

The Empirical Grounds for Leibniz's 'Real Metaphysics'*

Paul Lodge, Mansfield College, Oxford

Abstract

In discussion of Leibniz's philosophical methodology Donald Rutherford defends the view that Leibniz regarded metaphysics as an a priori demonstrative science. In the course of this discussion Rutherford isolates and tries to deflect a significant challenge for his view, namely the observation that in many of his mature writings on metaphysics Leibniz appears to defend his views by means of a posteriori arguments. I present some prima facie difficulties with Rutherford's position and then offer an alternative account of how Leibniz thought he needed to establish metaphysical claims. My suggestion is that the challenge that Rutherford poses may be best answered by attending to the fact that Leibniz recognized a kind of metaphysical enquiry, 'real metaphysics', that is essentially a posteriori, in virtue of the fact that it is concerned not just with possible kinds of beings, but with the kinds of beings that God actually created.

Introduction

In discussion of Leibniz's philosophical methodology Donald Rutherford defends the view that Leibniz regarded metaphysics as an a priori demonstrative science.¹ What makes Rutherford's treatment particularly interesting is the way he isolates and tries to deflect a significant challenge for his view, namely the observation that in many of his mature writings on metaphysics Leibniz appears to defend his views by means of a posteriori arguments. In this paper, I will present some prima facie difficulties with Rutherford's position and then offer an alternative account of how in his later years Leibniz thought he needed to establish metaphysical claims. My suggestion will be that the challenge that Rutherford poses may be best answered by attending to the fact that Leibniz recognized a kind of metaphysical enquiry, 'real metaphysics', that is essentially a posteriori, in virtue of the fact that it is concerned not just with possible kinds of beings, but with the kinds of beings that God actually created.

1. Rutherford's account: Metaphysics as an a priori demonstrative science

I will begin with a quote that provides a statement of the position that Rutherford ascribes to Leibniz:

The ultimate objects of metaphysical knowledge are the essences of beings (actual or possible), which are expressed in the eternal ideas of the divine understanding and in intelligible concepts of the human mind. Combinations of these concepts, in turn, form propositions that assert necessary relations among the essences of different types of being. By a demonstrative *science* of metaphysics, therefore, we mean just this: a system of deductively related propositions that together articulate the conceptual dependence of the principal types of being.²

Elsewhere Rutherford draws explicit parallels between the ideal form in which Leibniz would have liked to present his metaphysics and the so-called 'geometrical method' that is most readily associated with Euclid and Spinoza. He suggests that it would have been "derived from a small number of definitions and axioms"³ and that the concepts involved would "owe nothing to sense but [be] derived solely from reason or intellect,"⁴ so that "metaphysical truths [are] conceptual truths,"⁵ and metaphysics is "an a priori science."⁶ Thus, the interpretation that Rutherford offers accords well with the standard view of Leibniz as a rationalist who regarded metaphysics as a discipline that articulates necessary truths concerning the objects of innate concepts, the justifications for which truths are independent of experience.

Rutherford provides some explicit textual evidence for this characterization of Leibniz's position. For example, he cites a definition from a piece dated 1683(?) by the Akademie editors, according to which "metaphysics is the science of intelligible things"⁷ and a passage from the *Theodicy* in which metaphysics is said to be the science "which has being, and consequently God, the source of being, as its object."⁸ In addition, Rutherford presents a number of passages, to which we shall return below, in which Leibniz claims that his views are susceptible of demonstration. However, the case also relies on drawing attention to the form in which Leibniz's output is cast. As Rutherford indicates,⁹ between the middle of the 1660s and 1672 the main claims that Leibniz advances are often presented as theorems which have been demonstrated from combinations of definitions and axioms.¹⁰ And, although Leibniz did not employ this method in all of his writings of this period, it at least appears that, wherever possible, he wanted to cast his

THE EMPIRICAL GROUNDS FOR LEIBNIZ'S 'REAL METAPHYSICS'

philosophical views in geometrical form. During the period when Leibniz was in Paris (1672-76) his writings do not evidence the formal structure that was so common before. However, after his return to Germany, there seems to have been a renewed interest in this form. Between 1676 and 1692, Leibniz appears again to have made several attempts at providing geometrical demonstrations of his views,¹¹ and in the 1680s he produced numerous lists of definitions of fundamental logical, metaphysical, and ethical terms, which contained representations of categories that would have been essential for a geometrical demonstration of the main elements of his philosophy.¹² Furthermore, as Rutherford observes, in letters to Foucher from the late 1680s, we find Leibniz claiming that he “envisions presenting the rest of his philosophy as a series of demonstrations from a small number of definitions, which is all the geometers themselves can do.”¹³

As I noted above, one of the features of Rutherford's discussion that is of particular interest is a challenge that he poses for his own reading. Although he relies upon the form of Leibniz's earlier writings to support his views, Rutherford also admits that the form of Leibniz's presentation of his philosophy in later life would appear, by the same token, to undermine them.¹⁴ From the 1690s on, the structure of Leibniz's writings changed radically. Not only did he lose interest in the provision of geometrical presentation,¹⁵ he composed a number of essays, some published, in which he claimed to establish metaphysical theses through arguments based on empirical evidence.¹⁶ Indeed, Leibniz even went so far as to present some of his philosophical doctrines as hypotheses – most famously the pre-established harmony, which appeared as the best of three hypotheses concerning the union of mind and body when it received its public debut in the *New System* of 1695.¹⁷

Despite this apparent lack of interest in the geometrical method in Leibniz's later writings, Rutherford warns us against assuming that Leibniz's conception of metaphysics had changed. Instead he claims to find a growing disparity between what he calls Leibniz's “philosophical methodology” – the form that Leibniz thought philosophy ought to take – and his “philosophical method” – Leibniz's actual philosophical practice.¹⁸ Rutherford's main support for this claim is the abundance of passages in which Leibniz appears to insist, until his final years, that he hopes to demonstrate his views and that he can, in principle, accomplish this. Thus, in a postscript to a 1697 letter to Des Billettes, we find:

I hope still to explain demonstratively the nature and properties of substances in general and of souls in particular; although I have already begun to propose something in the journals in the form of a hypothesis, I believe that nothing

has been said about it that cannot be demonstrated.¹⁹

And in a letter to Tolomei from 1705, Leibniz writes, “Would that there were time to reduce all these things to Euclidean demonstrations, as I see could be done.”²⁰

This leaves us in need of an explanation of what Rutherford calls Leibniz’s “philosophical method” from the 1690s onward. Rutherford accounts for the divergence between ideal and practice by appeal to a number of factors. He notes that Leibniz often speaks of the lack of time needed to complete his philosophical investigations²¹ and that “occasionally” Leibniz admits that there may be “real conceptual problems to overcome” which warrant a provisional appeal to hypotheses.²² In addition, Rutherford points out that a letter to Biber from the last year of his life suggests that the lack of a “general characteristic” was a significant reason that Leibniz had failed in “carrying out the idea [he had] of displaying philosophy in the form of demonstrations.”²³ Here the reference is to the ideal language which Leibniz sought to develop from the 1670s onward and in which he hoped we would “be able to carry out demonstrations in all intellectual matters, just as with numbers and lines.”²⁴ Even after years of providing definitions and analyses of philosophical concepts, Leibniz seems to have got little closer to the “characteristic”, i.e., the alphabet suitable for this.

