Mills can't think: Leibniz' Approach to the Mind-Body Problem
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1 The Mill Argument in the Monadology

In the *Monadology* Leibniz argues that matter can't think by way of an interesting, and well-known thought experiment:

> Moreover, we must confess that *perception*, and what depends on it, is *inexplicable in terms of mechanical reasons*, that is, through shapes and motions. If we imagine that there is a machine whose structure makes it think, sense, and have perceptions, we could conceive it enlarged, keeping the same proportions, so that we could enter into it, as one enters into a mill. Assuming that, when inspecting its interior, we will only find parts that push one another, and we will never find anything to explain a perception. And so, we should seek perception in the simple substance and not in the composite or in the machine. Furthermore, this is all one can find in the simple substance – that is, perceptions and their changes. It is also in this alone that all the *internal actions* of simple substances can consist. (G VI 609, AG 215)[1]

[1] I use standard practices for references to Leibniz. For Leibniz's work in the original languages I refer by volume and page number to *Die Philosophischen Schriften von Gottfried Wilhelm Leibniz* (G); *Leibniz Sämtliche Schriften und Briefe* (A), references are by series and volume; *G.W. Leibniz: Methematischen Schriften* (GM). Translations can be found in *Leibniz: Philosophical Essays*, transl. Roger Ariew and Daniel Garber (AG); *Philosophical Papers and Letters*, ed. Leroy E. Loemker (L);

This passage has received much attention in the contemporary literature on the philosophy of mind, but it has been relatively neglected by historians of philosophy.[2] The argument in this passage, like everything else in the *Monadology*, is compact. It does not wear its structure on its sleeve and raises many questions. In particular:

(1) On what ground exactly does Leibniz think he can rule out the possibility of a machine that thinks? Does the argument simply rely on an appeal to intuition or does Leibniz have more to say?

(2) Why does he think that the subject of perception must be simple?

(3) At *Monadology* 14, so shortly before the Mill Argument, Leibniz characterizes perception as "the passing state which involves [*enveloppe*} and

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Peter Remnant and Jonathan Bennett, *New Essays on Human Understanding* (BR); *Leibniz's 'New System' and Associated Contemporary Texts*, ed. and transl. R. S. Woolhouse and Richard Francks (WF). And finally LOC stands for *The Labyrinth of the Continuum: Writings on the Continuum Problem, 1672-1686*. This work contains the texts both in the original languages and in English.

[2] For discussion in the philosophy of mind literature, see, for instance, Searle, 1983, p. 268; Guderson 1983, pp. 628-29; Seager 1991, pp. 174, 183-4; Hasker 2010, p. 181; Barnett 2010, p. 167; Landesman 2011. For further references, see Lodge Bobro, 1998. Attempts to interpret what Leibniz himself meant by the argument can be found in Wilson 1974, reprint, Wilson 1999. (I refer to the reprint), Jolley 1984; Lodge and Bobro 1998, Duncan 2011. Scott 2010 focuses on a different argument in Leibniz and argues that it rather than the Mill Argument is an ancestor of the modern knowledge argument.

represents a multitude in the unity or in the simple substance". How does this characterization relate to the Mill Argument? Does it feature as a premise? As a conclusion?

Before we launch into a full-blown discussion of the argument, it is worth making a few quick observations. First, the fairly obvious point of the mill thought experiment for Leibniz is that imagining a large (purported) thinking machine allows us to think more clearly about the issues than considering a small one, like a brain. He thinks we will realize that such a machine has only mechanical qualities; the argument is a *reductio* of the idea of a thinking machine.[3] If you think of a small one, as a materialist would do, you might think that the microscopic mechanical qualities could give rise to some novel kind of quality, in particular, perception. But Leibniz holds that there is no qualitative difference, only a difference in size, between a small machine and a large one and their properties.

Second, contrary to what some readers have thought, Leibniz does not claim we would not find perceptions when walking around in a mill, or rather a mill-size purported thinking machine. Instead, Leibniz observes that we would not find anything that explains perceptions. And that phrase, we will see, is crucial to understanding the Mill Argument. This point is relevant to an objection that is sometimes raised against the Mill Argument in the contemporary literature. You might say that if you look at water molecules you

[3] Locke made the same point when he argued in the *Essay* that interaction between material qualities can't result in thought (*Essay* IV.X.10). See quote below.

will also not find the macro properties of water such as its fluidity. But we would not conclude that water cannot have such qualities in virtue of its molecules. Leibniz would likely reply that we can explain the macro qualities of water in terms of the qualities of its molecules, but that we cannot offer analogous explanations of perception.[4] So our attempts at understanding the argument should examine the grounds on which Leibniz makes this claim about explanation. Is it supposed to be a brute intuition that we get in this thought experiment or is there more to it?

Third, it is tempting to think of the argument as concerned with consciousness. But the argument is about perceptions in general, and Leibniz did not think that all perceptions are conscious.[5] He repeatedly expressed his disagreement with Descartes on this issue; indeed, he does so just before the Mill Argument, at *Monadology* 14.[6]

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[4] For this point see also Seager 1991, pp. 183-184. For another defense of Leibniz on this issue, see Lodge and Bobro 1998, pp. 556-557.

[5] See also Lodge and Bobro 1998 p. 561 for this point.

[6] This is a more complicated point, however, than it first appears to be: the question what Leibniz means by consciousness is not easy to settle. So an important question, one I will not be able to address, is how his notion of consciousness relates to our contemporary notion – or notions. For recent discussions of Leibniz' notion of consciousness see Simmons (2001), Jorgensen 2009, 2011. In correspondence, Simmons has suggested to me that Leibniz' notion of consciousness appears to be a very demanding notion in ways that

It is worth pausing briefly over Leibniz' terminology. While for Leibniz the term "perception" covers what we now call "mental states" in general, he used the term "mind" in a restricted sense to refer to monads that are rational, in particular, human monads. Most monads are not rational (*Monadology* 29). Similarly for the term "thought" -- although sometimes Leibniz also uses these terms in the Cartesian and Lockean sense to refer to the mental generally. Furthermore, while I think it should be clear that for Leibniz perceptions are what we now call mental states, it is an interesting question to ask ourselves what the mark of the mental is for Leibniz, given that it is not consciousness. I cannot come even close to addressing this difficult issue fully here, but the most plausible candidate is representationality.[7] Of course, then we need to sort out what that means. Crucial is the point that representationality for Leibniz is intrinsic: monads represent not in virtue of relations to external objects they represent, but they have intentionality intrinsically. Perceptions are "as of objects" inherently. Thus even if God only created one monad --as Leibniz thought he could; each monad is a "world apart"-- it would have perceptions

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make it quite different from ours. At the same time, I see no reason to think that Leibniz's Mill Argument was about our contemporary notion of consciousness. In light of this aspect of Leibniz' view, sometimes interpreters raise the question whether for Leibniz perceptions are mental. I think it should be clear that they are, but won't attempt to defend that view here. See Rozemond 2009a and Simmons 2001.

[7] For this view see also Simmons 2001.

that are representational in this sense (see, for instance "New System", G 484/AG 143).

