

Leibniz on Essence

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There could be few more illuminating ways to chart the progress of western philosophy than to track the attitude to, and meaning of, the notion of 'essence'. Broadly speaking, it is an idea which begins to formulate in Plato, and attains a fairly distinct character in Aristotle, which ensures its orthodoxy until the seventeenth century. It is then subjected to a critique by both rationalists and empiricists, and falls into disrepute, despite a rearguard action by Leibniz. To most people's surprise, the concept re-emerges as a concomitant of the arrival of a fully developed modal logic in the 1960s, and is taken up by many writers on modality. The relevance of the notion of 'essence' to science was also noticed, and there followed a period of deep uncertainty about which exact concept we were dealing with, an uncertainty which still persists, and which needs to be directly addressed if any progress on this topic is to be made. Because so much careful and penetrating thought has been applied to the problem, the approach must be partly historical, but it is only worth tracking the concept of essence if we can identify a reasonably precise notion which can play an indispensable role in modern metaphysics.

Aristotle

The culminating notion of an essence in Aristotle is summarised in the single English word 'form', an aspect of his well-known 'hylomorphism'. The word 'form' actually translates two Greek words, which Aristotle uses in different contexts. '*Eidos*' is, interestingly, the word Plato used for his Forms, but in Aristotle it seems to mean something like the 'defining principle' of a thing, which would be spelled out by a successful definition. '*Morphe*' is close to the English word 'shape', and means something like 'structure'. Prior to the emergence of this idea of form in Aristotle, he has referred to an essence as 'what-it-is' to be a thing [*to ti en eina*], and we can take it that 'form' is an attempt to spell out what gives something its identity. For Aristotle the role of this identity is to establish what remains the same about a thing if it is to survive a process of change, and it also has the role of explaining the surface properties and behaviour of the thing. Aristotle is well aware that the form of an individual thing will have many aspects that will be shared by entities of the same kind. However, he resisted Plato's location of essences in timeless independent Forms, in which individuals 'partake', and insisted instead that individual physical entities each have their own essence. We might attempt a summary of an Aristotelian essence thus:

Aristotelian Essence: a group of structural features and causal powers in an individual entity which give it its enduring identity, which contribute to its membership of a kind, and which explain its behaviour. All of this will be articulated in a successful definition of the entity.

Critique of Aristotle

The decline in the reputation of Aristotle in the seventeenth century was largely the result of the refutation of many of his scientific hypotheses, and the emergence of a sceptical and experimental empiricism. The philosophers of that age gradually identified Aristotle's commitment to essences as one of the sources of the problem. By this time the word 'essence' was being used in discussion of our topic, along with the phrase 'substantial form'. The history of the word 'essence' is that it comes from the Latin word 'essentia', which was used to translate the Greek word '*ousia*'. However, the best direct translation of *ousia* into English is probably 'being', which is a much more general concept for Aristotle than his concept of what-it-is-to-be a thing, so there has been much scope for confusion in discussion of Aristotle in recent centuries. That said, the attacks of Descartes, Spinoza, Locke and Hume on the notion of 'essence' are aimed quite accurately at Aristotle's proposal. The objection is fairly simple – that not enough can be said about these essences or 'substantial forms', either to enable us to identify them, or to experience them, or for them to explain anything. Thus Descartes comments:

Clearly no explanation can be given by these substantial forms for any natural action, since their defenders admit that they are occult and that they do not understand them themselves, ...so they explain nothing [*Letter to Regius*, 1642]

Spinoza asserts [*Letter to De Vries*, 1664?] that experience can never show us essences, but he defends them in the world of thought, as when our understanding of circles requires a grasp of their essence. Hume's attitude was one of fairly contemptuous mockery, as when he refers to the 'unintelligible chimera of substance', and dismisses the whole Aristotelian account as being 'entirely incomprehensible' [*Treatise* 1.4.3]. Much the most thoughtful and interesting critic of the Aristotelian view was John Locke.

Locke's most significant contribution to our enquiry was the introduction of the notion of a 'nominal' essence, alongside the Aristotelian notion of a 'real' essence. In this way he attempted to defuse the Aristotelian position, by explaining why we find some aspects of it intuitively appealing, while declining to work with the main features of the older theory. Locke never denies the possible existence of Aristotelian real essences, but his rejection of them is based on his doctrinaire empiricism, and the claim (like Spinoza's) that there are simply no experiences to be had of these hidden wonders. Famously, he concludes by labelling an essence as a 'know-not-what' [*Essay* 2.23.2]. The nominal essence, on the other hand, is readily available to us, because it is our ideas of the characteristics which give rise to our words, concepts and categories; it consists of our concepts of the surface features which we actually can experience, and hence compare and correlate. He further gives us the notion of a 'sortal' term, which is one which gathers things into 'sorts', as a result of a selection of generic surface features.

Thus a sortal concept is the nearest we can sensibly get to any rational talk of essences. We can summarise Locke's concept of a nominal essence thus:

Lockean Nominal Essence: a group of surface features of an individual entity which provide the unified idea to which its name and sortal categories are attached; the loss of these features would deprive the entity of the right to those terms.

Locke acknowledges that real essences are not only possible, but that their existence is very likely. He merely thinks that for humans to grasp them is usually an idle dream. It is striking that in the case of a simple geometrical figure he acknowledges that we know the real essence, as well as the nominal essence. He says [Essay 3.3.18] that the essence of a triangle (simply described as a "space between three lines") is "that Foundation from which all its properties flow". The youthful Leibniz agreed with this attitude (though Spinoza said that that this was merely one of a circle's properties, and not the essence).

Locke's criticisms of real essence largely rest on the epistemological difficulties. At 3.3.17 he cites two opinions of what the dreamed-of essence is supposed to be, and rejects as less rational the idea that an essence is a pre-existing 'mould' from which kinds of things are made. The more rational (less platonist) concept, with which Locke is happy to work, is the idea of an essence as that inner feature which gives rise to the surface properties of a thing (and at 2.31.16 he speaks of the gold ring on his finger as having a putative essence which gives rise to such sensible properties), but he later says that, in the case of the gold, having a good knowledge of four surface properties will never enable us to derive a fifth [4.3.14]. His assumption is that it is only the surface properties which could be known, but he seems committed to the notion that if the inner characteristics could in fact be known (by an angel, perhaps), and the consequent prediction of the fifth property achieved, then that would indeed be an acceptable criterion for genuine knowledge of an essence. With hindsight, we might say that Locke should have been more impressed by the recent advent of the distinctly unangelic microscope, as a possible tool for penetrating beneath the surface.

His rejection of essence as generic 'mould', and acceptance of it as that which gives rise to the surface properties of the ring on his finger, raises the question of whether Locke understands real essences in terms of kinds or in terms of particular individuals (or some hybrid of these views). We have seen that at the level of nominal essence, Locke understands such things to be characterised by sortal terms, which are generic words or concepts which place things in categories and connect them to our ideas of natural kinds. At 3.3.1 he offers his well-known nominalist assertion that everything which exists is a particular, but notes that when it comes to words we find the opposite situation, that they are nearly all 'general' in character. Thus he associates essences as generic concepts with the 'nominal' essence, but when he comes to 'real' essences, his commitment is entirely to the level of the individual. His attempt at identifying the essence of a triangle shows that he has no a priori resistance to the concept of a real essence.

