

The Ontological and Epistemological Dimensions of Infinity in Malebranche

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Abstract

The Ontological and Epistemological Dimensions of Infinity in Malebranche
Malebranche, while retaining the theological and metaphysical reality of infinity, attributes thereto an epistemological function to the extent that he understands infinity as a sphere in which the mind grasps ideas, and an epistemic and regulatory direction is provided to guide the pursuit of knowledge. In this regard, Malebranche stresses the links that exist between said metaphysical infinity and the variety of infinities that emerges in the various sciences. In light of this emphasis, we propose to examine the Malebranchian concept of infinity in its ontological and epistemological meaning, with a particular focus on how this concept is thematized in the metaphysical and mathematical sense.

Keywords: Malebranche, Descartes, Infinity, Infinitesimal Calculus, Science.

1. Introduction

Of the philosophers and scientists of the seventeenth century, it is Malebranche who believes that we can have a positive idea of infinity. We note from the outset that he uses the formulas «infini en toutes sortes de perfections», «infini infiniment infini», «infini tout court», «infini en tout genre» or «infini en tout genre d'être» to indicate divine infinity, infinity in every sense. We will then go on to show that, according to the French philosopher, some knowledge of

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the metaphysical infinite is possible, because we have a perception of infinitely infinite infinity. In *The Search after Truth*, he stresses that the concept of being alone, before any distinction between infinite and finite being, allows us to mark out infinity. Thus, the infinite comes before the finite, not only because of its ontological perfection, but also because it is the ontological horizon on which those ideas connected to infinity actually appear. Since infinity is the ontological *prius* of the finite, Malebranche can argue that we can perceive infinity, even if we may not have a complete concept of it. It can also be said that this idea of divine infinity is distinct in the sense that, although we do not understand it, we understand that this concept should be very different from all other ideas, that is to say, we discern that its content must be thoroughly distinct from the content of any other concept. The impossibility of understanding infinity expresses the excess of the intelligible and, more precisely, the source of intelligibility, compared to the finite mind of man.

We will emphasize that, according to Malebranche, infinitely infinite infinity differs from various species of special infinities. In fact, the author of *The Search after Truth* differentiates between the absolute infinity and infinities of a particular form, such as intelligible extension or the infinity of intelligible numbers. We will focus our attention in particular on the relationships between absolute infinity and particular infinities in the mathematical sphere because an analysis of these relationships will enable us to highlight the ontological and epistemological dimensions of the Malebranchian conception of infinity. In this regard, we will argue that, in Malebranche's thinking, mathematical infinity has no single meaning, that this concept manifests different senses and nuances and is anchored on the metaphysical horizon of the infinitely infinite. Among other things, we would like to show how Malebranche tackles the problem of relationships between infinite magnitudes.

2. The Infinite in a Metaphysical Sphere

When Malebranche speaks of the infinite, he is referring primarily to God, that is to say, to the infinitely infinite infinity, infinity considered in the infinity of its perfections, which man's finite mind is able to perceive. Let us consider a passage from *The Search after*

Truth, Malebranche's first work, published in two volumes in 1674-1675, in which the author investigates the various forms of error that man must correct in order to free himself from his moral miseries. In the third book, in which the Oratorian looks at the intellect (or the pure mind), the infinite is treated as the soundest, most important evidence in favour of the existence of God. Malebranche does not repeat the ontological argument here, according to which the existence of God follows from the simple idea of the infinitely perfect being, but rather claims that, because God (that is, the infinitely perfect infinity) exists clearly within our minds, we must conclude that He exists. Let us examine, therefore, the text in question (Book 3, Part 2, Chap. 6).

Finally, of the proofs of God's existence, the loftiest and most beautiful, the primary and most solid (or the one that assumes the least) is the idea we have of the infinite. For it is certain that (a) the mind perceives the infinite, though it does not comprehend it [*l'esprit aperçoit l'infini, quoiqu'il ne le comprenne pas*], and (b) it has a very distinct idea of God [*une idée très distincte de Dieu*], which it can have only by means of its union with Him, since it is inconceivable that the idea of an infinitely perfect being (which is what we have of God) should be something created.

But not only does the mind have the idea of the infinite, it even has it before that of the finite. For we conceive of infinite being simply because we conceive of being, without thinking whether it is finite or infinite. In order for us to conceive of a finite being, something must necessarily be eliminated from this general notion of being, which consequently comes first. Thus, the mind perceives nothing except in the idea it has of the infinite [*Ainsi l'esprit n'aperçoit aucune chose que dans l'idée qu'il a de l'infini*], and far from this idea being formed from the confused collection of all our ideas of particular beings (as philosophers think), all these particular ideas are in fact but participations in the general idea of the infinite; just as God does not draw His being from creatures, while every creature is but an imperfect participation in the divine being [*toutes les créatures ne sont que des participations imparfaites de l'être divin*]¹.

1. N. Malebranche, *The Search after Truth*, edited by Th. M. Lennon and P. J. Olscamp, Cambridge: Cambridge University Press, 1980, Book 3, Part 2, Chapter 6, p. 232 (Id., *Œuvres Complètes*, edited by A. Robinet, vol. I, *Recherche de la vérité I-III*, edited by G. Rodis-Lewis, Paris: Vrin, 1962, p. 441 – henceforth abbreviated as OC. We have modernized the spelling of the original text). Malebranche

We can glean from the passage the following theses: (1) the human mind has a perception, not an understanding, of the infinite; (2) the mind possesses a very clear idea of God²; (3) the idea of an infinitely perfect being is no more than the idea that the mind has of God³.

These assertions hark back to the Cartesian vocabulary, in which the idea of God is taken to be clear and distinct⁴, but they also

reaffirms that the mind perceives the infinite, though it does not comprehend it, in his polemical writings against Arnauld. See for example Id., *Réponse au Livre des vraies et des fausses idées*, in Id., OC, vols. VI-VII, edited by A. Robinet, Paris: Vrin, 1966, pp. 165-167; Id., *Réponse à la troisième lettre de M. Arnauld*, 19 mars 1699, in Id., OC, vols. VIII-IX, edited by A. Robinet, Paris: Vrin, 1966, p. 953. On the idea of infinity see also Id., *Réponse à Régis*, in Id., OC, vol. XVII-1, edited by A. Cuvillier, P. Costabel, A. Robinet, Paris: Vrin, pp. 300-301.

2. In his *Elucidations of The Search after Truth* (*Elucidation 10*), in 1678, Malebranche went on to say that the mind sees clearly the infinite in sovereign and universal Reason, although it does not understand it: «[...] l'esprit voit clairement l'infini dans cette souveraine Raison quoiqu'il ne le comprenne pas» (Malebranche, *The Search after Truth*, cit., p. 614; Id., *Éclaircissements sur la Recherche de la vérité*, OC, vol. III, edited by G. Rodis-Lewis, Paris: Vrin, 1964, p. 131).

3. In the *Dialogues on Metaphysics and on Religion* (1688), Malebranche will write: «By the divinity we all understand the infinite, Being without restriction, infinitely perfect Being [Par la Divinité nous entendons tous l'Infini, l'Être sans restriction, l'Être infiniment parfait]» (N. Malebranche, *Dialogues on Metaphysics and on Religion*, edited by N. Jolley, translated by D. Scott, Cambridge: Cambridge University Press, 1997, *Dialogue 8*, § 1, p. 128; Id., *Entretiens sur la métaphysique et la religion*, in Id., OC, vol. XII-XIII, edited by A. Robinet, Paris: Vrin, 1965, p. 174).

