

The Hypercategorematic Infinite

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Abstract

This paper aims to show that a proper understanding of what Leibniz meant by “hypercategorematic infinite” sheds light on some fundamental aspects of his conceptions of God and of the relationship between God and created simple substances or monads. After revisiting Leibniz’s distinction between (i) syncategorematic infinite, (ii) categorematic infinite, and (iii) actual infinite, I examine his claim that the hypercategorematic infinite is “God himself” in conjunction with other key statements about God. I then discuss the issue of whether the hypercategorematic infinite is a “whole”, comparing the four kinds of infinite outlined by Leibniz in 1706 with the three degrees of infinity outlined in 1676. In the last section, I discuss the relationship between the hypercategorematic infinite and created simple substances. I conclude that, for Leibniz, only a being beyond all determinations but eminently embracing all determinations can enjoy the pure positivity of what is truly infinite while constituting the ontological grounding of all things.

In a striking passage of 1706 meant for his Jesuit correspondent, Bartholomew Des Bosses, Leibniz writes:

There is a syncategorematic infinite or passive power having parts, namely, the possibility of further progress by dividing, multiplying, subtracting, or adding. In addition, there is a *hypercategorematic infinite*, or potestative infinite, and active power having, as it were, parts eminently but not formally or actually. This infinite is God himself. But there is not a *categorematic infinite* or one actually having infinite parts formally.

There is also an actual infinite in the sense of a distributive whole but not a collective one [per modum totius distributivi non collectivi]. Thus, something can be stated of all numbers, though not collectively. In this way it can be said that for every even number there is a corresponding odd number, and vice versa; but it is not therefore accurately said that there is an equal multitude of even and odd numbers.¹

This text has attracted significant attention in recent years, especially in the context of the discussion on Leibniz’s theory of the infinite sparked by seminal papers by Laurence Carlin, Gregory Brown, and Richard Arthur published in the *Leibniz Review*.² The debate has broadened to other important contributions while retaining a focus on Leibniz’s notions of syncategorematic infinite and actual infinite, and on

their key implications for Leibniz's conception of bodies, composite substances, and more, generally, the physical world.³ Little attention has been devoted, however, to the intriguing notion of "hypercategorematic infinite" introduced by Leibniz in this passage.⁴ In this paper, after revisiting Leibniz's distinction between (i) syncategorematic infinite, (ii) categorematic infinite, and (iii) actual infinite, I try to unpack the much more unusual notion of (iv) hypercategorematic infinite. My aim is to show that a proper understanding of what Leibniz meant by the latter notion sheds light on some fundamental aspects of his conceptions of God and of the relationship between God and created simple substances or monads.

1. Four kinds of infinite

In the passage quoted above, Leibniz outlines four kinds of infinite: the syncategorematic infinite, the categorematic infinite, the hypercategorematic infinite, and the actual infinite. Of these four kinds of infinite, one (the categorematic infinite) is rejected.

The notions of 'syncategorematic infinite' and of 'categorematic infinite' track a well-established distinction in scholastic philosophy and in medieval logic, based on the grammatical distinction between 'categorematic' terms and 'syncategorematic' terms.⁵ 'Categorematic' terms, or *categorematica*, are terms such as nouns and adjectives. They fall under Aristotle's categories and have a definite independent signification (e.g. 'man', 'white'). 'Syncategorematic' terms, or *syncategorematica*, are terms which are not classifiable into any category in so far as they do not have any independent signification. As indicated by the prefix 'syn' (with / together), they acquire a signification when used in a proposition together with *categorematica*. Examples of 'syncategorematic' terms (or *consignificantia*, 'co-significative' terms) are 'and', 'or'.⁶

Treatises on *Syncategorematica* flourished especially in the thirteenth century.⁷ Authors distinguished not only between categorematic and syncategorematic terms, but also between a categorematic and a syncategorematic use of the same term. For instance, Thomas Aquinas, commenting on the use of the term "solus" ("alone") in reference to God, notes:

This term 'alone' can be taken as a categorematic term, or as a syncategorematic term. A word is said to be categorematic when it ascribes absolutely the meaning of the signified thing to a given suppositum [absolute ponit rem significatam circa aliquod suppositum]; as, for instance, 'white' to man, as when we say a 'white man.' If the term 'alone' is taken in this sense, it cannot in any way be joined to any term in God; for it would mean solitude in the term to which it is joined; and it would follow that God was solitary ... A word is said

to be syncategorematic when it attaches the quantifying of the predicate to the subject [importat ordinem praedicati ad subjectum]; as this expression ‘every’ [omnis] or ‘no’ [nullus]; and likewise the term ‘alone,’ as excluding every other suppositum from the predicate. Thus, when we say, ‘Socrates alone writes,’ we do not mean that Socrates is solitary, but that he has no companion in writing, though many others may be with him.⁸

Notably, as remarked by William of Sherwood, ‘whole’ (*totum*), can have a categorematic and a syncategorematic use: “sometimes it indicates (*dicit*) the wholeness of something considered as a real thing, in which case it is equipollent to ‘entire’ (*integrum*) and is a categorematic word. At other times it indicates the wholeness of something in respect of a predicate and is a syncategorematic word, in which case, as one says, it has the same strength as ‘each and every part’ and is a universal sign.”⁹

The basic idea seems to be that *categoremata* or, more precisely, words used categorematically, signify determinate things and ascribe absolutely the meaning of the signified thing (*res*) to something, whereas *syncategoremata*, or words used syncategorematically, do not, strictly speaking, signify any determinate thing. Rather, they perform some logical function and have a formal role, as opposed to the material role performed by *categoremata* in propositions. For instance, we use *totum* categorematically when we say that “the world is a whole”; we use *totum* syncategorematically when we say, distributively, that “the whole world (that is, each and every part of the world) is beautiful”.

Applied to the infinite, the distinction yields the notions of syncategorematic and categorematic infinite. By the seventeenth century, the standard scholastic doctrine read the Aristotelian contrast between potential and actual infinite in terms of the distinction between syncategorematic and categorematic infinite.¹⁰ As Aristotle accepted a potential infinite but rejected an actual infinite, so the standard scholastic doctrine affirmed the possibility of the infinite taken syncategorematically but rejected the possibility of a categorematic infinite.¹¹ That is to say, according to the Scholastics, it is possible to have a potential infinite by indefinitely dividing or adding. This division and addition will not yield, however, a genuine infinite but rather an ‘indefinite’. At any time, there will be some finite quantity, although it is possible to add or divide further. Moreover, as noted by one of the chief reference works of the time, the *Lexicon Philosophicum* of Goclenius, the infinite taken syncategorematically, or potentially, is a mental abstraction.¹² On the other hand, a categorematic infinite, that is, an infinite “actually having infinite parts formally” (as Leibniz puts it), is rejected.

In the passage of 1706 for Des Bosses, Leibniz seems to join the mainstream scholastic tradition in presenting the syncategorematic infinite as a potential infinite,

namely “the *possibility of further progress* by dividing, multiplying, subtracting, or adding” (my emphasis). More obscure is his characterization of it as a “passive power having parts”. As far as I can see, what is meant is once again potentiality, namely, the capacity of having parts if acted upon by some active power which divides what is originally undivided. In other words, in this potential, syncategorematic infinite, the entity to be divided is prior to the parts into which it can be divided, as an ideal line which can be indefinitely divided.¹³ This kind of infinite concerns the abstract, ideal entities treated by mathematics.¹⁴ It can be ordered by number and measure which (in so far as they are some *determinate* number and measure) are always finite. As Leibniz writes to Des Bosses on 11 March 1706: “It is of the essence of number, of line and of any whole whatsoever to be bounded,” and “an infinite aggregate is in fact not one whole”. One can, however, speak of, and operate with an infinite aggregate *as if* it was one whole, as long as it remains clear that we are dealing with a merely verbal unity (“nisi verbalem habere unitatem”). “It is therefore a form of shorthand,” Leibniz continues, “when we say ‘one’ where there are more things than can be comprehended in one specifiable whole, and when we describe as a magnitude something that does not have its properties.”¹⁵ Similarly, infinitesimals are for Leibniz useful “fictions of the mind, due to abbreviated ways of speaking, which are suitable for calculation.”¹⁶

Hence Leibniz’s rejection of the notion of infinite number, of the greatest number, or of number greater than any finite number.¹⁷ In brief: hence his rejection of a categorematic infinite.¹⁸ As broadly agreed in recent literature on the topic, the categorematic infinite does in fact commit to the claim that there is a *number* greater than any other number, namely, to the claim that there is an infinite *number* of parts y greater than any finite number x . On the contrary, the syncategorematic infinite does not commit to such a claim since it merely states that for any (finite) number x , there is a (finite) number y greater than x .¹⁹ In Leibniz’s words to Des Bosses (11 March 1706; DesB 32-33): “accurately speaking, in place of ‘infinite number’, we should say that more things are present than can be expressed by any number; or, in place of ‘infinite straight line,’ that a line is extended beyond any specifiable magnitude, so that there always remains a longer and longer line.”