In 3.6.2 he suggests that an essence is the 'constitution of the insensible parts' of a body, on which its qualities depend. In a more interesting passage, he reluctantly tries to articulate what a real essence might be:

When I enquire into the real essence, from which all the properties flow, I cannot discover it: the farthest I can go, is only to presume that it being nothing but body, its essence must be the figure, size and connection of its solid parts [Essay 2.31.6]

This tentative remark picks out as essential those properties which are nowadays referred to as 'categorical', and it seems to be under the influence of the Cartesian view of material bodies as essentially geometrical in character, but elsewhere in Locke's work he is prepared to talk about the very un-Cartesian notion of a 'power', which is usually classed in modern times as an 'intrinsic property'. (We will come to the relationship between so-called 'powers' and 'intrinsic properties' later). The philosophical notion of a power dates back to Aristotle's distinctive use of the term *energeia*, which Urmson translates as either 'actuality' or 'activity', it being typically opposed to Aristotle's *dunamis*, which is 'potential'. By Locke's time the notion of a fundamental activity, the source of other activities, is called a 'power'. Locke refers to 'powers' in several places, and seems happy to accept the concept, though with the characteristic empiricist spin of referring to our 'ideas' of the powers, rather than their actuality. He recognises experimental science as exploring the powers of a body, by examining its interaction with a range of other substances [2.31.8]. He acknowledges the two notions of power needed in the new physics, calling them 'active' and 'passive' [2.21.2]; passive power underlies any account we give of inertia and rigid resistance to force, but an active power seems to be a concession to the characteristics of a body which goes beyond the mere geometricality of the earlier quotation. And at 2.7.8 he accepts that we transfer our own inner experience of having power to move our limbs, and read such powers into external bodies when they in turn give rise to movement.

We must, of course, acknowledge the many caveats that Locke offers whenever the actual notion of an essence comes into view, but he certainly has a distinct concept which he is happy to work with, and which he knows very well cannot be ruled out of reality by his limited tools of strict empiricism. If we add his picture of powers to the shape and internal relations mentioned in the earlier quotation, we have a picture of a real essence something like the following:

Lockean Real Essence: An essence is a combination of structural and active features concealed within a physical body, which give rise to its surface properties and behaviours, and would enable predictions of these, if only essences could be known. This essence may differ from the ideas of surface properties which give rise in us to our sortal concepts.

If we compare this summary with the similar concept employed by Aristotle, we find very little difference. The emphasis is just on the epistemological limitations we face when studying essences, and the consequent gap (unnoticed by Aristotle) between the nature of the real essence and our human modes of classification.

Leibniz's Defence of Aristotelianism

Where Aristotle has left us four works to peruse when studying his essentialism, and Locke's thoughts are mostly confined to a single work, Leibniz's approaches to the problem form a gloriously scattered array of restatements, qualifications, new beginnings, and subtle rewordings of his views. Leibnizians are divided over many things, but the most central is over the extent to which Leibniz changed his thinking during his career. One extreme view says that he settled on a metaphysical system during the 1670s, and never wavered in his main views, and merely presented rather chameleon-like accounts of them to a wide variety of correspondents, as he sought to achieve the intellectual unity of Europe. The other extreme view, recently espoused by Garber, is that he was in a constant state of development and exploration, and that his famous theory of monads actually only became clear to him around the year 1700, despite his use of the word for many years previously. Garber especially notes the sudden introduction of a 'substantial chain', in late correspondence with Des Bosses, as a unifying principle which turns a collection of monads into a single object, and sees Leibniz's work as an incomplete exploration, more closely resembling the career of Russell than of Hume.

If we track what Leibniz says about essences through his career, Garber's account seems plausible. Remarks from the 1670s and the 1710s can seem at first reading to be very close in thinking, but shifts of emphasis gradually occur, and it is awareness of difficulties with his bold theories which most influence his later writings. The great difference from Locke is that Leibniz, unfashionably for his time, begins with a huge respect for the thinking of Aristotle in this area, and we can see Leibniz's central metaphysical project as a sustained attempt at progressively articulating what Aristotle meant (or should have meant) by 'form'. Our task must be approached carefully, and it seems important to give a date for any quotation (to place it within his lifespan from 1646 to 1716), because there is a worrying tendency among non-specialists to recruit Leibniz to their camp by highly selective use of his texts. Nevertheless, when faced with the question of what an essence actually is there seems to be a limited range of explicit sentences to choose from, and a brief examination can be reasonably accurate.

A summary of Leibniz's lifelong investigation into the nature of substantial form or essence must make reference to the main aspects of the matter which caught his interest – these being

- the active powers involved
- the possibility of predicting the surface qualities from the intrinsic substance
- the idea that we can discern a law which dictates the behaviour and future history of entities
- the way in which the form bestows unity on the components of a thing
- the distinction between necessary and contingent properties
- the place of definitions (particularly when they conflict)
- the relation between Aristotle's insight about form and the emerging new physics
- the place of Locke's 'nominal' essence
- the relation between general and particular essences (and truths)
- an explanation for his commitment to haecceitism.

The reason why students of Aristotelian essentialism must pay full attention to Leibniz is because this programme is so much more comprehensive than Aristotle's, which really got no further than identifying (after heroic investigations) the concept of the 'form' associated with a substance as the focus of metaphysical interest. It is Leibniz's early recognition that this Aristotelian essentialism must pay attention to what the physicists are beginning to say which makes him of importance in twenty-first century essentialist metaphysics.

Without telling the fascinating story of how Leibniz slowly develops his views on these questions, we can venture a summary of his findings, insofar as he felt that he had a full picture late in his career. The extraordinary phenomenon of his introduction of a 'substantial chain' in the late correspondence with Des Bosses, while making no mention whatever of this concept in his other writings, seems adequate confirmation that Leibniz's project was always in the process of development. The alternative explanation, that Leibniz merely concocted the idea to placate the theology of his Jesuit correspondent, shows insufficient respect for Leibniz's intellectual integrity.

Force

Of all the shifts and modifications which Leibniz added to the original Aristotelian account of essence, it was the emphasis on active force which he felt was his most distinctive contribution. The reason for this we can take to be twofold – that he simply felt that it preserved the phenomena better than the rather abstract or structural idea which is suggested to us by Aristotle's terms *eidos* and *morphe*, and that it provided an immediate link to a concept which was central in the mid-seventeenth century physics which he had been imbibing. In his *New*

System (1695) he writes that “Forms establish the true general principles of nature. Aristotle calls them ‘first entelechies’; I call them, perhaps more intelligibly, ‘primitive forces’, which contain not only act or the completion of possibility, but also an original activity” [Arlew/Garber:139]. In all of our survey of Leibniz in this area, we find him continually groping for the right words to capture what he is after, and it is these gropings at the limits of thought to which we should attend most closely. Thus in this quotation he says that the force ‘contains’ the incipient activity. On another occasion [1686; see Garber:124] he talks of the form as the ‘principle’ of action. On a further occasion [*To Des Bosses*: 29.5.1715, in Arlew/Garber] we find that the force is the same as the entelechy, but here acting within a composite, so that the force is what unifies the thing. In 1693 [Garber:171] we find him saying that force is the end result of a reductive analysis of any substance, which first “reduces to their actions and passions and to the dispositions that they have for this effect”, with these in turn being analysed down to “the principle of all this”, which is force.

Already we can see three strands in his attempts to pinpoint the nature of essence. On the one hand he is identifying a feature which is thoroughly natural and physical, the intrinsic source of action, but then he is also identifying a more abstract notion, caught in the word ‘principle’, and there is a third aspect, which is force as our best way of conceptualising what is primitive in a substance. This third aspect is characteristic of Leibniz’s thought, and distances him from Aristotle, who is less conscious of the role of the mind in shaping the reality under discussion. Leibniz, on the other hand, is already leaning towards the full picture which arrives with Kant, of the inextricability of our supposedly objective conceptualisation of nature from the workings of our own minds. However, the one thing which is mostly firmly asserted by Leibniz on the subject of force is that any account of essence must capture active rather than passive features of a thing. As he says in the *New Essays* preface [p.65], “I maintain that substances, whether material or immaterial, cannot be conceived in their bare essence without any activity, activity being of the essence of substance in general”. Garber comments, of this approach, that Leibniz was reacting to the Cartesian view that Aristotelian essence is unintelligible, by offering an account of essence as precisely the concept which is at the heart of the new physics [2009:128].