4. See *Third Meditation*: «I maintain that this idea of a being that is supremely perfect and infinite is true in the highest degree. For although I could perhaps pretend that such a being does not exist, nevertheless I could not pretend that the idea of such a being discloses to me nothing real, as was the case with the idea of cold which I referred to earlier. It is indeed an idea that is utterly clear and distinct; for whatever I clearly and distinctly perceive to be real and true and to involve some perfection is wholly contained in that idea» (R. Descartes, *Meditations, Objections, and Replies*, edited and translated by R. Ariew and D. Cress, Indianapolis/Cambridge: Hackett Publishing Company, Inc., 2006, p. 26; *Œuvres de Descartes*, edited by Ch. Adam and P. Tannery, Paris: CNRS/Vrin, 1964-1974, vol. VII, p. 46 and vol. IX-1, p. 36 – henceforth abbreviated as AT). Moreover, in the *Reply by the Author to the First Set of Objections*, Descartes makes a distinction between two different acts of the mind: he affirms that infinity can in no way be grasped, but it can still be understood: «I will declare here that the infinite qua infinite is in no way comprehended; nonetheless it is still understood,

show that Malebranche owes something to the conception of God found in the medieval school of thought, in which the infinite is understood as God's main attribute⁵. In the *Christian Conversations* (1677)⁶ and in the *Treatise on Ethics* (1684)⁷, the Oratorian clearly affirms that infinity is the essential attribute of Divinity: it plays the ontological constitutive role of the existence of God⁸. On this point we may recall Reiter's interpretation: first of all, if infinity is the essential attribute of Divinity, «essential» means that this attribute is the formal constituent («das *formelle Konstituens*») of the God being, the principle of all other attributes or, in other words, «ratio deitatis»⁹; secondly, the conception of the infinity as «das *formelle Konstitutivum*» of the essence of God goes back to Duns Scotus¹⁰.

The connection between the infinite and the perfect, which is found in the notion of the infinitely perfect, is also identified by Descartes¹¹. Descartes' God is infinite because He is perfect

insofar as understanding clearly and distinctly that a thing is such that plainly no limits can be found in it is tantamount to understanding clearly that it is infinite» (Descartes, *Meditations, Objections, and Replies*, cit., p. 65; AT, VII, 112; AT, IX-1, 89. On the similarities and differences between the perspectives of Descartes and Malebranche concerning the notion of infinity, see G. Rodis-Lewis, *La transcendance cartésienne de l'infini. Ses limites chez Malebranche et Spinoza*, in J.-M. Lardic (ed.), *L'infini entre science et religion au XVII^e siècle*, Paris: Vrin, 1999, pp. 25-35, in particular pp. 31-32.

5. See É. Gilson, *L'esprit de la philosophie médiévale*, Paris: Vrin, 1948, p. 56.

6. «[...] son infinité, l'attribut essentiel de sa divinité» (Malebranche, *Conversations chrétiennes*, OC, vol. IV, edited by A. Robinet, Paris: Vrin, 1959, *Entretien* 5, p. 119).

7. See Part 2, Chap. 5, § 10 of the *Treatise on Ethics*: N. Malebranche, *Treatise on Ethics* (1684), translated by C. Walton, Dordrecht: Springer, 1993, p. 166; Id., *Traité de morale*, OC, vol. XI, edited by M. Adam, Paris: Vrin, 1966, p. 191: «Car l'attribut essentiel de la Divinité c'est l'infinité». See also Malebranche, *Dialogues on Metaphysics and on Religion*, cit., *Dialogue* 9, § 6, p. 155 (OC, vol. XII-XIII, p. 205) and Id., *Réflexions sur la prémotion physique*, OC, vol. XVI, edited by A. Robinet, Paris: Vrin, 1958, p. 138.

8. See A. Robinet, *Système et existence dans l'œuvre de Malebranche*, Paris: Vrin, 1965, pp. 496-498.

9. J. Reiter, *System und Praxis. Zur kritischen Analyse der Denkformen neuerzeitlicher Metaphysik im Werk von Malebranche*, Freiburg-München: Verlag Karl Alber, 1972, p. 111.

10. Ibid., p. 121.

11. See the *Discours de la méthode*: AT, VI, p. 39.

and therefore free of any limitation. He is infinity itself and it is in infinity that Descartes finds the very basis of His perfection. Nevertheless, if Descartes recognizes the metaphysical existence of the infinite on the one hand, on the other hand he denies that we can become adequately conscious of it. After all, if in Descartes the infinite seems not be connected to nature and to the mechanism of human consciousness, Malebranche, who upholds its theological and metaphysical scope, recognizes its gnoseological function in theorizing that the infinite is the ontological horizon in which the mind grasps ideas, and the epistemic and regulatory course that steers the process of consciousness, as we will clarify later.

From the text quoted above, we can also gather the following two theories: the simple notion of being is enough, irrespective of any distinction between being infinite and being finite, to perceive the infinite; considering, then, the extract as a whole, the infinite precedes the finite, not only by virtue of its ontological perfection, but also because it represents the ontological horizon from which finite ideas spring forth, insofar as they participate in the general idea of («all these particular ideas are in fact but participations in the general idea of the infinite»)¹².

Given that the infinite has an absolute ontological priority, and that the idea of the infinite (which Malebranche identifies with the infinite itself)¹³ is the original entity whose finite ideas have a part to play, Malebranche argue that we perceive infinity, even if we may not have a complete concept of it. He can also claim that the idea of the infinite is distinct in the sense that, although the mind cannot comprehend it, the mind recognizes that this notion is quite different from all other ideas, and thereby understands that the contents thereof must be quite unlike the contents of any other concept. Malebranchian texts distinguish, therefore, between

12. Malebranche, *The Search after Truth*, cit., Book 3, Part 2, Chapter 6, p. 232; OC, I, 441.

13. In fact, the knowledge of divine infinity should be considered knowledge of a thing by itself. See Malebranche *The Search after Truth*, cit., Book 3, Part 2, Chapter 6, § 1, p. 236 (OC, vol. I, 448): «We know things by themselves and without ideas when they are intelligible by themselves, i.e., when they can act on the mind and thereby reveal themselves to it».

perceiving («apercevoir») and understanding («comprendre») and imply that it is possible to have a clear, distinct perception of an object, even if we do not understand it. Malebranche later adds that «the soul cannot perfectly know the infinite [l'âme ne peut connaître parfaitement l'infini]»¹⁴. In the case in question, the inability to understand the infinite is an expression of the excess of that which represents the source of intelligibility itself, as opposed to man's finite intelligence. In this regard, it seems that, on this point too, Descartes played an important part in the formation of Malebranche's concept of the infinite, insofar as he claims it is possible to perceive the infinite positively without understanding its entire sphere of intelligibility. In fact, in the *Author's Replies to the First Set of Objections*, he writes: «But as to the thing itself which is infinite, although our understanding of the thing is surely positive, still it is not adequate, that is, we do not comprehend all that is capable of being understood in it»¹⁵.