The extreme brevity of the statement of the argument in the *Monadology* poses a huge challenge. But its occurrences elsewhere, which have too often been neglected, help significantly in filling in the blanks --which is not to say that no questions remain, as we shall see. In particular, the argument occurs in a draft of a letter to Pierre Bayle, the Preface to the *New Essays* and a little known text, "Reflections on the Souls of Beasts".[8] We will see that Leibniz's view that we cannot explain how a machine could have perceptions relies on the view that the states of a substance must be modifications of its nature, a view that he shared with Descartes. And he thinks that mental states, perceptions, cannot be understood as modifications of a material thing. When he explains why this is so, the most explicit answer he gives is that perception is active and matter is

[8] I chose the order in which I discuss these texts on philosophical grounds and not in chronological order. I know of no reason why any differences between these texts should be explained in terms Leibniz' views changing over time, but others may think differently. It is certainly worth noting, however, that to my knowledge, the Mill Argument only occurs in Leibniz' later years. The *New Essays* (1703-5) and the letter to Bayle (1702) date from the very early years of the 18th century. "On the Souls of Beasts" is dated to 1710, the *Monadology* was published in 1714. This is significant in view of the fact that Leibniz' application of the term "simple", which tends to occur in our around the argument, to mind-like substances, monads or monad-like entities (substantial forms in the middle years), does not emerge until later in his writings. See Garber 2009, pp. 88-90.

passive. Other candidates for the reason consist in Leibniz' claim that perceptions are "internal actions" and that perceptions must belong to simple substances.

Its relationship to the notion of simplicity is an important question about the argument, which I will address in some detail. I will raise doubts about the view that the Mill Argument is an instance of an argument from the unity of consciousness, in the vein of the argument discussed by Kant in the Second Paralogism.

Some interpreters have been concerned that the Mill Argument relies on an argument from ignorance. But we will see that Leibniz was keenly aware of the defects of such an argument, and did not make this mistake. Instead the argument relies on some specific Leibnizian views about the nature of substance, matter and perception. These views are not ones that would obviously resonate with modern day discussions of the mind-body problem, but they constitute an early modern predecessor of what we would now call an argument from the explanatory gap between the mental and the physical—although the gap Leibniz identifies is very different from ours.

2 Perception cannot be a modification of matter

In the presentation of the Mill Argument in the *Monadology* Leibniz gives us some sense of why he thinks a machine cannot think when he writes that perception is "inexplicable in terms of mechanical reasons, that is, through shapes and motions", and all we would find in a mill is "parts that push one another, and never anything to explain a perception". Two points stand out immediately: (1) what processes Leibniz says we do find in a mill, and (2) a

reliance on the notion of explanation. Leibniz is explicitly working with an early modern mechanistic picture of the material world with its severely limited list of physical qualities and processes: it consists in material particles that move and push one another and this is supposed to explain all physical processes. Of course, this conception was already undergoing modification at the time in particular in light of Newton's notion of gravity, and Leibniz himself argued extensively that this picture is insufficient to explain the physical world. But his point here is to argue that matter so understood cannot think. Our conceptions of the material world are significantly different, but even now at least some philosophers see similar features of the material world as problems for materialism.[9]

We can find significant illumination of the type of explanation Leibniz is looking for in The Preface to the *New Essays*, where he responds to Locke's provocative claim that we can't rule out the possibility of God superadding thinking to matter. Locke had written:

> We have the *Ideas* of *Matter* and *Thinking*, but possibly shall never be able to know, whether any mere material Being thinks, or no; it being impossible for us, by the contemplation of our own *Ideas*, without revelation, to discover, whether Omnipotency has not given to some

[9] For the view that our contemporary conception of body is sufficient similar to Leibniz's for the purposes of the argument, see, for instance, Seager 1991 and (without mentioning Leibniz), Chalmers 2001. According to Chalmers, scientific physical explanations run in terms of structures and functions and these are unpromising as accounts of conscious experience.

> Systems of Matter fitly disposed, a power to perceive and think, or else joined and fixed to Matter so disposed, a thinking immaterial Substance: It being, in respect of our Notions not much more remote from our Comprehension to conceive, that GOD can, if he pleases, superadd to Matter a Faculty of Thinking, than that he should superadd to it another Substance, with a Faculty of Thinking; since we know not wherein Thinking consists, nor to what sort of Substances the Almighty has been pleased to give that Power, which cannot be in any created Being, but merely by the good pleasure and Bounty of the Creator. (*Essay* IV.III.6)

This argument gave rise to a heated debate in the period and it has been of great interest to historians of philosophy.[10] Leibniz was one of those who rejected the possibility of the superaddition of thinking to matter.[11]

The issue at stake is the possibility that dualism is not demonstrable and may even be false so that a human being is a single substance which is both material and thinks. It is worth noting that there are two different versions of this possibility. One is that God adds the capacity for thought to a material subject. This is the possibility Locke thought he could not rule out. Another possibility is that material qualities themselves give rise to thought. This

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[10] For discussion see Wilson 1979, Wilson 1982), Ayers 1981, Rozemond and Yaffe, 2004, Stuart, 1998.

[11] His discussion here clearly covers the full range of perception and not just "thought" in his own narrow sense. It includes sensation (*sentiment*) and the perceptions of animals (G V 59-60/BR 66-67).

possibility Locke rejected: he seems to conceive of mental states as entirely different in nature from physical states.[12] He wrote:

> Divide Matter into as minute parts as you will (which we are apt to imagine a sort of spiritualizing, or making a thinking thing of it,) vary the Figure and Motion of it, as much has you please, a Globe, Cube, Cone, Prism, Cylinder, *etc.* whose Diameters are but 1000000th part of a *Gry* will operate no otherwise upon other Bodies of proportionable Bulk, than those of an inch or a foot Diameter; and you may as rationally expect to produce Sense, Thought, and Knowledge, by putting together in a certain Figure and Motion, gross Particles of Matter, as by those that are the very minutest, that do any where exist. They knock, impell, and resist one another, just as the greater do, and that is all they can do. (*Essay* IV.X.10)

At first sight, the Mill Argument seems to address the second possibility rather than the first: it claims that thought or perception cannot be explained in terms of mechanical qualities. That would seem to leave open the possibility that God superadds thought to matter. But in the Preface to the *New Essays* it features in Leibniz' rejection of both types of materialism and he does not really distinguish between them, as he argues that the inexplicability of thought by reference to material qualities rules out that God would superadd thought to matter.[13]

Locke had suggested we cannot rule out this possibility, even though we can't understand it. Our lack of understanding, Locke contended, is no ground

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[12] For a different reading of this passage see Ayers (1981).

[13] I do not think that Leibniz' failure to distinguish between these two issues poses a problem. See note 23 below.

for rejecting it, as it would constitute an unwarranted limitation on God's power. In Leibniz' words, Locke argued that "our conception is no measure of the power of God" (G V 57/BR 64). Leibniz sees himself as in agreement with Locke that matter itself can't mechanically produce sensation (*sentiment*) or reason. He also agrees that "the conception of creatures is not the measure of God's power": so it is within God's power to superadd thinking to matter. But he objects that our "conceptual capacity (*conceptivité*) or power to conceive is the measure of the power of nature; whatever is in accord with the natural order can be conceived or understood by some creature" (G V 58/BR 65, emphasis added). So given that we can't understand thinking matter, its occurrence would be a standing miracle, and that would be objectionable (G V 60/BR 67). And Leibniz thinks it would be incompatible with God's wisdom (G V 363/BR 382). So Leibniz agrees that God could superadd thinking to matter, but he thinks he can rule out that God has done so.

