Simplicius and Avicenna on the Nature of Body

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1 Introduction

Ibn Sīna, known to the Latin West as Avicenna, was a medieval Aristotelian—one of the greatest of all medieval Aristotelians. He lived in Persia from 980 to 1037, and wrote mostly in Arabic. Simplicius of Cilicia was a sixth century Neoplatonist; he is known mostly for his commentaries on Aristotle. Both of these men were, broadly speaking, part of the same philosophical tradition: the tradition of Neoplatonic or Neoplatonizing Aristotelianism. There is probably no *direct* historical connection between them, however, and anyway I will not try to demonstrate one. In this paper I will examine their closely related, but ultimately quite different, accounts of corporeity—of what it is to be a body—and in particular of the essential relationship between corporeity and materiality.[1]

The problem that both Simplicius and Avicenna face in this respect is as follows. There is a certain genus of substances which forms the subject matter of the science of physics. I will refer to the members of this genus as the physical substances. On the one hand, all and only these physical substances

[1] A longer and more technical version of this paper will appear, under the title "Simplicius and Avicenna on the Essential Corporeity of Material Substance," in R. Wisnovsky, ed., *Aspects of Avicenna* (= Princeton Papers: Interdisciplinary Journal of Middle Eastern Studies, vol. 9, no. 2) (Princeton: Markus Wiener, 2000).

I want to emphasize at the outset that this paper is about Simplicius and Avicenna, not Aristotle. Because both Simplicius and Avicenna are Aristotelians, it is often necessary to cite Aristotle's text in explaining their views. But it would be worse than irrelevant to enter into an investigation, using modern interpretative methods, as to what Aristotle himself actually meant by these texts. Ideally, one would simply report Aristotle's words; then, one would indicate all the ways in which they appeared, to traditional interpreters, to be ambiguous; then, finally, one would show how Avicenna or Simplicius took them. But such a detailed treatment will not be possible here: I must simply ask readers who have their own ideas about Aristotle's true meaning to suspend disbelief long enough to see Aristotle through Simplicius and Avicenna's eyes.

are bodies; on the other hand, all and only they are material—that is to say, are composed of form and matter. This in itself is not problematic. It is often the case that all and only the members of a certain genus or species share several characteristics, and the reason that these characteristics are connected to one another may be unclear. For example, all and only human beings are rational, and all and only human beings have the capacity to laugh. A problem arises, however, because Simplicius and Avicenna take it that both materiality and corporeity are *essential* to physical substances as such.

The *essence* or *quiddity* of a thing is that which is signified by its definition.[2] An essential predicate is therefore one which belongs to the members of a certain genus or species by definition: something without which they cannot be conceived.[3] "Rational," for example, according to most if not all Aristotelians, is essential to humanity: a human being is by definition a rational animal. In contrast to this are other predicates which, although they belong to all and only the members of a certain genus or species, are not essential, but mere "concomitants" of the essence: characteristics which must always attach to the members of that genus or species in reality, but without which they can nevertheless be conceived. If either corporeity or materiality were merely concomitant to the physical substances, then it would be possible to understand one without the other, and in particular it would be possible not to know why these two characteristics are always and only found together. If, however, physical substances are essentially both corporeal and material, then either these two characteristics must be identical (i.e. "corporeal" and "material" must, in the relevant senses, be synonymous), or, if they are different, there must be a conceptually unavoidable connection between the two. Simplicius, as we will see, argues for the former option, and Avicenna for the latter. To understand their respective positions, and the particular difficulties which they are designed to solve, it is necessary first to say a few words about matter and body as they are understood in the Aristotelian tradition.

[2]See *Cat.* 1, $1^{a}6$–12; *Top.* 1.5, $101^{b}38$; *Metaph. Z*.5, $1031^{a}11$–12.

[3]See *Najāh* 1, 46,4–6. I am not aware of such a definition of "essential" in Simplicius, and Avicenna, indeed, reports that his predecessors lacked a definition—see *Sh. M.* 1.1.6, 33,9. I believe that Simplicius' arguments implicitly require something similar, however.

2 Matter

Aristotelian matter fulfills two distinct functions—I will call them the "physical" and "metaphysical" functions.