Monads

The notion of ‘force’ is the rock upon which Leibniz builds his metaphysical account of the activity of objects in nature, but he is not content to rest with that term, in the way that Aristotle seems to have rested on the term ‘form’. The culmination of his research is his famous concept of the ‘monad’, and it is at this point that we must make a real effort of imaginative sympathy with Leibniz’s aim if we are to find ideas here which are still of value to us. The monads were notoriously mocked by Voltaire when he asked whether a drop of urine consisted of little minds that were thinking about the whole universe. Leibniz’s statement of this key idea which is most illuminating is at *New Essays* 2.21 [p.172], where he tells us that “The clearest idea of active power comes to us from the mind. So active power occurs only in things which are analogous to minds, that is, in entelechies; for strictly matter exhibits only passive power”. The word which should never drift out of the picture, if we are to understand Leibniz here, is ‘analogous’; on almost every occasion on which he discusses monads, and talks of their mental characteristics, this word ‘analogous’ is employed. Monads are not minds – they are entities which we can only begin to grasp when we compare them with our own minds. So this proposal should be understood in the light of his third approach to the question of essences, the approach of seeing how we can possibly manage to conceptualise them, rather than how they strictly are. Just as it is sometimes pointed out by critics of David Hume that we don’t just derive causation from regular correlations, because we have actual direct experience of causation in our own acts of will, so Leibniz felt that we had direct experience in our own minds of the intrinsic activity that seemed to be confronting us in physical objects. This rather subjective underpinning of the monad theory is supported by a more objective claim, that we have to account for the unity of physical objects, and mental entities offer us the only clear instance of the sort of perfect unity which is required. Thus he wrote to Arnauld [1686; Garber:88] that “Every substance is indivisible and consequently every corporeal substance must have a soul or at least an entelechy which is analogous to the soul, since otherwise bodies would be no more than phenomena”. The difficulty here is that in the later correspondence with Des Bosses he lost confidence that the monads (being a multitude) could provide the unity he required, despite their mental character. We may require more convincing that normal physical objects actually have the perfect unity which Leibniz is attempting to explain, so it is the more subjective argument which we will nowadays see as more promising.

That his theory of monads is precisely related to the nature of essence which we are examining here is shown in the remark of 1690 that “The soul, properly and accurately speaking, is not a substance, but a substantial form, or the primitive form existing in substances, the first act, the first active faculty” [Garber:92]. The phrase ‘substantial form’ was the standard way of referring in Leibniz’s time to Aristotle’s own account of essence, so it is not oversimplifying to say that, for Leibniz, the monads *are* the Aristotelian essences, as he understood them. Having established his analogy, he must then do further work (using his powers of intuition and speculation, since nothing else seems to be available for this sort of task) to pick out the aspects of mind which can throw some light on what we are after. The proposal is that, for these purposes, mind has four aspects - sentience, appetite, consciousness and reason – and that only the first two can help us in our attempts at an analogous grasp of the nature of essence in inanimate physical objects. Of these, the modern student can most easily see the point of ‘appetite’, since that is the experience which we all have which has the quality of an inarticulate, spontaneous and intrinsic force within the mind that directs it towards action. There may be some indication in Leibniz’s vast corpus

of how he understood the analogy with sentience, but I have not found it, and can only speculate that he is observing a phenomenon such as that of a floor which seems to exert no upward force when undisturbed, but is considered by physicists to begin exerting such a force upwards at the moment when the weight of someone standing on it presses downwards. This way of seeing things (which always puzzled me as a youthful student of physics) seems to portray the floor as in some way 'responding' to the arrival of the downward force, but this picture is implausible without some notion of the floor detecting the weight which requires support, and this seems to suggest some sort of sentience. One might compare it to a human biceps flexing when it becomes aware of a weight in the palm of the hand, since if there were no such awareness the arm would presumably just flop down under the weight. That is my best attempt at being sympathetic to the notion that physical objects are in some (analogous) way 'aware' of the tasks they are called on to perform, but I do not find it persuasive. We see, though, Leibniz's twofold aim in this: we must take seriously the active nature of the force which is at the root of the explanatory account that is being developed, and if we are to achieve understanding (which is the central aim of Leibniz's whole project) then we must connect the phenomena with which we are faced to the phenomena which we are most clearly able to grasp (such as the workings of our own mental states). Whether the analogy really throws deep light of the nature of essence might be questioned when we read that "I don't say that bodies like flint, which are commonly called inanimate, have perceptions and appetition; rather they have something of that sort in them, like worms are in cheese" [*To Bernoulli* 17.12.1698, in Arlew/Garber:169]. What we have to acknowledge is the huge effort at imaginative understanding of the physical world which Leibniz was making, an approach which was being dramatically sidelined, even as Leibniz was writing these texts, by the development of mathematical physics, and in modern texts on quantum theory the effort to imaginatively grasp the reality of the phenomena that emerge from the equations is often confined to bemused footnotes, or left by physicists to their autobiographies. In 1686 (the year before Newton's *Principia*) he wrote to Arnauld (on 4/14 July) that "One must always explain nature along mathematical and mechanical lines, provided one knows that the very principles or laws of mechanics or of force do not depend upon mathematical extension alone but upon certain metaphysical reasons." in Mason/Parkinson:66]. It could be that the difference between science and philosophy is pinpointed in this difference of aim.

Law of the Series

If the analogy with mental states, while intriguing, doesn't seem to take us very far in our grasp of the nature of essence (if we are looking for a concept which could have real use within a modern account of nature), Leibniz's claim that we are directly confronting in essences some sort of 'law' of the nature of an entity is more interesting. The relationship between what is essential and what is necessary in an entity will be of continued interest in the present discussion, but the thought here is not merely that there may be necessity in the identity or in the properties of the entity, but that there may be a 'law' within a thing which necessitates its behaviour. As early as 1675 he was asserting that "the essence of substances consists in the primitive force of action, or the law of the sequence of changes" [Cover/O'Leary Hawthorne:222], and in 1688 he explained the idea a little more fully: "each indivisible substance contains in its nature the law by which the series of its operations continues, and all that has happened and will happen to it. All its actions come from its own depths, except for dependence on God" [Mason/Parkinson:170]. As so often with Leibniz, the extravagance of this is a little uncomfortable for the modern mind (and even for many of his contemporary correspondents). Leibniz wrestled with the theological problems of free will and determinism throughout his life, and seems to have been searching for a way to avoid Spinoza's extreme determinism, while facing up to the many pressures of his own system that pointed in that direction. The obvious response to Leibniz's large claim is to ask how the whole past and future of an entity can be intrinsic to it, when such things must depend on interaction with other things. Presumably the death of a hedgehog on the road would have to be written into the essence of both the creature itself and the vehicle which struck it, not to mention the road, and the driver, and the weather conditions. If we move to a holistic determinism, then the fate of things seems better located in the universe as a whole, or in the mind of God, than in the individual essence of some entity at the centre of a given event. Spinoza had argued for a comprehensive determinism: "Men are mistaken in thinking themselves free; their opinion is made up of consciousness of their own actions, and ignorance of the causes by which they are conditioned" [*Ethics* II Pr 35 4837], but Leibniz had worked to find distinctions that would cohere with more orthodox theology: "We must distinguish between what is certain and what is necessary; everyone agrees that future contingents are certain, since God foresees them, but it is not thereby admitted that they are necessary" [1686: *Discourse* §13, in Arlew/Garber]. Leibniz seems to have wanted to locate the source of the fixed laws of an entity's history in the thing itself, because this would provide the principle upon which human and divine freedom of will could be built.

