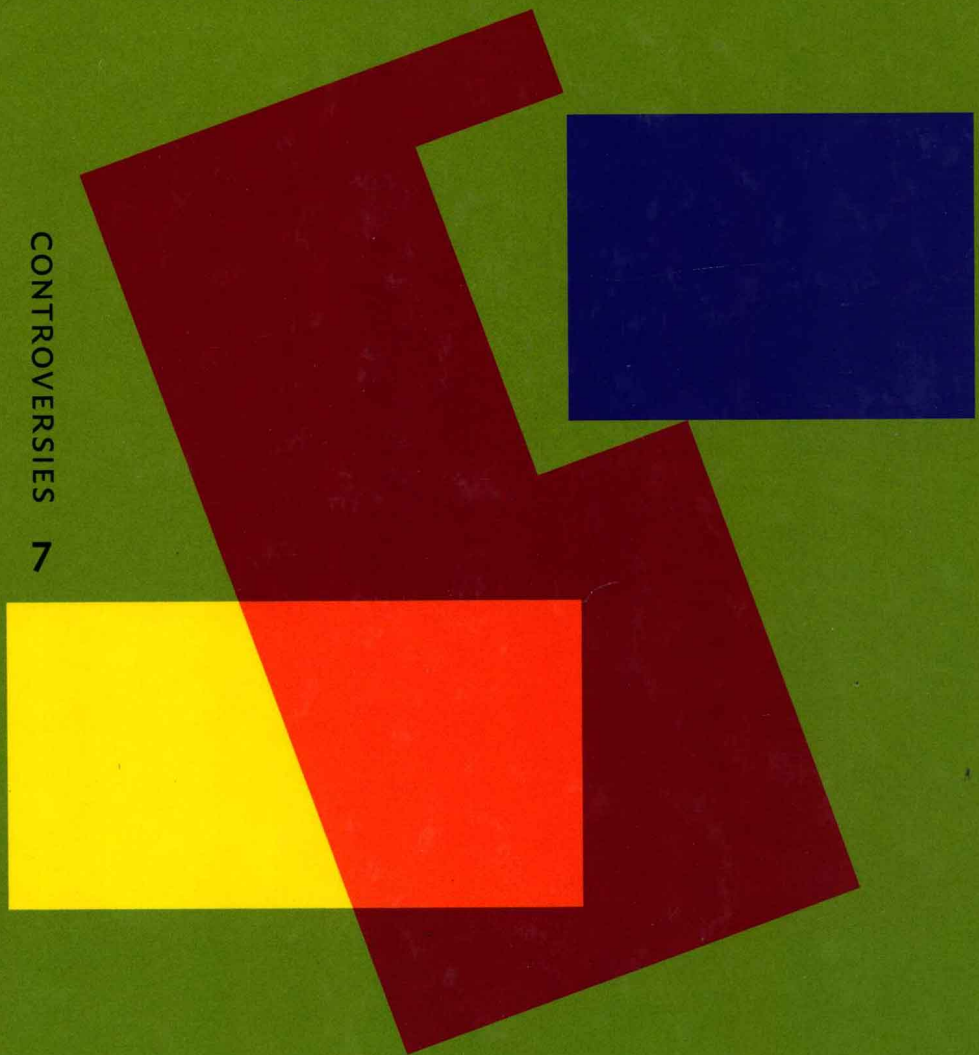
The Practice of Reason

Leibniz and his Controversies

Edited by Marcelo Dascal



CONTROVERSIES 7

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The Practice of Reason

Leibniz and his Controversies

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The Practice of Reason

Controversies (CVS)

Controversies includes studies in the theory of controversy or any of its salient aspects, studies of the history of controversy forms and their evolution, case-studies of particular historical or current controversies in any field or period, edited collections of documents of a given controversy or a family of related controversies, and other controversy-focused books. The series also acts as a forum for 'agenda-setting' debates, where prominent discussants of current controversial issues take part. Since controversy involves necessarily dialogue, manuscripts focusing exclusively on one position will not be considered.