However, in the end, Rutherford holds that these factors could not have provided insuperable obstacles to the provision of at least some geometrically demonstrative presentations of Leibniz’s views, claiming that the definitions of some key concepts were sufficiently worked out to underwrite this.²⁵ And, whilst he denies that we should look for a single explanation,²⁶ it becomes clear that Rutherford believes that two further, and interconnected, factors must be taken into account if we are to grasp “one of the most important reasons” for the lack of geometric demonstrations.²⁷ In a letter to Fontenelle from 1704 Leibniz observes:

The true metaphysics, or philosophy, if you will, does not appear to me any less important than geometry, especially if there is also a way of introducing into it demonstrations, which until now have been entirely excluded from it, along with the calculus that will be necessary in order to give them all the entry they need. However, it is necessary to prepare readers with exoteric writings.

The journals have served me well until now.²⁸

Here Leibniz refers to writings which are “exoteric”, drawing on a contrast which he employs explicitly elsewhere with those which are “esoteric [*acromatique*]”. The former are “popular” and the latter “suitable for those who are seriously concerned to discover the truth.”²⁹ Rutherford suggests that in his later years Leibniz becomes

THE EMPIRICAL GROUNDS FOR LEIBNIZ'S 'REAL METAPHYSICS'

more taken with the public presentation of his work to audiences which are not prepared for anything other than the exoteric writings, and that it is for this reason that he largely abandons geometrical demonstration.³⁰

However, the explanation does not finish there. Rutherford also suggests that this shift in style can be given a deeper explanation. Here he appeals to the “ethical dimension” which attends the “essentially social” aspects of Leibniz’s later work. The key point for Rutherford is that Leibniz’s ethical theory requires an opposition to all sectarianism and a commitment to the reconciliation of apparently opposing views.³¹ He claims that it is in the spirit of reconciliation that “an older and more experienced Leibniz” turns his sights from a geometrically demonstrative philosophy to a the more ‘popular’ form in which empirical hypotheses are chosen as propositions whose truth explains central tenets of his opponents with which he is in agreement.³²

The upshot of all this is that Rutherford believes that we should set aside the difficulty to which he drew our attention and accept that Leibniz always conceived of metaphysics as an a priori demonstrative science, with his failure to represent his views this way in later writings a function of extrinsic pressures, lack of time, and, in particular, the ethically motivated desire to actually convince other people to accept his views.

2. Challenges for Rutherford’s account

Whilst I think that Rutherford’s account provides us with a consistent reading of the texts that he examines, I want to suggest that it may not provide the best explanation for the approach that Leibniz adopts when defending his metaphysical views in later life. In the final section of this paper I will sketch a positive alternative. However, I will begin by presenting three challenges that Rutherford must face. The first of these concerns the role that he attributes to Leibniz’s ethical views in explaining why Leibniz avoided presenting his views as demonstrations later in life. The two remaining challenges arise in connection with the passages that Rutherford offers in support of his claim that Leibniz remained committed to metaphysics as an a priori science of intelligibles later in his career.

Turning to the first: According to Rutherford, Leibniz considered the demonstrative presentation of his views to be an esoteric approach that was at odds with the ethical goal of promoting general assent to the truth. The passages that Rutherford presents clearly support the distinction between esoteric and exoteric

presentation. However, to the extent that they provide us with further information about why Leibniz favored the exoteric, they seem to suggest that his audiences were too ignorant and/or unwilling to pursue the truth seriously enough.³³ The ethical dimension, which suggests that Leibniz regarded employing exoteric presentation as justifiable on the grounds that the overall good would not have been best served by writing in any other way, does not receive any direct textual support. I think this observation is noteworthy in itself. But, even if we suppose that Rutherford is correct, difficulties remain. Whilst ethical motives may have required Leibniz to withhold his views in some situations, one might think that if he had found a suitably serious and enlightened audience, he would have felt obligated to employ a priori demonstrations and perhaps even present his argument geometrically.³⁴ With this in mind, Leibniz's correspondence with De Volder may be instructive.

One of the starting points for the correspondence, which is repeated throughout, is De Volder's friendly request for an a priori demonstration of a metaphysical commitment that Leibniz had mentioned in the journals of the day, namely the essential activity of substances.³⁵ Although he does not provide an explicit account of what he means by "a priori", a statement of De Volder's desideratum appears in his letter of February 18, 1699: "If you would like us to agree with you without any worries, I believe it will be necessary to descend to the notion of substance and demonstrate that it is necessarily active from its nature."³⁶ Furthermore, at the heart of De Volder's philosophy was a commitment to the Cartesian proposition "whatever I clearly and distinctly perceive is true" and the experience-independent account of warrant that this embodied in Descartes' epistemology.³⁷ Thus, De Volder's demand for an a priori demonstration appears to be equivalent to the demand for one of the components in the demonstrative science of metaphysics that Leibniz was seeking according to Rutherford. Furthermore, given the prior acquaintance that Leibniz had with De Volder's writings, it is reasonable to assume that he would have understood the request in this way.³⁸

Leibniz's reaction, which appears in no fewer than thirteen letters, is interesting. For despite De Volder's numerous requests, Leibniz never provided him with an a priori demonstration of substantial activity. The main explanation that Leibniz offers De Volder is one that Rutherford notes, namely that he did not have a demonstration to give, due to lack of time and the provisional nature of his philosophy.³⁹ However, behind the scenes, the story was a little different.