What is of interest in his 'law-of-the-series' proposal is that so far we only have a notion of essence as being the primitive force which drives physics, which can be understood as analogous to appetite, but we are now adding the proposal that there is a focus and a regularity in this 'appetite', which can determine external outcomes in a specific way. The introduction of 'law' at the level of individual essences obviates the need for external imposed laws, and a picture emerges which is congenial to the modern scientific essentialism found in, for example, Ellis 2001 and Mumford 2004 (though the latter denies not only externally imposed laws, but also that there is a decent account available of the sort of internal and intrinsic laws that Leibniz seems to be thinking of).

A particularly interesting gloss on the idea of the law-of-the-series is provided by his undated remark that “The essence of substance consists in ...the law of the sequence of changes, as in the nature of the series in numbers” [Cover/O’Leary-Hawthorne:220], which offers as an analogy for what he has in mind the concept which we would now call the ‘successor’ operation in Dedekind-Peano arithmetic. We not only see how Leibniz’s thinking can guide us in grasping modern ideas of a posteriori necessity, but also how the same idea of essence which may illuminate our understanding of the physical world might also have application in the world of abstracta. Leibniz certainly saw it that way, as in his claim, contrary to Spinoza, that we can very accurately state the essence of a circle, and hence derive all the accessible truths about it. In his view the essence of a circle is in the equality of its radii [To Thomasius, 1669], though Spinoza had independently taken the view that [Improvement §95] “If a circle is defined as a figure in which lines from centre to circumference are equal, such definitions do not explain the essence of a circle, but only a property. The properties of a thing are not understood as long as their essences are not known”. It is worth adding here that the great critic of essences as possible objects of human knowledge – Locke – takes the side of Leibniz on this topic, and seems to show an even stronger commitment to real essences here, where the facts are available for human inspection: “A space between three lines is the real as well as nominal essence of a Triangle; it being not only the abstract idea to which the name is annexed, but the very *Essentia* or Being of the thing itself, that foundation from which all its properties flow” [Essay 3.3.18]. Later in this discussion we will revisit the question of the essence of number and of geometrical figure, to see whether such a comprehensive commitment to real essences can survive in modern thought. If the key characteristic of the real essence of a thing is (as apparently agreed by both Locke and Leibniz) that it is the source ‘from whence all of its properties flow’, then this structure of explanation would seem to have as much application to the concepts of abstracta as to the concepts of physical objects, as long as the former have an array of properties which exhibit a dependence relation (and not mere uniform necessity).

Superessentialism

In modern discussions of Leibniz and essentialism, it has become an orthodoxy that Leibniz is a rather strange representative of an extreme view which needn’t be taken too seriously. Penelope Mackie, for example (2006:1), says “the view, standardly attributed to Leibniz, that makes all an individual’s properties essential to it should be regarded as an extreme version of essentialism, not a denial of essentialism”. Interestingly, Wiggins, presumably relying on similar evidence, pronounces that “Leibniz was not an essentialist” (2001:109). On this dispute Quine can be considered sufficiently detached to arbitrate, and he summarises Aristotelian essentialism as $\exists x(\text{nec } Fx.Gx.\neg\text{nec } Gx)$ where Fx and Gx are open sentences [1953:176]; that is, there is no essentialism if we cannot at least distinguish between some properties which are necessary and others which are not. Blumenfeld articulates the orthodoxy to which Mackie alludes, calling it ‘superessentialism’, which he defines as “every property that an individual has (save existence) is an essential part of its nature” [1982:103]. Unlike Mackie, though, he gives a range of references from Leibniz to support his view. Examining these, we find that he is resting his claim of superessentialism on Leibniz’s views about predictable properties, necessary properties, and the notion of a ‘complete concept’, so let us inspect what Leibniz says here.

Leibniz was certainly the consistent holder of a rather startling view, as when he says to Arnauld “even in the most contingent truths, there is always something to be conceived in the subject which serves to explain why this predicate or event pertains to it, or why this has happened rather than not” [1686, Mason/Parkinson:50]. That is, not only will a full understanding of a ‘subject’ enable you to predict both its innermost and its surface properties, but it will facilitate prediction of an object’s relations to other objects, and even its past and future role in events. Putting that to one side (with relief), we must focus on the relevant question here, which is whether such lavish prediction arises from a grasp of the essence of the object, or even whether this huge nexus of relations is the very essence of the thing. Note that if the latter were the case, we would be looking at an essence which extends far beyond the borders of the focal object, which seems an unlikely concept of essence. At the very least we can say that the essence is not this vast network, because Leibniz says the explanation of all of these predictions is to be found in “something to be conceived in the subject”, rather than in the subject in its entirety. In the *Discourse* of the same year he says that “The subject-term must always include the predicate-term, in such a way that the man who understood the notion of the subject perfectly would also judge that the predicate belongs to it” [§8]. There is no doubt that Leibniz is committed to a necessary connection between some inner aspect of a subject and the surface properties, such that inferences can be drawn between the two. It is, though, when we start to look at Leibniz’s notion of a ‘concept’ that the nature of his claim becomes clearer.

In 1690 he wrote that “of the essence of a particular thing is what pertains to it necessarily and perpetually; of the concept of an individual thing on the other hand is what pertains to it contingently or per accidens” [Cover/O’Leary-Hawthorne:127]. At the very least we can note here that Leibniz clearly distinguishes between what is necessary and what is contingent about a subject, so he is certainly not committed to the idea that all of a thing’s properties are necessary. The important Leibnizian distinction to grasp, though, is between the ‘concept’ of a thing and the ‘complete concept’ of a thing. It turns out that the 1690 remark refers to the *incomplete* concept.

Two quotations give us his account of the ‘complete’ concept: “Apart from those that depend on others, one must only consider together all the basic predicates in order to form the complete concept of Adam adequate to deduce

from it everything that is ever to happen to him, as much as is necessary to account for it" [1686, Mason/Parkinson: 48], and more clearly, in 1690, "In this complete concept of possible Peter are contained not only essential or necessary things, ..but also existential things, or contingent items included there, because the nature of an individual substance is to have a perfect or complete concept" [Cover/O'Leary-Hawthorne:126].

The distinction appears to emerge that there is an inner essence, then there is the 'concept', which is the contingent features, and there is the 'complete concept' which is the combination of the two. The necessities pertaining to the subject have their source in the essence, which results in the whole network of events in which the subject is involved. We have a difficulty, though, because he seems to concede that certain things pertain contingently to a subject, and yet its history is required by its essence and can be inferred from it. The only way to reconcile the two is to pay attention to the phrase to Arnauld "as much as is necessary to account for it". That is, some of the surface features will be part of a chain of necessities, such as will make historical prediction and reconstruction possible, while other surface properties are contingent and play no such role. What he is very firm about is that objects have contingent features which are quite distinct from the essential properties and features, which are indeed necessary. In 1690 he spells it out for us: "Of the essence of a particular thing is what pertains to it necessarily and perpetually; of the concept of an individual thing on the other hand is what pertains to it contingently or per accidens" [quoted by Cover/O'Leary-Hawthorne:127].