Volume 7

The Practice of Reason. Leibniz and his Controversies
Edited by Marcelo Dascal

Foreword

Gottfried Wilhelm Leibniz was a philosopher, mathematician, jurist, engineer, theologian, physicist, linguist, logician, political advisor and theorist, historian – in short, a polymath. His aim, in all his endeavors, was one – to contribute to the improvement of humankind. He was also one of the first thinkers to realize that controversies have a crucial role in the growth of knowledge, as well as in progress in all branches of human activity. Much of his intellectual and practical activities consisted in participating in some of the central debates of his time (many of which are still open today). His main concern was not to ensure the victory of his own positions, however persuaded he was of their correctness. He was rather interested in learning from his opponents' views, for he conceived the development of knowledge and the solution of man's problems as a collective enterprise to which every bit of insight, whatever its source, was a precious, irreplaceable contribution. For him, man's chance of progress towards happiness lies in the capacity to recognize the value of the different individual perspectives through which humans approach the world. In controversies we have the opportunity to exercise this capacity by making the necessary effort to view the opponent not as an adversary but as a teacher, from whose point of view one has much to learn and through which one can enrich and improve one's own understanding.

To his friend Placcius, who asked for his critique of a recent manuscript, Leibniz wrote in April 1695: "You should not doubt that I will be an eager and, as far as possible, a studious reader of whatever emanates from you. Nevertheless, criticism requires more work, and it should not be expected from me, for by nature and education I am prepared to look for, in the writings of others, for what contributes to my improvement rather than to the other's failure" (DA 297). It is in this Leibnizian spirit that this series was created and this book – the first in the series especially devoted to his work – is intended to provide further insight into his *sui generis* dialectic.

Leibniz the controversialist is presented to the reader in this book through a selection of actual controversies in which he took part in different areas of knowledge and action. Of course, the practice of controversy reveals the practitioners' beliefs about the principles that should underlie it, thereby providing a glance

into their way of understanding the peculiar features of controversy's rationality. Nevertheless, the possibility of observing the unfolding of actual controversies, the recurring strategies of argumentation used, the aims pursued, and the measure in which they are or are not reached, offers, in addition, a new perspective for understanding and assessing a controversialist's 'theory of controversies'. For it shows not only what a thinker *thinks* about how one *should use* reason and other tools in the conduct of a controversy, but also how he *actively puts in practice* the kind of rationality he preaches. It is mainly, though not only, through this perspective that the book purports to contribute to the understanding of what must be acknowledged as Leibniz's 'dialectic'.

His unquestionable merits as a moderate and constructive polemicist notwithstanding, Leibniz was not a saint when it came to actual disputes, as he was no saint when it came to his other activities. One should not expect all the polemics he was engaged in to unfold in the benevolent spirit he claims to conform to by his nature and education. From a pluralist like him, who declares that "in a simple substance there must be a plurality of affections and relations, even though it has no parts" (*Monadology* §13; GP 6 608), one should rather expect a variety of 'affections' vis-à-vis controversies. Indeed this is the case, to judge from the sample of Leibnizian controversies gathered in this book. In this respect, the book shows how a thinker is not necessarily bound to a single model and style of debating.

No wonder that the three ideal types identified in the typology of debates, which I have been using for more than a decade in my investigation of controversies (see, e.g., Dascal 1995, 1998a, b, c, d, 2001, 2004, 2008), found their way into the pages of this book effortlessly and unintentionally. Leibniz's participation in the *vis viva* controversy and the Leibniz-Huygens exchange on the infinitesimal calculus (Chapters 3 and 2), for example, are close to be good examples of the ideal type I call 'discussion' (generally taken to be the model for scientific debate); where the objective is to determine the truth, the contenders share the assumption that this can be reached by applying a certain decision procedure, and the preferred form of argumentation is logical, mathematical, or experimental proof. The animosity of the Leibniz-Pufendorf relation, reflected in their intellectual and political positions vis-à-vis each other's views (Chapter 10), is typical of the kind of debate I dub 'dispute', in which the aim is victory over the adversary, no shared method of decision of the divergence is available, and stratagems of all sorts are in use. The Sturm-Schelhammer debate is also a quite clear case of dispute, apparent, for instance, in the titles chosen for their writings against each other. Yet Leibniz's conciliatory intervention in this dispute transforms it in fact into a 'controversy' (in my sense of the term). It is exemplary of his way of trying to transform the opposition between apparently contradictory positions into a milder opposition; this method permits to overcome the exclusive *tertium*

non datur dichotomy, unblocking the debate and leading to the creation of an alternative which combines elements of each of the opposed positions in a sort of hybrid theory – a typical example of the contribution of the ideal type 'controversy' to the growth of knowledge (Chapter 6).