A crucial requirement emerges for Leibniz: thinking belonging to matter must be intelligible to creatures. God would not engage in standing miracles. I will not be able to discuss this idea, which is clearly very important to Leibniz; it also plays a central role in his arguments against the occasionalist view of mind-body interaction.[14] One might well object, however, that Leibniz is moving too

[14] As Leibniz sees it, occasionalism depicts such interaction as a constant miracle because of the lack of intelligible connections between the correlated mental and physical states. He also sees this as a problem for the view that there is genuine causal interaction between mind and body (G II 92-94/AG 82-84). For discussion, see Rutherford 1993.

fast. Perhaps we do not understand thinking matter, but perhaps some day we will, or someone will. Isn't Leibniz offering an argument from ignorance?[15] He makes very clear that he is aware of the problem and that he considers himself not guilty. He writes: "I recognize that we should not deny what we do not understand, but I add that we do have the right to deny (at least in the natural order) what is absolutely unintelligible and inexplicable" (G V 58/BR 65, emphasis added). So Leibniz holds that it's not merely the case that we don't understand thinking matter, but that we know that it is "absolutely unintelligible and inexplicable". But why does he think that?

The answer to this question also makes clear what kind of explanation Leibniz was looking for in the Mill Argument:

> … The modifications that can belong naturally or without miracle to a subject, must come from the limitations or variations of a real genus or from an original constant and absolute nature. For this is how philosophers distinguish the modes of an absolute being from that being itself, just as we know that size, shape and motion are clearly limitations and variations of corporeal nature. For it is clear how a limited (*borné*) extension gives rise to shapes and that the changes that occur in it are nothing other than motion. And whenever we find some quality in a subject, we must believe that if we understood the nature of that subject and of that quality, we would conceive how that quality could result from it. Thus in the order of nature (setting aside miracles) God does not

[15] Wilson suggests Leibniz might be doing so, although she also considers a different way of looking at his approach. Wilson 1999, p. 400.

> arbitrarily give these or those qualities indifferently to substances; he never gives them any but those that are natural to them, that is to say, those that can be derived from their natures as explicable modifications. (G V 58-59/BR 66, see also G V 56/BR 63)

So the qualities of a substance must be modifications of its nature, and Leibniz envisions a simple, clear test for establishing whether this is so in a particular case: when we understand both a quality and the nature of its subject, we see that the quality simply consists in a limitation of the nature of the subject. I will refer to this view as the Mode-Nature View.

In the Preface to the *New Essays* he first uses this line of thought to argue that gravity can't naturally belong to matter:

> So we may take it that matter will not naturally possess the attractive power referred to above, and that it will not of itself move in a curved path, because it is impossible to conceive how this could happen – that is, to explain it mechanically—whereas what is natural must be such as could become distinctly conceivable by anyone admitted into the secrets of things. This distinction between what is natural and explicable and what is inexplicable and miraculous removes all the difficulties: if we rejected it, we would support something worse than occult qualities and in doing so we would renounce philosophy and reason, we would give refuge to ignorance and laziness… (G V 59/BR 66)[16]

[16] In a letter to Arnauld Leibniz uses the inexplicability of a body moving along a curve as opposed to in a straight line against occasionalism, relying on the view

These remarks are striking for their rationalist insistence on the intelligibility of the natural world, an issue on which Leibniz contrasts strongly with Locke. At the same time, his they are part of the early modern insistence that mechanistic explanations trump Aristotelian scholastic ones because if their superior degree of intelligibility. Early modern mechanists spoke dismissively of occult qualities, qualities that we do not understand and that consequently can't explain anything. Leibniz indicates here that gravity is worse than such qualities.

He then returns to the question of the possibility of thinking matter and now he connects the Mode-Nature View to the Mill Argument:

> As for thought, it is certain and the author admits it more than once, that it cannot be an intelligible modification of matter, or that it can be understood and explained in it. That is, a feeling and thinking being is not a mechanical thing like a watch or a mill, so that we can conceive sizes, shapes and motions the mechanical conjunction of which could produce something thinking and even feeling in a mass in which there was no such thing [before], and that would cease in virtue of the cessation of the machine's functioning. (G V 59/BR 66-67)

Thinking-- and Leibniz thinks Locke agrees-- can't be understood as a modification that arises from limitations or variations of matter. It can't arise from mechanical qualities. So for Leibniz, given his rejection of standing miracles and his strong requirements of intelligibility on what is natural, it also cannot belong to a material substance.

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that what a thing does must be explicable in terms of its nature (April 30, 1687, G II 93/AG 83).

This line of thought is noteworthy for several reasons. First, we can now see that that Leibniz does not give an argument from ignorance; instead he offers an argument that relies on a very specific view about the relationship between the qualities or states of a substance, and the nature of that substance. It is an argument that is akin to an argument from an explanatory gap but it is a rather strong version of this line of thought. The problem is not just that we cannot explain how matter could think, but Leibniz believes that we can see that doing so is absolutely impossible-- at least naturally. And it relies on the rationalist view that the structure of substance is transparent to the human intellect.

Furthermore, this view is strongly reminiscent of Descartes, who held that all the qualities of a substance must be understood as modes of its nature, what he called its principal attribute: "… each substance has one principal property which constitutes its nature and essence, and to which all its other properties are referred." (*Principles* I.53). Descartes then claimed that a mode of a substance presupposes this principal attribute and cannot be understood without it.[17]

[17] I have argued elsewhere that this feature of Descartes's mode-attribute conception of substance is central (while usually implicit) to his main argument for dualism. See my *Descartes's Dualism*, ch. 1. I argue that Descartes's strict mode-attribute conception of substance, where its modes are ontologically and conceptually dependent on its principal attribute, explains why he thought that the possibility of doubting that I am a body ultimately supports the claim that I am not a body. Consequently, Leibniz' Mill Argument and Descartes's main argument for dualism have very important features in common. A full comparison between the two goes beyond the scope of this paper.

Leibniz rejected, of course, important specifics of the overall Cartesian view about substances and their natures: most notably he argued repeatedly against the view that there are substances whose nature consists in extension. But he accepts a version of Descartes's general view about the structure of substance. For both there is an *a priori* connection between the qualities of a substance and its nature. Leibniz's argument, as we will see more clearly in a moment, relies not exactly on the Cartesian claim that modes presuppose the nature of their substance, but on the stronger claim that they must be *nothing more than* modifications of this nature. He makes this point more emphatically in a letter to Bayle we will discuss in detail later: "…a modification, far from adding some perfection, can only be a variable restriction or limitation, and as a result cannot exceed the perfection of the subject" (G III 67/WF 128).[18],[19]

[18] One might think that Leibniz' argument presupposes views he does not accept in a way that undermines it, but I don't think there is a problem of this kind. First, the argument relies on the idea of purely material beings. He himself thinks there are no such substances and that bodies are grounded in monads, or as he puts it in earlier writings, substantial forms. But the Mill Argument does not presuppose Leibniz' extensive critique of the Cartesian conception of matter, instead it takes aim at a view that contains such a conception in order to criticize merely the idea of thinking matter. Leibniz' argument that on such a conception of matter it is not a substance is a philosophically posterior move in the defense of his view. The next move is then to argue that a purely material substance is not possible. In the end, Leibniz holds that the view that matter can think has

Locke, of course, would not accept this line of thought, since he does not have any optimism about our ability to grasp the nature of substance. Locke thinks that much of the world, presumably the natural world, is not intelligible to us. He holds that superaddition of thinking to matter might actually occur, even if we don't understand how it would work. If instead dualism is true, he pointed out, mind-body interaction occurs even if we don't understand any better how it works (*Essay* IV.iii.6)! So either way we are stuck with a metaphysics that contains central unintelligible elements. And he writes to Stillingfleet: "[T]hat a solid substance may not have qualities, perfections and powers, which have no natural or visibly necessary connexion with solidity and extension, is too much

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things entirely backwards. On this view matter is fundamental and it can sustain thought; for Leibniz, matter is itself ultimately grounded in monads.