The correspondence with De Volder was mediated by Leibniz's friend, Johann Bernoulli, and the letters between the two provide a different perspective on the

THE EMPIRICAL GROUNDS FOR LEIBNIZ'S 'REAL METAPHYSICS'

interchange. Although Leibniz expresses similar views to those above in the letters accompanying his earliest dealings with De Volder,⁴⁰ soon the situation changes. In the margin of one of Bernoulli's letters from early 1700,⁴¹ Leibniz added the following comment: "I define substance as that which acts or is acted upon. Whatever can be acted upon necessarily can act as well. Whatever acts is intrinsically active." Here we appear to have part of what De Volder had been requesting. In the privacy of his own study, Leibniz provides his definition of substance.⁴² Perhaps even more interesting is the following letter to Bernoulli:

If, with all the schools, we mean by substance that which can act or be acted upon (and moreover accept that nothing is acted upon unless it also acts) it follows that every substance can act. But if it is already established that every substance which can act is intrinsically active, it follows that every substance is like this [i.e. intrinsically active].⁴³

Here we find an account of substance which is very similar to the marginal definition. Moreover, this passage appears to give the demonstration of substantial activity that De Volder had been seeking. One might have expected these comments to lead into the kind of discussion which De Volder had been hoping for. However, this was not to be. Bernoulli offered a few comments in his next letter.⁴⁴ After that, the argument was never discussed again and nothing of this kind was passed on to De Volder.

The interchange above seems to confirm part of the overall account of Leibniz's metaphysics that Rutherford offers. It looks like Leibniz did have at least part of the science of intelligibles available and refused to give it even though it was asked for repeatedly. Indeed, he seems to have given it to one of his correspondents, but not the other. So how are we to explain this? It seems likely that Rutherford would say that Leibniz did not regard De Volder as someone ready to receive the esoteric version of his metaphysics as a matter of ethics; that he thought better than to try to force agreement by demonstration where it was unlikely to be successful. And as the grounds for this, one assumes, Rutherford would claim that Leibniz perceived a combination of lack of preparedness for the truth and seriousness of purpose.

But none of this fits terribly well with the details of the correspondence. For one thing, a cursory glance at the letters makes it hard to question De Volder's seriousness and preparedness. And, as we have seen, his favored mode of justification is just the kind of a priori demonstration that Rutherford associates with Leibniz's methodology. It is true that Leibniz expresses doubts about De Volder's preparedness in some of the letters to Bernoulli and suggests that there is little point in trying to answer De Volder's request for a demonstration of substantial activity

until he has come to understand the more obvious truth of Leibniz's account of the proper measure of the motive force of bodies.⁴⁵ However, by the middle of 1700 De Volder had been won over in this regard and in his letter of 6 September Leibniz acknowledges De Volder's conversion and apparent readiness to embark upon a discussion of the question at hand.⁴⁶

I think that these considerations cast some doubt on Rutherford's ethical explanation of the supposed gap between Leibniz's method and methodology. It seems to me that De Volder was a prime candidate for Leibniz's esoteric philosophy as conceived by Rutherford. An obviously friendly and philosophically sophisticated correspondent, he wanted nothing more than the a priori demonstration that Leibniz appears to have had at his disposal.

As I mentioned above, the two remaining difficulties that I want to discuss concern the passages he offers in support of his claim that Leibniz remained committed to metaphysics as an a priori science of intelligibles later in his career. First I want to turn to those in which Leibniz mimics, or claims that he would like to mimic the Euclidean style of presentation.

Rutherford is not very explicit about the relations between these passages and the understanding of metaphysics that he ascribes to Leibniz. However, I take it that Rutherford regards the use of the geometric method in metaphysics as involving a commitment to experience-independent knowledge of the content of the definitions, axioms, and postulates employed.⁴⁷ Assuming this is the case, Rutherford faces the worry that there is no particular reason to think that geometric form of presentation is anything other than contingently related to the epistemic status of the claims that are expressed in this way. After all, the geometric method can be employed with equal right, and to good effect, by someone who regards the definitions, axioms and postulates as essentially derived from experience. Thus, it seems to me that Leibniz's actual, or promised employment of this mode of presentation tells us nothing definitive about the crucial epistemic issues.⁴⁸

The second problem concerns Rutherford's reliance on passages in which Leibniz speaks of demonstrating his views. In each case, we are to understand the term "demonstration" in the strong sense that Rutherford's account of Leibniz's methodology requires. However, it is not clear that this is supported by the things that Leibniz says about the nature of demonstration.

In a letter to Herman Conring from 1678, the primary meaning that Leibniz offers is as follows:

Demonstration is reasoning by which some proposition is made certain. This

THE EMPIRICAL GROUNDS FOR LEIBNIZ'S 'REAL METAPHYSICS'

is achieved whenever it is shown that the proposition necessarily follows from certain suppositions (which are assumed to be certain). By *necessarily* I mean in such a way that its contrary implies a contradiction.⁴⁹

Here demonstration appears to be nothing more than formally valid deductive reasoning and independent of the truth of the conclusion. As Leibniz tells Countess Elisabeth in a letter from November of the same year, “we sometimes think about impossible things and we even construct demonstrations from them.”⁵⁰ One might wonder whether a relatively early passage such as this is representative of Leibniz’s considered view. However, this conception is repeated in a letter to Bernoulli from 1700 where Leibniz observes, “A demonstration is reasoning whose force is evident and by which you could expect the indubitable conviction of your adversaries.”⁵¹

Whilst Leibniz is sometimes catholic in his statements regarding the form that such reasoning may take – for example, telling Elisabeth that “the account of an accountant” is an example of a proper form⁵², he generally operates with a more abstract conception which treats demonstration as a “chain of definitions.”⁵³ On this conception, “to demonstrate a proposition is to show that the predicate or consequent is contained in the antecedent or subject by resolution of the terms into equivalents.”⁵⁴ However, it is not clear that this is always intended. Thus, in a letter to De Volder from 1703, Leibniz responds to De Volder’s persistent request for a demonstration of his thesis that all substances are active as follows:

I do not see how you could have doubts about the internal tendency to change in things, since we are taught that there are changes in things by our experience of the phenomena, as well as from the inside where the operations of the mind themselves changes. Therefore, I think that the fact is demonstrated a posteriori.⁵⁵

Here the fact in question is “whether every substance, at least every substance known to us, should be considered active,” and, according to Leibniz it “can be established from the phenomena.”⁵⁶

A distinction between a posteriori demonstration and a priori demonstration – which can be traced back through scholastic philosophy as far as Aristotle – had been brought to the fore in the late sixteenth century, in the wake of Jacopo Zabarella’s *Opera logica*. A posteriori demonstration proceeds from experience of an effect to its cause and produces knowledge of the nature of the effect. A priori demonstration proceeds from cause to effect and produces knowledge of why the effect obtains. The terminology is a little confusing. Importantly, we must avoid the temptation to assimilate a priori demonstration to the kind of methodological ideal

that Rutherford ascribes to Leibniz. There is no suggestion here that the concepts involved “owe nothing to sense but are derived solely from reason or intellect.”⁵⁷ Demonstrations are a priori in the sense that they show how observed phenomena follow from their causes. Both a priori and a posteriori demonstrations involve concepts whose content is derived empirically.