Matter in its physical role is a permanent substrate of change. Both Plato and Aristotle were driven to introduce such a substrate because change, strictly speaking, is between opposites. Something not-white, say, becomes white. But the not-white cannot literally become white: when the white arrives, the not-white as such must already have departed. This paradox is solved by assuming that, in every change, there is something that remains constant, and which takes on each of the opposites in turn. What changes is the form; what remains is the matter.[4] In its metaphysical role, on the other hand, matter is the subject of determination. The quiddity of a composite, that which is indicated by its definition (i.e. by a list of essential predicates), that which determines something to be such-and-such, is its form. The matter, in contrast, is the "something" which is so determined.[5]

Both of these functions require that matter itself be formless. Physical matter, as the substrate which can receives two opposites, must not as such possess either of them; metaphysical matter, as the subject of determination, must not as such have either the determination in question or its opposite. These two kinds of formlessness are in most cases equivalent. What is determined, by a form, as either white or not-white, must not in itself possess either of these determinations, and similarly what serves as the substrate for a change from one to the other. But the formlessness in such a case is merely relative: the matter must not be white or not-white, but it may be determined in other ways. The difference between the two becomes apparent only if we focus on prime matter, which is purely matter, absolutely without form. *Absolute* formlessness means different things, depending on whether matter is physically or metaphysically construed. Since the physical distinction between matter and form is merely a distinction between what remains and what does not remain in the course of some change, there is no absurdity in supposing that the ultimate physical matter has its own positive character, so long as it is conserved under all changes. Metaphysical prime matter, on

[4]See *Tim.* $49^{e}7$–$51^{b}6$, *Ph.* 1.6, $188^{a}21$–26 and 1.7, $190^{b}29$–35.

[5]See *Metaph. Z*.3, $1029^{a}20$–23, and see also *Tim.* $49^{e}1$–7. Of course it is controversial among modern interpreters whether Aristotle believed in such a thing as physical, let alone metaphysical, prime matter. Such questions are irrelevant for our purposes, as I have already explained.

the other hand, must be without positive intrinsic predicates.

Though nothing positive can be said about metaphysical prime matter, it can be truly described, and even, so to speak, defined, by a special kind of negation—an "infinite" or "indeterminate" negation. It is not true, for example, to say of this prime matter that it is not-white, if by that one means that it is some other color instead. But it *is* true, and even essentially true, that it is not-white in the sense that its nature is different from that of the white, i.e. does not include whiteness. Metaphysical prime matter is not conceptually separable from that indeterminacy. Hence even though prime matter is "unknowable per se,"[6] a kind of per accidens knowledge about it is possible by means of the *via negationis*. That is how Simplicius understands both Aristotle's statement that we know prime matter only according to analogy and Plato's that statement that we know it "by a certain bastard reason": "because it comes to be not by the impression of form, but by stripping-off and negation of forms."[7]

What remains to be explained is the relationship between this wholly indeterminate metaphysical prime matter and the physical prime matter which was needed to solve the paradox of change. It might be supposed that they are different: that the ultimate substrate of all physical change, which is therefore prime matter in the physical sense, has some determinate characteristics—i.e., is metaphysically composite. Aristotle, however, proves that this is not so, by means of his distinction between generation and corruption, on the one hand, and alteration, on the other. The distinction is supposed to be, roughly speaking, that in alteration some thing changes from one state to another, whereas generation is the coming into being of a thing which was not previously there at all. The "thing" that remains in alteration, but comes into being and passes away in generation and corruption, is the subject of accidental qualities—i.e., it is a physical substance.[8]

According to Aristotle, some of his predecessors denied that such a distinction can be drawn—a position he regards as absurd.[9] Others, however, tried to explain the difference in terms of mixture and separation. Sub-

[6] *Metaph. Z*.10, $1036^{a}9$.

[7] *In Ph.* 1.7, 226,25–227,5. For the statements in Plato and Aristotle, see *Tim.* $52^{b}2$ and *Ph.* 1.7, $191^{a}7$–8, respectively.

[8] See *Cat.* 5, $4^{a}10$–11; *GC* 1.4, $319^{b}8$–18; *Ph.* 1.7, $190^{a}2$.