The consistent picture which we find in these remarks, and many others, is that Leibniz is very definitely an essentialist, either by the lights of Quine's definition or according to Aristotle's conception of an essence. Thus Penelope Mackie is wrong in her acceptance of the reading that Leibniz considers all properties to be essential, and Wiggins is wrong in his denial that Leibniz is an essentialist.. In 1710 [Preface to *New Essays*:66] Leibniz writes that "Every time we find some quality in a subject, we ought to think that, if we understood the nature of this subject and of this quality, we should conceive how this quality could result from it", which draws a clear distinction between a thing's 'qualities' and its 'nature', with a straightforward causal dependency of the former on the latter. In 1715 he wrote to Wolff that "It is the same to look for perfection in an essence and in the properties that flow from an essence" [Arlew/Garber:233], and clearly takes for granted that the notion of a thing's essence is quite distinct from the notion of its properties. The idea of superessentialism has a place in modern discussions, but the authority of Leibniz should not be enlisted in its support.

The source of this modern misunderstanding has grown from the gradual elision of essential properties with necessary properties, to the point where the distinction has ceased to be of interest to many modern theoreticians, but Leibniz is certainly not of this view, and in a letter to Queen Charlotte of 1702 he is completely clear in asserting how distinct the two concepts are: "That which is necessary for something does not constitute its essence. Air is necessary for our life, but our life is something other than air" [Arlew/Garber:191].

As we will see, it is only as a result of a series of essays by Kit Fine in the 1990s that modern essentialism theorists have become alert to the idea that an essential property and a necessary property are two utterly different concepts, even if most theories allow that they regularly overlap. The crucial point is that once the distinction is grasped, it becomes clear that not only do we have different concepts here, but that the concepts are not even coextensive, which is what thinkers rather lazily began to assume in the 1970s and 1980s. It has now become obvious that there are plenty of properties which we would accept as 'necessary', but to call them 'essential' leads to very confused metaphysics. We will also have to face the much less fashionable possibility that there might be properties which are essential but not necessary, though Leibniz would wince at such a thought, and even Aristotle would be rather doubtful.

Haecceitism

An interesting adjunct of the immediate discussion is the question of whether Leibniz is a haecceitist, and, if so, of whether he specifies the nature of the aspects of a subject which do the job. Haecceitism is, in modern discussion, a view first clearly formulated by Kaplan [1975], that each entity is in some way utterly unique, so that there is no possibility of two entities wholly indistinguishable even in principle (such as in the famous imaginary universe of Max Black [1953], which just contains two qualitatively identical spheres). If one commits to haecceitism, one is then faced with the need for an account of what it is which distinguishes two entities which no human being can ever tell apart. The traditional and drastic proposal was Duns Scotus's idea that there is an actual distinguishing property, known as 'a haecceity' (not to be confused with the -ism), which has no characteristics at all except for its quiet role as the provider of individuality. This is, understandably, a thoroughly unpopular view with modern thinkers, but Plantinga [1979] and Adams [1979] have tried to revive the idea by attributing what Adams calls 'primitive thisness', utilising each thing's unique property of being identical with itself. Thus Socrates, and only Socrates, has the unique property of being-identical-with-Socrates (as opposed to his having the property of self-identity, which pertains equally to every subject). This might be plausible if one had a very liberal view of what counts as a property, but such liberalism seems to be a slippery slope which allows Socrates to satisfy a profusion of predicates which hardly seem like his true properties, such as negative ones (not being a goat), or disjunctive ones (being either Socrates or a goat), or relational ones (being within a thousand miles of a goat), or universally necessary ones (being such that $2+2=4$). We will have to revisit the

question of what is to count as a property later in this discussion, when we close in on a plausible account of essences.

There seems little doubt that Leibniz was quite an impassioned haecceitist, as evinced by his strong commitment in the 14th July 1686 letter to Arnauld to the thought that if the world created by God had been in any way different, with Adam hence being slightly different, then this would not have been Adam. Clearly this individual uniqueness must reside in the essence of the thing concerned, and not merely in the concept, which contains contingent qualities, which could therefore be different without disturbing the essence. Even the 'complete concept' contains contingent properties and will not do the job, since the properties needed for haecceitism would evidently have to be necessary. Cover and O'Leary-Hawthorne plausibly propose [1999:286] that it is precisely for this job that Leibniz developed his idea of the 'law-of-the-series', and if we accept this, then that concept acquires an increased importance as a feature of Leibniz's notion of an essence, if that view is to be of use to us in modern metaphysics. They identify three accounts of haecceitism – that it is provided by a vacuous Scotist haecceity, or that it is provided by Adams's 'thisness' (which they call the 'singleton set' view), or that it is properties which do the job. It seems that Leibniz votes for the third view, and he is attempting to characterise the powers of the properties which will do the job, namely that they are the properties which generate the causal role and history of the entity concerned.

Now that we are clear that Leibniz really does believe in essences, and that these are not to be identified either merely with the necessary properties of a thing, nor with the whole sum of the properties of a thing, we can return to our quest for the nature of the essences to which he is committed. Narrowing the interest in these matters down to the merely necessary properties of a thing arose because of a concern about the nature of an object of reference in discourse about possible as well as actual situations, especially in processes of formal logic, and we must consider later whether real Aristotelian or Leibnizian essences are the concept needed for that job, or whether we can just make do with necessary properties, leaving essences for use in other areas of enquiry.

Powers

We saw that Locke was happy to allude to 'powers', even though they might seem to be beyond the range of his empirical telescope, and Leibniz was certainly happy to utilise this scholastic notion, which seems to capture exactly what he wanted to say about the (divinely implanted) primitive force within subjects which is the source of all activity. In concert with his analysis of the 'concept' of a thing, as having 'incomplete' and 'complete' modes, he divides powers into two groups – the 'primary' and the 'derivative': "Primary powers are what make up the substances themselves; derivative powers, or 'faculties' if you like, are merely 'ways of being' - and they must be derived from substances." [New Essays 4.03:379]. In *New Essays* 2.23 he says that "Powers which are not essential to substance, and which include not merely an aptitude but also a certain endeavour, are exactly what are or should be meant by 'real qualities'." [226] Apart from reinforcing the point that Leibniz is certainly not a 'superessentialist', the second quotation clarifies the first very helpfully, and we can gradually assemble the jigsaw of Leibniz's picture of the physical world. It is tempting for the modern reader to skim over the remark about 'aptitude' and 'endeavour', but an important distinction is being suggested, which will surface in modern discussions as the distinction between 'categorical' properties (the 'aptitudes', which we can take to be the passive structural features) associated with Armstrong, and the 'causal' properties (the 'real qualities', which exhibit 'endeavour') which are associated with Shoemaker. We also note in the first quotation that the 'derivative' powers are 'ways of being', leaving the substantial form as the underlying 'true' being, exactly in the spirit of Aristotle's quest for 'being *qua* being', but with a more active spin. A remark of 1703 [To *De Volder*, 20.6.1703] links this dual picture of power with the nature of the monads: "What I take to be the indivisible or complete monad is the substance endowed with primitive power, active and passive, like the 'I' or something similar." [Arlew/Garber:176] There may be no discernible difference between the concepts of 'force' and of 'power' in the writings of Leibniz. In a 1705 letter he wrote that "Primitive forces are internal strivings of substances, acting according to their internal laws" [Arlew/Garber:181], where 'internal strivings' would seem to capture the notion of a 'power' as much as of a 'force', but it is important that the word 'power' (Latin 'potentia') comes from traditional metaphysics, while 'force' comes from the latest science; their close resemblance is precisely Leibniz's point.