Nevertheless, in part II, chapter VII, paragraph 2 of the very same book, Malebranche seems to correct the theory according to which the mind has a very distinct idea of God. Here, he specifies that we know God in Himself and that He (i.e. the universal being, the absolute infinite) cannot be grasped by way of an idea, or by a being other than that which He is. Indeed, every idea, including that of infinite extension, implies a particularization; even the idea of infinite extension is nothing more than an entity participating in the perfection of the divine absolute, the only infinity in every sense:

I cannot conceive how a created thing can represent the infinite, how being that is without restriction, immense and universal [l'être sans restriction,

14. Malebranche, *The Search after Truth*, cit., Book 3, Part 2, Chapter 1, § 1, p. 203 (OC, I, 390).

15. Descartes, *Meditations, Objections, and Replies*, cit., p. 65. «[...] ipsam verò rem, quæ est infinita, positive quidem intelligimus, sed non adæquate, hoc est non totum id, quod in eâ intelligibile est, comprehendimus» (AT, VII, 113; see also AT, XI-1, 90). On this point, see also G. W. von Leibniz, *Animadversiones in Partem Generalem Principiorum Cartesianorum*, in Id., *Die Philosophischen Schriften*, edited by C. I. Gerhardt, vol. IV, Hildesheim: Georg Olms, 1965, p. 360: «Aliud est autem scire aliquid de re, aliud rem comprehendere, hoc est quicquid in ea latet in potestate habere».

l'être immense, l'être universel], can be perceived through an idea, i.e., through a particular being [un être particulier] different from universal and infinite being. But as far as particular beings are concerned, there is no difficulty in conceiving how they can be represented by the infinite being that contains them in His most efficacious and, consequently, most intelligible substance¹⁶.

Here, Malebranche asserts that the being without restrictions, the infinitely infinite infinity, cannot be perceived in terms of a finite idea or encapsulated within the representational sphere of the finite mind. Malebranche uses the word «représenter» in reference to both finite minds and to the infinite being. In the first case he claims that a finite being cannot render the infinite. «Représenter» is used here to express the subjective mental perception of that which is presented to the mind¹⁷. It is clear to Malebranche, therefore, that a finite mind does not have the power to grasp the infinite through the

16. Malebranche, *The Search after Truth*, cit., Book 3, Part 2, Chapter 7, § 2, p. 237 (OC, I, 449). See also N. Malebranche, *Réponse à Régis*, OC, XVII-1, 284; Id., *Dialogues on Metaphysics and on Religion*, cit., Dialogue 2, § 6, pp. 23-24 (OC, XII-XIII, 53). In the *Traité de l'amour de Dieu*, Malebranche reiterates that «[...] l'idée de Dieu ne peut être que Dieu, puisque rien de fini ne peut représenter l'infini» (OC, vol. XIV, edited by A. Robinet, Paris: Vrin, 1963, p. 12).

17. We should point out that in Malebranche's most elaborate thinking, ideas are entities that have their own ontological consistency, are independent of the finite mind and able to produce therein a whole range of modifications. On Malebranche's theory of ideas, see in particular J.-M. Gaonach, *La théorie des idées dans la philosophie de Malebranche*, Thèse pour le doctorat présentée à la Faculté des lettres de l'Université de Rennes, Brest, 1908; Robinet, *Système et existence dans l'œuvre de Malebranche*, cit., part II, pp. 207-284, 323-333; F. Alquié, *Le cartésianisme de Malebranche*, Paris: Vrin, 1974, pp. 185-241; S. Nadler, *Malebranche and Ideas*, New York/Oxford: Oxford University Press, 1992; M. Cook, *The Ontological Status of Malebranchian Ideas*, «Journal of the History of Philosophy», 36 (1998), 4, pp. 525-544; T. Schmaltz, *Malebranche on Ideas and the Vision in God*, in S. Nadler (ed.), *The Cambridge Companion to Malebranche*, Cambridge: Cambridge University Press, 2000, pp. 59-86; D. Moreau, *Malebranche. Une philosophie de l'expérience*, Paris: Vrin, 2004, pp. 63-93; S. Peppers-Bates, *Does Malebranche Need Efficacious Ideas? The Cognitive Faculties, the Ontological Status of Ideas, and Human Attention*, «Journal of the History of Philosophy», 43 (2005), 1, pp. 83-105; L. Nolan, *Malebranche on Sensory Cognition and 'Seeing As'*, «Journal of the History of Philosophy», 50 (2012), 1, pp. 21-52; A. Roux, *Le cercle de l'idée. Malebranche devant Schelling*, Paris: Champion, 2017, pp. 127-227.

spontaneous activity of its cognitive functions. There is simply no idea of the infinite confined within the mental landscape of a finite mind. In the second part of the extract quoted, the word «représenter» takes on another nuance: it concerns the original ‘representation’ of the infinite incorporating the finite¹⁸, a representative activity with an obvious ontological significance. In other words, specific, finite beings are represented in that they find their intelligibility in the infinite¹⁹. The infinite is, from this perspective, the very source and condition of the possibility of every representation; we can say that it is the original ‘self-presentation’ of which the ideas representing finite beings form the articulation.

It should be said, moreover, that in Malebranche the idea of the infinite being seems to identify with the idea of being in general²⁰. As has already been said, we perceive the infinite being by the very fact that we perceive being, without considering whether it is finite

18. In the third book of his first work, Malebranche writes that « [...] God is all being, since He is infinite and comprehend everything; but it is no being in particular. Yet what we see is but one or more particular beings, and we do not understand this perfect simplicity of God, which includes all beings» (Malebranche, *The Search after Truth*, cit., Book 3, Part 2, Chapter 6, p. 231; OC, I, 439). On this point, see J.-C. Bardout, *Malebranche et la métaphysique*, Paris: PUF, 1999, p. 236: «Le Dieu de Malebranche se désigne comme une substance représentative, autrement dit comme une essence infinie dont la perfection suprême consiste à penser et donner à penser la totalité des êtres. Dieu seul pense authentiquement, en nous faisant participant de ses représentations».

19. Malebranche confirms this idea in his last work, *Réflexions sur la prémotion physique*, by observing that in the book *L'action de Dieu sur les créatures* Boursier too recognized that «on ne peut voir le fini que dans l'infini, et que dans l'infini intelligible, capable seul d'agir dans les intelligences finies, par l'efficacité des idées qu'il renferme dans sa sagesse, dans son verbe par qui et avec lequel il opère sans cesse» (N. Malebranche, OC, XVI, 98-99).