However, so far Leibniz is simply aligning himself with fairly standard scholastic views. In the letter by Des Bosses which prompted these clarifications, his Jesuit friend had in fact noted that the crux of the matter is “whether it is necessary to admit in nature an actual infinity”. As long as infinity is not taken rigorously, as Leibniz himself grants in the case of the calculus, the infinite “can be confined to the syncategorematic” – in other words, we are still looking at the traditional potential infinite, rather than a genuine, actual infinite. What prevents us, concludes Des Bosses, from applying the same sort of non-rigorous infinity “to a multitude

of substances”, that is, to the real (as opposed to the ideal) world?²⁰

It is at this point that Leibniz self-consciously moves away from the traditional line and introduces a third kind of infinite, which he expressly distinguishes from the (traditional) syncategorematic, potential infinite described in the same text just a few lines above:

There is also an actual infinite in the sense of a distributive whole but not a collective one [per modum totius distributivi non collectivi]. Thus, something can be stated of all numbers, though not collectively. In this way it can be said that for every even number there is a corresponding odd number, and vice versa; but it is not therefore accurately said that there is an equal multitude of even and odd numbers. (DesB 52-53; GP II, 314-315)

Leibniz uses here mathematics to illustrate his claim that the actual infinite he is affirming must be taken in a distributive and not in a collective sense. It seems clear to me, however, that he is offering a mathematical *analogy*, as opposed to maintaining that the *actual* infinite (even if thought of syncategorematically) applies to mathematical, abstract entities, and to the ideal, mathematical continuum.²¹ As he writes to Des Bosses on 24 January 1713 (DesB 306-307): “a mathematical continuum consists in pure possibility, like numbers”.²² More generally, Leibniz is quite consistent in pointing out that the actual infinite he is endorsing concerns the ‘real’ as opposed to the ‘ideal’ order. In the letter of 11 March 1706 to Des Bosses in which he replies to his friend’s objection, after stating that infinitesimals are fictions and that “it is of the essence of number, of line and of any whole whatsoever to be bounded”, he explicitly stresses that in moving his attention to the actual infinite, he is shifting from the ideal to the real order: “To pass now from the ideas of geometry to the realities of physics, I hold that matter is actually fragmented into parts smaller than any given, or that there is no part of matter that is not actually subdivided into others exercising different motions.” (DesB 33). In 1695, in his *Remarques sur les Objections de M. Foucher*, Leibniz famously warns that it is “the confusion of the ideal and the actual which has muddled everything, and made a labyrinth of ‘the composition of the continuum’”. He goes on to explain that “as regards the ideal order, it is by the subdivision of a half that we arrive at a quarter; and the same applies to the line, where the whole is prior to the part, because this part is merely possible and ideal. But in real things, where there are only actual divisions, the whole is only a result or assemblage, like a flock of sheep.”²³ Similar explicit statements of the actual infinity of the physical (or ‘real’, ‘actual’) world are well known:

Created things are actually infinite. For any body whatever is actually divided into several parts, since any body whatever is acted upon by other bodies. And any part whatever of a body is a body, by the very definition of body. So bodies

are actually infinite, i.e. more bodies can be found than there are unities in any given number. (*Actu infinitae sunt creaturae*, summer 1678-winter 1680/81; A VI, 4, 1393; Ar 234-235)

I am so much in favour of the actual infinite [l'infini actuel], that, instead of admitting that nature abhors it, as is commonly said, I hold that nature affects it everywhere, in order the better to mark the perfections of its author. So I believe that there is no part of matter which is not, I do not say divisible, but actually divided; and consequently the least particle must be regarded as a world full of an infinity of creatures. (Leibniz to Simon Foucher, c. 1693; GP I, 416)

[i]t is perfectly correct to say that there is an infinity of things [une infinité de choses], i.e. that there are always more of them than one can specify. But it is easy to demonstrate that there is no infinite number [nombre infini], nor any infinite line or other infinite quantity [quantité infinie], if these are taken to be genuine wholes [veritables Touts]. The Scholastics were taking that view, or should have been doing so, when they allowed a 'syncategorematic' infinite, as they called it, but not a 'categorematic' one. (NE 157)

In sum, although Leibniz thinks of the actual infinite *syncategorematically*, he firmly distinguishes it from the traditional notion for which he reserves the (also traditional) name of syncategorematic infinite.²⁴ Although mathematical analogies are very useful in illustrating his point, the infinite which applies to ideal, mathematical entities is potential and, strictly speaking, 'indefinite' or 'indeterminate' rather than genuinely infinite. The key difference between the potential and the actual infinite is that the actual infinite which applies to the physical world cannot be "enumerated"²⁵ since any enumeration can only be finite. Therefore, enumeration can only yield a traditional syncategorematic potential infinite. On the other hand, both potential (mathematical) infinite and actual (physical) infinite, are to be conceived distributively and not collectively. That is, in William of Sherwood's phrase, the term *totum* must be taken syncategorematically, namely, as having "the same strength as 'each and every part'", and not as attributing its absolute, categorematic meaning of "whole" to the aggregate of which it is predicated.²⁶

There is for Leibniz, however, a fourth kind of infinite: the hypercategorematic infinite, that is, "God himself". It is to this fourth infinite that we now turn.

2. God as hypercategorematic infinite

It should be noted at the outset that, unlike the well-established distinction between ‘categorematic’ and ‘syncategorematic’ infinite, neither the term ‘hypercategorematic’ nor, a fortiori, its application to the infinite, was common currency.²⁷ In introducing this unusual notion, Leibniz is breaking new ground. Although this expression appears to occur only in the 1706 passage intended for Des Bosses, once unpacked and read in conjunction with other statements about God, it sheds light on some fundamental features of Leibniz’s conception of God and his relation to creatures.

Let us go back to the key passage of 1706:

In addition, there is a *hypercategorematic infinite*, or potestative infinite, and active power having, as it were, parts eminently but not formally or actually.

This infinite is God himself. (DesB 52-53; GP II, 314-315)

It seems clear that by *hyper-categorematic* Leibniz means that which is *beyond* all *categorematica*, namely, that which is beyond any *determinate thing* falling under the Aristotelian categories and signified by categorematic terms. In other words, *hyper-categorematic* is that which is beyond any determination. It seems to me that the metaphysical mould Leibniz is using is that of the Plotinian One.

For Plotinus, the One, in its absolute simplicity and unity, is *beyond-Being*, that is, beyond any determination and differentiation. Being, or the intelligible and ordered multiplicity of the Forms, is generated by Intellect in its attempt to know the One (or, as one could also say, by the One as object of Intellect). The product of this first movement of differentiation within the Intelligible realm is not, however, immediately Intellect but an intelligible Matter, that is, the Indefinite, Indeterminate, Undelimited, which needs to be determined by contemplating (or returning to) the One.²⁸ The Forms together constitute a kind of image of the One, and at the same time constitute the essential activity of Intellect. The key idea appears to be that the One, while beyond any determination, may be conceived of (albeit inadequately) as embracing all possible determinations. On the other hand, the lack of determination of matter is the poorest of all states since matter *is not* any specific being.