Substratum

As we will see later, the details of the essentialism which is emerging from a close examination of Aristotle and of Leibniz will have an important part to play not only in our modern overview of the metaphysics and telos of modern science, but also in our metaphysical understanding of the identity and individuation of objects in contemporary metaphysics. For that reason, we must briefly look at Leibniz's response to two ideas which were around in his time, and which have been prominent in modern discussion. Some modern thinkers, usually of an empirical persuasion, like to see physical objects as 'bundles' of properties (with the properties sometimes understood as 'tropes' – abstract particular 'bits' of properties), while others like the old idea of 'substance' as the thing in which the properties inhere, but without attributing any characteristics to the substance, so that it is a mere 'substratum'. Both views are inimical to essentialism, so Leibniz makes short work of them. The idea of the possible 'substratum' surfaced in Locke's discussion, but in his responding *New Essay* [2.23:217] he says that this is no more than a metaphor. The better modern way of expressing his point is that a 'substratum' is merely a 'placeholder', which says nothing more than that some properties are collected together here, and so must have a

conceptual focus. I would say that it comes close to Aristotle's word *ousia* (meaning 'being', the mere object of his investigations), though its etymology tracks back (via the Latin) to Aristotle's *to hupokeimenon*, which means 'that which lies under', which is also no more than a placeholder in Aristotle's investigations, as we saw earlier.

The idea of an object as a 'bundle' seems inherent in most empirical thought, and the word seems to have entered philosophy when Hume used it to label our rather fragmentary and transient notion of the self that appears to introspection. But the notion of an object as a bundle of properties is implied by Locke's notion of 'nominal essence', where the surface properties which generate the ideas which are grouped by our sortal concepts appear to be all that we can know of the true object. Leibniz's verdict on this is that it is too subjective and relative to give us a proper metaphysics of objects: "If one person applies the name 'covetousness' to one resemblance, and another applies it to another, these will be two different species designated by the same name." [1710, *New Essays*:292]. On p.294 he sweeps this view of objects aside, and makes it clear that our account of the identity of physical objects can only be an essentialist one: "The essence of gold is what constitutes it and gives it the sensible qualities which let us recognize it and which make its nominal definition; but if we could explain this structure or inner constitution we would possess the real, causal definition." These are pointers to how a fundamental account of the nature of individual unified objects can have an important place in a wider metaphysics of nature, and we will return to these thoughts later.

Definition

It is a tribute to the extensiveness of Leibniz's examination of essentialism that only now does this attempt at a concise summary of his findings arrive at his central conclusions. Aristotle, as we have seen, made the procedure of definition a key step in the human attempt to understand reality. We have argued earlier that there is, however, considerable misunderstanding of Aristotle's notion of definition, and that it is a mistake to give definition pre-eminence in his system, because that misses the greater importance which he gives to 'demonstration'. The more plausible picture of the Aristotelian approach is that understanding is the aim, demonstration is the means to achieve this, definition is the key to demonstration, and essence is the main concept which delivers the definitions. In our examination of Aristotle's approach to definition it became clear from the texts that it is entirely wrong to think of his definitional procedure as the mere identification of 'genus' and 'differentiae' – that is, to first place the entity in a class, and then specify what makes it a distinctive member of that class. What Aristotle in fact argues for is 'definition by division', with the genus/differentia distinction being a mere tool that contributes to such an analysis, the main aim of which is the bottom level of division, where the what-it-is-be the thing has its true home. Leibniz is worth studying because he brings a powerful but sympathetic critical sense to be bear on the fundamentally Aristotelian picture, and the genus/differentia strikes him as actually not such a useful tool after all (and certainly not the aim of definition). His comment in *New Essays* 3.3 [p.292] is that "The genus can very often be turned into the differentia, ...so that in place of saying that man is a 'reasonable animal' we could, if language permitted, say that man is an 'animable rational', a rational substance with animal nature." That striking remark not only puts paid rather swiftly to the idea that mere specification of a genus and a differentia will do the job of definition, but also sends a deep tremor through the picture of nature as a neat hierarchy of categories which awaits the perfect human map. We already begin to see that Leibniz's insights take us forward from Aristotle, not only to the beginnings of Kant's more subjective account of these matters, but also to Hilary Putnam's fully argued view that even if we accept a single reality, we will never find ourselves in possession of the one true account of it.

However, Leibniz was very interested in the question of whether a single ultimate definition of an entity is possible, and offers an interesting perspective which ultimately supports the older Aristotelian optimism about such things. In writing to Arnauld in 1686 [Mason/Parkinson:72] he was already making a distinction between definitions which are 'real' and those which are merely 'nominal' (before he had encountered the 'nominal essence' of Locke), and offers the intriguing test that we know a definition is a real one when it clearly shows that the thing in question is possible, a fact not discernible in a merely nominal (and hence unreliable) definition. This doesn't seem very helpful away from the context of Leibniz's philosophy, given that a fairly comprehensive definition of a flying pig seems achievable without showing the real possibilities. A more sympathetic example might be a circular square, which seems possible when we merely assert that it is 'a figure which is both circular and square', but whose plausibility shrinks to vanishing as we fill out the definition (culminating in contradiction when we discuss the corners). The Leibnizian view should therefore probably be understood as requiring a more extensive definition of the flying pig, which includes physics as its context, and details of power-weight ratios to complete it. The comprehensive nature of such a definition is close to what Aristotle seems to have in mind for definition, which he considered could be quite lengthy, and much more like a scientific monograph than like a modern lexicographical summary of a thing.

We must thank Locke for stimulating Leibniz into more extensive thoughts about definition, in the latter's *New Essays*. At 3.3 he revisits the link between definition and possibility: "Essence is fundamentally nothing but the possibility of the thing under consideration. Something which is thought possible is expressed by a definition." [p.293]. This connects definition to his notion of essence, but adds an interesting gloss on essence, as (somehow) the embodiment of the possibility of a thing's existence. This will explain why flying pigs are indefinable, but also suggests that the definition of a beech tree will include all the information which is needed to

show why we are able to have beech trees. (Cynthia MacDonald nicely captures the attitude to metaphysics that lies behind this thought: “Philosophical problems are problems about how what is actual is possible, given that what is actual appears, because of some faulty argument, to be impossible” [2005:19]). A new thought about definitions which had struck him by 1710 was the Putnamesque idea that a thing might be amenable to more than one definition, raising the question of how we should interpret such a phenomenon. He notes that “although a thing has only one essence, this can be expressed by several definitions” [New Essays:294], but it is Locke’s distinction between nominal and real essence which offers him an account of this fact – “The real definition displays the possibility of the definiendum, and the nominal definition does not.” [295]. Back on p.267 he had given the fullest and most illuminating expression to his problem: “The result of having an imperfect idea of something is that the same subject admits of several mutually independent definitions: we shall sometimes be unable to derive one from another, or see in advance that they must belong to a single subject.”

Putting these remarks together, we have a picture which closely matches the Aristotelian account of definition as converging on a precise account of the essence of the thing. But Leibniz adds two ideas to the Aristotelian account, both of which add nicely to our understanding of what is being proposed. The first is Leibniz’s recognition that there may be numerous definitions floating around, and his suggestion seems to be that the prolixity and variety of these possible definitions is itself a symptom of how near (or not) you are to the truth. The rejection of the Putnam view resides in the evident commitment to the ideal convergence on a single definition (reminiscent of Peirce’s idealised account of truth as the convergence of all enquiry), its very singularity being the hallmark which shows that it is correct. The second thought is that it will be a second hallmark of arrival at the desired destination that the successful definition will bring to light not only the nature and properties of the thing in question, but the very reason why this particular exists and is able to exist. Whether such aspirations can actually be cashed out in a modern scientific essentialism, by (for example) showing that there is a single accurate definition of table salt (involving reference to sodium, chlorine, molecular structure etc.), such that we not only see that there is no room for rival definitions, but also how it is that there can be (and perhaps even must be) table salt in the actual world, remains to be considered.