Needless to say, *actual* debates can hardly be pure instances of any categories that are construed as ideal types. Debates are dynamic; they may typify different categories in different phases of their development, and even within the same phase they may display elements of different ideal types. In fact, in several of the Chapters we face debates that cannot be simply assigned to one of the ideal types. For example, the Leibniz-Papin debate, as shown in Chapter 4, is typically a 'dispute' in its public phase and a 'controversy' in its private phase – a similar phenomenon occurring in the Leibniz-Foucher debate (Chapter 8).

Having briefly hinted at the richness of the material contained in each chapter of this book, which deals with relatively unknown Leibnizian controversies, I will leave it to the reader to pursue its exploration on his/her own. We have cared to make this possible by providing abundant quotations that convey not only the content but also the flavor of the arguments, by keeping the originals in French or Latin, as well as by translating them when they are not easily accessible in standard English versions, and by giving the necessary references.

The origins of this book can be traced back to a 1995 project titled "Leibniz the Polemicist" and they are described in detail in DA 2006: xv–xviii. The more recent story of the book begins in 2001, with a colloquium at the Center for the Study of Modern Philosophy (CNRS, Paris), jointly organized by Christiane Frémont and myself. The topic was Leibniz's controversies. Only some of the participants in that colloquium have submitted their contributions to the present book, but it is thanks to that indispensable initial impulse that the book has finally materialized. Other authors joined the group and gradually the intended coverage of the variety of controversies in which Leibniz was involved reached the point originally aimed at.

I wish to thank the authors for their perseverance, patience, and cooperation, which collectively brought this long process to this fine result. Next, the translators who voluntarily translated or revised the translations of several chapters, especially Nikos Psarros, Joseph B. Dallet, Pol Boucher, Anna Laerke, and Edward Hughes. And most of all, Zoe Gutzeit, whose superb and dedicated editorial work produced a homogeneous volume out of disparate materials. The publication of this book was supported by the Israel Science Foundation, Grant N° 81/05.

Marcelo Dascal
Tel Aviv, September 2009

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Abbreviations

Leibniz's works

A = *Gottfried Wilhelm Leibniz Sämtliche Schriften und Briefe.* Edited since 1923 by various Leibniz Research Centers in Germany. Currently published by Akademie Verlag, Berlin.

C = *Opuscules et Fragments Inédits de Leibniz.* Edited by L. Couturat. Paris, 1903 (repr. Hildesheim, 1966).

D = *Gottfried Wilhelm Leibniz Opera Omnia.* Edited by L. Dutens. Genève, 1767 (repr. Hildesheim, 1989).

FC = *Oeuvres de Leibniz.* Edited by A. Foucher de Careil. Paris 1859–1875 (repr. Hildesheim, 1969).

GM = *Leibnizens Mathematische Schriften.* Edited by C. I. Gerhardt. Halle, 1849–1863 (repr. Hildesheim, 1962).

GP = *Die Philosophischen Schriften von G. W. Leibniz.* Edited by C. I. Gerhardt. Berlin, 1875–1890 (repr. Hildesheim, 1965).

GR = *G. W. Leibniz Textes inédits.* Edited by G. Grua. Paris, 1948.

LH = *Leibniz-Handschriften, Niedersächsischen Landesbibliothek Hannover.*

NE = *Nouveaux essais sur l'entendement humain.* In A VI 6 and in GP 5.

English translations

DA = *Leibniz: The Art of Controversies.* Translated by M. Dascal, with the cooperation of Q. Racionero and A. Cardoso. Dordrecht: Springer, 2006.

L = *Gottfried Wilhelm Leibniz Philosophical Papers and Letters.* Translated by L. E. Loemker. Dordrecht: Kluwer, 2nd ed., 1969.

W&R = *G. W. Leibniz Philosophical Texts.* Translated by R. S. Woolhouse and R. Francks. Oxford: Oxford University Press, 1998.