20. «The clear, intimate, and necessary presence of God (i.e., the being without individual restriction, the infinite being, being in general) to the mind of man acts upon it with greater force than the presence of all finite objects» (Malebranche, *The Search after Truth*, cit., Book 3, Part 2, Chapter 8, § 1, p. 241; OC, I, 456). On this topic, see M. Guerout, *La connaissance de Dieu chez Malebranche*, in Id., *Études sur Descartes, Spinoza, Malebranche et Leibniz*, Hildesheim-New York: Georg Olms, 1970, pp. 165-204, in particular pp. 166-169, and D. Radner, *Malebranche. A Study of a Cartesian System*, Amsterdam-Assen: Van Gorcum, 1978, pp. 54-55.

or infinite (an argument that we also find in Descartes, in the 23 April 1649 letter to Clerselier²¹), and this confirms the anteriority of the infinite to the finite²². By presenting the infinite as an entity which is maximally perfect in every sense and a concept which precedes every other notion (from which the finite derives through restriction), Malebranche brings to light the constitutive apriority of the gnoseological function of the infinite: the infinite being is being in general, which constitutes the ontological condition of possibility of the finite, the foundation of every intellection, and the *medium* of our knowledge. In this regard, we can refer to Desmond Connell's interpretation, according to which the idea of the infinite in Malebranche is «the universal medium in which all particular beings can be known»²³.

We must, however, draw attention to a conceptual and lexical inconstancy. In *The Search after Truth* Malebranche at times speaks of the idea of the infinite, and at other times of the infinite which we know without ideas, without mediation, that is to say by means of itself, by virtue of its simple presence in the mind. This

21. «I say that the notion I have of the infinite is in me before that of the finite because, by the mere fact that I conceive being, or that which is, without thinking whether it is finite or infinite, what I conceive is infinite being; but in order to conceive a finite being, I have to take away something from this general notion of being, which must accordingly be first» (*The Philosophical Writings of Descartes*, vol. III, *The Correspondence*, translated by J. Cottingham, R. Stoothoff, D. Murdoch, A. Kenny, Cambridge: Cambridge University Press, 1991, Letter to Clerselier, 23 April 1649, p. 377; AT, V, 356). On the positive notion of infinity, see also the *Quintae Responsiones*, AT, VII, 365: «Nec verum est intelligi infinitum per finis sive limitationis negationem, cum e contra omnis limitatio negationem infiniti contineat».

22. On this point, see once again the *Meditations on First Philosophy*, *Third Meditation*: «[...] I clearly understand that there is more reality in an infinite substance than there is in a finite one. Thus the perception of the infinite is somehow prior in me to the perception of the finite, that is, my perception of God is prior to my perception of myself» (Descartes, *Meditations, Objections, and Replies*, cit., p. 25; AT, VII, 45).

23. D. Connell, *The Vision in God. Malebranche's Scholastic Sources*, Louvain: Editions Nauwelaerts, 1967, p. 305. On this point, see also J. Lewin, *Die Lehre von den Ideen bei Malebranche*, Hildesheim-New York: Georg Olms, 1981 [first edition: 1912], p. 20: «Gott [...] ist das Unendliche, durch den wir alles Endliche erkennen [...]».

inconstancy may be explained by the fact that Malebranche, in the first edition of his *The Search after Truth*, has not yet clearly defined the concept of the idea. For clarification on this point we may refer to the *Réponse à Régis*, in which the Oratorian throws light on the distinction between perceptions and ideas. It is a question of the difference between we who know and that which is the object of our knowledge: if our perceptions are modifications of the mind, then that which we know is the ideas found in universal reason, i.e. objective entities that cannot be reduce to individual subjectivity²⁴. In the third *Elucidation of The Search after Truth*, Malebranche recognizes the ambiguity inherent in the notion of idea, arguing that this word can mean anything that represents something to the mind (whether clearly or confusedly), anything that is the immediate object of the mind, or anything that represents an object to the mind clearly enough that we can discover it by simple perception whether a certain modification belong to them. The last is «the most precise and restricted sense»²⁵.

3. Different Types of Infinity

The philosophy of Malebranche developed hand in hand with his peculiar scientific interests, and with the discoveries and experiments carried out by other researchers of his time. This osmosis between scientific research and speculative thinking is perceived clearly in the concept of infinity, which is enriched and develops to the extent that the French philosopher progresses in his mathematical studies and advances into the paths of infinitesimal calculus²⁶.

On the metaphysical plane, Malebranche distinguishes the «infini infiniment infini», «infini en toutes manières»²⁷, «infini en tout sens»,

24. N. Malebranche, *OC*, XVII-1, 288, 289.

25. Id., *The Search after Truth*, cit., *Elucidation* 3, p. 561; *OC*, III, 44.

26. See A. Robinet, *La vocation académicienne de Malebranche*, «Revue d'histoire des sciences et de leurs applications», 12 (1959), 1, pp. 1-18.

27. «Thus it is only God, the infinite, indeterminate being, or the infinitely infinite infinite, who can contain the infinitely infinite reality I see when I think of being, and not of particular beings or of particular infinites»; «In the second place, it is certain that the idea of being, of reality, of indeterminate perfection, or of the infinite in every way, is not the divine substance insofar as it is represen-

«infini tout court»²⁸, «infini en tout genre d'être»²⁹, and even an infinity «en toutes sortes de perfections» (which came to be defined in his more mature thinking as the essential attribute of God³⁰) from the «infini particulier»³¹, which can be the intelligible extension (i.e. the idea of the extension in which all the lines and shapes can be discovered therein, thus representing relationships of distance)³² or the infinity of ideal numbers³³. These latter infinities represent relative perfections of the divine being. This is an interesting and thorny point of Malebranchian ontology and epistemology, which was stressed by Alexandre Koyré when he analysed the relationships between the infinity of intelligible extension and the God infinity: «Infinity belongs unavoidably to God, not only to the very dubious God of Spinoza, but also to the God of the Christian religion. Thus, not only Spinoza, the by no means pious Dutch philosopher, but also the very pious Father Malebranche, having grasped the essential infinity of geometrical space, is obliged to connect it with God»³⁴.

tative of or participable by a particular creature» (N. Malebranche, *Dialogues on Metaphysics and on Religion*, cit., *Dialogue 2*, §§ 3 and 4, p. 22; OC, XII-XIII, 52).

28. Ibid., *Dialogue 8*, §§ 7 and 8, pp. 136 and 137 (OC, XII-XIII, 183, 185).

29. N. Malebranche, *Dialogue between a Christian Philosopher and a Chinese Philosopher on the Existence and Nature of God*, translation and introduction by D. A. Iorio, Washington: University Press of America, 1980, p. 70; *Entretien d'un philosophe chrétien et d'un philosophe chinois, sur l'existence et la nature de Dieu, Œuvres Complètes*, vol. XV, edited by A. Robinet, Paris: Vrin, 1958, p. 5.

30. «L'Infinité en toutes sortes de perfections, est un attribut de la divinité, et son attribut essentiel, celui qui renferme tous les autres» (Id., OC, XV, 117).

31. Id., OC, XV, 6.

32. Id., *Dialogues on Metaphysics and on Religion*, cit., *Dialogue 1*, § 2, pp. 6-7 (OC, XII-XIII, 32-34). On the intelligible extension, see also *ibid.*, *Dialogue 8*, § 8, pp. 136-138 (OC, XII-XIII, 184-185).

33. See Id., *Dialogues on Metaphysics and on Religion*, cit., *Dialogue 2*, § 2, p. 21 (OC, XII-XIII, 51-52): «Surely, the substance containing intelligible extension is all-powerful. It is infinitely wise. It contains an infinity of perceptions and realities. For example, it contains an infinity of intelligible numbers [Assurément la substance qui renferme l'étendue intelligible est toute-puissante. Elle est infiniment sage. Elle renferme une infinité de perfections et de réalités. Elle renferme, par exemple, une infinité de nombres intelligibles]». See also Id., *Réponse à la troisième lettre de M. Arnauld*, OC, VIII-IX, 927, 929.

