Glenn A. Hartz, *Leibniz's Final System. Monads, Matter and Animals*. London and New York: Routledge 2007. xvi + 234 pp.

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When Henry Oldenburg, secretary to the Royal Society, announced the forthcoming publication, or rather reprinting, of Leibniz's *Hypothesis physica nova* in London in the July 1671 issue of *Philosophical Transactions*, he drew readers' attention to the conciliatory nature of the work that his young fellow-countryman had produced. In the *Hypothesis*, Oldenburg claimed, Leibniz had made it his business to show that with its help

> the Causes of most of the phaenomena of Nature may be rendered from one single and universal Motion, suppos'd in our Globe, neither crossing the Copernican nor Tychonian Hypothesis; the Author having so managed the whole, as that all Sects may bear and admit what he here produceth, without a prejudice to their own Opinions.[1]

Indeed, the young Leibniz saw the ability of his *Hypothesis* to reconcile ancient and modern learning, ranging from Platonic forms and Aristotelian prima materia to van Helmont's Archaeus and the astronomical system of Tycho Brahe as something of enormous significance, allowing him to surmise that on this account ostensibly hypothetical knowledge could be seen to approach something like the status of verifiable truth.

Leibniz recognized that in the absence of direct means of verification, as is always the case in metaphysics, truth can only be evinced in such a way. In this respect his mature metaphysical system is no different from the speculative *Hypothesis physica nova* of his youth. Just as he regularly describes his mature metaphysics, the doctrine of monads, as a hypothesis, so too does he happily draw on the fruits of ancient and modern learning, on the scholastic concept of substantial form and the results of contemporary microscopists such as Leeuwenhoek and Malpighi in order to provide evidence for its veracity. This evidence could be seen to be that much stronger, because the authors with whose concepts or theories he claimed agreement represented a very broad philosophical and scientific spectrum and because at the same time as accommodating the views of others, his metaphysical system was able to reconcile theology and reason in a fundamental way. As he writes in the *Nouveaux Essais*: "This system appears to unite Plato with Democritus, Aristotle with Descartes, the scholastics with the moderns, theology and morality

with reason. Apparently it takes the best from all sides and then advances further than anyone has done yet."[2]

But it is one thing to unite aspects of various theories and positions in the books of ancient and modern authors and quite another to overcome fundamental philosophical divides. Yet it is precisely this which Leibniz sets out in his mature metaphysics to achieve: the harmonization of realism and idealism, of an almost common-sense understanding of the world around us with an ontology which ascribes true being only to substantial unities or monads.

In the wealth of secondary literature on Leibniz the materialist or realist side of his philosophy, in contrast to the idealist side, has been largely ignored. This has been partly due to the fact that up to recently texts featuring the interface between his philosophy and his more practical scientific and technological activity have not been available at all or at least not in the critical form of the *Akademie-Ausgabe*. Thus it was all too easy in the past to start out from the idealism of the *Monadology* and then to discover that that the status of bodies in Leibniz's thought is problematic. But as Glenn Hartz argues in his new book, entitled *Leibniz's Final System*, there is a lot more to this discussion than that. Importantly, Hartz seeks to show that the German philosopher and mathematician while not being able to reconcile idealism and realism in the way he does other theories, nevertheless operates with a concept of rationality which allows him simultaneously to maintain these two incompatible positions. Moreover, this is not an interpretation to which Hartz has been led by spectacular new textual discoveries; rather, he holds that it can be demonstrated on the basis of key texts, such as the *Discours de métaphysique* and the correspondence with Arnauld, which have been available for a considerable time. Nevertheless, one might add that the whole discussion on idealism and realism has become increasingly acute in recent years as commentators have become more aware of Leibniz as a practicing natural scientist. Physicists and chemists are notoriously realistic in their outlook and Leibniz was no exception when working in these fields.