[9] For the details of the following argument, see *GC* 1.1 and 1.3–4. There are alternate ways of understanding these chapters; I have summarize them according to an interpretation which will make sense of the arguments in Simplicius and Avicenna.

stances, they said, are composed, in different proportions, of the four elements. When the right mixture comes into being, a substance is generated; when the mixture again changes, that substance is corrupted. Alteration, on the other hand, is a change in qualities which occurs while the underlying mixture of elements remains unchanged. To this theory Aristotle objects that, among other things, it will not serve to explain the generation and corruption of the four elements themselves. He takes it to be evident that these four elements are distinct types of sensible substance, and that they can be transformed completely one into the other—which process of transformation must therefore be one of generation and corruption. But what, then, is the constant substrate in which this transformation takes place—what, that is, is the physical matter common to the four elements?

This matter must be prime matter in the physical sense, because all other physical substances are mixtures of the four elements. Whatever matter is common to these four must be common to all physical things, and therefore remain constant through all physical changes. But it must also be metaphysical prime matter. For suppose that it is not. Then it would have to be composed of metaphysical prime matter and some determining form—i.e., it would be a composite substance.[10] Since this subject would remain present throughout all physical changes, such changes would never truly be generation or corruption, and we would land back at the (supposedly) absurd conclusion that there is only alteration. The only way out is to assume that the substrate of generation and corruption has no determinate nature of its own, so that there is no determinate thing—no "subject," strictly speaking—that remains the same when the elements are transformed one into another. What is prime matter in the physical sense, in other words, must also be metaphysically so.

3 Body, Matter and Substantial Form

Aristotle defines body in several places, and all the definitions point in a single direction: that body is three-dimensional magnitude, i.e. three-dimensional continuous quantity.[11] There is a slight subtlety about this definition, how-

[10]It would have to be a substance, and not an accident, because an accident cannot persist by itself through change—it requires a persistent subject, which must ultimately be a substance. Or so it seems. This line of argument was eventually challenged by Kant.

[11]See *Cat.* 6, $4^{b}20$–25; *Cael.* 1.1, $268^{a}6$–8; *Metaph.* Δ.6, $1016^{b}27$–8 (and cf. *Metaph.* Δ.13, $1020^{a}7$–11).

ever, which we must now consider. Every actual three-dimensional magnitude is a finite solid: it has a determinate length, width and depth, or, more generally, determinate limits, in the form of a surface or surfaces that completely enclose it. For short, we can speak of these limits as the body's determinate dimensions. One might therefore suppose that body could be defined as three-dimensional finitude. But this would leave over something else that all bodies have in common: three-dimensional extendedness, in abstraction from the finitude of that extension. If one were to define body as that which has three-dimensional limit then this "indeterminate dimension" would remain ontologically unaccounted for.[12] Aristotle, however, does not mention limit in his definitions of body, and both Simplicius and Avicenna argue that this is no oversight. An infinite corporeal substance, they contend—a "body" without limit, and hence without any determinate dimensions or figure whatsoever—is perfectly conceivable, even though such a thing could never actually exist.[13] Therefore body as three-dimensional magnitude or measure cannot simply be identified with limitedness.[14] Body qua continuous quantity is to be identified with, rather than distinguished from, indeterminate triple dimension; the figure and limits, if any, are an accident of body so construed.[15]

Now every physical substance, recall, is either one of the four elements, or in some way composed of them.[16] Given that such substances are essentially corporeal, it is therefore not surprising that Aristotle defines the elements as the four fundamental types of body, which differ from one another in their possession of the four fundamental tangible qualities.[17] If the elements are all bodies, however, and differ from one another only in quality, then it is natural to assume, given Aristotle's definitions of body, that they agree with one another in quantity: i.e., that "common" or "absolute" body is "qualitiless

[12]It is in this sense that Philoponus, Avicenna, Averroes, and others use the phrase "indeterminate dimension." For Simplicius' more abstract usage, see below.

[13]For Simplicius, see *In Ph.* 4.2, 538,27–8; for Avicenna see *Sh. Il.* 2.2, 62,4–5; *Najā* 3.1, 238,5–6; *Sh. M.* 2.3.4, 113,4–5.