There appear to be two lessons here: First, Leibniz endorses the use of the expression “a posteriori demonstration”. Thus, we should be alert to the possibility that he might be thinking in these terms when he speaks of demonstrating his views. And, secondly, the notion of a posteriori demonstration that he happily employs is attended by a sense of the expression “a priori demonstration” that brings no implication with it that the content of the concepts involved is available independently of experience. Thus, even where Leibniz suggests that he had, or would like to, provide *a priori* demonstration, we should pause for thought before assuming that this counts as direct evidence for Rutherford’s position.

Rutherford does acknowledge that the “the word ‘demonstration’ can be used in a variety of senses” and that Leibniz “sometimes employs the term in a weaker sense.”⁵⁸ But he claims that in the passages that are important for his account it is used to mean “formal deduction”, and this is taken to suffice for his purposes. But if we turn to the passages in question, it is not clear to me that they support his position.

The key distinction that we find in the places to which Rutherford draws our attention is articulated in the postscript to the letter to Gilles Des Billettes that we considered already, but which is worth quoting again:

I hope still to explain demonstratively the nature and properties of substances in general and of souls in particular; although I have already begun to propose something in the journals in the form of an hypothesis, I believe that nothing has been said about it which cannot be demonstrated.⁵⁹

Demonstrative argument is contrasted with that which relies on isolating the most explanatory hypotheses. The main point of reference here, for Rutherford, is the *New System* of 1695, in which Leibniz offers his pre-established harmony as the preferred account of the observed relationship between mind and body, when pitched against the hypothesis of ‘real influence’, which he regards as incoherent on the grounds that it would require accidents to leave one substance and come to inhere in another, and occasionalism, which he regards as requiring perpetual miracles in a way that conflicts with divine wisdom.⁶⁰ Embedded within this is a conception of substances as essentially active entities which are causally isolated

THE EMPIRICAL GROUNDS FOR LEIBNIZ'S 'REAL METAPHYSICS'

from one another.

If Rutherford's account of Leibniz's methodology is to be adequate, passages such as the one above must involve a commitment to the idea that what has been explained hypothetically can, and hopefully will, be demonstrated to be the case on the basis of definitions and axioms that can be established independently of experience. Returning to another passage that we considered above, however, I think it is far from clear that this is what Leibniz has in mind. In the 1703 letter to De Volder, it is precisely a truth about the nature of substances – that they are naturally active – that is said to be demonstrated. This is precisely the kind of thing that he had advertised to Des Billettes and crucially it is said to be “demonstrated a posteriori.”⁶¹

Of course, none of what I have said so far constitutes a knock-down refutation of Rutherford's view. Take my worries about the ethical dimension. Perhaps I am just being too generous to De Volder and ungenerous to Leibniz, when I suggest he should have been perceived as worthy of admission to the esoteric version of Leibniz's philosophy. Indeed, it might be argued that Leibniz's friend Bernoulli is a prime example of someone who did deserve special treatment and got it.⁶² And, of course, I have drawn attention to a single metaphysical issue in one correspondence, whereas Rutherford was trying to account for a more widespread lack of geometrical presentation in Leibniz's later writings. Perhaps Leibniz was unethical here, but generally behaved more in accord with his better self.

Furthermore, even if my criticism is an effective one, it only counts against part of the account that Rutherford presents, albeit his preferred part. There is an obvious fall-back position that leaves the conception of Leibniz's methodology as a priori demonstrative intact. Rutherford could simply revert to an explanation of the gap between method and methodology (i.e. the gap between the actual way in which Leibniz presented his views and the ideal to which he aspired) that trades on Leibniz's suggestion that he was held back by lack of time, and, in some cases genuine confusion over the content of his views. Were this route taken, I would suggest that the discussion of substantial activity in the De Volder correspondence isn't accounted for terribly well in this way. But I certainly don't claim to be able to prove that Leibniz conceived of his definition of substance as fully worked out. Finally, I have not argued that Leibniz's claims to have demonstrated, or to be able to demonstrate his views couldn't be claims about a priori demonstration as Rutherford understands it. I simply suggest that we don't have positive reasons to think they are.

For all this, however, I do think that the concerns I have raised warrant looking for an alternate explanation for the changes in the way that Leibniz presented his philosophy in later life. It is to this that I turn in the remainder of the paper.

3. The role of a posteriori arguments in Leibniz's mature metaphysical writings

The hypothesis that I want to offer is as follows: The disappearance of geometric presentations and increased prevalence of a posteriori arguments in Leibniz's later writings are evidence of his pursuing a kind of metaphysical enquiry whose warrant is essentially empirical. I don't claim to find explicit statements to this effect in Leibniz's writings, but I think there is a case to be made for the claim that he was engaged in such a project. Furthermore, it is consistent with Leibniz's continuing interest both in demonstrating his views and in providing a geometric articulation of them, albeit this would not then have the importance that Rutherford attaches to this. And, I want to suggest, it provides a better explanation of the change in Leibniz's mode of presentation of his ideas in later life. A caveat is in order at this point, however. I aim to provide little more than a sketch of a defense of this hypothesis in the remainder of this paper. The more detailed work must wait for another day.