So how is this undeniable realistic tendency in his work to be squared with his purported idealism? While on Hartz's view there is no question that Leibniz "has an Idealist theory on offer", he seeks to show that at the same time, astonishing as this might at first seem, Leibniz also presents a realist theory, "right alongside the Idealist one" (p. 6). While other commentators might ascribe idealism and realism to different periods of Leibniz's long and illustrious philosophical development, Hartz is convinced that he was at all times in his maturity as much a realist as he was an idealist. In effect, Leibniz sought to have the best of both worlds.

Hartz is careful to distinguish his interpretation, for which he coins the term "theory pluralism", from the concurrent holding of incompatible sets of truths. While the latter is logically incoherent, the former he believes is not. Indeed, on Hartz's view, it is only through theory pluralism that Leibniz can be saved from the otherwise inevitable incoherency of seeking concurrently to maintain two incompatible sets of truth propositions (p. 197). Accordingly, Hartz is of the opinion that Leibniz floats two main theories, each of which, while not cohering with the other, is nevertheless internally consistent. Now, as far as idealism is concerned, the internal consistency of Leibniz's position has never been seriously called into question. But with realism things are quite different, as no-one up to now has put this side of Leibniz seriously to the test. It is for this reason that Hartz not only argues for theory pluralism in his book, but also seeks to show that Leibniz indeed has a coherent realist theory with which he seeks to explain the presence of the world around us.

Hartz begins his considerable task by outlining the idealist-realist division as it presents itself to Leibniz's readers. On the one side there is the concept of individual substance as the sole metaphysical reality with all its attendant solipsistic tendencies. According to this account only minds and their ideas exist, while the physical world is reduced to mere appearances. On the other side Leibniz maintains that there is a real world populated by us together with animals and aggregates. Moreover, none of these beings are simply appearances, but rather mind-independent objects whose properties and behavior can be the subject of scientific investigation.

As Hartz points out, previous commentators have adopted different strategies when faced with these two sides of Leibniz's thought. Some maintain that Leibniz did not defend one theory over the other, while others find only idealism consistently endorsed in his mature thought. Others still contend that inconsistencies are to be explained through historical and philosophical influences and tensions which Leibniz inherited and was unable to resolve successfully. Finally, exclusive realism has also recently found a voice in Pauline Phemister, who seeks to show that Leibniz presents an animal-only ontology, all monads on this account being corporeal substances, and that is to say, essentially combined with body.[3]

Without exception Hartz rejects all of these strategies, since each necessarily involves disregarding fundamental texts, namely those which lean in the opposite direction. On his view this inevitably does an injustice to Leibniz. To pick or reject texts according to our interpretation has the consequence of undercutting "the rationality of the one who penned them all" (p. 14). Since neither idealism

nor realism is provable, but each seeks to explain uniformities on a wide-ranging evidence base, all we can do is to judge their explanatory power and the extent to which they fit with the evidence. We should not seek at all costs to present a single or uniform picture of Leibniz's mature thought (p. 15).

More than once Hartz compares the mutual exclusivity of idealism and realism as accounts of the way things are with the mutual exclusivity of the Ptolemaic and Copernican theories as accounts of the universe. Moreover, he takes heart from the fact that in respect of conflicting world-pictures Leibniz adopts a strategy which points in the same direction as the one he proposes for the debate over realism and idealism among his commentators. Leibniz apparently advises tolerance on both sides, saying that while the Copernican hypothesis has a greater claim to truth, since it is capable of providing a more intelligible explanation than the Ptolemaic account does, the astronomer makes no greater mistake by explaining the theory of planets in accordance with the Tychonian hypothesis than he would make by using the Copernican hypothesis in teaching spherical astronomy and explaining night and day.[4]

This reading is, however, somewhat questionable. In the text to which Hartz refers, Leibniz is tolerant primarily for religious and not for scientific reasons. He is in no doubt about the fundamental truth of the Copernican theory, but he is keen not to antagonize those who are committed to opposing it on theological grounds. In the text concerned, or in others like it, Leibniz is certainly not proposing anything like theory pluralism.