34. A. Koyré, *From the Closed World to the Infinite Universe*, Baltimore: The John Hopkins Press, 1957, p. 56.

In light of these premises, we intend, for our purposes, to dwell on the relationship between the specific infinities (in particular the mathematical infinity and the infinitely infinite infinity), and on how the human mind relates to these two great types of infinity³⁵. We have noted that, according to Malebranche, the mind cannot aspire to a full, exhaustive knowledge of the infinite³⁶. It cannot embrace or comprehend the metaphysical infinity, but can merely perceive it, i.e. have a conception of it that is infinitely small in relation to a perfect perception³⁷. Here Malebranche also theorizes that «it takes neither more thought nor a greater capacity for thinking to have an infinitely limited perception of the infinite than to have a perfect perception of something finite, since all finite magnitude, compared to or divided by the infinite, is to this finite magnitude as this same magnitude is to the infinite». Thus a finite perception in itself, a specific mental state, may constitute a perception of the infinite, but it is a perception of the infinite which is infinitely small compared to an infinite perception or full understanding of the infinite³⁸. Only in the latter case, after all, must the perception measuring the infinite be as infinite as its object³⁹. In an addition to the 1712 edition of *The Search after Truth*, in which the repercussion of Malebranche's new and crucial interest in infinitesimals on the previous work is apparent⁴⁰, the Oratorian claims that the product

35. On the various levels of Malebranchian infinity, see S. Mallet, *L'infini indéfini de Malebranche*, in B. Pinchard (ed.), *La légèreté de l'Être. Études sur Malebranche*, Paris: Vrin, 1998, pp. 121-146; J.-M. Lardic, *Malebranche et ses deux infinis*, in J.-M. Lardic (ed.), *L'infini entre science et religion au XVII^e siècle*, cit., pp. 71-82; C. Santinelli, *Meditare l'infinito. Saggio sul pensiero di Nicolas Malebranche*, in C. Santinelli (ed.), *Meditare l'infinito. La corrispondenza di N. Malebranche con J.-J. Dortous de Mairan (1713-1714)*, Urbino: Editrice Montefeltro, pp. 91-123.

36. Malebranche, *The Search after Truth*, cit., Book 3, Part 2, Chapter 2, § 1, p. 203 (OC, I, 390).

37. «But certainly we do think of it; we have of it, I do not say an *understanding* or a perception that describes and embraces it, but some perception of it, i.e., an infinitely limited perception, by contrast to a perfect understanding» (ibid., Book 4, Chapter 11, § 3, p. 321; OC, I, 100-101).

38. Ibid. (OC, I, 101).

39. Id., *Réponse à Régis*, OC XVII-1, 285.

40. This flow of Malebranchian philosophy is also witnessed by an addition

of the infinite of the object by infinite smallness of perception is always equal to the soul's capacity to think⁴¹. To clarify this concept, he uses a mathematical example: «For the product of the infinite and the infinitely small is a finite and constant magnitude, as is the soul's thinking capacity. This is evident, and it is the foundation of the property of hyperbolas between asymptotes, the product of whose abscissae increasing to infinity and the ordinates infinitely decreasing, is always equal to the same magnitude»⁴². Drawing once again upon mathematics, Malebranche claims that, although the product of the infinite for zero is certainly zero, our capacity to think is not zero. Our mind, although finite, can perceive the infinite by means of a perception which, however feeble it may be, is quite real⁴³. Far from considering the relationship between the infinitely small and the infinitely large (finite perception as with respect to the infinite) as void, Malebranche refers to an assignable magnitude, which is infinitely small and always positive (such as the distance between the hyperbola and its asymptote), and connects this to the

to 1715 edition of *The Search after Truth* (Book 6, Part 1, Chapter 5), which replaces the passage theorizing the primacy of arithmetic and algebra (see OC, II, 289-291, variant b): «The invention of the differential and integral calculus has extended analysis beyond limit, as it were. For these new calculi have placed an infinity of mechanical figures and problems of physics under its jurisdiction. They have provided it with a means of expressing infinitely small elements that we can conceive as composing the circumference of curved lines, as well as the area of figures and the volume of bodies defined by curved lines; they have provided it with a means of answering, in a simple and general way by calculating the expression of these elements, problems whose solutions are both useful and the most complex that can be stated in geometry» (Id., *The Search after Truth*, cit., Book 6, Part 1, Chapter 5, p. 436; OC, II, 294).

41. Ibid., Book 4, Chapter 11, § 3, p. 322 (OC, II, 102: «[...] le produit de l'infini par l'infiniment petit est une grandeur finie et constante, telle qu'est la capacité qu'a l'âme de penser»).

42. Ibid. In this regard, see also Id., *Conversations chrétiennes, Entretien 2*, OC, IV, 47, and Id., *Dialogues on Metaphysics and on Religion*, cit., *Dialogue 1*, § 9, pp. 15-16 (OC, XII-XIII, 44-45).

43. «Now, the product of infinity and zero is certainly zero, and our capacity for thinking is not zero; it is not null. It is therefore clear that our mind, although finite, can perceive the infinite, but by virtue of a perception that, though infinitely weak, is certainly quite real [est certainement très réelle]» (Id., *The Search after Truth*, cit., Book 4, Chapter 11, § 3, p. 322; OC, II, 102).

principle of the conservation of the same quantity of thought. In this way, Malebranche puts forward the theory that an infinitesimal yet always positive perception of the infinite is, in general, possible, although this perception will never be the same as an understanding.

The use of certain mathematical principles and relations to clarify some gnoseological and ontological relationships, such as that between the human mind and the infinite, is based on the original ontological collocation of mathematical objects. Mathematical truths are relationships which exist between ideal objects, that is to say numerical and geometric entities that are encapsulated in universal reason, which is the reason of God Himself. This reveals a complex structuring of the being: the infinite in its absolute transcendence; the infinite of universal reason (the realm of mathematical entities and moral values); the magnitudes in themselves taken absolutely (extension, unit, mathematical infinity); the magnitudes as a relation and the truth as a real relationship between ideas. This comprehensive connection between God/universal reason/numbers and extension/mathematical truths opens up the possibility of using certain internal lower level relations and procedures as explanatory keys (in terms of metaphors, similes, examples) of the ontological relationship between the mind and the metaphysical infinite. Reflecting on the particular mathematical relations allows us to clarify the ontological relationships within the system, in which the mathematical truths themselves are established, as well as the relationship of the mind thereto. This extraepistemic usage of certain methods and mathematical relations is possible to the extent to which Malebranche is aware of the complexity of the mathematical world and of the very fact that the mathematical infinite does not have a single definition but has various values and meanings⁴⁴. As André Robinet observed⁴⁵, Malebranche clearly

44. On mathematical infinity in Malebranche, see A. Buchenau, *Über den Begriff des Unendlichen und der intelligiblen Ausdehnung bei Malebranche und die Beziehung des letzteren zum Kantischen Raumbegriff*, «Kantstudien», 14 (1909), pp. 440-467, in particular pp. 452-455; M. E. Hobart, *Malebranche, Mathematics, and Natural Theology*, «International Studies in Philosophy», 20 (1988), pp. 11-25, in particular pp. 17-18; M. Priarolo, *Visioni divine. La teoria della conoscenza di Malebranche tra Agostino e Descartes*, Pisa: ETS, 2004, pp. 143-163.