Unity

Locke saw perfect unity in God, and plausible unity in living things, but he flirted with a sceptical account of the unity of ordinary physical objects (“There are no things so remote, nor so contrary, which the mind cannot, by its art of composition, bring into one idea, as is visible in that signified by the name ‘Universe’.” Essay 2.24.3), and empiricism has strong affinities with the wholesale rejection of physical objects as an ontological category (beyond the most minimal particles, the atoms), as found in the modern writings of Van Inwagen [1990] and Merricks [2003]. This may be the central debate of modern metaphysics (where one might find the opposite view in the vigorous defence of ordinary common sense objects in Amie Thomasson [2007]). The sceptical view seems to have been rare in the ancient world (though Empedocles may have thought that way, as Aristotle reports him as saying that “there is no coming-to-be of anything, but only a mingling and a divorce of what has been mingled” [ed.McKeon:471]). Plato and Aristotle both have a strong commitment to the existence of unity in things, but felt that it was a phenomenon requiring metaphysical explanation, and for Plato it led to paradoxes which he could never master (as charted in Harte 2002). For Aristotle an account of unity in things was possibly the central task which he set himself in his whole metaphysics, as a solution would deliver the explanation and understanding he sought. The notion of ‘form’ serves several functions, but unifying the particular subject of properties may be its most important one.

Leibniz shared Aristotle’s ambition in this respect, and the major idea in Leibniz’s metaphysics (the monad) is his response to the problem. In 1678 he noted that “Substantial form, or soul, is the principle of unity and duration, matter is that of multiplicity and change” (quoted by Garber:55). Leibniz was very much concerned with the projects of the new physics, and sought a metaphysical underpinning which started (roughly) with God, and with the twin principles of sufficient reason and non-contradiction, but culminated in a conceptual scheme which offered an explanatory framework for mechanics. The problem of how the objects of mechanics endure over time, or why there is a multiplicity of things, didn’t bother the physicists, but the depth of Leibniz’s thinking about nature is shown by the fact that he appears to have been the very first person to ask the lovely question ‘why is there something rather than nothing?’ The full reasons why Leibniz felt that there must be unities in nature are complex and would take us too far off track, but we can roughly say that he found the evident multiplicity of nature incomprehensible if it did not rest on unity at some bottom level of analysis, so unity became a prime focus for his researches. He was happy to quote Aristotle in this respect – that unity was bestowed by substantial form – but there is a continuous unease in his writings about how this unity is generated, and it consistently bothered him that his monads had to be (for sundry weighty reasons!) completely independent of one another, and so they didn’t hand him the unity of an object on a plate. When Aristotle commits himself to studying ‘being qua being’, it sounds as if he might be drifting into mystical (or Heideggerian) speculations, but the actual examination of the problem focuses almost entirely on the unity of the object. Leibniz remarked that “what is not truly *one* entity is not truly one *entity* either” (Mason/Parkinson:121; the remark is given in a translation of Badiou as “What is not truly one being is not truly a being either”), and his view seems to be that the unity of certain separate entities simply is the bedrock of existence, such that without fundamental unities there could be no existence. Aristotle, like Leibniz, rejected atomism, but could see no reason why a piece of wood should not be divisible ‘through and

through', reducing it to nothing; he felt just as strongly as Leibniz, though, that he could get no purchase on nature if he could not begin with an account of unity.

Leibniz regularly uses the example of a pile of bricks as an apparent entity which clearly lacks unity. His problem was that the situation didn't become any different if the bricks were very small, and in the end (according to Jolley 2005:74) he developed the idea of monads as *spiritual* units precisely because that could provide the unity which seemed so elusive in the physical world. A characteristic statement of his solution to the problem in 1686 was that "In a Being one per se a real union is required consisting not in the situation or motion of parts, as in a chain or a house, but in a unique individual principle and subject of attributes and operations, in us a soul and in a body a substantial form" (quoted by Garber:293), where he seems quite happy with the Aristotelian solution to the unity of bodies. But with the advent of the full-blown monads theory this has to shift, and the striking thing is how many different proposals surface in his writing. He felt that one of the monads in an object had to be 'dominant'; he suggested) that it was the tying together of the past with the future of the object in the substance which conferred the unity [*New Essays*:114]; and his boldest proposal is the striking introduction of a 'substantial chain' in his late correspondence with Des Bosses (and only with Des Bosses). At first glance it looks as if this last idea is a bold new addition to his metaphysics, but it might be better to understand it as little more than yet another imaginative (and metaphorical) attempt at spelling out the nature of Aristotelian substantial form. In this remark of 29.5.1716 [Arlew/Garber:202], for example, that "I do not say there is a chain midway between matter and form, but that the substantial form and primary matter of the composite, in the Scholastic sense (the primitive power, active and passive) are in the chain, and in the essence of the composite" it seems that when we examine his new 'chain' more closely it turns out to consist of familiar ingredients, notably the active and passive force which he always said was at the heart of his account of physical objects. The feeling I am left with is that Leibniz felt there had to be unities, and he just didn't know quite how it worked.

He was well aware (unlike Aristotle) of the danger that all of these unifying processes were actually creations of the human mind. In 1690 he remarked that "A plurality of things can neither be understood nor can exist unless one first understands the thing that is one, that to which the multitude necessarily reduces", and this sentiment seems to apply to a pile of bricks, which was Leibniz's paradigm case of a thing which lacked true unity. [Arlew/Garber:103] In 1686 he had labelled a 'pair' of diamonds as 'a mere entity of reason', but the 1690 remark would even seem to apply to a multiplicity of monads, and he never seems to find an adequate response to this scepticism about true unities. When he asserts the existence of the chain, he remarks that without it physical objects would just be "continual dreams perfectly in agreement" [Arlew/Garber:198]. It will remain for us to discuss later whether doubts about unity are sufficient to undermine a commitment to essences, or whether some compromise account can be found.

Kinds

One of the most important issues which runs in a lively way through two millennia of debate about essences is the question of whether the essence of the individual or the essence of the kind to which it belongs has the priority. Although Locke was a nominalist, and firmly proclaimed that only particulars actually exist, when it came to the elusive real essences, to which he granted probable existence combined with hopeless inaccessibility, he seems in one place to take the surprising view that the kind or sort predominated over the individual, when we find him writing that "Even real essence relates to a sort, and supposes a species: for being that real constitution on which the properties depend, it necessarily supposes a sort of things, properties belonging only to species and not to individuals" [3.6.6]. We have seen that interpreters of Aristotle are divided over his attitude to this issue, but we have made a case that he is best read as endorsing the individual essence as prior. Given that he is talking about real essences, Locke's attitude in this quotation is a little puzzling, and the justification he offers – that properties belong only to species and not to individuals – is not persuasive.

We will argue throughout the present discussion that generalised properties must rest their existential status on the properties of the individuals which exemplify them. A plausible suggestion seems to be that Locke's remark doesn't actually say that essences are sortal in type, but that they 'relate to' sorts, which are 'supposed' by the existence of individual essences, and that his whole picture actually relies on his affirmation that it is only the nominal essence which can enable us to classify and grasp objects. He has taken the view that our very concepts arise from noting similarities between the properties of objects, so we should expect the nominal essence at which we eventually arrive to be constructed from these generic concepts. It is not hard to find in Locke his denial of existence to the generic properties on which he has said that real essences must rest (such as "It is plain that general and universal belong not to the real existence of things; but are the inventions and creatures of the understanding, made by it for its own use, and concern only signs, whether words or ideas." – 3.3.11), so the most plausible way to understand him is as seeing the reliance on sorts in identifying essence as merely the inferior categorisations of a limited human understanding. Our possible archangel, who sees more deeply, might still comprehend an essence in an individual entity. This reading is confirmed at 3.6.32, where he says that "In this whole business of genera and species, the genus, or more comprehensive, but a partial conception of what is in the species, and the species but a partial idea of what is to be found in each individual", and in the same section he laughs at the idea that something might be a large collection of sortal essences when he writes that "If anyone thinks that a man, a horse, an animal, a plant, are distinguished by real essences made

by nature, he must think nature to be very liberal, making one for body, another for an animal, and another for a horse, all bestowed upon Bucephalus" [p.460].