[14]See Simplicius *In Ph.* 4.2, 538,23–30; *Sh. Il.* 3.4, 111,4–13; *Sh. M.* 2.3.4, 114,3–4.

[15]See *Sh. Ṭ.* 1.1.4, 27,14–15; *Sh. Il.* 2.1, 57,5–6, and cf. *Ph.* 3.5, $204^{a}17$–19. Simplicius implies much the same when he says that the surface of a body is "a limit of form, but not form" (*In Ph.* 4.2, 538,23–30).

[16]This is true, anyway, if we ignore the celestial bodies and the fifth element, aether. Including them would complicate our discussion considerably, but would not ultimately change its implications as far as Avicenna and Simplicius are concerned.

[17]*GC* 2.2, $329^{b}7$–10. Cf. also *Metaph. H*.1, $1042^{a}25$–26.

body," in the sense of body as pure quantity. True, Aristotle says that there is no such thing as "common body," and Plotinus, for one, takes this to imply that the very idea of "qualitiless body" is unintelligible.[18] But such an interpretation is hardly necessary. What Aristotle objects to is the idea of qualitiless body existing separately, i.e. being found in actuality without its qualities.[19] This does not mean that qualitiless body is a conceptual absurdity; merely that it can be considered only by abstraction from the qualities with which it always, in reality, exists.

If such qualitiless body, then, is what all the elements have in common, then it must apparently remain constant as one element is transformed into another. But that would mean that, at least in a physical sense, qualitiless body is prime matter. Simplicius reports this theory, and this argument, in the name of "some, and not just anyone in the field of philosophy":

> For both Aristotle and Plato first introduce the matter of things that change based on change, and they both claim that the qualities of the elements are hot, cold, dry, and damp. But these qualities have body as common subject, and it remains while they change in it: so body would be prime matter.[20]

That qualitiless body does not exist separately, far from being a problem for this theory, is a distinct advantage. Aristotle's doctrine of prime matter is precisely "that there is some matter of sensible bodies, out of which are generated the so-called elements, but that it is not separate, but always with contrariety."[21] There are other problems with the theory, however—problems so serious, indeed, that Avicenna never seriously considers it. Simplicius discusses it at some length, but only, as he says, because it has been put forward by his distinguished colleagues and predecessors.

If we thought of corporeity qua (qualitiless) three-dimensional quantity in terms of *determinate* dimensions (or, in general, in terms of determinate limit and figure), then the theory would not be tenable even with respect to the physical role of matter. For we know that substantial change brings not only changes in quality, but also in quantity. When air, for example, is generated from water, the resulting substance has greater bulk or volume.

[18] For Aristotle, see *GC* 1.5, $320^{b}23$; for Plotinus, *Enn.* 2.4.8.2–3.
[19] See *GC* 2.1, $329^{a}8$–13.
[20] *In Ph.* 1.7, 227,26–30.
[21] *GC* 2.1, $329^{a}24$–6; cf. *Ph.* 4.9, $217^{a}21$–25.

This means, as Plotinus points out, that the physical formlessness of matter must extend, not just to quality, but to determinate quantity as well.[22] Simplicius turns this argument to the purpose of showing that matter is not "qualitiless body" in the sense of determinate three-dimensional quantity.[23] This physical argument does not really apply, however, to qualitiless body as Avicenna and Simplicius themselves understand it—i.e., to "indeterminate dimension." Determinate volume may not be conserved when one substance is corrupted and another is generated, but the simple characteristic of three-dimensional extendedness certainly is. Couldn't body in this latter sense be identified with prime matter?

The problem is that prime matter must be not just physically, but also metaphysically, formless. Even, therefore, if there is some quality or other character which all physical things have in common, that quality or character cannot be identified with prime matter. It follows that body, if it has any determinate characteristic whatsoever per se, cannot be identified with matter.[24] The indeterminateness of "indeterminate" dimension, however, is not absolute but relative. To say that something is three-dimensionally extended is not to specify its precise limits or figure, but it is to predicate *something* of it—i.e., to determine it in some way. Simplicius can therefore use several variations of the above metaphysical argument to show that matter is not qualitiless body, even in the indeterminate sense.[25]