Second, Jolley contends that Leibniz is not entitled to the Mode-Nature View of the Preface and that this seriously undermines his argument (Jolley 1984, p. 99). He does so in light of criticism of the view that Leibniz offers in a letter to De Volder (G II 169,249/L 516, 528). But it is not clear to me that the specific criticisms Leibniz voices to De Volder affect the Mill Argument, given that for Leibniz the argument relies on the idea that matter is passive and perception active, as we shall see in the next section.

[19] A similar line of thought can be found in Samuel Clarke's criticism of thinking matter: thought would be something more than is contained in the nature of matter and material qualities. Clarke does not, however, explain this idea in terms of the Mode-Nature View, but on the basis of considerations about causality. For discussion see Rozemond 2009b.

for us (who are but of yesterday, and know nothing) to be positive in". (*Works* III, 465). Whatever Locke thought of the full Mode-Nature View, it is amply clear that he rejected the epistemological part of the view: that is to say, Locke clearly denies that this relationship would be detectable by us *a priori* as Descartes and Leibniz held. And so for Locke the limits of our knowledge rule out reliance on the Mode-Nature View.

Locke had written that in order to rule out the superaddition of thought to matter one would need to argue that this would be contradictory (To Stillingfleet, *Works* III, 466). But Leibniz does not respond by doing that. He accepts that it is not *absolutely* impossible for matter to think, God can bring this about, but it would be a miracle and he finds that objectionable. Locke's discussion of superaddition of thinking to matter did not explicitly address this particular nuance. He envisions either that it is impossible or that it is possible in virtue of God's power, and the latter option means we cannot rule out that it actually occurs.[20]

Finally, as we saw, there is the following important difference between Locke and Leibniz: Leibniz thinks not just that we don't understand how thinking matter would work, as Locke claimed. Leibniz thinks that we see that thinking matter is absolutely unintelligible, because we can't understand it as a modification of matter. But now the question arises: on what grounds does he

[20] Locke claimed also that God does actually engage in superaddition in adding motion to matter, the perfections of roses, peach trees and elephants, and gravity (letter to Stillingfleet, *Works* III, p. 460). This suggests that he did not think superaddition was miraculous.

think so? In the absence of an answer to this question, the worry that he relies on an argument from ignorance is unlikely to go away entirely.[21]

3 Why can't perception be understood as a modification of matter?

[21] It is also worth noting the following concerns. (1) Leibniz seems to identify two points that are not obviously the same. The idea that thought must be intelligible as a variation, limitation, or extension or solidity in order to be a quality of matter is not the same as the idea that mechanical states can't produce thought. I think, however, that this point does not in the end affect Leibniz' Mill Argument: on the view at hand, if mechanical qualities produce thought, then thought would be a modification of matter. So if Leibniz can rule out the latter, he can rule out the former. Sometimes he speaks as if he is ruling out the former, which might not be enough to rule out the latter: if motion of particles can't produce thought, thought might still be another type of modification of matter. But I think he held that both can be ruled out for the same reasons, which we are about to discuss. (2) Leibniz does not address the possibility that perception is reducible to material qualities. If so, perception could be a modification of matter. We will see in the next section why Leibniz thinks this is not possible; perception is active, matter and its modifications are passive. (2) A different concern is the following. Perhaps a single thing could have side by side, as it were, two natures, a physical and a mental nature, and its states could be modes of either. Leibniz does not consider this scenario. He assumes that a single entity has a single, unitary nature. For discussion of this issue in Descartes, who also holds this view, see Rozemond 1998 ch. 1.

One might think that for Leibniz it was obvious that perception cannot be understood as a limitation of the nature of matter. It does seem intuitive especially in the context of the early modern mechanical conception of matter: surely mental states involve something more, or something different from states like shape and size, or what could result from them; states which themselves can easily be understood as nothing over and above "limitations" of extension (or as Locke might say, solidity). But in "Reflections on the Souls of Beasts" Leibniz actually explains why perceptions cannot be modification of matter:

> 1. Matter considered in itself, i.e. bare matter, is constituted from antitypy and extension. I call "antitypy" that attribute through which matter is in space. Extension is continuation through space or continuous diffusion through place. And so, as long as antitypy is continuously diffused or extended through place and nothing else is assumed, there arises matter in itself, or bare matter.
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> 2. The modification or variation of antitypy consists in variation of place. The modification of extension consists in variation of magnitude and shape. From this it is obvious that matter is something merely passive, since its attributes and the variation of these involve no action. And insofar as we consider in motion only variation of place, magnitude and shape we consider nothing there that is not merely passive.
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> 3. But if we add in addition an actual variation or the very principle of motion, we arrive at something besides bare matter. In the same way, it is obvious that perception cannot be deduced from bare matter since it consists in some action. The same thing can be understood about any type of perception. If nothing were present in an organism except a machine,

i.e. bare matter having variations of place, magnitude and shape, nothing could be deduced and explained from this except a mechanism, i.e. variations of the sort just mentioned. For from any one thing considered by itself nothing can be deduced and explained except variations of its attributes and of those of its constituents.

4. Hence we also may easily conclude that in any mill or clock considered by itself no perceiving principle is found that is produced in the thing itself; and it makes no difference whether solids, fluids or mixtures of the two are considered in the machine. Furthermore, we know that between coarse and fine bodies there is no essential difference, but only one of magnitude. From this it follows that if it cannot be conceived how perception arises in a crude machine, whether composed of fluids or solids, it also cannot be conceived how it arises in a more subtle machine, for if our senses also were more subtle it would be the same as if we were perceiving a crude machine, as we do now. And so it must be regarded as certain that from mechanism alone, or bare matter and its modifications, perception cannot be explained any more than can the principle of action and motion.

5. Consequently, it must be admitted that something besides matter is both the principle of perception or internal action, and of motion or external action.[22]

[22] The translation is taken from Donald Rutherford's website. The Latin can be found at G VII 328-332, which dates it to 1710. I am very grateful to Deborah Black for drawing my attention to this text.

Leibniz again connects the Mill Argument to the requirement that if a material being can perceive, perceptions must be explicable as modifications of matter. But now he provides a clear reason why this is impossible: matter is passive and "perception consists in some action". And he claims that neither the principle of motion nor perception can be deduced from matter on account of its passivity. This is the clearest and most explicit statement of a reason why mills cannot think I have found in Leibniz.

The idea that mind and not matter is active was not at all peculiar to Leibniz but was common in the period. The Cartesian notion of matter as extension was widely interpreted as depicting matter as passive. The question whether Descartes himself thought of matter as utterly passive is a vexed one. But at least some of his followers, such as Malebranche, who used it as one of his arguments for occasionalism, did follow this route. And on the other side of the English Channel, the conception of matter as passive was the main premise for Cudworth's argument for the need for "plastick natures", active entities distinct from matter to explain a broad range of features of the natural world.[23] The assumption is problematic, however, in relation to Locke, Leibniz's target in the *New Essays*.

But why does Leibniz think perception is action? This is certainly not an obvious point. Aren't sense perceptions in particular passive? Descartes labeled all perceptions, as opposed to volitions, as passive (*Passions of the Soul* I.17). And what notions of passivity and activity is Leibniz using in this context?

