expressions of a single universe; an individual substance exerts a physical action on all others, but not a metaphysical action, from which follows the hypothesis of preestablished harmony; there is no void, nor are there any atoms; every particle of matter is actually divided infinitely; bodies have no actual, determinate shape; space, time, and movement are no more than

which is derived from the deepest roots of philosophy and by means of which mathematics alone has so far carried itself beyond ordinary notions, i.e. beyond imaginable things, in which up to now geometry and analysis have been almost entirely immersed. In part these new mathematical discoveries will receive illumination from our philosophizing, and in part they will give to them, in return, their authority" (Grotendorf, 210.) Is it not a crime to separate that which was so intimately related in Leibniz's thought?

⁶ We do not wish to wait for that occasion to make known our full gratitude to M. Laird, director of higher education, who in entrusting us with a mission in Germany has allowed us to bring to fruition a double labor; to Counsellor Bodemann, chief librarian in Hanover, who freely opened to us the treasure that he guards; and to Mr. Vacca, assistant in mathematics at the University of Turin, who showed us the way to it.

⁷ Notably Chap. 3 (The Universal Language) and Chap. 8 (The Logical Calculus).

⁸ This is the same conclusion that Mr. Russell has arrived at, albeit by a completely different interpretation, in his *Critical Exposition of the Philosophy of Leibniz* (Cambridge, 1900).

⁹ LH IV 8, Bl. 6-7. See the extracts quoted in Chap. 6, §17, especially p. 208, n. 1.

true phenomena; the substance of bodies is a “form” analogous to the soul; and finally, no substance is able either to come into being or to pass away naturally. As one sees, these are all the essential theses of the *Monadology*, and they derive from this single principle of reason, the precise and exact sense of which is *every truth is analytic*. As a consequence, everything in the world must be intelligible and logically demonstrable by means of pure concepts, and the only method of the sciences is deduction. This can be called the postulate of universal intelligibility. The philosophy of Leibniz thus appears as the most complete and systematic expression of intellectualistic rationalism. There is a perfect accord between thought and things, between nature and the mind; reality is completely penetrable by reason, because it is penetrated with reason. To characterize this metaphysics in a single word, it is a *panlogism*.¹⁰

This word serves to indicate the fundamental position that logic must occupy in Leibniz’s system. We neither sought this conclusion nor even foresaw it; we reached it unintentionally and almost in spite of ourselves. We were proposing simply to study Leibniz as the precursor of modern algorithmic logic, to analyze his logical and geometrical calculi, and to reconstruct the basis for his universal characteristic. But when we wanted to return to the philosophical principles of these theories, we saw on the one hand that they proceeded from Leibniz’s seminal conception of a universal mathematics and from his youthful invention of the combinatory; on the other hand, that they were tightly bound up with his attempts at a universal language, as well as with his great project for a demonstrative encyclopedia, which occupied his entire life. Finally, it was clear that he had deduced all of his philosophical theses from the principles of his general science, i.e. from his methodology. In this way, we were led to discover that his logic was not only the heart and soul of his system but also the center of his intellectual activity and the source of all his inventions. In it, we recognize the obscured, or at least concealed, source from which so many luminous fulgurations burst forth.

¹⁰ This interpretation seems to us useful for clarifying the relationship between Leibniz and Kant. The latter radically distinguishes himself from his predecessor by maintaining the existence of *synthetic a priori* judgments.