It remains possible, however, that qualitiless body, in the sense of pure three-dimensional magnitude, is a generic substantial form—one which all physical substances have in common. In that case all such substances would be essentially corporeal because, and in the sense that, they are all essentially three-dimensional magnitudes. Here again, however, if we take three-dimensional magnitude in the *determinate* sense, then we can dispose of the suggestion rather easily. When water is heated, for example, it expands, and a lump of wax can change its figure arbitrarily, yet neither is corrupted by such a change: their determinate limits and figures are evidently not essential to them.[26] This shows that determinate magnitude is an accident in at

[22] *Enn.* 2.4.8.14–23; cf. Aristotle, *Ph.* 4.9, $217^{a}26$–7.

[23] *In Ph.* 1.7, 229,21–8; cf. *Sh. Il.* 2.3, 77,12–13.

[24] For both of these arguments, see Plotinus, *Enn.* 2.4.13.1–7 and 2.4.12.34–35.

[25] *In Ph.* 1.7, 230,10–16.

[26] *Sh. M.* 2.3.4, 114,5–10; *Sh. T.* 1.1.1, 13,6-10; *Sh. Il.* 2.2, 64,1–4. The example of wax derives from Aristotle (*Cael.* 3.7, $305^{b}29$–30), although it is used there to a somewhat different purpose. It later turns up, famously, in Descartes (*Meditations* 2, AT 30).

least some corporeal substances. Even, therefore, if there are other corporeal substances that are essentially of a certain size and shape, so that some substantial forms are indeed (among other things) species of determinate magnitude, still determinate magnitude cannot be the generic substantial form of all corporeal substances. If there is some sense in which three-dimensional magnitude is such a generic substantial form, then it must be in the sense of "indeterminate dimension."

Neither Simplicius nor Avicenna can accept this view, but it is somewhat easier to see why in Avicenna's case. This is because he and Simplicius disagree about a fundamental issue which has troubled nearly all interpreters of Aristotle, regarding the differentiae of substance. It seems that they are qualities: not just because certain qualities are said to differentiate certain substances (e.g., the four elements), but because Aristotle actually states in a blanket way that differentiae are qualities.[27] Yet a quality is a kind of accident, and the differentiae of substance cannot be accidents.[28] Plotinus suggests, in outright disagreement with Aristotle, that sensible substances are nothing but bundles of accidental qualities and therefore are not really substances at all—i.e., that sensible substance is merely phenomenal.[29] But this radical line of thought stops with Plotinus, until, fourteen hundred years later, it is again taken up by Leibniz and Kant. Later Neoplatonists and Aristotelians, beginning with Plotinus' own student Porphyry, abandon the Plotinian theory of sensible substance, and of the sensible categories in general, and return to Aristotle's. They must therefore explain why Aristotle says that the differentiae of substance are qualities, without allowing that those differentiae are merely accidents. There are two solutions, one of which is adopted (following Porphyry) by Simplicius, the other by Avicenna.

Porphyry's solution is that the very same quality, depending on its context, can be either accidental or substantial. This is the theory of so-called "substantial qualities": qualities such as the heat of fire, without which the substance in question cannot exist.[30] It is true, then, that the differentiae of substance are qualities, but only in the sense that the same characteristics, e.g. heat, which serve to differentiate substance, turn up elsewhere as

[27]See, e.g., *Top.* 4.2, $122^{b}16$–17 and 6.6, $144^{a}20$–21.

[28]See *Ph.* 1.6, $189^{a}33$–4; *Top.* 6.6, $144^{a}24$–7; 1.4, $101^{b}17$–19; 1.5, $102^{b}4$–5.

[29]*Enn.* 6.3.8.30–37.

[30]See Porphyry, *In Cat.* 5, 95,22–7. The expression itself, "substantial quality," is Plotinian (*Enn.* 6.3.14), but the theory which accompanies it is not. Note how Simplicius specifically attributes it to Porphyry (*In Cat.* 5, 78,21–3), and see *Enn.* 6.3.8.27–30.

members of the accidental category of quality.