I begin with a passage from the *New Essays*, which dates from 1704. After discussing the folly of past metaphysical discussions, Leibniz observes, "As for real metaphysics, we are all but beginning to get it established, and are discovering important general truths, established by [*fondée en*] reason and confirmed by experience."⁶⁴ Here we learn that there is a direct connection between what Leibniz calls "real metaphysics" and experience. However, he does not say any more. The expression 'real metaphysics' occurs infrequently in Leibniz's writings, but there are at least two other places where it (or something like it) occurs. Thus, in a letter to De Volder from 1699, Leibniz speaks of the "laws of power or of cause and effect" as "rules of the real metaphysics."⁶⁴ And in the correspondence with Clarke, in section five of his fourth letter, Leibniz notes that, along with the principle of sufficient reason, the principle of the identity of indiscernibles "change[s] the state of metaphysics" such that it becomes a "science [which is] real."⁶⁵

What significance should we give to the adjective 'real' here? In the passage from the De Volder correspondence, Leibniz is contrasting the laws of nature he sanctions with those he had adopted in his youth. The problem with the latter is

THE EMPIRICAL GROUNDS FOR LEIBNIZ'S 'REAL METAPHYSICS'

that, although consistent with the laws of geometry and the conception of body as merely extended that he favored in the early 1670s, they do not apply to the actual physical world, the nature of which includes active principles.⁶⁶ And, whilst the immediate context surrounding the quote from the Clarke correspondence provides little illumination, in a number of places in the correspondence with Clarke, Leibniz suggests that the principle of the identity of indiscernibles applies contingently to creation.⁶⁷ In light of these considerations, I want to suggest that where Leibniz speaks of real metaphysics, we take him to be using the expression to refer to the theory that articulates the metaphysical structure of the actual world.⁶⁸

Returning to the passage from the *New Essays*, with this assumption made, we can see that it is making a claim about how real metaphysics, i.e., the metaphysics of the actual world, is warranted. Firstly, it is “established by reason”. As Leibniz notes in the *Preliminary Dissertation* from the *Theodicy* of 1710, reason “has only to do with truths that are independent of the senses.”⁶⁹ Thus, Leibniz’s real metaphysics is supposed to have a non-empirical component. But real metaphysics is also “confirmed by experience”.

One way to understand the second claim is that it accords no essential epistemological role to experience. Experience simply bears out the truths of real metaphysics, given that it is the science which deals with the ultimate structure of reality and this structure is available to us empirically. Alternatively, one might interpret Leibniz as claiming that, whilst real metaphysical propositions can be established independently of the senses, there is a sense in which empirical evidence is needed for their justification. Whilst this might sound like an odd suggestion, I think that it can be made intelligible, and plausible, once we take proper account of Leibniz’s conception of contingency and the role that it plays in his mature work.

In fact, it seems to me that the first interpretation of what it is for real metaphysics to be confirmed by experience does not fit well with other aspects of Leibniz’s philosophy. A central claim of Leibniz’s from the late 1670s onward is that the actual world was freely and contingently created by God because it was the best of an infinite number of possible worlds.⁷⁰ The first reading of the passage from the *New Essays* requires that truths of real metaphysics could be established independently of experience. There seem to be two ways this might be possible if the world exists only contingently. Either, there is a single metaphysical structure shared by every possible world which is knowable through the use of reason alone, or there is more than one such structure, but it is possible to know independently of experience that

the actual world has a particular one of those structures rather than the others.

Turning to the first: There is *prima facie* evidence against the claim that Leibniz thought that all possible worlds shared the same metaphysical structure. In a letter to Bernoulli from 1699 we find, “I do not say that the vacuum, the atom, and other things of this sort are impossible, but only that they are not in agreement with divine wisdom. . . . From an infinity of possibles, God chose, in accordance with his wisdom, that which is most appropriate.”⁷¹ It would be helpful for my argument at this point if there were more passages that I could cite. Unfortunately, I haven’t found any yet, and this is an obvious weakness.⁷² However, the position I wish to ascribe to Leibniz is one according to which his writings are devoted to real metaphysics. If this is true, perhaps we should not expect much discussion of the details of non-actual alternatives. At any rate, the hypothesis I wish to present requires that we grant that Leibniz believed there are possible worlds which do not share the metaphysical structure of the actual world.

The second strategy for saving the interpretation that deflates the role of empirical confirmation requires that there be truths of reason that entail that the actual world has the metaphysical structure that it does. This seems a more promising avenue. Indeed, the passage from the letter to Bernoulli above suggests how this might be achieved, namely by demonstrating that there exists a wise God whose wisdom led him to create a world with one of the possible metaphysical structures, i.e., the most appropriate, or best, world.

Before I consider this option further, I want to revisit the criteria that this strategy would need to satisfy in order to conform to the methodological ideal that Rutherford attributes to Leibniz. Leibniz would need to hold that there is a set of innate intelligible concepts on the basis of which one could show, in principle by substitution of equivalent terms, that a creator exists and that his nature leads to the creation of the best of all possible worlds (in what follows, I will express this as the claim that there is a ‘wise creator’). But, furthermore, he would need to be able to show in the same way that the most appropriate world was one that had the metaphysical structure of the actual world.

Let’s start with the demonstration of a wise creator. Leibniz subscribes to a number of arguments for the existence of God throughout his career and two of these are intended to be independent of experience, namely a version of the ontological argument and what I shall refer to as ‘the argument from eternal truths’. Furthermore, each of these is spoken of with approval in the *Monadology*, which was written right at the end of Leibniz’s life, so there is good reason to think that

THE EMPIRICAL GROUNDS FOR LEIBNIZ'S 'REAL METAPHYSICS'

they might be used to support the second strategy.⁷³ However, on closer examination, we can see that the argument from eternal truths does not seem to be of much use. It moves from the claim that there are essences and eternal truths based on them, to the conclusion that there exists a necessary being whose understanding grounds these essences and truths.⁷⁴ But it is not rich enough to establish the proposition that there is a being which has the power or the will to create the best. So even if one could make the case that Leibniz regarded the argument from eternal truths as, at least in principle, demonstrative in Rutherford's sense, I don't think it would do the job required.

However, there is still the ontological argument, which looks like a more plausible candidate. Typical of Leibniz's discussion of the argument is the one that appears in *Meditations on Knowledge, Truth, and Ideas*, published in 1684. The version presented there is derived from Descartes and is as follows:

[W]hatever follows from the idea or definition of anything can be predicated of that thing. Since the most perfect being includes all perfections, among which is existence, existence follows from the idea of God (or the idea of the most perfect being, or the idea of that than which nothing greater can be thought).

Therefore existence can be predicated of God.⁷⁵

Having given this argument, Leibniz launches into a critique on the grounds that Descartes does not show that the idea or definition of God as "the most perfect being" is a real definition, i.e., one that expresses a genuine possibility. And he concludes that, as a result, the argument itself establishes nothing more than the conditional claim that God exists if he is possible.