In a note of 1695 to a series of extracts from William Twisse, *Dissertatio de Scientia Media* (Arnhem 1639), Leibniz strikes a remarkably Neoplatonic chord in describing the divine intellect as representatively grasping what in the divine essence is contained eminently.²⁹ In so doing, the divine intellect represents also the imperfections and limitations of things, whereas the divine essence, in its absolute simplicity, is not tainted (as it were) even by the creaturely imperfection represented by the intellect in its thinking the essences of individual things. What is driving this doctrine seems to be one of the deepest insights of Neoplatonism,

namely, that only what is absolutely unitary and simple can be perfect and purely positive, since any determination is a negation, any determinate thing is a negation of its being something else, any differentiation implies the denial of some other perfection:³⁰

In the divine essence, things are contained eminently; in the intellect, they are contained somewhat more widely [In essentia divina res eminenter, in intellectu aliquid amplius], indeed representatively, because in the divine intellect are represented also the imperfections or limitations of things. ... Hence it is manifest that all things are in God [Hinc apparet quod omnia in Deo]. Indeed a creature originated from whatever perfection can constitute something complete while excluding another perfection. Complete perfection is that which involves all that can coexist. (Grua 355-356)

Some discussion of the notion of being *eminently* in God and the related tenet that all things are in God (“omnia in Deo”) is needed at this point. The latter doctrine could claim a filiation from no less than St Paul who famously stated in Romans 11:36 that “in ipso sunt omnia.”³¹ Not surprising, this Pauline doctrine became a locus classicus of theological discussion as Church Fathers and Scholastics alike tried to determine its correct interpretation. How easily one could read Paul as embracing pantheism is in fact shown by Spinoza himself who writes in one of his letters to Oldenburg (copied by Leibniz): “All things [Omnia], I say, are in God [in Deo esse], and move in God, I affirm with Paul”.³²

A first step is to investigate the different ways in which something can be in something else. The standard scholastic doctrine distinguished between *formaliter* (‘formally’), *virtualiter* (‘virtually’), and *eminenter* (‘eminently’). Something is contained in something *formaliter* when it is actually present in its proper form and according to its own nature (*quoad rationem suam formalem*), e.g. as “warmth is contained in fire, soul in a human being”. Something is contained *virtualiter* when its presence is merely potential, e.g. as a tree is contained in a seed or, more generally, an effect is contained in its cause.³³ Something is contained in something else *eminenter* “when in one most simple and superior form it supplies not only the perfection of the thing which is said to be contained but also other [perfections]; and surpasses not only all the effects which the contained thing can produce, but also other [effects]: as the rational soul is said to contain eminently the vegetative and the sensitive soul.”³⁴ In turn, something can be in something else *formaliter eminenter*, that is, properly and in itself but in a superior form, or *eminenter virtualiter*, that is, in a superior form but not according to a certain specific mode of being.

Assuming God is the *Ens Perfectissimum*, a second step is to establish how all perfections (that is, roughly, all purely positive qualities)³⁵ are in God. A standard

summary of Aquinas's views on the matter is to say that all perfections considered simpliciter and absolutely are found in God *formaliter eminenter*. A third step is to consider whether and how the perfections of creatures can be said to be in God. Creaturely perfections are perfections *secundum quid*, that is, limited perfections relative only to a certain kind and hence necessarily implying some imperfection or negation of further perfection. These limited perfections can be said to be in God only *eminenter virtualiter* and not *formaliter eminenter*.³⁶ In brief, in scholastic language, one could say that the properties of all things are in God *formaliter eminenter* if considered absolutely and simpliciter as perfections; but are in God *eminenter virtualiter* if considered *secundum quid*. These distinctions provided scholastic philosophy with the tools for dealing with the claim that all things are in God without sliding into pantheism. All things are in God, not in the sense that God is a lion, a stone, and so on, but in the sense that in God are found *eminenter virtualiter* all the positive qualities or 'perfections' of creatures.³⁷

In the passage of 1706 for Des Bosses, Leibniz explicitly contrasts having parts "eminently" with having parts "formally" or "actually". The hypercategorematic infinite is not only undivided but absolutely indivisible. However, it can be conceived as "habens quasi partes, eminenter, non formaliter seu actu." To apply the full scholastic distinction, the hypercategorematic infinite contains *eminenter virtualiter* the full richness of all the multiplicity of things without being in any way tainted by the imperfection brought about by divisibility and parthood. An absolute lack of composition which is nevertheless compatible with having parts *eminenti ratione* seems to be for Leibniz the hallmark of "real" or genuine infinity in its full metaphysical rigour. As Leibniz writes in a letter of 7 June 1698 to Johann Bernoulli: "the real infinite is perhaps the absolute itself, which is not composed of parts, but comprehends having parts eminently [eminenti ratione] and as though perfectly" (GM III/2, 500). Likewise, he states in the *New Essays* (Book II, Ch. 17, § 1; A VI, 6, 157): "Rigorously speaking, the true infinite is only in *the absolute* which is prior to all composition, and is not formed through the additions of parts. ... And the true infinite is not a *modification*, it is the absolute; on the contrary, as soon as there is modification, there is limitation or something finite is formed [dès qu'on modifie, on se borne ou forme un fini]."

Let us focus for a moment on the meaning of 'absolute' employed by Leibniz in these passages. Being absolute is specifically linked here to being "prior to all composition." The thought behind this appears to be that any composition or any constituent imply dependence from these constituents. Parts or constituents are 'conditions' of that which they constitute. Hence nothing which is *ab-solutus* (free from any bound or any condition) can be composed of parts. This lack of parts, however, is different from the way in which in the syncategorematic, potential in-

finite an ideal entity is logically prior to its parts.³⁸ As we read above, an ideal line is thought of as originally undivided; its division is potential. This lack of division seems to be analogous to the lack of determination of Plotinian matter, that is, the poorest of all states. Similarly, although (scholastic) primary matter considered per se as “in a state of potentiality towards all forms [in potentia ad omnes formas]” can be said to be infinite, it has merely mental existence since matter without any determination is a mere abstraction.³⁹ In sharp contrast, it appears to be important for Leibniz to stress that the being beyond every determination or every division of the hyper-categorematic infinite contains eminently the richness of *all* determinations. The Plotinian One looms large. The process of determination or ‘partition’ brought about by the divine intellect thinking determinate individual essences, manifests the hyper-categorematic infinite as the ultimate ground of all beings.

Moreover, in the passage quoted above from the *New Essays*, Leibniz not only distinguishes genuine infinity from the non-rigorous, syncategorematic, potential infinity “formed through the additions of parts”.⁴⁰ He also gives us some clue of how he thinks of the derivation of “finite” things from the “true infinite” or “absolute”. The true infinite “is not a modification” – by which, I take it, Leibniz means to say that the true infinite is what is metaphysically primary. Metaphysically derivative things (namely, “finite” things) are modifications of what is metaphysically primary through a process of “limitation” (“dès qu’on modifie, on se borne ou forme un fini”). Other texts indicate that Leibniz thinks of this process of limitation as an *addition*. Prima facie this may be puzzling since limited perfections could be thought of as perfections resulting from “taking away” or subtracting from a greater perfection. Leibniz tells us, however, that limiting is *adding* a limit: “the absolute is prior to the limited; and so is the unbounded prior to that which has a bound, since a bound [terminus] is a kind of addition.”⁴¹ Once again, a Neoplatonic framework may help us understand this way of thinking: finite things result from the *addition* of a determination (being this or that thing; having this or that degree of this or that quality). Any ‘added’ determination, however, is of course also a limit or a negation. In a text of April 1676, belonging to the collection known as *De Summa Rerum*, Leibniz offers a striking understanding of “absolute” as that which lacks any “determining addition”: “to which existence is attributed absolutely, that is, without a determining addition [sine additione determinante]”. (A VI, 3, 520). This leads us to a family of senses in which “absolute” means, roughly, “unqualified”. More specifically, as noted by R. M. Adams, a “determining addition” might be a condition, hence suggesting an understanding of “absolute” as “unconditioned”; or might be a limit, hence suggesting an understanding of “absolute” as “unlimited”.⁴²

Interestingly, in his *Notes on Twisse*, Leibniz characterizes the representative activity of the divine intellect as somewhat adding (“aliquid amplius”) to the

purely eminent presence of all things in the divine essence, in so far as the intellect represents also what is not formally present in the divine essence, namely the imperfection of things.⁴³ At the same time, creatures originate from whatever perfection can constitute something complete while excluding or denying some other perfection. A conception of the divine essence as hyper-categorematic, and its distinction from the divine intellect, could be seen as an attempt to address the problem of how the divine nature can preserve, as it were, its pure positivity while embracing what necessarily implies negation and limitation.⁴⁴

In sum, to the meaning of “absolute” as unconditioned due to its lack of any constitutive parts, should be associated the companion (and perhaps even more pervasive) meaning of “absolute” as unlimited.⁴⁵ Both meanings fall under the broader umbrella of being “unqualified” or, to use a more directly Neoplatonic notion, being beyond all determinations.