45. See A. Robinet, *La philosophie malebranchiste des mathématiques*, «Revue

distinguishes the infinite by addition (the infinite of the consecutive addition of units or parts of units to a given number⁴⁶), the infinite of variation without limits (the possibility of conceiving an infinite number of shapes or of different types of the same shapes⁴⁷), the immeasurable⁴⁸ and the asymptotic⁴⁹. These various instances of infinity represent relationships between magnitudes that are found in the infinite regions of numbers and extension.

It is worth highlighting that the possibility of endless variations of shape, the possibility of reiterating the addition, as well as other arithmetical operations, assumes (from the Malebranchian perspective) that the actual infinite is positively implied in the ideas of numbers and of extension⁵⁰.

These theories of infinity would seem to emerge in a passage of *The Search after Truth* in which Malebranche notes that it is possible to increase or decrease the height of a triangle to infinity without varying the length of the base. He concludes that, in doing so, we can conceive of an infinite number of different kinds of the same

d'histoire des sciences et de leurs applications», 14 (1961), 3-4, pp. 205-254, in particular pp. 226-227.

46. Malebranche, *Dialogues on Metaphysics and on Religion*, cit., *Dialogue* 1, § 9, pp. 15-16; OC, XII-XIII, 44.

47. Id., *The Search after Truth*, cit., Book 3, Part 2, Chapter 4, p. 226; OC, I, 429.

48. « [...] no part of the diagonal of a square, be it a million times smaller than the smallest grain of dust, can equal exactly and without remainder this diagonal of a square and any one of its sides [nulle partie de la diagonale d'un carré, fût-elle un million de fois plus petite que le plus petit grain de poussière, ne peut mesurer exactement et sans reste cette diagonale d'un carré et quelqu'un de ses cotés]» (Id., *Dialogues on Metaphysics and on Religion*, cit., *Dialogue* 1, § 9, p. 16; OC, XII-XIII, 44-45).

49. «Tu vois clairement, que l'hyperbole et ses asymptotes et une infinité de lignes semblables, prolongées à l'infini, s'approchent toujours sans jamais se joindre: tu vois évidemment qu'on peut approcher à l'infini de la racine de 5, de 6, de 7, de 8, de 10, et d'une infinité de nombres semblables, sans pouvoir jamais la rencontrer, comment, je te prie, te modifieras-tu pour te représenter ces choses?» (Id., *Méditations chrétiennes et métaphysiques*, OC, vol. X, edited by H. Gouhier and A. Robinet, Paris: Vrin, 1959, *Méditation* 1, § 21, p. 17).

50. See P. Schrecker, *Malebranche et les mathématiques*, in R. Bayer (ed.), *Travaux du IX^e Congrès international de philosophie*. Études cartésiennes, Paris: Hermann, pp. 33-40, in particular p. 39.

shape⁵¹. In this regard, the Oratorian claims that the mind perceives («aperçoit») in some way («en quelque manière») this infinite number, although it can imagine only a small part thereof («quoi qu'on n'en puisse imaginer que très peu») and cannot have specific and distinct ideas of many triangles of different kinds but merely a general notion («idée générale») of an infinity of triangles of various types (and this is also true for all other polygons)⁵². Malebranche concludes, therefore, that the mind sees all these things («l'esprit voit donc toutes ces choses»); it has ideas about them and it is sure that these ideas will never be lacking in any artificial hypothesis in which it has an infinite number of centuries to examine a single shape; and if the mind does not perceive («n'aperçoit pas») these infinite shapes at a single glance («in an instant [tout d'un coup]»), in other words, it simply grasps the potential infinite, this happens as a result of its limitations («son étendue est très limitée»)⁵³. Nevertheless, that which comes first and is actual ontologically speaking is the infinite number of ideas: «It has, then, an infinite number of ideas – what am I saying – it has as many infinite numbers of ideas as there are different figures [...]»⁵⁴. For this reason, the act of listing various

51. Malebranche, *The Search after Truth*, cit., Book 3, Part 2, Chapter 4, p. 226 (OC, I, 429). See also the following passage from the tenth Elucidation: «The mind of man clearly conceives that there are, or can be, infinite numbers of intelligible triangles, tetragons, pentagons, and other such figures» (Id., *The Search after Truth*, cit., *Elucidations*, p. 614; OC, III, 130).

52. Id., *The Search after Truth*, cit., Book 3, Part 2, Chapter 4, pp. 226-227; OC, I, 429-430. In the additions to *Treatise on Nature and Grace*, Malebranche affirms that the properties of numbers are infinitely infinite: for example, as regards shapes, there may be an infinite number of triangles of different kinds because each of their sides can be lengthened or shortened to infinity (N. Malebranche *Traité de la nature et de la grâce*, OC, vol. V, edited by G. Dreyfus, Paris: Vrin, 1958, p. 80). See also Id., *Dialogues on Metaphysics and on Religion*, cit., *Dialogue 2*, § 4, p. 22 (OC, XII-XIII, 53): «For the idea of a circle in general or the essence of a circle represents or applies to an infinite number of circles. This idea contains that of the infinite. For to think of a circle in general is to perceive an infinity number of circles as a single circle».

53. Id., *The Search after Truth*, cit., Book 3, Part 2, Chapter 4, p. 227 (OC, I, 430).

54. Ibid. «Il a donc un nombre infini d'idées: que dis-je un nombre infini: il a autant de nombres infinis d'idées, qu'il y a de différentes figures [...]» (OC, I, 430).

shapes or various kinds of the same shape, and the notion of endless variation that allows us to conceive of virtual infinity, imply the positive and actual infinity of extension and of numbers. Indeed, as Malebranche writes immediately after the passage quoted above: «[...] consequently, since there is an infinite number of different figures, the mind must have an infinity of infinite number of ideas just to know the figures»⁵⁵.

If we ask ourselves from the knowing subject's epistemological point of view, how the passage from a limited number of analysed shapes to an infinity of shapes occurs, we find a possible answer in this passage: «But to mention only simple figures, it is certain that their number is infinite, and even if we fix upon only one, such as the ellipse, the mind undoubtedly conceives of an infinite number of different kinds of them when it conceives that one of its diameters may be infinitely lengthened while the other remains constant»⁵⁶. At the basis of the notion of an infinity of shapes of different kinds there is a logico-constructive notion, a concept which grasps and expresses a law or systematic principle of the transformation of a shape which produces different types thereof. The «*idée générale*» formula, on the one hand, expresses the fact that we conceive of an operation for structuring and modifying a given geometric object, that is to say, of the distance relationships which it forms and gives us specific information about. On the other hand, it shows that we grasp ideas not exhaustively, but in their general scope. In this way, we can conceive of an infinity representing the ontological background as the law of composition of an infinite number of shapes and as the conceptual instrument, thanks to which we may perceive the possibility and the effectiveness of this particular infinity. It is not possible to represent – due to the limitations of the imagination – the various types of ellipse or of triangle in their

55. Ibid. « [...] de sorte que puisqu'il y a un nombre infini de différentes figures, il faut pour connaître seulement les figures, que l'esprit ait une infinité de nombres infinis d'idées » (OC, I, 430).