[23] Cudworth 1678, 147ff.

Leibniz does not explain, and I can only speculate. For the purposes of his argument, Leibniz perhaps felt no need to explain, because the notion of matter as utterly passive would mean that any type of activity goes beyond matter.[24]

Leibniz is well known for holding that in order to explain motion we need to add to passive matter a genuine force, a genuine efficiently causal power to produce effects.[25] And such force requires recourse to mind-like entities, monads, or in the terminology of his middle years, "substantial forms". And so matter can't account for motion, as he puts it on "On the Souls of Beasts", the principle of motion. In "On the Souls of Beasts" he argues that both motion and perception require activity. So he may have had in mind that they both need genuine causal powers or forces in order to explain their occurrence. Motion is change in the physical world; perceptions are the changing states of mental substances, monads (*Monadology* 14). And so he concludes: we need "a principle of perception or internal action, and of motion or external action".[26]

But what exactly goes beyond matter: perception itself or the activity that produces perception? Leibniz may be thinking along the following, Aristotelian lines. In some processes an activity is distinct from an effect it produces, as in the building of a house. But in the case of activities like perceiving or thinking, matters stand differently: when thinking one does not produce an effect distinct

[24] This possibility was suggested to me by Jeff McDonough.

[25] See for instance, "On Nature Itself" (G IV 504-516/AG 155-167).

[26] For another interpretation of the role of action in the Mill Argument, see Bolton, forthcoming.

from one's activity, nothing more is produced than the activity itself.[27] So it is, Leibniz might say, with perceiving in general. Consequently, saying that perception is a type of action and that it requires genuine action amount to the same thing.

So on the only occasion when Leibniz explicitly addresses the question why perception cannot be a modification of matter, he cites its need for activity. This is a surprising result for the Mill Argument. There is no hint in the statement of the argument in the *Monadology* of the contrast between activity and passivity.[28] And it is philosophically surprising, at least from our point of view; it is not a particularly compelling account of the force of the thought experiment in Mill Argument. It certainly has no obvious connection with the evident appeal of the thought experiment the Mill Argument holds for contemporary philosophers of mind; while there is variety in their discussions of what makes the thought experiment interesting, the contrast of activity and passivity plays no

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[27] See Aristotle, *Metaphysics* IX, 8, 1050a30-b2. For this point in Aquinas see *Questiones de veritate*, I. Qu. 8, a. 6.

[28] One might further argue that in the *Monadology* Leibniz must be describing the mill as active because he described it as moving. But Leibniz himself would reject this claim. As he says in "Reflections on the Souls of Beasts" he holds that one can conceive of motion as "only variation of place, magnitude and shape" and then "we consider nothing there that is not merely passive" (see also *Specimen dynamicum*, (GM VI 247/AG 130-131). And since in that text this how he conceives of the motions of a mill or watch, he may well be doing the same in the *Monadology*.

role. Issues around the contrast between simplicity and complexity are more likely to surface. On the other hand, in Leibniz' own day, as I have noted, the view that matter with its modifications is passive was very common. Perhaps (some of) his contemporaries would have read the mill thought experiment in this way, but I must say I have trouble doing so. And it seems to be an interpretation heavily subsidized by philosophical preconceptions.

Internal Action

In Leibniz's draft of a letter to Bayle a different angle emerges that centers on the notion of internal action, a notion that also emerges in the *Monadology*, as well as the "Reflections on the Souls of Beasts", and that distinguishes perception from motion. In this letter Leibniz argues against not Locke, but against John Toland who had claimed that material configurations can produce thought.[29] Leibniz writes:

> Even if we had eyes as penetrating as you like, so as to see the smallest parts of the structure of bodies, I do not see that we would thereby be any further forward. We would find the origin of perception there as little as we find it now in a watch, where the constituent parts of the machine are visible, or in a mill, where one can even walk around among the wheels. For the difference between a mill and a more refined machine is only a matter of greater and less. We can understand that a machine could produce the most wonderful things in the world, but never that it might perceive them. (G III 68/WF 129)

[29] For more on Leibniz and Toland on these issues, see Duncan, 2012.

Again, Leibniz thinks that we can't find the explanation for perception in mechanical processes: he writes that we cannot find the origin of perception in a machine. He continues as follows:

> Among visible things there is nothing which gets nearer to thought than does an image in a mirror (and brain traces could be no more accurate than that is), but the accuracy of that image doesn't produce any perception in the thing it is in. We do not come close to it, whatever mechanical theory we make up; we remain infinitely far away from it, as must happen with things which are absolutely heterogeneous, just as a surface, when folded up on itself as often as you like, can never become a body. (G III 68-69/WF 129-130).

So Leibniz follows the Mill Argument with a comparison with a mirror, and writes that perception is "absolutely heterogeneous" from material qualities without saying <u>why</u> they are heterogeneous.[30]

He does not explicitly appeal to the Mode-Nature View here, but his analogy with folding a surface is suggestive of his Mode-Nature View of substance: the qualities of a substance can't get something more out of it, as it were, than is already in it. But he does not say what about perception would be more. And, as we saw, earlier in the same letter in a different context he relies explicitly on the view that matter is passive. Leibniz invokes it when responding to De Volder's doubts that we need to take recourse to entelechies, mind-like

[30] I do not know the history of the example of a mirror, but it was not new with Leibniz. See Mijuscovic 1974, p. 75, who notes similar examples in John Smith and Bentley.

entities, in order to explain activity in matter. He comments: "for what is purely passive could never have active modifications, since a modification, for from adding some perfection, can only be a variable restriction or limitation, and as a result cannot exceed the perfection of the subject" (G III 67/WF 128). So the combined observations in this letter so far express a line of thought very much like the one found in "On the Souls of Beasts", a line of thought that centers on the activity-passivity contrast.[31]

Next Leibniz writes:

> We can also see that since thought is an action of one thing on itself [*une même chose sur elle même*], it has no place among shapes and motions, which could never provide the principle [*montrer le principe*] of a truly internal action. Moreover [*d'aillieurs*], there must be simple beings, otherwise there would be no compound things … (G III 68-69/WF 129-30)

Now he does specify a feature of thought that means it does not belong in the realm of the mechanical: thought is "an action of one thing upon itself", a "truly internal action", for which shapes and motions can't provide an explanation.

There is a real difference between this consideration and the argument about activity and passivity: we saw in "On the Souls of Beasts" that both motion

[31] In addition, Leibniz and Toland disagreed about the question whether matter as such, without such immaterial, mind-like entities, is active, with Toland contending that matter itself is inherently active. (See Duncan 2012). I don't know at this point whether Leibniz was familiar with this feature of Toland's view at the time of writing of this letter to Bayle. Indeed, Duncan has suggested to me in correspondence that Toland himself did not have the view at that time.

and perception require activity and so an immaterial origin or explanation. But now Leibniz separates motion and perception. And as he indicates on various occasions, there is a sense in which motion can be understood as a mode of matter when we abstract from the forces it requires.[32] But his point here seems to be that this is not so for perception: "it has no place among shapes and motions". Perception being an internal action sets it apart from motion. I will address in a moment the sense in which it does.