Going back to the passage for Des Bosses of 1706, the hypercategorematic infinite is further characterized as “potestative infinite”, and “active power”. Given that the hypercategorematic infinite is explicitly identified with “God himself”, its characterization as “active power” is hardly surprising. It is worth noting that this “active power” is directly contrasted here with the “passive power” of the syncategorematic infinite, and that a contrast between two kinds of infinite in terms of active power (*potentia activa*, associated with being infinite in *essentia* or *natura*) and passive power (*potentia passiva*, associated with “a line infinitely extended”), is attested in Goclenius’ *Lexicon Philosophicum* (p. 237). It is also worth noting that in his famous letter on the infinite (excerpted by Leibniz in April 1676), Spinoza similarly distinguishes between “that which must be infinite by its very nature”, and “that which is unlimited not by virtue of its essence but by virtue of its cause”. The former clearly maps into the kind of infinite which “cannot be divided into, or possess any, parts;” the latter into the kind of infinite which “can be so divided without contradiction”.⁴⁶ Leibniz glosses Spinoza’s view that some things are infinite not by their nature but “by the force of the cause in which they inhere” with the remark: “such as duration and extension”.⁴⁷

The characterization as “potestative infinite” is somewhat more unusual, although the use of the term “potestative” for beings which are constituted by (*bestehen aus*) intrinsic powers to act (such as our soul) is recorded, for instance, in Zedler’s *Universal-Lexicon*.⁴⁸ It seems plausible that Leibniz may also have been inspired by the use of the notion of “potestative” in juridical contexts. “Potestative” indicates not only power but also the privileged position, in a relationship, of the party having the power to enforce or not enforce something. It seems clear, at any rate, that Leibniz is stressing the supreme *potestas*, power or sovereignty to be attributed to

the hypercategorematic infinite or God.⁴⁹

3. *Totum, omnia, and three degrees of infinity*

At this point, one may wonder whether, according to Leibniz, the hypercategorematic infinite qualifies as a whole.⁵⁰ Were this to be the case, it would be, once again, in sharp contrast to the other kinds of infinite, namely, the traditional, potential syncategorematic infinite which applies to ideal entities, and the Leibnizian actual infinite which applies syncategorematically to the physical world. However, in a letter to Des Bosses of 1 September 1706, Leibniz flatly denies that “the indivisible infinite”, explicitly equated to God, is a whole (*totum*):

I maintain, strictly speaking, that an infinite composed from parts [ex partibus constans] is neither one nor a whole [neque unum esse, neque totum], and it is not conceived as a quantity except through a fiction of the mind [nec nisi per fictionem mentis concipi ut quantitatem]. The indivisible infinite alone is one, but it is not a whole [sed totum non est]; that infinite is God. (DesB 52-53)

But the matter is not so easily settled. In a brief text composed between 1683 and 1686 (*Deum non esse mundi animam*), Leibniz writes: “the infinite in number and magnitude neither is one nor is a whole [neque esse unum neque esse totum]; only the infinite in perfection is one and a whole [tantum infinitum perfectione unum et totum esse]” (A IV, 4, 1492). In an earlier text of 11 February 1676, we read: “The reason of things is the aggregate of the requisites [aggregatum requisitorum] of all things. God from God. The whole infinite is one [Totum infinitum esse unum].”⁵¹ In a note of the same period, commenting on Spinoza’s views on the infinite, Leibniz describes God as *unus omnia* and attributes to him the highest degree of infinity (“*omnia*”): “The third degree of infinity, and this is the highest degree, is *everything* [*omnia*], and this kind of infinite is in God, since he is one-everything [unus omnia]; for in him are contained the requisites for existing of all other things.”⁵²

This text introduces us to the distinction between the three degrees of infinity proposed by Leibniz in 1676,⁵³ and to the question of how these three degrees of infinity relate to the conception of the infinite outlined by Leibniz thirty years later in 1706. By *unus omnia* Leibniz seems to mean that God, or the true infinite, is the unity of all things. Moreover, the way in which God is *unus omnia* is by containing the requisites for the existence of all other things. In turn, by “requisites”, Leibniz means the “naturally prior” conditions such that, if they are not posited, the thing of which they are requirements or conditions is not.⁵⁴ Leibniz is signalling not only a causal dependence but also a conceptual and ontological dependence of all things from God in so far as God’s perfections or purely positive qualities are requisites or conditions of all other things. It is also clear that the way in which these other

things result is by a limitation or partial negation of what is in God purely positive.⁵⁵

In October 1676, commenting on Spinoza's remark about St Paul cited above, Leibniz writes: "It can be said at any rate that all things are one, that all things are in God [omnia unum esse, omnia in Deo esse], as an effect is contained in its full cause, and a property of any subject in the essence of that same subject. For it is certain that the existence of things is a consequence of the Nature of God, which brings it about that only the most perfect can be chosen." (A VI, 3, 370; trans. by Adams in *Leibniz*, p. 127). The first example given by Leibniz to illustrate how all things can be said to be in God is a classic scholastic example for something contained in something else *virtualiter*. The second example, however, is much more puzzling and certainly problematic if one wishes to avoid pantheism. If all things are like properties of a "subject in the essence of that same subject", it is hard to see how Leibniz can avoid a Spinozistic conception of all things as modes of God rather than substances. In fact, in this period, there are texts in which Leibniz seems to embrace precisely such conception.⁵⁶

Even in this period, however, Leibniz is making an effort to distinguish God and creatures. In the passage above he refers to the *choice* of the most perfect, suggesting that (unlike Spinoza's view) there are non-existing possible beings which God does not chose. At any rate, as has been noted, the view that things are modes of God rather than substances is not stable, and by 1677-8 Leibniz has rejected it.⁵⁷ On 28 April 1677, in the context of the demonstration of the existence of the *Ens Perfectissimum* in conversation with Arnold Eckhard, Leibniz denies that there can be a being which is "omnia": "It is indeed seen as impossible for there to be a Being [Ens] that is everything. Of such a Being it could be said that it is you, and, likewise, that it is me – which, I take, you will not admit" (GP I, 222).

It seems to me that Leibniz eventually succeeds in combining the need for maintaining an ontological distinction between God and creatures, and the need for conceiving God as the ontological grounding of everything (expressed in the formula *unus omnia*, or by the statement that God is *omnia*), by availing himself of the traditional scholastic notion of all things being in God eminently. This scholastic doctrine is interpreted, as it were, Neoplatonically and hyper-categorematically: the essence of God, while being *beyond* all determinations, is manifested as the ground of all determinations in the activity of the divine intellect.

Regarding the issue of God qualifying or not qualifying as a "whole", the answer must be "no", at least as long as Leibniz is thinking (as he normally does) of wholes as having parts or implying divisibility. Hence the true, absolute, indivisible infinite "is one, but it is not a whole" (DesB 52-53). Likewise, it can be said to be *omnia* only if all things are conceived as contained in it eminently but not formally.⁵⁸

What about the other two degrees of infinity identified by Leibniz in 1676, namely (in descending order from *omnia*), “*maximum*” and “*infinitum*” in its lowest (*infimum*) degree?⁵⁹ Like the highest degree, these two degrees of infinity are conceived by Leibniz as “greater than any assignable”.⁶⁰ However, Leibniz explicitly stresses that he has “always distinguished the Immensum from the Unbounded [ab Interminato], i.e. that which has no bound [terminum]. And that to which nothing can be added from that which exceeds an assignable number.” (A VI. 3, 282; Ar 114-5) With the concept of “Immensum”, Leibniz points to a kind of infinity which is un-measurable, or *beyond* measure,⁶¹ as opposed to a mere syncategorematic infinity. Moreover, the highest degree or the “absolutely infinite” contains everything (*omnia*) and is maximum in entity,⁶² whereas the “*maximum* is everything of its kind [*omnia sui generis*], or that to which nothing can be added, like a line unbounded on both sides, which is obviously also infinite; for it contains every length.” Finally, “those things are *infinite in the lowest degree* whose magnitude is greater than we can expound by an assignable ratio to sensible things, even though there exists something greater than these things ... For a maximum does not apply in the case of numbers.” (A VI, 3, 282 / Ar 115)

It seems fairly straightforward to identify the lowest degree of infinity with the syncategorematic, potential infinite which applies to numbers and other ideal entities, and which (unlike the two higher degrees of the infinite) admits of, or indeed is formed by, addition. Leibniz is already suggesting here his usual denial of infinite number or of the greatest of all numbers. It is more difficult to place the second degree of the infinite or “*maximum*”. According to one proposal, this degree corresponds to the degree of infinity of created things as distinguished from the absolute infinity of God.⁶³ This is an intriguing idea but it seems to me more likely that, in the context of notes commenting on Spinoza such as these, Leibniz is simply thinking (as Spinoza) of the infinity of the divine attributes. It would seem rather odd to think of a creature, which Leibniz is constantly at pain to characterize as limited, as *maximum* or “*omnia sui generis*”. In this (passing) phase of his thought, in which the ontological status of creatures is drastically down-played, Leibniz seems content to focus on the infinity of the *unus omnia* which embraces all creatures rather than reflecting on which kind of infinity may be proper of creatures themselves. On the other hand, it is beyond doubt that, for Leibniz, creatures are (in more than one sense) *infinite*. It is to this rather puzzling conception of creatures as infinite that we finally turn.