The occasional comments of Leibniz on this issue show some sympathy with generic essences as having priority, but we have already seen his observation that genus and differentia could be swapped in a definition, so he is not rigidly tied to one mode of classifying species. He does, though, take the view, which is also found in Aristotle, that generalisation is indispensable for knowledge, and judges that "It is impossible for us to have knowledge of individuals and to find the means of determining exactly the individuality of everything." [New Essays:289]. In this matter we are always talking about the 'truths' which can be expressed about such things, rather than the actual structure of the world, and expressed truths must rest on the universal character of the terms and predicates they employ. This would explain Leibniz's observation that "The reasons for particular truths rest wholly on the more general ones of which they are mere instances" [New Essays:83]. His distinction between the 'concept' and the 'complete concept' of a thing referred to the individual rather than the species, but a remark of 1686 extends the idea to the species, when he writes that "The concept of a species contains only eternal or necessary truths, whereas the concept of an individual contains, regarded as possible, what in fact exists or what is related to the existence of things and to time" [Mason/Parkinson:41]. Our attitude to the concept of an animal species has irrevocably shifted from this Leibnizian view since the emergence of theories of natural selection, and the idea that such concepts contain any necessary truths seems untenable. However, there are grounds on which we can still defend essentialism about animal species, once we accept the sharp distinction between necessary properties and essential properties [e.g. Devitt 2008]. There is a widespread essentialist thought in contemporary debate, that the one sort of property which might be considered essential to an object is its membership of a class or kind. Thus we might say that a lion is essentially an animal, or a mammal, or a feline mammal. If essence is just understood as what supports the intrinsic identity of a thing, then it might be claimed that nothing is more intrinsic to the identity of any given lion than its being a mammal (and it couldn't possibly lose its mammalian features without ceasing to be a lion). But Leibniz's comment on the idea is worth considering – that "There are sorts or species such that if an individual has ever been of such a sort or species it cannot (naturally, at least) stop being of it" [New Essays:305] – and hence that this notion of the essentiality of kind is by no means universal, but can only be considered on a case by case basis. There is to be no overarching rule about the relationship between the essence of an individual and its membership of a kind, and the complexities of the situation must be charted with care. This is the approach which will be adopted when we come to the contemporary situation with theories of essence.

Gold

The precedent of using gold as a key example for essentialism was established by Locke. Leibniz responded to his comments, and Kripke has focused on the nature of gold in his revival of essentialist ideas, leading to its use as a paradigm case by scientific essentialists such as Ellis. We will remain within this tradition, and use gold as a test case throughout this discussion. As we will see later, this will quickly lead us to a consideration of the periodic table of elements, but for now we can just note Leibniz's brief comments, which come close to giving an overview of his essentialism.

The aim of this discussion is to find an account of essence in the writings of Leibniz which can provide us with a concept which has sufficient empirical and theoretical content to serve as part of our framework for modern scientific understanding. He never came closer to modern scientific essentialism than in his remarks about gold [New Essays:267]:

Even if an idea is distinct, and does contain the definition or criteria of the object, it can still be inadequate or 'imperfect' – namely if those criteria or components are not all distinctly known as well. For example, gold is a metal which resists cupellation [a *separation process*] and is insoluble in aquafortis; that is a distinct idea, for it gives the criteria or definition of 'gold'. But it is not a perfect idea, because we know too little about the nature of cupellation and about how aquafortis operates. The result of having only an imperfect idea of something is that the same subject admits of several mutually independent definitions: we shall sometimes be unable to derive one from another, or see in advance that they must belong to a single subject. ...Thus, 'gold' can be further defined as the heaviest body we have, or the most malleable, ...but only when men have penetrated more deeply into the nature of things will they be able to see why the capacity to be separated out by the above two assaying procedures is something that belongs to the heaviest metal.

We have seen how Leibniz was struck by the possibility that there might be more than one plausible definition of a thing, and here he fills out his notion that there can be a gradual 'convergence' of definitions. The very simple but striking thing we observe in this passage is Leibniz's steady optimism about the prospects for essentialist revelation in nature, in strong contrast with the pessimism which we find in Locke (and Hume). Leibniz has an expectation that we might achieve precisely the understanding which Locke denied, which is the ability to predict some properties and behaviours of gold from others. What we are after, though, is a general understanding of how Leibniz conceived the essences which are sought by science, and the key is in the simple phrase that men "will be able to see *why*" these tests are successful and definitive. That is, Leibniz is endorsing exactly the view of essentialism which emerged from our examination of Aristotle in the previous chapter – that a grasp of an essence is, above all, a grasp of a full and fundamental explanation.

That completes our survey of the main aspects of Leibniz's sustained attempt to articulate the character of the fundamental level of explanation of reality. We can summarise his findings (at a little more length this time) as follows:

Leibnizian real essence: the essence of an entity is an active force, analogous to human appetite, which is associated with the internal structure or constitution of the thing, giving it its primitive power to act in a lawlike way, and the range of possibilities for those actions; this essence is the aspect of the entity which requires its existence, produces the evident properties of the thing which may necessitate its membership of a kind, and gives it its unique identity and intrinsic unity. The essence is expressed by the final single result of the converging definitions which emerge from scientific research into the entity.

We might settle for that and move on, but there is a question which hovers over Leibniz's investigations, of whether these essences are real features of the physical world, or whether they are just a central part of the conceptual scheme that is generated in the course of our most successful attempts at explaining reality – or whether they are both – that is, that our multitudes of partial definitions involve thoroughly human conceptual creations, but also that the convergence on the successful definition generates concepts which are a perfect match for how things are. A few remarks are illuminating on this issue, without ever pinning Leibniz down on it. In 1678, when discussing causes as explanations, he observes that “All the phenomena of nature can be explained solely by final causes, exactly as if there were no efficient causes; and all the phenomena of nature can be explained solely by efficient causes, as if there were no final causes.” [Garber:258] This seems to count against the dream of a single perfectly conceptualised definition which establishes the truth about a thing, and sounds more like middle-period Putnam, where there is one reality, but no one account which can be given of it. One might infer from this remark that it implies two different notions of essence, one whose law-of-the-series points towards its *telos*, and one pointing towards its more passive capacity to be directed by external efficient causes. Two remarks from an article of 1689 [Arlew/Garber:91-2] reinforce this rather more subjective account of how explanations will work. In the first he observes that “one should choose the more intelligible hypothesis, and the truth is nothing but its intelligibility”, which places the onus for the choice of final definition much more on the thinker than on the object of thought, and a page later he offers an application of this idea when he says that “The Copernican account is the truest theory, that is, the most intelligible theory and the only one capable of an explanation sufficient for a person of sound reason.” We can leave this question in delicate suspension for later chapters, but it is an issue which haunts any simple aspiration to affirm the existence of real Aristotelian essences in the world. The sceptics will, of course, quickly proceed from this point to making a case for essences being simply fictional, but the account which we will aim to support is the compromise position, that creative conceptualisation gradually focuses on something which is really out there. The movement from a grasp of the contingent ‘concept’ of a thing to a grasp of the ‘complete concept’ (which includes what is necessary) is something like a movement from the subjective to the objective, and tracks a movement from nominal essence to real essence.

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