It is noteworthy, however, that Leibniz does not present the fact that perception is internal action as what he sees as underlying the Mill Argument. He presents it as an additional consideration: "We can also [*aussi*] see that since thought is an action of one thing on itself, it has no place among shapes and motion" (emphasis added). And next he writes: "Moreover, there must be simple beings, otherwise there would be no compound beings, or beings by aggregation". This last consideration is an argument that has nothing to do with the nature of perception; it focuses on a very general claim about the nature of composites, and so it is not a clarification of the Mill Argument. In sum, the observation about internal action features in a list of a variety of reasons for believing that there is more in the world than just matter.

While Leibniz separates the notion of internal action from the Mill Argument in this letter, this may not mean he does not at all see it as relevant to the argument, if for no other reason than that we are dealing with a draft of a

[32] See for instance *Specimen dynamicum* (GM VI 247 / AG 130-131).

letter.[33] Furthermore, an understanding of the Mill Argument as involving the notion of simplicity seems a more intuitive way of understanding the thought experiment than Leibniz' own claim that it relies on the passivity-activity contrast. Either way, if we are interested not simply in the Mill Argument but in the broader question why Leibniz thought thinking matter is impossible we do now have two clear answers: matter is passive and it has no room for internal action.[34]

But what does Leibniz means by "internal action"? How does it go beyond the notion of action so as to add a further anti-materialist consideration? Leibniz' texts suggest two features of the notion of internal action. One is the scholastic distinction between an action where the agent is identical with the patient from action where one thing acts on another. This notion appears in *On*

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[33]Duncan sees the need for a simple subject for perception as underlying the Mill Argument in this letter (Duncan 2011, p. 7). He also thinks that there is no argument from explanation in this letter, but he does not discuss the fact that Leibniz talks about the Mode-Nature View earlier in the letter and that he connects it with the passivity-activity contrast.

[34] Could Leibniz have had in mind internal action rather than action in the Mill Argument *Monadology* and the Preface to the *New Essays*? It is difficult to say. I have found no clues for an answer to this question in the latter text. In the *Monadology* Leibniz does refer to internal action, after he concludes the Mill Argument. But it does not follow that the argument there is meant to rely on that notion; after all, in "On the Souls of Beasts" it explicitly does not, and there too the notion of internal action surfaces shortly after the argument.

Nature Itself, albeit under the label "immanent action", which the scholastics contrasted with "transeunt action". Arguing against occasionalism Leibniz writes:

> Indeed, if this view [occasionalism] were extended so far as to eliminate even the *immanent actions* of substances, … then it would be as distant as it could possibly be from reason. For who would call into doubt that the mind thinks and wills, that we elicit in ourselves many thoughts and volitions, and that there is a spontaneity that belongs to us? If this were called into doubt, then not only would human liberty be denied and the cause of evil things be thrust onto God, but it would also fly in the face of the testimony of our innermost experience and consciousness, testimony by which we ourselves sense that the things my opponents have transferred to God, without even a pretense of reason, are ours. (G IV 509-510/AG 161).

Strikingly, Leibniz here suggests that we *directly experience* that we produce some of our mental states in our own mind (See also letter to Masham, May, 1704, G III 340/WF 206)! Very much contrary to Malebranche, and later Hume, who both denied that we have such experience. But note that the passage does not claim that <u>all</u> our thoughts and volitions are "immanent actions". Of course Leibniz does hold that much stronger view because he is committed to the Pre-established Harmony, which states that <u>all</u> states of a soul or monad are produced by that soul or monad: monads have no windows. And in some contexts, the notion of internal action seems precisely to indicate the immanent nature of perceptions. On this understanding, Leibniz' view that all perceptions are internal comes from deep inside his own system.

Now the idea that perceptions are immanent actions is of course a reason for Leibniz to hold that matter can't think. Furthermore, since Leibniz thinks that all action is ultimately internal action, considered from the point of view of his own system, considerations from action and internal action do not clearly come apart. But it seems philosophically unfortunate that Leibniz' objections to thinking matter should rely on views deeply embedded in his own system. Leibniz' own way of phrasing his arguments against thinking matter suggest that he did not mean to rely on features of his own system: in particular, he consistently phrases these arguments as if he accepts the view that there are material things whose nature consists in passive extension, and that are not grounded in mind-like entities. But of course he does not accept that view.[35]

Furthermore, Leibniz presents internal action as characteristic of the mental even in a piece meant to be introductory to a work for a broader audience, where it seems unlikely that he assumes his Pre-established Harmony. Leibniz writes that there are two kinds of substance, one of these is living substance, the other "cognitive substance, which acts in itself and is called a mind [*Substantia congitans quae agit in seipsam, dicitur est Mens*]" (A IVA.531, *Introductio ad encyclopaediam arcanam* dated tentatively 1683 to early 1685).

[35] Duncan 2011 is very thoughtful and interesting about the possibility that Leibniz used the argument in two different ways along different dimensions on different occasions: (1) in a way that appeals to intuitions about the impossibility of a thinking machine without spelling them out (2) in a way that relies on specific views of his own that he thinks explain such intuitions.

And there is an alternative angle on the notion of internal action. In *De mundo preasenti* he offers a particularly helpful comment:

> Every substance has within it a kind of operation and this operation is either of the same thing on itself [*eiusdem in seipsum*], in which case it is called reflection or thought [*reflexio sive cogitatio*] and such a substance is spiritual, i.e. a *mind*, or it is the operation of its various parts [*diversarum partium*], and such a substance is called a *corporeal substance* (A.VI.iv. 1506-7/LOC 284-5)

Leibniz here does not contrast internal action, an action of a thing on itself, with transeunt action. Instead he contrasts it with an action of a thing that is the action of the parts of that thing.[36],[37]

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[36] In Kant's Second Paralogism where he discusses a well-known argument for the simplicity of the soul, this same notion of an internal action plays a crucial role. I will briefly discuss the Second Paralogism in the next section. It also seems possible that the two aspects of internal action are connected. There is at least the suggestion that for Kant this is so. See *Critique of Pure Reason*, A 351-2.

[37] As in the letter to Bayle and the Preface to the *New Essays*, in these passages Leibniz uses terms that elsewhere for him refer to subspecies of perception or monad rather than perception and its subject generally: he speaks of mind, reflection, thought and spiritual substances. So one might think that these comments do not apply to perception in general. But both at *Monadology* 17 and in "On the Souls of Beasts" he clearly refers to perception in general as internal action.

So how should we understand the idea that all perception involves action of a thing on itself and cannot belong to matter for this reason? I cannot settle this question here. A few reflections will have to suffice, and I will return to the notion of internal action briefly in the next section. The notion is suggestive of consciousness, but as we saw before, Leibniz is very clear that not all perceptions are conscious.[38] And it is important to note that the notion of internal action is not reflection in the psychological sense. Leibniz's point is metaphysical rather than psychological. He contrasts internal action in *De mundo praesenti* with the action of a composite thing, or, to be more precise, it is action that should be understood as the action of the parts of that composite thing. Immanent action is contrasted with action of one thing on another. So the question we need to ask (but which I will not attempt to answer) is: what feature of perception requires that it be understood as internal action in these senses?

For Leibniz himself, of course, perceptions are both immanent actions and actions of simple substances, and the notion of internal action sometimes seems

[38] For Leibniz all perception is modeled on thought, as he explains in our very letter to Bayle: "Now internal changes in simple things are of the same kind as that which we understand to be in thought, and we can say in general that perception is *the expression of multitude in a unity*" (G III 69/WF 130). An important, but difficult question is just in what respects perception in general is modeled on thought.

to refer to one, sometimes to the other of these two features.[39] But my suspicion is that in offering an argument against thinking matter on the basis of the notion of internal action he has in mind the contrast with actions of composites. On this reading, this contention does not rely on the pre-established harmony.