4. The hypercategorematic infinite and created substances

There are at least two senses in which creatures are infinite for Leibniz. One is the sense which we have encountered above in discussing Leibniz's conception of the actual infinite proper to the physical world. According to Leibniz, "the least particle must be regarded as a world full of an infinity [une infinité] of creatures" (GP I, 416) and "any body whatever is actually divided into several parts ... So bodies are actually infinite" (A IV, 1393; Ar 234-235). This kind of infinity has received a good deal of attention in recent literature. It has been shown that, for Leibniz, both the world and any body in it are infinite aggregates but not wholes. There cannot be such a thing as the collection of all the parts of an aggregate with an infinite multitude of parts. In the kind of (syncategorematic) infinity which implies infinite division, there is, strictly speaking, no quantity, no *number* of all the parts.⁶⁴

Instead, I would like to focus here on another sense of infinity which applies to creatures – a sense of infinity which *does not* imply division or divisibility since it concerns simple substances or monads, namely the beings which in Leibniz's mature philosophy undoubtedly qualify as substances *stricto sensu*. According to Leibniz, created substances or created monads enjoy many of the features that we have found to be characteristic of the "true infinite": strict unity, indivisibility, active power. Most importantly for the matter at hand, they are also said to be, like God, "infinite":

I don't know whether it is possible to explain the constitution of the soul better than by saying 1) that it is a simple substance, that is, what I call a true unity; ... 4) that the soul is an imitation of God as much as is possible to creatures; that it is, like Him, simple and yet also infinite, and envelops all through confused perceptions, but is limited as regards distinct perceptions. Whereas everything is distinct for the sovereign substance, from which everything emanates, and which is the cause of existence and of order, and in a word, is the ultimate reason of things. God contains the universe eminently, and the soul or the unity contains it virtually, being a central mirror, but active and vital, so to speak. One can even say that each soul is a world apart, but all these worlds harmonize and are representative of the same phenomena reported in a different way. (Leibniz to Pierre Bayle, c. 1702; GP III, 72)

The difference between God and created substances ultimately reduces to one (but, to Leibniz's mind, crucial) difference: unlimited versus limited perfection. Ultimately, the ontological distinction between God and creatures is based on what Leibniz regards as the strict incompatibility between God and any negation or limitation.⁶⁵ Creatures, as determinate beings which, as such, are certain things but not others, have certain qualities in a certain degree but not others,⁶⁶ necessar-

ily imply limitation and negation of perfections which in God can only be purely positive. Hence, there must be ontologically distinct subjects of inherence of limited versus unlimited perfections. Moreover, Leibniz seems to indicate that conceiving the activity of the divine intellect as “representative” (in its thinking, as ideas *in mente Dei*, the essences of *limited* things) helps preserving the positivity and simplicity of the divine essence.

Interestingly, in this letter to Bayle, the scholastic distinction between *eminenter* and *virtualiter* is pressed into service alongside a Neoplatonic-sounding notion of “emanation”. The universe is contained in God eminently but (I would like to add) not formally or even *formaliter eminenter* since this would introduce negation and limitation in God. I think Leibniz would agree with the Scholastics that only perfections taken absolutely and simpliciter (namely, purely positively) can be in God *formaliter eminenter*. On the other hand, the universe is contained in each created substance *virtualiter*. This claim is understood in terms of *infinite confused* perceptions which represent (confusedly) everything. That is, the limitation of created substances manifests itself as a limitation of *distinctness* of perceptions, not as *finitude* of the number of perceptions which any given monad can embrace. It is striking that, in its containing the universe, a creature is “an imitation of God as much as is possible” -- although, of course, God is “the ultimate reason of things”, that is, he constitutes the ontological grounding of all things by containing the ultimate requisites of all things, as opposed to being merely a “mirror” of all things, albeit “active and vital”.

To conclude, Leibniz draws a fine line between being ‘limited’ and being ‘finite’. Strictly speaking, creatures for him are *limited* rather than *finite* since, through its confused perceptions, each individual substance involves the infinite.⁶⁷ The crucial feature which seems to keep created substances from matching the “absolute infinity” of God is not, after all, indivisibility or simplicity but the lack of pure positivity which comes with any limitation.⁶⁸ Only a being *beyond all determinations* but *eminently embracing all determinations* – or, as at one point Leibniz puts it, the hyper-categorematic infinite -- can enjoy the pure positivity of what is truly infinite while constituting the ontological grounding of all things (*omnia*). Leibniz seems to need some version of the Neoplatonic One, and of the distinction between One and Intellect, in order to protect the pure positivity of the divine essence. In so doing, he finds also a way to distinguish God and creatures, and (narrowly) escape pantheism. In so far as the divine essence cannot formally contain any limited perfection, limited perfections require distinct substances as their bearers. The lack of any negation, and hence limitation, is what, ultimately, distinguishes the divine nature from the nature of created things.⁶⁹

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Notes

¹ Leibniz to Des Bosses, 1 September 1706 (supplementary study, crossed out; DesB 52-53; GP II, 314-315).

² See Laurence Carlin, "Infinite Accumulations and Pantheistic Implications: Leibniz and the 'Anima Mundi'," *Leibniz Society Review* 7 (1997): 1-24; Gregory Brown, "Who's Afraid of Infinite Numbers? Leibniz and the World Soul," *Leibniz Society Review* 8 (1998): 113-25; Gregory Brown, "Leibniz on Wholes, Unities, and Infinite Number," *The Leibniz Review* 10 (2000): 21-51; Richard T. W. Arthur, "Infinite Aggregates and Phenomenal Wholes: Leibniz's Theory of Substance as a Solution to the Continuum Problem," *Leibniz Society Review* 8 (1998): 25-45; Richard T. W. Arthur, "Infinite Number and the World Soul: In Defence of Carlin and Leibniz," *The Leibniz Review* 9 (1999): 105-16; Richard T. W. Arthur, "Leibniz on Infinite Number, Infinite Wholes, and the Whole World: A Reply to Gregory Brown," *The Leibniz Review* 11 (2001): 103-16; Richard T. W. Arthur, "Presupposition, Aggregation, and Leibniz's Argument for a Plurality of Substances," *The Leibniz Review* 21 (2011): 91-116. See also Gregory Brown, "Leibniz's Mathematical Argument Against a Soul of the World," *British Journal for the History of Philosophy* 13.3 (2005): 449-88.

³ In addition to the papers cited in the note above, see especially Samuel Levey, "Leibniz on Mathematics and the Actually Infinite Division of Matter," *Philosophical Review* 107.1 (1998): 49-96; Samuel Levey, "Archimedes, Infinitesimals, and the Law of Continuity: On Leibniz's Fictionalism," in U. Goldenbaum and D. M. Jesseph (eds), *Infinitesimal Differences: Controversies Between Leibniz and His Contemporaries*, Berlin: Walter de Gruyter, 2008, pp. 107-33; Richard T. W. Arthur, "Leibniz's Syncategorematic Infinitesimals, Smooth Infinitesimal Analysis, and Second Order Differentials," *Archive for History of Exact Sciences*, 67 (April 2013): 553-593; Adam Harmer, "Leibniz on Infinite Numbers, Infinite Wholes, and Composite Substances," *British Journal for the History of Philosophy* 22.2 (2014): 236-259; Richard T. W. Arthur, "Leibniz's Actual Infinite in Relation to his Analysis of Matter," in Norma Goethe, Philip Beeley and David Rabouin (eds), *G. W. Leibniz: Interrelations Between Mathematics and Philosophy*, Dordrecht: Springer, 2015, pp. 137-156.