Whilst Leibniz is critical of Descartes, he has a favorable view of the ontological argument more generally as I noted above. Indeed, in the *Meditations on Truth, Knowledge, and Ideas* he observes that "nothing is truer than that we have an idea of God and that a most perfect being is possible, indeed necessary."⁷⁶ It is, therefore, unsurprising to find Leibniz offering arguments that are supposed to plug the gap that he has located. As David Blumenfeld notes, there are in fact three different strategies to be found in Leibniz's work.⁷⁷

The first, offered as a fallback position, is that, absent a proof of its impossibility, it is acceptable to presume that a perfect being is possible. As he writes in letter to an unknown recipient, probably dating from around 1700, "there is always a presumption on the side of possibility; that is to say, everything is held to be possible until its impossibility is proved."⁷⁸ Leibniz's willingness to adopt such a strategy is clearly of methodological significance. However, in the current context, the more

important point is that such a strategy could not be adopted as a way of supporting Rutherford's position, since it does not rely on any kind of demonstration. The remaining two strategies both involve positive arguments for the possibility of God.

The first appears explicitly in writings from the late 1670s. It relies on the claims that the perfections which a perfect being would possess are simple and positive. With this in place, Leibniz argues that it can be shown that simple positive properties are necessarily compatible, and hence that there could be a being which possessed all the perfections.⁷⁹ The second, appears later in Leibniz career. A version is to be found in a letter to the editor, published in the *Mémoires de Trévoux* in 1701. Here Leibniz relies on the claim that contingent beings require a ground for their existence, whence it is inferred that if a necessary being is impossible, then nothing is possible. Given the additional premise that there are possibilities, Leibniz concludes that there is a necessary being.⁸⁰

The second of these strategies offers little hope of providing the demonstration that Rutherford needs. Even if it worked, the argument establishes the existence of a necessary being rather than a being that is perfect in the richer sense required to entail the proposition that there is a wise creator.⁸¹ Thus, it seems to me that only the argument from the simplicity of the perfections is a serious candidate for providing the demonstration that is needed. But even here there appear to be serious problems. Setting aside worries about whether it actually works, this argument relies on consideration of the logical relationships that hold between the simple concepts that capture what Leibniz calls the "absolute attributes" of God.⁸² It is clear that Leibniz would consider predicates such as 'wise creator' (as understood above) to be complex. To get the required demonstration going we would need to have an analysis of this concept into simples available to us. In the *Meditations*, Leibniz expresses doubts over our ability to carry out such analyses, saying that "he doubts whether humans can provide a perfect example."⁸³ In the contemporary piece *An Introduction to a Secret Encyclopaedia*, he seems even less optimistic, writing: "An analysis of concepts by which we are enabled to arrive at primitive notions, i.e., at those which are conceived through themselves, does not seem to be within the power of man."⁸⁴ Finally in *Of an Organum or Ars Magna of Thinking*,⁸⁵ having suggested that there may be just two simple concepts, those of God and nothing, Leibniz remarks that "it is not in our power to demonstrate the possibility of things in a perfectly a priori way, that is, to analyse them into God and nothing."⁸⁶

Taking account of these considerations, I find it hard to believe that Leibniz held

THE EMPIRICAL GROUNDS FOR LEIBNIZ'S 'REAL METAPHYSICS'

the hope for the kind of demonstrative knowledge of a wise creator that would be required to support the view that there is only a deflated role for empirical confirmation in Leibniz's real metaphysics. But we must also remember that Leibniz would have had to believe in the possibility of providing more than this. He would also have to be committed to the provision of a Rutherford-style demonstration that showed that the metaphysical structure of the actual world was a feature of the most appropriate world. And I don't know of anywhere that Leibniz provides even the beginnings of a sketch of how such an argument might go.

One final consideration can be brought against Rutherford's view. I have suggested that there is reason to think that Leibniz did not hold out hope for a demonstration of the fact that the actual world has the metaphysical structure that it does based on reason alone. Leibniz believed that the actual world was the best in virtue of the fact that it was comprised of an infinite number of monads. As we have seen, Leibniz appears to admit that there are possible worlds which did not contain an infinite number of monads and which have different and incompatible metaphysical structures. This seems to rule out at once the idea that there could be the kind of demonstration that Rutherford needs. For in order that the actual world be seen to be the most appropriate object for the divine choice, its goodness would need to be assessed relative to those alternatives. But the assessment of the goodness of an infinitely complex world is not something that is amenable to demonstration since this would require, per impossible, the completion of an infinitely complex series of inferences. Indeed, it is important to Leibniz that it not be demonstrable in this way, given the infinite analysis account of contingent truth that he adopts from the middle of the 1680s until the end of his life. On this account, were there a completable demonstration that this world is better than other incompatible possibilities, this would be a necessary truth, and, hence the alternate possibilities would not be possibilities at all.⁸⁷

In light of these considerations, I want to suggest that when Leibniz speaks of empirical confirmation in connection with real metaphysics he is thinking of something that is essential for its justification. Furthermore, I think that this offers us a better explanation for the change in Leibniz's philosophical method than the one Rutherford offers. In what remains I will flesh out this explanation a little further. However, I am conscious that a good deal more remains to be said.

On the account that I am offering, the precise inventory of Leibniz's real metaphysics must be a matter of empirical investigation. The fact that the content of a given metaphysical concept is available to reason and that it stands in relations

to other such concepts, which can be understood to ground metaphysical truths, will not guarantee that it has application in the world which God chose to create, or that these truths are of any relevance for our understanding of the actual world. Even in a situation where we have access to an innate idea by the power of reason alone, the inclusion of this in the science of real metaphysics requires that there be empirical confirmation that it is an idea which applies to actual things and not merely an idea that applies to possibles. The truths it grounds may be based on reason, but the confirmation that it belongs in Leibniz's real metaphysics will be essentially grounded in experience.

If this is accepted, we can see an alternate explanation for the appearance of empirical arguments in Leibniz's later metaphysical writings. Whereas Rutherford claims that it was merely a matter of practice that Leibniz adverted to empirical arguments when doing metaphysics, I have suggested that Leibniz may think that the credentials of any metaphysical concept, as a principle that should play a role in real metaphysics, can only be fully established once it has been shown that the actual world accords with this concept and that this cannot itself be established by reason alone.

Thus, Leibniz's real metaphysicians must provide arguments that establish that their metaphysical concepts and the intelligible truths that they ground are contained in the metaphysical theory that applies to the actual world. It seems, therefore, that establishing the real metaphysics would involve identifying the metaphysical principles which provide the best explanation of the particular phenomena that are found in the actual world. **With this in mind, we can see that it would have been** only natural for Leibniz to provide empirical arguments when attempting to justify his metaphysical views from the 1680s onward.