As already mentioned, the standard account of Leibniz's theory of monads, "the Canonical metaphysics" (pp. 27-9), as Hartz calls it, is decidedly idealistic in orientation. The only substances are monads and bodies are given the status of simply being the representational content of monads' perceptual states. Despite this eliminative reduction, body is nevertheless said by Leibniz to contain monads or even to be constituted by them. Moreover, those expounding this account suggest that in the mature system animals should not be classified as true unities, but merely as aggregates of substances (pp. 28, 159).

As Hartz correctly recognizes there is a certain tension between representation and composition on the standard account. To a certain extent this betrays Leibniz's earlier atomist leanings. Although he soon came to reject atomism, Leibniz was nevertheless clear that an adequate metaphysical account of nature must be based on simples (p. 40). Since on account of his rejection of atomism only simples which are heterogeneous to the whole are available to him, he is required to introduce an

active relation of supervenience: "the simples that make up the composite must also furnish the ultimate 'supervenient' properties for the composite's properties" (p. 42).

Hartz quotes a number of passages in Leibniz where this supervenience relation is clearly expressed. For example in a letter to the Electress Sophie he says "there must be force and perception in these unities themselves, for otherwise there would be no force or perception in all that is formed of them"[5]. More fundamentally, he writes in the *Monadology* that "what is in a composite can only come from its simple ingredients"[6]. Although Leibniz here, and on other occasions, too, speaks of "ingredients" and sometimes seems to suggest that simples serve as building blocks for wholes, Hartz is, I feel, incorrect when he accuses Leibniz of ambiguity on the question of how simples are related to the whole. Through the analysis of the continuum Leibniz was clear that a material composition from indivisibles could not be on the cards. Just as points cannot constitute lines, so, too, metaphysical indivisibles cannot constitute bodies. And in addition he recognized that the supervening properties of composites could not be explained by means of the concept of extension. It was precisely for this reason that the German philosopher and mathematician developed his concept of active and passive force: quantitative extension and division which formed the basis of most contemporary mechanistic explanations of body were now primarily the preserve of abstraction while the long unexplained quality of impenetrability or antitypia was able to receive a foundation in the primitive passive force of monads. Individuals' perception was identified with primitive active force, while the motion of bodies qua secondary matter was explained through derivative active force.

For Hartz this is where Leibniz starts to get into difficulties. If the composite can derive its qualities from the mind thinking them, as when bodies are described as being essentially perceptions of the monads, there is no need to include the monads' qualities in a mechanistic explanation of these composites. Hartz is convinced that it is precisely this which one does find in Leibniz's realist doctrine: substance "reaches forth and touches" the aggregates of secondary matter, imparting reality to them (p. 49). How else, he suggests, are we are to understand Leibniz's repeated claim that body presupposes substance? Then this presupposition is meant quite clearly in the sense that it is from substance, and that is to say from the active and passive force in substance, that bodies acquire their reality. Correspondingly, Leibniz's arguments for substances are on his view paradoxical, for they almost exclusively begin with realism and end with idealism: "The existence of mind-independent

matter is the fundamental first premise, but the substances he establishes with those very arguments threaten to eliminate it in favor of phenomena or appearances in minds" (p. 52).

Referring to Leibniz's letter to De Volder of 25 January 1705, in which he tells the Dutch Cartesian that corporeal mass is not a substance but a phenomenon resulting from simple substances which alone have unity and absolute reality,[7] Hartz points to an evident tension in his mature philosophy. The two theories which Leibniz is trying simultaneously to maintain, that is to say idealism and realism, "are tearing away in different directions" (p. 53). Quite simply, without extended things, Hartz contends, there would be no bodies for substances to be in, no bodies needing to borrow their reality, activity, and force from substances. It is for this reason, he surmises, that we find Leibniz keeping extended things in his philosophy. But the author of the *Monadology* keeps them in a non-committal way, so that they can be consonant with his idealist theory.