56. Ibid., p. 226. « Mais pour ne parler que des simples figures, il est constant que le nombre en est infini: et même si on s'arrête à une seule comme l'ellipse, on ne peut douter que l'esprit n'en conçoive un nombre infini de différente espèce; lorsqu'il conçoit qu'un des diamètres peut s'allonger à l'infini, l'autre demeurant toujours le même » (OC, I, 429).

infinity, but once it has grasped the principle of generation-variation of these various types of object, the mind can conceive of an infinity of shapes that can be constructed and modified according to a given law. In this context, the infinite expresses the necessity of presuming that a fixed legality – of knowing and of being – is always in force, beyond any possible application of the mind to objects and to their relations. This principle of legality is latent in the general notion of the infinite number of different types of ellipse (or of triangle), which indicates that the entire range of ellipses (or of triangles) is given in their infinite variations. An infinite multiplicity, therefore, can be perceived as a unit (and is so only as the result of a law), and as a general idea, that is to say, a universal notion which does not represent a certain number of bodies but expresses a virtuality and, above all, the law itself which connects all the elements that make up the shape to be constructed and modified. From this perspective, the actual infinite is still the background that allows us to conceive of the generation-variation of the same shape as well as different variations of the same shape as a process that goes to infinity. For example, given the idea of the ellipse, the concept of the infinite growth of the diameter, which is effected while keeping everything else unchanged, presupposes the notion of an infinite straight line, which is an example of actual infinity in geometry, in the form of an entirely given magnitude with infinite ongoing measurement.

We also find the idea of positive actual infinity in the *Dialogues on Metaphysics and on Religion*. The operation of addition, multiplication, division etc. of finite ideas (i.e. of units or finite segments) is not the source of the authentic infinity. Every operation of this type presupposes the infinity of ideas, of intelligible extension or of ideal numbers⁵⁷. This is a dimension which cannot

57. On this topic, M. Gueroult (*Malebranche. I La vision en Dieu*, Paris: Aubier-Montaigne, p. 38) writes: « [...] toute Idée est infinie: l'Idée du cercle, c'est l'infinité des cercles possibles en un, c'est le cercle infini ». See also this remark of Jolley on the Gueroult thesis according to which the infinity of ideas should be considered as the extension of concepts in possible worlds: «There are occasions when Malebranche seems to have such a claim in mind, but the bulk of evidence seems to favour an intensional interpretation; ideas – geometrical concepts, for instance – are infinitely complex» (N. Jolley, *The Light of the Soul: Theories of Ideas in Leibniz, Malebranche, and Descartes*, Oxford: Oxford University Press,

be reduced to our finite perceptions but which can be perceived by our intellect. By contemplating ideas in their ontological status and in their relationships, the mind can grasp the various infinities of mathematics (series of whole numbers, the infinity of triangles, the infinite approaching of a parabola to its asymptotes etc.) and conceive of the infinite as an extensional and intensional space of ideas themselves, to the extent that it is an ongoing magnitude of infinite measurement (or a completed whole including infinite elements) and as a law which enables us to conceive of the possible types of infinity that emerge within the field of mathematics⁵⁸.

4. Relationships between Infinities

It should also be remembered that, as far back as 1683, in the first edition of the *Christian and Metaphysical Meditations*, Malebranche grasps the intuition on which the infinitesimal calculation is based, i.e the idea of finite relationships between infinities, which is later made explicit (as we have already seen) in the 1712 edition of *The Search after Truth*:

But you should know that the same relationships exist between infinities and between finites and that all infinities are by no means equal. There are double and triple infinities, some a hundred times greater than others; and whilst the smallest of infinities is infinitely bigger than any finite magnitude, no matter how large you imagine it to be, and there can thus be no finite relationship between the finite and the infinite that can be understood by the human mind, you can, nevertheless, measure the relationships of magnitude that exist between infinities exactly [...] When God comes

1998, p. 76). On the infinity of ideas – in an extrapolative and interpolative sense –, see M. E. Hobart, *Science and Religion in the Thought of Nicolas Malebranche*, Chapel Hill: University of North Carolina Press, 1982, p. 72.

⁵⁸ It is the infinite conceived as the horizon of intelligibility: «It is likewise true that the mind sees the infinite as much in the small as in the great, not through the repeated division or multiplication of its finite ideas, but through the infinity itself which it discovers in its ideas and belongs to them [mais par l'infinité même qu'il découvre dans ses idées et qui leur appartient]; ideas which at once teach it that on the one hand there is no unity, and on the other hand there are no limits to intelligible extension» (Malebranche, *Dialogues on Metaphysics and on Religion*, cit., *Dialogue* I, § 9, p. 16; OC, XII-XIII, 45).

up with an infinity of tens and an infinity of units, he has conceived one infinite which is ten times greater than another [...] So you can clearly see that infinities can have finite relationships between each other. They can even have infinite relationships between each other, for the mind can conceive of some infinities that are infinitely larger than others⁵⁹.

In this passage, we find a reference to finite relationships between infinities, which are at the basis of the infinitesimal calculation. Indeed, the infinitesimal method does not consider that which is infinitely small in itself, but merely finite relationships between evanescent magnitudes, that is to say those that tend towards the infinitely small⁶⁰. This idea combines perfectly with the Malebranchian conception, according to which science is interested exclusively in the relationship between magnitudes and not in the magnitude in its essence. The very orientation of the infinitesimal method is, then, compatible with the theory of truth as an intelligible and real relationship⁶¹: intelligible, in that it is accessible to pure

59. «Mais tu dois savoir qu'il y a les mêmes rapports entre les infinis qu'entre les finis, et que tous les infinis ne sont pas égaux. Il y a des infinis doubles, triples, centuples les uns des autres: et quoique le plus petit des infinis soit infiniment plus grand qu'aucune grandeur finie, quelque grande qu'on la veuille imaginer, et qu'ainsi entre le fini et l'infini, il ne puisse y avoir de rapport fini, et que l'esprit humain puisse comprendre, néanmoins tu peux mesurer exactement les rapports de grandeur que les infinis ont entre eux. [...] Lorsque Dieu conçoit une infinité de dizaines et une infinité d'unités, il conçoit un infini dix fois plus grand qu'un autre. [...] Ainsi tu vois clairement que les infinis peuvent avoir entre eux des rapports finis. Ils peuvent même avoir entre eux des rapports infinis, car l'esprit se représente des infinis infiniment plus grands les uns que les autres» (Id., *MCM, Méditation 4*, § 11, OC, X, 40). On the relationships between infinities, see also Id., *The Search after Truth*, cit., Book 1, Chapter 6, § 1, pp. 27-28; OC, I, 86. In these passages Malebranche underlines that we do not have an idea of infinities in themselves, but we know them only through their relationships. See a commentary to this question: P. Schrecker, *On the Infinite Number of Infinite Orders*, in M. F. Ashley Montagu (ed.), *Studies and Essays in the History of Science and Learning*, New York: Henry Schuman, 1946, pp. 361-373, in particular pp. 361-362, 372.