Contributors

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Christiane Frémont, a graduate of the École Normale Supérieure, agrégée and docteur en philosophie, is chargée de recherche of the CNRS presently at the Centre Chevrier, Université de Bourgogne. Her work has focused mainly on Leibniz's philosophy and comprises: *L'Etre et la Relation* (1981, 2nd ed. 2000), *Leibniz, Discours sur la théologie naturelle des Chinois* (1987), *Singularités: individus et relations dans le Système de Leibniz* (2003), as well as three edited volumes of Leibniz texts (1994, 1996, 2001). Since 1984 she is director of publications of the collection Corpus des Oeuvres de Philosophie en langue française (whose editor in chief is Michel Serres). She has participated in the Dictionary of Seventeenth-Century French Philosophers (2008) as a contributor and supervising editor in charge of religious controversies. She has written many articles on the relationship between philosophy and literature (Voltaire, Diderot, Victor Hugo), on the philosophy of life in the 17th and 18th century, and on contemporary philosophy. Her article on Michel Serres, "Philosophie pour le temps present" is forthcoming.

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Hartmut Rudolph, Dr. theol. (University of Heidelberg), published monographs on the history of the Prussian military church from the 18th century to World War I, on the German Protestant churches and their meaning for the integration of the refugees into West-German society 1945–1972, several articles on the history of the Reformation period in early modern Germany, on the relationship between public and church law, on Leibniz, and on subjects of contemporary German church history. He collaborated with the historical-critical edition of the works of Paracelsus (since 1976) and Martin Bucer (since 1983). From 1993 to 2007 Hartmut Rudolph was Director of the Leibniz Edition Potsdam of the Berlin Brandenburg Academy of Humanities and Sciences, and since his recent retirement he continues to contribute to the edition of Leibniz's political writings.

Michel Serfati holds the Higher Chair of Mathematics at the Université Paris VII – Denis Diderot. Holding doctorates in mathematics and philosophy, he has for many years directed the seminar on epistemology and history of mathematical ideas held at the Institut Henri Poincaré in Paris. His research concerns in particular algebraic supports of multiple-valued logics (Post Algebras), the philosophy of mathematical symbolic notation, and the history of mathematics in the 17th century (especially Leibniz's and Descartes' works) and in the 20th century (especially Category Theory and Spectral Methods). He organized many conferences on the history and philosophy of mathematics, and is the author and editor of works in both disciplines. Among his recent publications, *De la Méthode. Recherches en histoire et philosophie des mathématiques* (2002), *La Révolution symbolique. La constitution de l'écriture symbolique mathématique* (2005), and *Mathématiciens français du XVIIème siècle: Pascal, Descartes. Fermat* (2008). His next forthcoming publication is a book on the mathematical thought of René Descartes.

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CHAPTER 1

The principle of continuity and the 'paradox' of Leibnizian mathematics*

Michel Serfati

1. Introduction

On the basis of the epistemological analysis of several Leibnizian "mathematical situations", I will first attempt to show how Leibniz's "principle of continuity" (which is, in fact, a meta-principle) belongs to the conceptual framework of what he calls "symbolic thought", at least insofar as its mathematical implementations are concerned. I will then show how the ambiguity of the mathematical and metaphysical status of the principle engendered controversies between Leibniz and some of his correspondents (the 'paradox' of Leibnizian mathematics), according to whether they were mathematicians (e.g., Varignon) or philosophers (e.g., Wolff). I will then briefly indicate the ways in which the same controversy continued after Leibniz between Poncelet and Cauchy. Finally, it will be shown how this seventeenth century "principle" remains to these days fully operational in research and teaching as a sort of internalized methodological guide.

Let us begin with the following example of a well-known contemporary mathematical proposition.

> If u_n is the general term of a real sequence such that $u_n \geq a$ for every n, and if u_n converges, then $\lim_n u_n \geq a$.

It is clear that this statement is immediately and spontaneously accepted by contemporary mathematicians as well as by those of the nineteenth century. This is not only due to its intrinsic validity, which is doubtless, but also due to the acknowledgment of the now familiar underlying 'mode of truth' it relies upon – that of "proof by continuity". One can recognize here indeed a fundamental type of 'attitude' or 'behavior' by mathematicians – currently usual – which might be informally described as follows: what is always true of the changing object (here u_n)