In chapter three of his book, to which he gives the heading "Mereology", Hartz seeks to make the problematic character of bodies in Leibniz apparent by approaching the topic through the concept of extension. As is well known, the German philosopher and mathematician contends that on a material level extension is only of a relative nature, having its foundation in the discrete qualities which bodies possess. In this sense extended bodies owe their reality not to a collection of primitively real substances, but to the single primitve substance doing the perceiving (p. 65). At the same time Leibniz asserts that bodies as secondary matter are actually divided into infinity. This thesis, according to Hartz, is devastating for idealism, because to make sense it requires that there are things out of which bodies are constituted – something which the primacy of monads explicitly negates. Not only can bodies conceived as appearances not be divided into substances, as §65 of the *Monadology* implies, but also some of the substances into which bodies are there said to be divided are not monads, but rather animals or corporeal substances.

The tension between idealism and realism in this regard is reflected for Hartz in the way in which Leibniz trades off divisibility and division in the context of his discussion on the nature of body. He calls this an "unfortunate equivocation", as one never knows which particular understanding of body, i.e. the well-founded phenomenon of the Canonical metaphysics or the concept of body actually divided into monads and corporeal substances is actually on tap. The actually divided account, on Hartz's view, points to a realist conception of bodies with a foundation

in substance, while the endlessly divisible account accords to bodies "the sort of continuity and lack of reality supposedly reserved for space, time, mathematical bodies, and other continuous magnitudes" (p. 68).

Hartz is correct in identifying a certain ambiguity in Leibniz here, but I am not convinced that it is there for the reasons he gives. Actual division is ontologically important in the context of the doctrine of monads because the created world cannot remain in the mode of possibility. If actual division were not the case, the creation would be incomplete. This concept does not, however, entail that secondary matter is in some way constituted from simples in the way material composition in atomism is understood. The discrete substances whose presence in secondary matter Leibniz concludes from the nature of organisms of various degrees of complexity are not present in the sense that they could be reached by division. Only in a derivative sense can substances be said to be in matter, namely in the sense that primary and secondary matter have their origin in the primitive forces of the monads. Nor does the concept of corporeal substance conflict with this. To say, as Leibniz does, that no monad or substance can subsist without at least a minute body does not make substance a part of matter. Indeed, Hartz seems to recognize this when he repeatedly qualifies the substances into which secondary matter is divided as "non-parts" (pp. 71-2). The notion of well-founded phenomena which Leibniz employs to characterize secondary matter in general and bodies in particular is designed precisely to avoid any implication of composition. Although Leibniz sometimes employs compositional language this does not in itself commit him to realism. At the same time it does not necessarily commit him to a strict form of idealism either. Thus when Leibniz speaks in the *Système nouveau* of atoms of substance as the absolute first principles of the composition of things, this is meant purely in the sense of metaphysical first principles or ontological requirements for the understanding of composites. Indeed, this is the reason why he takes care to distinguish his "atoms of substance" or "metaphysical points" from the "atoms of matter" of the atomists and the "mathematical points" of the mathematicians.[8]

A central part of Hartz's argument for the presence of a strong realist position in Leibniz is taken up by his discussion on aggregates. Leibniz is not always clear on what he understands by these and it is therefore extremely useful to have such a detailed analysis of the various passages in which he touches on the topic as the one which Hartz provides in *Leibniz's Final System*. Generally speaking an aggregate's unity is for Leibniz mind-dependent, whereas its reality is derived from its constituents. His standard examples are a flock of sheep or an army. Neither of

these has any unity in itself, but only the conceptual unity provided by the knowing mind. As such the unity of aggregates is quite different from that of organisms or corporeal substances in which unity and being are directly correlated according to the principle *ens et unum convertuntur* (p. 76). In this sense only beings endowed with true unity can for Leibniz claim reality.