60. See D. Hilbert, *Über das Unendliche*, «Mathematische Annalen», 95 (1925), pp. 161-190, in particular p. 161.

61. See N. Malebranche, *MCM, Méditation 4*, § 4, OC, X, 37: «Ainsi les vérités ne sont que des rapports: mais des rapports réels et intelligibles». On this point, see D. Moreau, *Vérité et 'rapport entre les idées': remarques sur l'univoc-*

intellection, without the help of the senses and the imagination; real, because the clear, distinct knowledge that characterizes these relationships taps into something that lies outside of us (within the order of ideas, the quantitative order of things). Consequently, even if the infinitesimal calculation makes use, as do other mathematical methods, of artificial symbols (which are not, however, chosen at random), that which the calculation expresses is by no means make-believe: the relationships, or combinations of relationships (consider, for example, the parabola, which is a relationship of sets of spatial relationships) depict relationships between ideas of ontological scope, each of which is represented by a word or a sign (the parabola, the transcendental number ϖ , the differential dx). Malebranche seems to confirm, somewhat forcefully, that which Leibniz wrote in the 2 February 1702 letter to Varignon, that is that the science of the infinite cannot be reduced to pure make-believe⁶². Leibniz seems to limit the metaphysical scope of the infinitely small, preserving, in every case, the possibility of making use of it as an ideal notion⁶³; Malebranche, on the other hand, by virtue of his

ité de la connaissance entre l'homme et Dieu chez Malebranche, «L'Enseignement philosophique», 2 (1998), pp. 7-19.

62. «De plus comme les racines imaginaires ont leur f u n d a m e n t u m i n r e [...] on peut dire de même, que les infinis et infiniment petits sont tellement fondés que tout se fait dans la Géométrie, et même, dans la nature, comme si c'étaient des parfaites réalités, témoins non seulement notre Analyse Géométrique des Transcendantes, mais encore ma loi de la continuité, en vertu de laquelle il est permis de considérer le repos comme un mouvement infiniment petit (c'est à dire comme équivalent à une espèce de son contradictoire), et la coïncidence comme une distance infiniment petite, et l'égalité comme la dernière des inégalités» (G. W. von Leibniz, *Mathematische Schriften*, edited by C. I. Gerhardt, vol. IV, Hildesheim: Georg Olms, 1962, p. 93). We have modernized the spelling.

63. «D'où il s'ensuit, que si quelqu'un n'admet point des lignes infinies et infiniment petites à la rigueur métaphysique et comme des choses réelles, il peut s'en servir surement comme des notions idéales qui abrègent le raisonnement, semblables à ce qu'on appelle racines imaginaires dans l'analyse commune (comme par exemple $\sqrt{-2}$), lesquelles toutes imaginaires qu'on les appelle, ne laissent pas d'être utiles, et même nécessaires à exprimer analytiquement des grandeurs réelles [...]» (ibid., p. 92). See the 14 April 1702 letter to Varignon: «[...] les infinis et infiniment petits pourraient être pris pour des fictions, semblables aux racines imaginaires, sans que cela dût faire tort à notre calcul, ces fictions étant utiles et fondées en réalité» (ibid., p. 98). We have modernized the spelling.

conception of ideas as metaphysical entities and of the theory of the truth as a real, intelligible relationship between ideas, seems to legitimize an ontological basis for the infinitesimal calculation rather more decisively than Leibniz does⁶⁴. In brief, it seems that, while maintaining the distinction between an ontological plane and an epistemological one, Malebranche wishes to avoid fragmenting and separating the various fields to which intelligence can be applied. He attempts, rather, to conceive of a theoretical structure that can connect these two spheres, placing the reason of coherence and the validity of the second within the first. In other words, although we may be familiar with the relationship that exists between two objects (for example, the relationship between two infinities) without understanding the objects themselves and without thematizing the ontological horizon that they presuppose, this must not blind us to the fact that, in Malebranche, the epistemological sphere is rooted in the ontology on which it is based. He requires a fundamental metaphysical architecture in which to place mathematics without sacrificing its specificity or its technical aspects.

Moreover, when the Oratorian writes that the same relationships exist between infinite magnitudes and finite magnitudes, he would seem to be conjecturing the equality of the infinite and the finite in the field of mathematical relationships. In a nutshell, he is attempting to trace relationships belonging to finite sets, as well as those that may be placed among infinite sets and traced back to a single relationship typology. Malebranche thinks, therefore, that between infinite pluralities there are relationships of equality or inequality just as there are in the finite, and he thereby recognizes the same logical status for the mathematical infinite and the finite. On the other hand, he traces the infinitesimal and the finite back to the same logical horizon when he writes – as we have seen – that an infinitely small perception of the infinite is equivalent, in terms of

64. As Mariangela Priarolo observed, if Leibniz distinguishes between an ontological plane of mathematics and a procedural plane, Malebranche does not make this distinction: it is significant that it is in the apologetic pages of the *Christian and Metaphysics Meditations* that Malebranche refers to the plurality of infinities and to the finite and quantifiable relationships between infinities (Priarolo, *Visioni divine*, cit., p. 155).

the amount of thinking involved, to a perfect perception of a finite entity⁶⁵. When, then, we meet, in the case of infinite magnitudes, relationships and proofs that, while they can definitely be conceived of or symbolically expressed, cannot be fully understood by our mind⁶⁶, we ascertain an excess of the internal logic of the infinite with regard to our epistemic instruments and we are forced to remember that we are familiar only with relationships and not with magnitudes in themselves. After all, the notion of relationship occupies a central position in Malebranche's philosophy of mathematics. It is by starting with the infinite whole of relationships and the laws that govern them that we can identify finite relationships among finite magnitudes, and finite relationships among infinities, of which the mind can grasp the mathematical significance. In other words, as Hobart noted, we comprehend the finite relations between infinities, but only conceive that particular operations and functions lead as a matter of course to infinity⁶⁷. As far as infinite relationships among infinities are concerned, the Oratorian, aware of how particular they are, had a speculative intuition but no mathematical idea. The mind can conceive of infinities, each one greater than the other, to the extent to which it is a participant in infinite Reason, which forms the ultimate ontological landscape in which all types of relationship are found, and which we gradually become familiar with without ever exhausting the epistemic fecundity of reason itself⁶⁸. Among these relationships there are also those which will never be perfectly thematized or represented mathematically due to the structural limits of the finite mind.

65. Malebranche, *The Search after Truth*, cit., Book 4, Chapter II, § 3, p. 321; OC, II, 101.

66. We can know with evidence that $\sqrt{8}$ is greater than 2 because we can approximately know the true magnitude of $\sqrt{8}$, but we cannot know how much greater than 2 is the square root of 8 to the extent that we do not know its true magnitude, and this is because the square root of 8 is a number consisting of endless ciphers (ibid., Book 6, Part 2, Chapter 7, p. 497; OC, II, 398).

67. Hobart, *Science and Religion in the Thought of Nicolas Malebranche*, cit., p. 130.

68. «In a word, the reason man consults must be infinite because it cannot be exhausted, and because it always has an answer for whatever is asked of it» (Malebranche, *The Search after Truth*, cit., *Elucidation 10*, p. 614; OC, III, 131).