In sum, it seems to me that more needs to be said about Leibniz's reliance on the notions of action and internal action in arguing against thinking matter. But a significant result at this point is that Leibniz offered two arguments against thinking matter based on these two notions.

Simplicity

Shortly before the Mill Argument in the *Monadology*, in article 14, Leibniz offers the following definition of perception: "the passing state which involves [*enveloppe*} and represents a multitude in the unity or in the simple substance". Similar definitions of perception occur elsewhere (*Principles of Nature and Grace* 2, letter to Bayle G III 69/WF 130).[40] Does the idea that perception belong to a simple subject play a role in the Mill Argument and if so what?

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[39] Internal action seems to be immanent action at G VI 552. At *Principles of Nature and Grace* 2 it seems to be in contrast with the action of a composite. At *Monadology* 7 Leibniz connects the two features.

[40] In a letter to Arnauld, Leibniz writes that perception is expression or representation "in a single indivisible entity or in a substance, which is endowed with true unity" (G II 112/L 339). Leibniz does not use the term "simple" here. For this terminological issue see note 9 above.

In the previous section we saw that Leibniz sees the idea of perception as internal action as a consideration against materialism, although he never identifies it as underlying the Mill Argument. And this notion seems to involve the idea of a simple subject. Arguments of this type are common in the history of philosophy since Plato's *Phaedo* and in contemporary philosophy of mind the issues of complexity and simplicity do sometimes play a role in objections or reservations about materialism.[41] Particularly well-known is a discussion in Kant's Second Paralogism of an argument for the simplicity of the subject of the mental, which he labels "the Achilles of all rational inferences in the pure doctrine of the soul". Despite the grand label, Kant discusses the argument in order to criticize it, but the label "Achilles Argument" has stuck. Kant writes:

> That thing whose action can never be regarded as the concurrence of several things acting, is *simple*.
>
> Now the soul, or the thinking 'I', is such a being.
>
> Thus, etc. (A 351).

He then explains that the argument relies on the idea that thought is an internal action, an action that cannot be "the concurrence of several things acting". As we saw, this idea is part of the notion of internal action in Leibniz. And as Kant explains it, the Achilles Argument thought is an internal action because it involves the unification of contents in a single act. The argument then claims that such unification can only be accomplished if the contents of a thought belong to a simple subject, as opposed to being scattered over the parts of a composite subject. On the latter scenario, there would not be any single thing

[41] See Seager 1991, Barnett 2010 and Hasker 2010.

that holds all the contents so that it can connect them. The argument continues by contending that matter is inherently composite and so thought can't belong to matter. Finally, because a simple subject can't go out of existence, the soul is immortal (or, as its adherents tended to hold in the early modern period, it is *naturally* immortal -- God could annihilate it). Versions of this argument were widely used in the early modern period, and it dates back to Plotinus.[42]

Leibniz' definition of perception explicitly refers to the multitude in perception, and this, in combination with his claim that perception is an internal action and his view that it requires a simple subject, might suggest that a version of the Kantian Achilles Argument is at stake. Indeed, this interpretation was proposed by Margaret Wilson.[43]

Wilson also writes that sometimes Leibniz suggests that we directly experience the simplicity of the soul in our own case. In particular, he writes at *Monadology* 16: "We experience a multitude in a simple substance when we find that the least thought we ourselves apperceive involves variety in its object". But I think this is a misinterpretation of what Leibniz says. His point is here not that we experience the simplicity of the soul, but that we experience the multiplicity

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[42] For discussion of the history of this argument see Mijuscovic 1974, and for more detailed discussion of its occurrence in various philosophers, see Lennon and Stainton 2008. The argument is formulated in various ways by different thinkers. For instance, it is sometimes stated in terms of thought, sometimes in terms of consciousness, sometimes it focuses on sensory states.

[43] Wilson 1974. See also Hasker 2010, pp. 179-180. For a variant that includes the notion of action, see also Lodge and Bobro 1998.

in perception. In the next sentence he writes: "Thus, all those who recognize that the soul is a simple substance should recognize this multitude in the monad; and Mr Bayle should not find any difficulty in this as he has done in his *Dictionary* article, 'Rorarius'". Leibniz' point is this: Bayle and others already accept the simplicity of the soul, but we all experience multiplicity in our thoughts and so he and others should recognize multiplicity in the unity of the soul. So rather than defending the simplicity of the soul, Leibniz seems to be relying here on the fact that many accepted it.

And he was right in thinking the view was common given the long-standing tradition of accepting the simplicity of the subject of the mental, or at least, as thinking of the soul as not having parts, and as indivisible.[44] Furthermore, this is not the only occasion on which Leibniz relies on acceptance by others of views about the simplicity of the soul. Bayle worried that a simple being cannot produce changes in its states. Leibniz writes in response: "for several centuries most philosophers have attributed thoughts to souls and to angels which they believe are completely incorporeal (not to mention the intelligences of Aristotle), and have also admitted spontaneous change in simple beings" (Barber 1955, 51/WF 84). So Leibniz sometimes seems to assume that perception belongs to a simple subject, and I see no textual evidence that Leibniz thought we experience the simplicity of the soul. I should add that I think this is

[44] Early modern philosophers often withheld the label "simplicity", while insisting on the indivisibility of the soul or mind, as in the case of Descartes in the Sixth Meditation, Leibniz before his later years (see note 9), and Samuel Clarke in the Clarke-Collins correspondence.

fortunate: it seems implausible that we have such an experience. Simply assuming it is not much better, but I suspect Leibniz did have his reasons, although I will not be able to explore this question here. Furthermore, while the view that the human soul is simple is widespread in the philosophical tradition, the view is connected to a strong tradition of arguing for this view. And this is what the Achilles Argument does.

But what role does the notion of simplicity play in the Mill Argument? Although this is no straightforward matter, there is reason for rejecting the view that it serves as a premise. To begin, Leibniz never explicitly relies on claims about simplicity in formulating the argument nor does he cite the multiplicity in the content of perception. This by itself is inconclusive since it leaves open, of course, the possibility that such claims figure implicitly in the argument. But there is more. At *Monadology* 17 the notion of simplicity does surface, but it does not do so until the conclusion of the argument, which contains several statements about the simplicity of the subject of perception beginning with this one: "And so, we should seek perception in the simple substance and not in the composite or in the machine". So Leibniz first contends that matter can't think and only then concludes that the subject of perception must be a simple substance. Kant's Achilles Argument proceeds in the reverse order: first it claims that thought requires a simple subject, and then that for this reason the subject cannot be material because matter is inherently composite. And this order corresponds to Leibniz' own explanation of the argument in "On the Souls of Beasts", our clearest text on the structure of the Mill Argument. As we saw, Leibniz explains that a thinking machine is impossible because matter is passive, not because it is

composite. The notion of simplicity emerges after the conclusion that matter cannot think as follows:

> Consequently, it must be admitted that something besides matter is both the principle of perception or internal action, and of motion or external action… But it is evident that this principle is not extended, otherwise it would involve matter, contrary to our hypothesis. For we showed that something else has been added to bare matter. Therefore a soul will be a certain substantial simple lacking parts outside of parts.