As Hartz accepts, this ties in with the Canonical metaphysics which recognizes no mind-independent subject of predication for aggregates. Other than monads the only subjects in view are the well-founded mind-dependent phenomena. But, he claims, this account of aggregates is inconsistent with Leibniz's doctrine of animals which takes these not only to be mind-independent but also to have mind-independent aggregates as their bodies (p. 84). Correspondingly he presents, in chapter six, a realist analysis of aggregates which aims at showing how Leibniz's metaphysics can achieve "a new sense of coherence and interest" (p. 96). In this respect the possibility of Leibniz holding two parallel positions is of great importance. Against idealism's eliminative reduction of aggregates to substances, theory pluralism allows Leibniz to have a realist account of aggregates as well. According to this, aggregates must be considered as wholes with substances serving as their components or constituents or parts. As evidence for this conception Hartz cites the correspondence with Arnauld, where Leibniz employs the terminology of parts and wholes in relation to the concept of aggregate and calls the latter variously "secondary matter", "a multiplicitiy of substances" or simply "mass" (p. 97).

In the course of explicating the notion of aggregate, Hartz quotes places where Leibniz tells us that secondary matter or body is an aggregate of substances. For example he tells Johann Bernoulli that man is a substance whereas his body or matter is substances (GM III, 560; quoted p. 103).[9] Likewise he compares the body in a letter to De Volder with an army of creatures or with a herd of sheep or a cheese full of worms (GP II, 193; quoted p. 107).[10] Here and elsewhere in the Leibnizian corpus Hartz discovers passages which on his view render idealism incoherent, since they involve the transmission of activity from substances to the body, whereby the whole must on his view "be a mind-independent object" (p. 121). If the whole were merely an appearance in someone's mind, Hartz suggests, any reality, activity, and force it had would have to be due to that person's thinking of the substances which constitute the aggregate "as real, active, and possessing force". But is it not precisely this kind of problem which the different ontological levels of the doctrine of monads are designed to solve, and which they do in fact solve rather well?

One of the strongest pieces of evidence which Hartz finds for the mind-independent existence of aggregates is provided by a thought experiment which Leibniz conducts in a manuscript draft published by Bodemann.[11] The German philosopher and mathematician considers a scenario in which *per impossibile* all minds are destroyed, yet bodies remain intact. Hartz reports Benson Mates's incredulity when confronted with this draft since it apparently cannot be squared with Leibniz's view that all bodies are purely phenomena. Theory pluralism, however, allows the problem to be solved: "The reason Mates is astonished is that he takes Leibniz's mind-body parallelism to be True rather than as a doctrine belonging to a separate theory" (p. 132).

I do not find this argument convincing. A thought experiment of the kind Leibniz conducts in the draft concerned only makes sense when it is counter-factual and that is to say here, that it conflates with the principles of his own theory, the Canonical metaphysics. And that theory is, it seems to me, quite clear in its treatment of the aggregates to which Hartz seeks to ascribe some kind of mind-independent existence: animals like human beings have dominant monads which endow them with existential unity and which derivatively provide them with their active and passive force and therefore also with their purposefulness in the context of the created world. This is why Leibniz writes to Bernoulli perfectly coherently that matter per se cannot persist without forces (GM III, 552; quoted p. 147).[12] Hartz quotes innumerable passages in which Leibniz discusses the nature of animals and aggregates (pp. 163-176), ostensibly to support his own interpretation, but nothing in these passages is fundamentally at odds with the doctrine Leibniz sets out in the Canonical metaphysics. Phenomenologically, the world is always as perceived by the individual monads according to their own point of view. But this does not commit Leibniz to anything like the idealism of Bishop Berkeley. The beauty of Leibniz's system is that it makes normal science and the realist conception of the world around us perfectly intelligible. The Canonical metaphysics with its inherent pragmatism allowing reconciliation with different scientific theories and philosophical approaches does the job itself; it is not necessary to construct a realist model alongside the idealist one, or to have a "world monads could perceive" (p. 139). Hartz puts the neglect of Leibniz's realism in part down to his reception in Kant, but he ends up making this aspect of Leibniz's mature philosophy almost proto-Kantian.