⁴ The most sustained discussion of this notion of which I am aware is to be found at pp. 165-168 of the excellent article by Fabio C. M. Bosinelli, “Über Leibniz’ Unendlichkeitstheorie,” *Studia Leibnitiana* 23.2 (1991): 151-169 (based on Fabio C. M. Bosinelli, “I quattro infiniti di Leibniz,” *Annali di discipline filosofiche dell’Università di Bologna* X (1988-89): 117-134). I am grateful to Bosinelli for introducing me to Leibniz’s infinities in our Hanoverian discussions back in 1991.

⁵ The distinction is commonly said to originate from a passage of the *Institutiones Grammaticae* (II, 15) of the sixth-century Latin grammarian, Priscian. In fact, Priscian is reporting a previous use: “According to the dialecticians, therefore, there are two parts of speech, noun and verb, because they constitute a complete speech [plenam faciunt orationem] on their own or per se joined; on the other hand, they called [appellabant] the other parts of speech ‘syncategoremata’, that is, *consignificantia*”. The mention of “dialecticians” seems to point to the logical as well as grammatical origin of this distinction. Unless otherwise stated, translations are my own.

⁶ Cf. G. Klima, “Syncategoremata,” in Alex Barber and Robert J Stainton (eds), *Concise Encyclopedia of Philosophy of Language and Linguistics*, Elsevier 2006, pp. 714-717; E. Jennifer Ashworth, “Medieval Theories of Singular terms,” *The Stanford Encyclopedia of Philosophy* (Winter 2012 Edition), Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/entries/singular-terms-medieval/>; Jorge Gracia and Lloyd Newton, “Medieval Theories of the Categories,” *The Stanford Encyclopedia of Philosophy* (Fall 2012 Edition), Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/fall2012/entries/medieval-categories/>; Norman Kretzmann, “Syncategoremata, Exponibilia, Sophismata,” in Norman Kretzmann *et alia* (eds), *The Cambridge History of Later Medieval Philosophy*, Cambridge: Cambridge University Press, 1982, pp. 211-245; “Syncategoremata” in R. Audi (ed.), *Cambridge Dictionary of Philosophy*, Cambridge: Cambridge University Press, 2015; Roger Ariew and Alan Gabbey, “The Scholastic Background,” in Daniel Garber and Michael Ayers (eds), *The Cambridge History of Seventeenth Century Philosophy*, New York: Cambridge University Press, 2012, pp. 444-47. For a detailed history of the term ‘syncategorema’, see Stephan Meier-Oeser, “Syncategorem,” in J. Ritter and K. Gründer (eds), *Historisches Wörterbuch der Philosophie*. Vol. 10. Basel: Schwabe, 1998, pp. 787-799.

⁷ See, for instance, the *Syncategoremata* of Peter of Spain and William of Sherwood’s treatise on *Syncategoremata* (translated with an introduction and notes by Norman Kretzmann, Minneapolis: University of Minnesota Press, 1968). Later medieval authors discussing *syncategoremata* include William of Ockham and Jean Buridan.

⁸ Aquinas, *Summa Theologiae* I. 31. 3. See also I. 31. 4.

⁹ William of Sherwood's *Treatise on Syncategorematic Words* (trans. Kretzmann, p. 40). *Omnis* and *Infinita* can also be taken categorically or syncategorematically. *Omnis* ("every" or "all") sometimes "signifies universality as the disposition of a thing; in that case it is not a syncategorematic word but is equipollent to 'whole' (*totum*) or 'complete' (*perfectum*), as in 'the world is all [mundus est omne].' At other times it signifies universality as a disposition of a subject insofar as it is a subject; in that case it is a syncategorematic word. For example, when I say 'every man is running' the word 'every' signifies that the word 'man' is universal in respect of serving as a subject – i.e., that it is universally subjected to the predicate" (trans. Kretzmann, p. 17).

¹⁰ Cf. Rodolphus Goclenius, *Lexicon Philosophicum*, Frankfurt 1613, p. 237.

¹¹ As noted by Ariew – Gabbey, "The Scholastic Background," p. 444, Aristotle "affirms the potential infinite by division in magnitude and number, while denying the potential infinite by addition in magnitude (except in the case where one is adding a part determined by a ratio, instead of keeping the parts equal)."

¹² Goclenius, *Lexicon Philosophicum*, p. 237. Goclenius mentions the Padua Aristotelian, Jacopo Zabarella (1533-1589), as his source.

¹³ Cf. A VI, 3, 502 / Ar 96-97: "In the continuum, the whole is prior to its parts." See also GP IV, p. 492 (*Remarques sur les Objections de M. Foucher*), quoted below.

¹⁴ See Bosinelli, "Über Leibniz' Unendlichkeitstheorie," pp. 152-165.

¹⁵ DesB 32-33.

¹⁶ DesB 32-33. Cf. GP VI, 629: "despite my *Infinitesimal Calculus*, I do not admit a truly infinite number, although I maintain that the multitude of things surpasses all infinite number, or rather all number. ... The infinitesimal Calculus is useful when it is a matter of applying mathematics to physics; but it is not by this means that I pretend to account for the nature of things. Since I regard infinitesimal quantities as useful fictions." For Leibniz, all infinite aggregates (e.g. all bodies), when are treated as 'one' or as 'wholes', are fictions (cf. DesB 52-53: "an infinite composed from parts is neither one nor a whole, and it is not conceived as a quantity except through a fiction of the mind"). Harmer, "Leibniz on Infinite Numbers, Infinite Wholes, and Composite Substances," notes that, although both *finite* and *infinite* aggregates are the product of a mental act which aggregates the individual components, only infinite aggregates are fictions (see esp. p. 251). In other words, not all ideal entities are fictions.

¹⁷ Cf. A VI 4, 551; Ar 179: "I believe it to be the nature of certain notions that they are incapable of perfection and completion [perfectionis, atque absoluti], and also of having a greatest of their kind. Number is such a thing."

¹⁸ The related issue of Leibniz's position vis-a-vis the so-called Galileo's paradox (namely, the one-to-one correspondence between an infinite set and a proper subset

of itself) has been widely discussed in recent literature. See footnotes 2 and 3 above.

¹⁹ See, for instance, Arthur, “Leibniz on Infinite Number,” p. 107.

²⁰ Des Bosses to Leibniz, 2 March 1706 (DesB 26-27): “I am eager to know whether it is necessary to admit in nature an actual infinity ... You indicated on another occasion in the *Mémoires de Trévoux*, when discussing the differential calculus, that it is not necessary that the infinite be taken rigorously; and in your ‘Specimen of Dynamics,’ after having spoken of infinite degrees of impetus, you say: ‘although I would not claim on that account that these mathematical entities as such are actually found in nature but only that they are useful for making accurate estimates by means of a mental abstraction.’ From what you say in these two places, I would have conjectured that the infinite that you add can be confined to the syncategorematic; for what prevents us from transferring what you say about degrees of impetus to a multitude of substances?”

²¹ On the difference between the mathematical continuum, in which infinite division is potential, and the physical *contiguous*, in which infinite division is actual, see Massimo Mugnai, *Introduzione alla Filosofia di Leibniz*, Torino: Einaudi, 2001, esp. 119-121 and Maria Rosa Antognazza, *Leibniz: An Intellectual Biography*, Cambridge: Cambridge University Press, 2009, pp. 353-354.

²² It should be noted that Leibniz’s nominalism with regard to ideal entities such as numbers is moderated by an element of Platonic realism, as shown by the following passage: “Only absolute and indivisible infinity has a true unity, namely, God. And this, I think, is enough to satisfy all the arguments against an actual infinity, which also ought to apply to a potential infinity in its own way. For it cannot be denied that in reality there are natures of all possible numbers, at least in the divine mind, and thus that the multitude of numbers is infinite.” (Leibniz to Des Bosses, 11 March 1706; DesB, 32-33). Ideal entities (including numbers) have a stable (mental) existence and eternal natures as thoughts of God (ideas *in mente Dei*). Cf. Massimo Mugnai, “Essences, Ideas, and Truths in God’s Mind and in the Human Mind,” in Maria Rosa Antognazza (ed.), *The Oxford Handbook of Leibniz*, Oxford – New York: Oxford University Press (forthcoming); online version: DOI: 10.1093/oxfordhb/9780199744725.013.14.