Leibniz seems to assume that the subject of perception either (1) is something material and extended and composite, which has *partes extra partes*, as the traditional phrase goes, or (2) it is simple. He has ruled out matter because it is passive, not because it is composite. And then the only alternative is something simple. Thus, as Leibniz explains the Mill Argument in "Reflections on the Souls of Beasts", simplicity plays no part in it.[45]

The letter to Bayle raises the possibility of an alternative line of thought that does involve simplicity insofar as it invokes the notion of an internal action. But recall that this letter presents the notion of internal action as an additional

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[45] One might object that surely there are only two alternatives: the subject of perception is simple or it is not, i.e. composite. A reliance on this disjunction is hardly noteworthy. It is not obvious, however, that something that is composite is therefore material. And in fact Leibniz invokes a specific type of complexity, the idea of a thing having parts outside parts. But this is not obviously the only possible type of composition. The matter bears more discussion than I can offer here.

consideration against thinking matter rather than as part of the Mill Argument. This notion may import the notion of simplicity insofar as it relies on the idea that its alternative is external action, which consists in the actions of the parts of the thing. So an internal action might have to be an action of a simple subject. This would be the case if the action of a composite entity were always a composite of the actions of its parts.[46]

Kant's presentation of the Achilles Argument relies on that line of thought. Leibniz accepts this view for aggregates and he thought matter is an aggregate.[47] So it would follow that matter cannot think. On this scenario Leibniz' argument that perception cannot belong to matter because it is an internal action might rely on the idea that it requires a simple subject.

But on what ground did Leibniz think that perception must be an internal action? We saw that at least sometimes Leibniz seemed to assume that perception is an internal action and that it belongs to a simple subject and in doing so relied on a strong tradition for this position. But did he have reasons of his own for thinking that perception is an internal action of a simple subject?

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[46] On the other hand, it might be that the idea that perception is internal action does not assume that it is the action of a simple being, but that there is an argument from the idea that perception is not a composite of actions to the conclusion that its subject must be simple.

[47] For brief discussion see Sleigh 1990, p. 123. The idea that mental states must be states of indivisible subjects because they cannot be external actions in the sense of states of a composite, is discussed at length by Samuel Clarke and Anthony Collins. For discussion see Rozemond 2009b.

The Achilles Argument suggests a possible answer to this question in terms of the unification of contents, and it was often used in the early modern period. But I do not know of any evidence that it constitutes Leibniz's reason. One might think that it must be that this is Leibniz' reason, given that he explains perception as "the passing state which involves and represents a multitude in the unity or in the simple substance", even if he never cites the unification of content as a reason why matter cannot think. But it is important to note this answer is not the only one that is available historically. Another one resorts to notions of reflexivity. Thus Proclus based the simplicity of the soul on its capacity for reflexivity or self-reversion, which is self-knowledge. Neoplatonism was influential in the 17th century and important to Leibniz.[48] The idea of self-knowledge seems like a difficult place to start for an analysis of Leibnizian perception in general as it is limited to only a subspecies of perception, thought, which is intellectual. But at least for the Cambridge Platonist John Smith, some sort of notion of reflexivity is also built into the notion of sensation. He argues that a body can't sense because

> What we call Sensation, is not the Motion or Impression which one Body makes upon another, but a Recognition of that Motion; and therefore to attribute that to a Body, is to make a Body privy to its own acts and passions, to act upon itself, and to have a true and proper *self*-feeling virtue (*On the Immortality of the Soul*, 116).

In discussion of the question whether animals have souls like ours, Bayle insisted that all sensory acts are reflexive in the sense that anything that senses knows

[48] For extensive discussion of its influence on Leibniz, see Mercer 2001.

that it senses (*Dictionary* 221ff.) And in a very early argument for the immortality of the soul Leibniz contends that the subject of thought must be simple because a specific feature of thought has no parts. When thinking of an object, he writes, the representation of the object is composite, but the thought involves a noticing (*notitia*) that we know by introspection has no parts. He then argues that this feature of thought requires a simple subject ("The Confessions of Nature against Atheists", 1669, G IV 109-110/L 113). It is not at all obvious how this line of thought relates to his later views (and Leibniz' terminology in this text is very different from what we find later). But it is again noteworthy because it does not clearly appeal to the unification of contents central to the Achilles Argument.

In sum, Leibniz' clearest explanation of the Mill Argument, in "Reflections on the Souls of Beasts", very clearly does not rely on the notion of simplicity. On the other hand, Leibniz' reference to internal action suggests the possibility that the need for a simple subject for perception did constitute an additional anti-materialist consideration for him. He may have had the Achilles Argument in mind, but there are other candidates. This is a question that merits further investigation.

Conclusion

We saw that Leibniz attached great importance to the Cartesian requirement that the states of a body must be intelligible as limitations, variations on the nature of body. Leibniz relied on very high, rationalistic standards for the intelligibility of the natural world that include the structure of substance. Underlying the Mode-Nature View is the idea that a quality cannot belong to just any thing, but must belong to a thing with a suitable nature. It is,

however, a very strong view about the relation between the natures of things and their qualities. Perhaps this removes Leibniz' thinking awfully far from how we might think about the issues today. On the other hand, one can see the view as an early modern, rather strong version of the idea that there is a conceptual or explanatory gap between the mental and the physical. For Leibniz, the view was important in his rejection of the dreaded "occult qualities" of the scholastics, as well as Newtonian gravity. Furthermore, his reliance on the Mode-Nature View makes clear that Leibniz did not simply offer an argument from ignorance as is sometimes thought. Finally, Leibniz did not merely think that we cannot explain now how thinking matter would work, but he thinks he has reasons for saying that it is impossible (that is, he would specify, *naturally* impossible).

Contrary to what one might expect, his most explicit statement about what feature of the mental makes thinking matter unintelligible, in "On the Souls of Beasts", does not appeal to the idea that perception requires a simple subject. Instead it relies on the other main reason Leibniz thought Cartesian matter is objectionable: its passivity. And in this work he contends that perception must belong to a simple subject not because it requires a simple subject, but because a composite subject would be matter and that has been ruled out on account of its passivity.

But we saw that Leibniz also claims that perceptions don't belong in the mechanistic physical world because they are internal actions. And this reason is likely to involve the idea that perception requires a simple subject.[49] He does not offer the notion of internal action as an account of the Mill Argument, but

[49] For brief consideration of the matter, see Alison Simmons 2001, p. 42.

philosophically speaking, this seems like a good explanation for the intuitive force of the argument, an explanation that is more likely to resonate with 21sth century philosophical sensibilities.[50] And of course, we may continue to find the thought experiment of the argument useful, even if we do not accept Leibniz' own explanation of its point.

Examination of Leibniz' lesser known presentations of the Mill Argument help significantly in understanding how he saw the argument. But it also leaves some important questions unanswered: Leibniz is not explicit about the sense in which he thinks perception is active --although I have suggested an answer to this question – or why perception is an internal action. Much work remains to be done.[51]

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[50] See fn. 9 on this matter.

[51] This paper has benefitted from presentation of its earlier incarnations to early modern research groups at Harvard University, the University of North Carolina at Chapel Hill, Yale University and the University of Notre Dame; to the Berlin-Toronto Workshop in Early Modern Philosophy at the Humboldt Universität and the workshop "Matter and Nature in Early Modern Philosophy" at Ghent University, and to the philosophy departments at the CUNY Graduate Center, Texas A & M University and Trent University. I owe special thanks for very helpful comments on the penultimate version from Martha Bolton, Stewart Duncan, Jeffrey McDonough, Scott Ragland and Alison Simmons. I am grateful to the Social Sciences and Humanities Research Council of Canada for financial support for my research.

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