Despite such misgivings on details in *Leibniz's Final System*, Hartz deserves considerable praise for enormous task he has carried out. No-one before him has

taken such care to outline the various interpretive strategies adopted by scholars in the reading of Leibniz. For each interpretation Hartz presents both supporting evidence and arguments which might be raised against the interpretation. In doctrinal tables contained in the Appendix he lists the occurances of realism and idealism in the key texts of Leibniz's mature period. The results are as impressive as they are instructive. The show with abundant clarity how one-sided the predominantly idealist presentations of Leibniz in the past have been.

Above all Glenn Hartz is to be congratulated in having taken the contemporary discussion on Leibniz an important step further. He has thrown down the gauntlet to those who are content to focus on the idealist side of Leibniz's mature philosophy. Future investigators will need to take greater note of the German philosopher and mathematician's realist approach to the world than they have done up to now. They will need to be more prepared, than they have previously been, to take account of those texts which are not overtly supportive of the idealist interpretation. Above all it is to be hoped that in future it will not be realism which, in Hartz's words, is always forced to compromise (p. 146).

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Notes

[1] H. Oldenburg, [Advertisement of] Hypothesis physica nova, sive Theoria motus concreti, una cum Theoria motus abstracti. Auth. Gothofredo Guilielmo Leibnitio [...]. In: Philosophical Transactions 73 (17 July 1671), 2213-2214, 2213.

[2] Leibniz, *Nouveaux Essais* I, 1, A VI, 6, 71: "Ce systeme paroit allier Platon avec Democrite, Aristote evec des Cartes, les scholastiques avec les modernes, la Theologie et la morale avec la raison. Il semble qu'il prend le meilleur de tous cotés, et que puis aprés il va plus loin qu'on n'est allé encore."

[3] P. Phemister, *Leibniz and the Natural World. Activity, Passivity and Corporeal Substances in Leibniz's Philosophy*, Dordrecht 2005.

[4] C 591: "ita quoque non magis peccabit Astronomus Theoriam planetarum explicando Hypothesi Tychonica, quam si in doctrina Sphaerica tradenda

explicandisque diebus et noctibus Hypothesi Copernicana utatur."

[5] Leibniz to the Electress Sophie, 12 June 1700, GP VII, 552: "il faut qu'il y ait de la force et de la perception dans ces unités mesmes, car sans cela il n'y auroit point de force ny de perception dans tout ce qui en est formé."

[6] Leibniz, *Monadology* §8, GP VI, 608: "ce qui est dans le composé ne peut venir que des ingrediens simples."

[7] Leibniz to de Volder, 25 January 1705, GP II, 275: "Ego vero non tollo corpus, sed ad id quod est revoco, massam enim corpoream quae aliquid praeter substantias simplices habere creditur, non substantiam esse ostendo, sed phaenomenon resultans ex substantiis simplicibus quae solae unitatem et absolutam realitatem habent."

[8] Leibniz, *Système nouveau de la nature et de la communication des substances*, GP IV, 582-3.

[9] Leibniz to Johann Bernoulli, 17 December 1698, GM III, 560: "Homo substantia est; corpus ejus seu materia est substantiae."

[10] Leibniz to de Volder, 11 September 1699, GP II, 193: "Cum omne corpus extensum quale reapse in mundo reperitur, revera sit velut exercitus creaturarum vel grex aut confluges ut caseus vermium, non magis necessario inter partes corporis cujuscunque nexus erit quam inter partes exercitus [...]"

[11] LH IV, 6, 12f, Bl. 15. The draft is printed in E. Bodemann, *Die Leibniz-Handschriften der Königlichen öffentlichen Bibliothek zu Hannover*, Hannover 1889, 89.

[12] Leibniz to Johann Bernoulli, 18 November 1698, GM III, 552: "nec dubito quin materiae ipsi coaevae sint vires, quia arbitror, materiam per se sine viribus subsistere non posse."