But, for all that I have disagreed with the account that Rutherford gives, it should be clear that there is no conflict between the view I have outlined and the suggestion that Leibniz pursued metaphysics in something like the way that Rutherford envisions. After all, Leibniz's real metaphysics comprises a subset of the concepts and propositions that make up the science of intelligibles. And whilst it will be the case that it cannot be demonstrated that a given proposition belongs in Leibniz's real metaphysics through the resolution of terms, there will be hypothetically necessary truths which can be investigated in this way. The difference between the view that I have put forward and Rutherford's concerns the explanation for the diachronic changes in his style of output. According to my account, we should expect to see empirical arguments because Leibniz was interested in real metaphysics and,

THE EMPIRICAL GROUNDS FOR LEIBNIZ'S 'REAL METAPHYSICS'

from the 1680s onward became firmly committed to the contingency of the actual world.

Received 5 November 2010

Paul Lodge
Mansfield College
Oxford, OX1 3TF
England, UK
paul.lodge@mansfield.ox.ac.uk

Notes

* I am grateful to audiences at The New England Colloquium in Early Modern Philosophy and the Universities of Leeds, Nottingham, Oxford, and Torcuato Di Tella, Buenos Aires, for their responses to earlier versions of this paper. Thanks also go to Angela Chew, David Leopold, Antonia LoLordo, Gonzalo Rodriguez-Pereyra, and two anonymous referees for this journal for their helpful comments on more recent drafts. In addition to the standard abbreviations used in this journal, I employ the following: **D**: *Philosophical Works of Leibniz*. Trans. and ed. by G. M. Duncan. New Haven: Tuttle, Morehouse, and Taylor, 1908. **Dut**: *Leibniz: Opera omnia*. Ed. L. Dutens, 6 vols. Geneva, 1768; **EA**: *Burchard de Volder: Exercitationes Academicæ quibus Renati Cartesii Philosophia Defenditur adversus Petri Danielis Huetii Censuram Philosophiæ Cartesianæ*, 2 vols. Amsterdam: Van Ravenstein, 1695. Cited by volume and page, e.g., EA I, 52; **F de C**: *Lettres et Opuscules inédits de Leibniz*. Ed. A. Foucher de Careil. Paris, 1854; **LBr**: *Der Briefwechsel des Gottfried Wilhelm Leibniz*. Ed. Eduard Bodemann. Hanover, 1889; **P**: *Leibniz: Logical Papers*. Trans. and ed. by G. H. R. Parkinson. Oxford: The Clarendon Press, 1966.

¹ See Donald Rutherford, *Leibniz and the Rational Order of Nature*. Cambridge: Cambridge University Press, 2005, pp. 71-73; and "Demonstration and Reconciliation: The Eclipse of the Geometrical Method in Leibniz's Philosophy," in *Leibniz's 'New System' (1695)*. Ed. R. S. Woolhouse. Firenze: Lessico Intellettuale Europeo, 1996, pp. 181-201.

² *Rational Order*, p. 77.

³ "Demonstration and Reconciliation," p. 182.

⁴ *Rational Order*, p. 71.

⁵ “Demonstration and Reconciliation,” p. 189.

⁶ *Rational Order*, p. 73.

⁷ A VI iv, 511.

⁸ GP VI, 227/H 243-44. See *Rational Order*, pp. 71-79 for additional citations.

⁹ See “Demonstration and Reconciliation,” p. 181.

¹⁰ For example, *Demonstratio propositionum primarum*, a work dating from 1671-72 (A VI ii, 479-86), *Demonstrarium Catholicarum conspectus* (A VI i, 494-500), and *De transubstantione* from 1668-69 (A VI i, 508-513/L 115-17).

¹¹ A number of theological writings from the late 1670s consist of propositions and demonstrations (see A VI iv, 1357-66; 2157-9; 2202-04; 2204-10). Several other works embody the geometrical method in full, for example, *De obligatione credendi* from 1677(?), which has the full arsenal of definitions, axioms, propositions, corollaries and scholia (A VI iv, 2149-55); and *De extenso, spatio, corpore et puncto* from 1685-87 (A VI iv, 669).

¹² For example, see A VI iv, 27-39; 53-7; 72-7; 302-11; 388-97; 398-405; 405-07; 566-70; 624-30; 861-6; 867-70; 870-9; 930-4; 934-6; 937; 938; 939-41.

¹³ “Demonstration and Reconciliation,” p. 187, n.18.

¹⁴ See “Demonstration and Reconciliation,” pp. 183-85.

¹⁵ One notable exception is an extensive series of definitions, which Couturat dates 1702-04, covering all aspects of Leibniz’s philosophy (C 436-510).

¹⁶ Leibniz utilizes a number of empirical arguments against the Cartesian thesis that the essence of bodies consists in geometrical extension given observable features of the material world, in particular the existence of motion and resistance. Published versions of these can be found in *On Nature Itself* (GP IV, 508-09/AG 159-60) and a letter to the *Journal des Savants* of June 1691 (GP IV, 464-65/D 42-44). I also regard another argument, which appears in section 13 of *On Nature Itself* (GP IV, 512-14/AG 163-65) as empirical. However, this has not been the standard reading (see Paul Lodge, “Leibniz’s Heterogeneity Argument Against the Cartesian Conception of Body,” *Studia Leibnitiana* 30 (1998), 83-102).

¹⁷ See GP IV, 485/AG 144.

¹⁸ See “Demonstration and Reconciliation,” p. 196.

¹⁹ A I xiii, 657.

²⁰ GP VII, 468.

²¹ “Demonstration and Reconciliation,” pp. 191-93. For example, see the letters to Placcius (Dut VI 1, 59-60), Burnett (A I xiii, 555), Biber (LBr 15-16), and

THE EMPIRICAL GROUNDS FOR LEIBNIZ'S 'REAL METAPHYSICS'

Dangincourt (Dut III, 499).

²² “Demonstration and Reconciliation,” p. 193. See the letters to l’Hospital (GM III, 283) and De Volder (GP II, 168/L 514; GP II, 241/L 527).

²³ LBr 15-16.

²⁴ A I xii, 751. See “Demonstration and Reconciliation,” p. 190 n. 28 for additional citations.

²⁵ See “Demonstration and Reconciliation,” pp. 194-95.

²⁶ Ibid., p. 199.