²³ GP IV, pp. 491-492. See also an unsent supplement prepared by Leibniz for a letter to Nicolas Remond of July 1714 (GP III, 622): “In the ideal or the continuum, the whole is prior to the parts, as the Arithmetic unity is prior to the fractions which divide it, and which can be assigned arbitrarily; parts are merely potential. In the real, however, the simple is prior to the aggregates, parts are actual, and are prior to the whole. These considerations remove the difficulties concerning the continuum, which suppose that the continuum is something real and has parts before any division, and that matter is a substance”; Leibniz to Des Bosses, 31 July 1709 (DesB

140-141): “space is something continuous, but ideal, whereas mass is discrete, indeed an actual multitude, or a being by aggregation, but from infinite unities. In actual things, simples are prior to aggregates; in ideal things, the whole is prior to the part.” Cf. GP VI, 629 (cited in note 16).

²⁴ See Bosinelli, “Über Leibniz’ Unendlichkeitstheorie” (especially the table p. 168), to which I am indebted. In my view, recent literature has not sufficiently stressed this distinction.

²⁵ Leibniz to Des Bosses, 11 March 1706 (DesB 31-33): “Arguments against an actual infinity assume that, with this allowed, there exists an infinite number, likewise, that all infinities are equal. But it must be recognized that an infinite aggregate is in fact not one whole, or endowed with magnitude, and that it cannot be enumerated.” To be sure, mathematics can be applied to the physical world. However, when this happens -- that is, when the physical world is ordered by numbers, measured etc. -- everything that applies to numbers (e.g. the denial of infinite number) will apply to the mathematical measurement (or to the *number*) of any entities.

²⁶ Cf. GM III, 575; Ar lxiii: “I concede an infinite multitude, but this multitude forms [facit] neither a number nor one whole [unum totum]. It only means that there are more elements than can be designated by a number, just as there is a multitude or complex of all numbers; but this multitude is neither a number nor one whole [unum totum].”

²⁷ I have found no other occurrence of “hypercategorematic infinite” before Leibniz. Although there may well be some previous use which I have not identified, it seems clear that this was not a standard notion.

²⁸ *Enneads* II, 4, 5: “this motion, this cleavage, away from the first is indetermination [=Matter], needing The First to its determination which it achieves by its Return.” (In *Plotini Opera*. Ed. by Paul Henry and H.-R. Schwyzer, Vols I-III. Oxford: Clarendon Press, 1964-1982. Trans. by Stephen Mackenna and B.S. Page). See also *Enneads* II, 4, 13 and II, 4, 15.

²⁹ The importance of the Platonic and Neoplatonic inheritance in Leibniz’s thought has been stressed, amongst others, by Donald Rutherford, Patrick Riley, and Christia Mercer in a number of high-profile publications, including Donald Rutherford, *Leibniz and the Rational Order of Nature*, Cambridge: Cambridge University Press, 1995; Patrick Riley, *Leibniz’ Universal Jurisprudence: Justice as the Charity of the Wise*, Cambridge, Mass.: Harvard University Press, 1996; Christia Mercer, *Leibniz’s Metaphysics: its Origins and Development*, Cambridge: Cambridge University Press, 2001. The thesis that the great seventeenth-century rationalists worked “within a heavily theologised Platonic tradition” is central to the collection edited by Michael Ayers on *Rationalism, Platonism and God*, Proceedings of the British Academy, vol. 149, Oxford: Oxford University Press, 2007, here p. 3.

I discuss aspects of this Platonic inheritance in “Metaphysical Evil Revisited,” in Samuel Newlands and Larry Jorgensen (eds), *New Essays on Leibniz’s Theodicy*, Oxford: Oxford University Press, 2014, pp. 112-134 and “Primary Matter, Primitive Passive Power, and Creaturely Limitation in Leibniz,” *Studia Leibnitiana* 46.2 (2014):167-86.

³⁰ Cf. Dennis O’Brien, “Plotinus on matter and evil,” in Lloyd P. Gerson (ed.), *The Cambridge Companion to Plotinus*, Cambridge: Cambridge University Press, 1996, p. 172: “non-being . . . is an essential condition of the existence of any object, since all objects, except only being itself, participate in otherness in relation to being”. Hegel developed this insight into a full metaphysical system. Inspired by Spinoza’s remark that “determination is negation” (to Jarig Jelles, Ep. 50 in *Spinoza Opera*, edited by Carl Gebhardt, 4 vols. Heidelberg: Carl Winter, 1925, vol. 4), Hegel proclaimed that *Omnis determinatio est negatio* (Hegel’s 1816 review of Jacobi’s *Werke*, in G.W.F. Hegel, *Heidelberg Writings*, trans. B. Bowman and A. Speight, Cambridge: Cambridge University Press, 2009, p. 9; cited by Y. Y. Melamed in “Determination, negation, and self-negation in Spinoza, Kant, and Hegel,” *Spinoza and German Idealism*, ed. by E. Förster and Y. Y. Melamed, Cambridge: Cambridge University Press, 2012, pp. 175-196).

³¹ *Vulgata Clementina*. Cf. also Colossians 1:17: “omnia in ipso constant”; Acts 17:28: “In ipso enim vivimus, et movemur, et sumus.”

³² Cited from Leibniz’s copy of October 1676 (A VI, 3, 370); cf. *Spinoza Opera* 4, Ep. 73 (November–December 1675), pp. 306–309.

³³ Charles-René Billuart, *Summa Sancti Thomae hodiernis academiaram moribus accommodata*. 19 vols, Leodii [Liège] 1746-1751 (cited from 1839 ed., vol. 1, p. 72). See also Dominicus de Marinis, *Expositio Commentaria In Totam Primam Partem Angelici Doctoris Sancti Thomae*, Lugduni [Lyon] 1662, p. 58.

³⁴ Dominicus de Marinis, *Expositio Commentaria*, p. 58.

³⁵ See, for instance, GP VII, 261: “I call *perfection* every simple quality which is positive and absolute, or which expresses whatever it expresses without any limits.” I cannot enter here into the issue of whether there may be positive perfections (in the sense of qualities having a positive ontological status) which would not be appropriate to attribute to God. Leibniz himself wonders whether pain could be such a quality with positive ontological status, contrary to the attempt to reduce it to a *lack* of pleasure. Cf. A II, 1, 363. For a discussion see R. M. Adams, *Leibniz: Determinist, Theist, Idealist*, Oxford-New York: Oxford University Press, 1994, pp. 119-123. In general, with regard to sensible qualities (which, traditionally, one would not expect God to have), the Scholastics could avail themselves of the notion of being *eminenter* in God “as the rational soul is said to contain eminently the vegetative and the sensitive soul.”

³⁶ See Dominicus de Marinis, *Expositio Commentaria*, pp. 58-60; Billuart, *Summa Sancti Thomae*, pp. 72-74 (esp. p. 72: “Perfectiones secundum quid, quae sunt tales ratione imperfectionis, non sunt in Deo formaliter eminenter sed tantum eminenter virtualiter”). Cf. Aquinas, *Summa Theologiae* I, 13, esp. 5-6.

³⁷ Cf. Billuart, *Summa Sancti Thomae*, p. 72: “si essent formaliter in Deo, possent de Deo prædicari, et sic posset vere dici: Deus est rationalis, est sensitivus, leo, lapis, etc. Sunt autem in Deo eminenter virtualiter”.

³⁸ Cf. *Numeri Infiniti*, April 1676; A VI, 3, 502 / Ar 97: “In the continuum, the whole is prior to its parts”.

³⁹ Cf. Goclenius, *Lexicon Philosophicum*, p. 256. Cf. also the “pure being”, that is, “being in general; being, and nothing else, without further determination” of Hegel’s *Science of Logic* (trans. by George Di Giovanni, Cambridge: Cambridge University Press, 2010, p. 47).

⁴⁰ A VI, 6, 157; cf. A VI, 3, 282; Ar 114-5.

⁴¹ *Numeri Infiniti*, A VI, 3, 502 / Ar 97.

⁴² Adams, *Leibniz*, p. 115, where other supporting texts are listed. The fact that these meanings point to a negative rather than a positive conception of the absolute (*unqualified; unlimited, unconditional*) should not obscure the fact that Leibniz (like Descartes and unlike Locke) thought that we have some positive idea of the infinite which (Platonically) is prior to that of the finite (see *Quelques remarques sur le livre de Mons. Lock intitulé Essay of Understanding*, 1695-February 1697; A VI, 6, 7). How difficult it is to articulate then such a positive idea is shown by the continuous falling back into negative language. Cf. R. M. Adams, “The Priority of the Perfect in the Philosophical Theology of the Continental Rationalists,” in Ayers, *Rationalism, Platonism and God*, pp. 91-116, and Maria Rosa Antognazza, “Comments on Adams,” in Ayers, *Rationalism, Platonism and God*, pp. 117-131.