²⁷ Ibid.

²⁸ F de C 234.

²⁹ NE 260-61.

³⁰ See “Demonstration and Reconciliation,” p. 196.

³¹ See *ibid.*, p. 197

³² *Ibid.*, pp. 198-99.

³³ See “Demonstration and Reconciliation,” p. 195.

³⁴ Indeed, Rutherford implies that such a context arose when Leibniz worked in isolation in the 1680s (see “Demonstration and Reconciliation,” p. 196).

³⁵ See GP II, 151.

³⁶ GP II, 166.

³⁷ EA I, 56.

³⁸ In a letter to Foucher from 1695, he reports having read a copy of De Volder’s *Exercitationes Academicæ* (GP I, 420 - also see GP III, 19-20).

³⁹ See GM III, 559-60; 609 and GP II, 162; 172/L 518; 206n.

⁴⁰ See GM III, 559-60; 589; 592.

⁴¹ GM III, 622-23.

⁴² A slightly different definition is found on the margin of the manuscript of a letter to De Volder from 1701 (GP II, 224n).

⁴³ GM III, 625.

⁴⁴ See GM III, 626.

⁴⁵ See GM III, 609

⁴⁶ See GP II, 213.

⁴⁷ I infer this from the fact that, immediately after drawing the reader’s attention to Leibniz’s desire to follow Euclid in “Demonstration and Reconciliation”, Rutherford describes Leibniz’s conception of metaphysics as “in the strictest sense, a *scientia*, or demonstrative science” (p. 187).

⁴⁸ Indeed, in the case of Spinoza, the seventeenth century philosopher most famous

for employing the method, there is no clear consensus from scholars about the epistemic status of the definitions, axioms and postulates (see Aaron Garrett, *Meaning in Spinoza's Method*. Cambridge: Cambridge University Press, 2003, pp. 9 ff).

⁴⁹ A II i, 398/L 187.

⁵⁰ A II i, 435/AG 237.

⁵¹ GM III, 621.

⁵² Ibid.

⁵³ A II i, 398/L 187.

⁵⁴ A VI iv, 135. This definition is taken from a work that probably dates from 1678-79, entitled “Praecognita ad encyclopediam sive Scientiam universalem,” and underpins a definition of “knowledge [*scientia*]” that we find as “certain cognition [*cognitio*] of the truth of propositions” (A VI iv, 135). Also see *On Freedom* from 1689(?) (FC181-82/AG 95-96).

⁵⁵ GP II, 258.

⁵⁶ Ibid.

⁵⁷ *Rational Order*, p. 71.

⁵⁸ “Demonstration and Reconciliation,” p. 186 n.15

⁵⁹ A I xiii, 657.

⁶⁰ GP IV, 483-86/AG 143-45.

⁶¹ GP II, 258.

⁶² In fact, on the account I shall sketch below, it will be apparent that I do not think that Leibniz presented Bernoulli with an a priori argument at all. Whilst it might be thought to embody the geometric style of presentation, I think that the account of substance on which it depends would have been justified by Leibniz on empirical grounds had he chosen to provide a justification.

⁶³ NE 431.

⁶⁴ GP II, 186.

⁶⁵ GP VII, 372/AG 328.

⁶⁶ Also see GP VI, 588/AG 264.

⁶⁷ See GP VII, 394/AG 333; GP VII, 394-5/AG 334. Also see GP III, 565/AG 170.

⁶⁸ Although I do not want to claim a direct influence, there is an interesting precedent for this in the work of Duns Scotus, who conceived of metaphysics as a “real science”, namely as a science of actual things rather than concepts (see Peter King, “Scotus on Metaphysics,” p. 15, in T. Williams ed. *The Cambridge Companion to*

THE EMPIRICAL GROUNDS FOR LEIBNIZ'S 'REAL METAPHYSICS'

Duns Scotus, Cambridge: Cambridge University Press, 2003, 15-68).

⁶⁹ GP VI, 49/H 73.

⁷⁰ It must be admitted that some difficulties arise when we investigate the coherence of these views. Leibniz wishes to maintain, for example, that God was determined by his nature to choose the best, but not necessitated. However, the contingency of the actual world is never in doubt.

⁷¹ GM III, 565/AG 170-71

⁷² One of the referees for this journal has suggested that the situation might be worse for my position since Leibniz might have regarded worlds with atoms and vacua as ones in which the same metaphysical structure obtains and it is the physics that accounts for absence of a plenum. I am unable, however, see how this would work. I read Leibniz's later philosophy as including the claim that the fundamental constituents of the actual world are an infinite number of essentially active monads. And, whilst, I don't have space to make the case for it here, it seems to me that this is inconsistent with the existence of empty space or homogeneous extended beings.

⁷³ *Monadology* sections 43-45 (GP VI, 614/AG 218).

⁷⁴ *Monadology* sections 44-45 (GP VI, 614/AG 218).

⁷⁵ A VI iv, 588/AG 25

⁷⁶ *Ibid.*

⁷⁷ David Blumenfeld, "Leibniz's ontological and cosmological arguments," in N. Jolley ed. *The Cambridge Companion to Leibniz*. Cambridge: Cambridge University Press, pp. 357-64.

⁷⁸ GP IV, 294/D 142. Also see GP IV, 404; GP IV, 405/D 145; GP III, 444; NE 438.

⁷⁹ See A VI ii, 578/L 167; A VI iii, 571-79.

⁸⁰ See GP IV, 406/D 147.

⁸¹ In the *Theodicy* Leibniz does argue that the necessary being must be a perfect rational agent. However, this depends on what appears to be an a posteriori claim, namely that there exists a single world which was one among many possibles (see GP VI 106/H 127)

⁸² A VI iv, 590/AG 26.

⁸³ A VI iv, 587/AG 24.

⁸⁴ A VI iv, 530/MP 8. The editors of A VI iv suggest a date for this piece between the summer of 1683 and beginning of 1685.

⁸⁵ A VI iv, 156-60/MP 1-4. The editors of A VI iv suggest that this piece may have been written in March or April 1679.

⁸⁶ A VI iv, 158/MP 3.

⁸⁷ For the infinite analysis account, see, for example, *On Freedom and Necessity* from 1680-84? (A VI iv, 1444-49/AG 19-23). *General Inquiries About the Analysis of Concepts and of Truths*, section 61 from 1686 (A VI iv, 164-66/P 61-62) and *On Contingency* from 1689 (A VI iv, 1649-52/AG 28-30).