⁴³ Grua 355: “In essentia divina res eminenter, in intellectu aliquid amplius, nempe repraesentative, quia repraesentantur intellectu divino etiam rerum imperfectiones seu limitationes.” As we have seen, the Scholastics would say that perfections of creatures are not in God *formaliter eminenter* but merely *eminenter virtualiter*.

⁴⁴ This positivity appears to be stressed in *Quelques remarques sur le livre de Mons. Lock intitulé Essay of Understanding* of 1695-1697, where Leibniz uses the expression “positive infinite [l’infini positif]” for the true infinite or the Absolute. Composed things result from its limitation: “the true infinite is not at all found in a whole composed of parts. Nevertheless, it does not fail to be found somewhere else, namely in the Absolute, which is without parts, and which has influence on composed things, since they result from the limitation of the absolute. Since then the positive infinite is nothing other than the absolute, one can say that there is in this sense a positive idea of the infinite, and that this idea is prior to that of the finite.”

(A VI, 6, 7) It seems to me that Leibniz's point is primarily metaphysical and only secondarily epistemological. He is drawing attention to the lack of composition and limitation of the absolute, and hence to the positivity of its nature, as grounding the sense in which it can be said that we have a positive idea of the infinite.

⁴⁵ In notes of 1715-16 on Aloys Temmik's *Philosophia vera theologiae et medicinae ministra*, cited by Adams, *Leibniz*, p. 115, Leibniz distinguishes two meanings of "absolute": being "opposed to the limited" and being "opposed ... to the relative" (LH IV,8,60-61; the text is published in Massimo Mugnai, *Leibniz' Theory of Relations*, Stuttgart: Steiner, 1992, pp. 155-160, here p. 159). It seems to me that the second meaning tracks that of absolute as "unconditioned".

⁴⁶ Spinoza to Lodewijk Meyer, 29 April 1663 (Ep. 12 in *Spinoza Opera* 4; trans. by Samuel Shirley in Spinoza, *Complete Works*, Indianapolis: Hackett, 2002, pp. 787-788). Cf. A VI, 3, 276.

⁴⁷ See also A VI, 3, 281 / Ar 113.

⁴⁸ See "Totum Potestativum" in J. H. Zedler, *Universal-Lexicon*, Leipzig 1732-1754, vol. 44, col. 1638: "That which is constituted by many powers and abilities to do something is called 'potestative whole', or 'potential whole' [Totum potestativum, oder Totum potentiale], as for instance our soul." Cf. Aquinas, *Summa Theologiae*, I-II, Prologue: "as Damascene says (*De Fide Orthod.* ii. 12), man is said to be made in the image of God, in so far as through the image is signified an intellectual being with free-will and per se potestative [*per se potestativum*]".

⁴⁹ Vincenzo De Risi notes that the hypercategorematic infinite implies "a leap" (see "Leibniz on Relativity: the debate between Hans Reichenbach and Dietrich Mahnke on Leibniz's theory of motion and time," in R. Krömer and Y. Chin-Drian (eds), *New Essays on Leibniz's Reception*, Basel: Springer, 2012, p. 177, footnote 81; cf. also Vincenzo De Risi, *Geometry and Monadology: Leibniz's Analysis Situs and Philosophy of Space*, Basel: Birkhäuser, 2007, pp. 332, 338, 339, 342, 370, 426, 431).

⁵⁰ One may well be tempted to take this simply for granted. Cf. Ohad Nachtomy, "A Tale of Two Thinkers, One Meeting, and Three Degrees of Infinity: Leibniz and Spinoza (1675-8)," *British Journal for the History of Philosophy*, 19.5 (2011): 935-961, here p. 943: "it would be unthinkable for Leibniz, both on philosophical and theological grounds, to deny that God is an infinite whole"; pp. 247-8: "Leibniz clearly regards God as an infinite whole. He calls God the one-all (*unus omnia*, A 6.3 385)". As we will see, however, things turn out to be more complicated. Recent literature on Leibniz's conception of the infinite has focused on showing that, for Leibniz, infinite collections are not wholes.

⁵¹ *De arcanis sublimium vel De summa rerum* (A VI, 3, 474; my trans.). It seems to me that *Totum infinitum* is better translated as "The whole infinite" (with *totum*

modifying the following noun) than as “An infinite whole”, as proposed by other translations.

⁵² A VI, 3, 385; Ar 43: “Tertius infiniti, isque summus gradus est ipsum, *omnia*, quale infinitum est in Deo, is enim est unus omnia, in eo enim caeterorum omnium ad existendum requisita continentur.” I have slightly modified Ar which translates “unus omnia” as “all one” and “caeterorum omnium” as “all the others”.

⁵³ These three degrees of infinity are the focus of Nachtomy, “A Tale of Two Thinkers.”

⁵⁴ See A VI, 3, 483 and C 417, cited by Adams, *Leibniz*, p. 117 in the illuminating discussion of requisites from which I am drawing.

⁵⁵ See Adams, “The Priority of the Perfect,” esp. p. 107.

⁵⁶ Cf. especially A VI, 3, 573. In an attempt to distinguish God and creatures, Leibniz writes on 15 April 1676, in one of the texts of *De Summa Rerum*: “Just as ‘ternary’ is different from 1,1,1, but is 1+1+1. And yet the form of ternary is different from all parts; and thus things differ from God, who is everything [qui est omnia]. Creatures are some things [Creaturae sunt quaedam]” (A VI, 3, 512). The mathematical analogy is far from reassuring, since it seems hard to avoid the pantheistic conclusion that God is the collection of created things. Not to speak of the suggestion that God is the result of composition of constituents which are logically prior.

⁵⁷ See Adams, *Leibniz*, pp. 130-134.

⁵⁸ “habens quasi partes, eminenter, non formaliter” GP II, 315 ; “partes habentia, eminenti ratione” GM III/2, 500.

⁵⁹ See A VI, 3, 282 / Ar 115 and A VI, 3, 385 / Ar 43.

⁶⁰ A VI, 3, 385 / Ar 43.

⁶¹ Cf. Nachtomy, “A Tale of Two Thinkers,” p. 946. The main thesis of Nachtomy’s paper is that when Leibniz (and Spinoza) say that the divine substance is infinite, this is to be understood in non-numerical and non-quantitative terms. Cf. also Ohad Nachtomy, “Leibniz on the Greatest Number and the Greatest Being,” *The Leibniz Review* 15 (2005): 49–66. On the concept of *Immensum*, see also Adams, *Leibniz*, pp. 123-4. Goclenius, *Lexicon Philosophicum*, p. 237, treats *Immensum* as synonym of *Infinitum*, defined as “quod dimensionem seu finem non habet”. Unlike Leibniz, he does not distinguish between *Immensum* and having no bound or end.

⁶² A VI, 3, 282 / Ar 115: “Whatever contains everything [*omnia*] is maximum in entity ... Likewise, that which contains everything is the most infinite [infinatissimum], as I am accustomed to call it, or the absolutely infinite [absolute infinitum].”

⁶³ See Nachtomy, “A Tale of Two Thinkers,” pp. 957-958.

⁶⁴ See, most recently, Harmer, “Leibniz on Infinite Numbers, Infinite Wholes, and Composite Substances.”

⁶⁵ I follow here the interpretation proposed by Adams, *Leibniz*, pp. 123-134, of how Leibniz avoids a Spinozistic conception of God.

⁶⁶ Cf. A VI, 3, 512 (15 April 1676; in *De Summa Rerum*): “and thus things differ from God, who is everything. Creatures are some things.”

⁶⁷ *Annotatiunculae subitaneae ad Tolandi Librum De Christianismo Mysteriis carente*, 1701 (DUT V, 147): “individual substances ... involve the infinite.”

⁶⁸ I note that the issue of the pure positivity of God is central to Leibniz’s version of the ontological argument. See, for instance, *Definitiones notionum metaphysicarum atque logicarum*, mid-1685 (A VI, 4, 626): “There is however some *Ens perfectissimum*, or the most perfect Being is possible, because it is nothing other than pure positivity [*Ens summe perfectum est possibile, quia nihil aliud est, quam pure positivum*].” Around 1695-1697, Leibniz writes (Grua 371): “Perfection is pure act or pure positivity. What we commonly say of act and potency is more correctly said of the positive and privative, or of the absolute and limited.”

⁶⁹ I am very grateful to Richard Arthur, Howard Hotson, and Paul Lodge for their helpful feedback on a draft of this paper.