Avicenna is well aware of this theory, and firmly rules it out, as "a great error."[31] He therefore concludes that the term "quality" is just completely equivocal. There is a sense of "quality," sure enough, in which the differentiae of substance (and of everything else) are qualities, but "quality" in that sense is not the name of any genus whatsoever, and in particular does not at all correspond to the *category* of quality, all the members of which fall under it as their true (highest) genus.[32] If the elements and other substances are sometimes described as differentiated by accidental qualities such as heat and cold, that is merely a shorthand way of referring to their true essential characteristics. The true differentiae are not qualities but the powers to produce them.[33]

Now, on Avicenna's view, it is perfectly easy to see that three-dimensional magnitude, even in the indeterminate sense, cannot be substantial. For it belongs to the genus of quantity—i.e., is a kind of accident. It cannot be confused with anything substantial.[34] According to the Porphyrean view adopted by Simplicius, however, the issue is not quite so simple. If there can be substantial quality, then why can't there be substantial quantity? Philoponus proposes exactly that.[35] But Simplicius does not, and for good reason. It is, first of all, textually difficult: Aristotle says explicitly that "quantum is not substance."[36] Then, too, there is this question: if every corporeal substance is essentially a magnitude, and in that sense possesses "substantial quantity," then in what circumstances is (indeterminate) magnitude *not* substantial? Or, if it is always substantial, then in what sense is it called "quantity"? Even if these problems could be explained away, however, there is a more serious one which cannot be avoided. For, as we will see in the next section, Simplicius has arguments which rule out any such thing as substantial corporeity, however it may be defined.

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[31] *Sh. Il.* 2.1, 58,10–15.

[32] See *Sh. M.* 2.1.6, 45,15–17 and 47,17–18.

[33] *Sh. M.* 2.1.6, 47,5–7; *Sh. Ṭ.* 1.1.6, 34,14–35,5 and 3.6, 129,15–131,11; *Najāh* 3.1, 246,10–247,16.

[34] See *Sh. M.* 2.3.4, 114,1–4.

[35] See *In Ph.* 1.2, 38,23–39,2; *Contra Proclum de aeternitate mundi*, ed. H. Rabe (Leipzig: Teubner, 1899), 11.5, 424,4–7.

[36] *Metaph. Z*.3, $1029^{a}14$–15. See also *Metaph. K*.6, $1063^{a}24$–8, and see Plotinus, *Enn.* 6.3.17.10–11.

4 Simplicius: Corporeity as a Privative Characteristic of Matter

The key to understanding Simplicius on this question is found in the following passage from the *Physics* commentary:

> Perhaps, then, one ought to posit body in two ways: in one way, existent according to form and logos and determined by three dimensions, and in another way as remission and extension and indeterminateness of the incorporeal and impartible and intelligible nature, this latter not being formally determined by three dimensions, but rather remitted and released out in every way [$\pi\acute{\alpha}\nu\tau\eta$], and emanating out in every direction from being to non-being. And one must perhaps posit matter as such dimension, but not as the corporeal form, which has already measured and defined the infinity and indeterminateness of such dimension, and has halted its fleeing out from being.[37]

Unfortunately, the passage is less than completely clear. Simplicius mentions three things: (a) body which is "existent according to form and logos"; (b) body which is "remission and extension and indeterminateness"; (c) "corporeal form." How many things are being distinguished here, and which is to be identified with matter, and why?

There are two important existing interpretations of the passage, by Wolfson and Sorabji.[38] Both agree that (a) and (c) are to be identified. As for the distinction between (b), on the one hand, and (a) and (c), on the other, they disagree. Wolfson sees it a distinction between true prime matter, which is incorporeal, and corporeal "second matter," which is a substantial form common to all the elements. Sorabji, on the other hand, takes it as a distinction between "extension" in the abstract—what we are calling "indeterminate dimension"—and determinate three-dimensional magnitude, which is an accident.

Both of these interpretations can, I think, be ruled out on fundamental grounds.[39] Wolfson suggests that the "matter" common to the elements

[37] *In Ph.* 1.7, 230,21–29.

[38] For Wolfson's interpretation, see *Crescas' Critique of Aristotle* (Cambridge: Harvard University Press, 1929), p. 582. For Sorabji, see *Matter, Space, and Motion: Theories in Antiquity and Their Sequel* (Ithaca, NY: Cornell University Press, 1988).

[39] For Wolfson and Sorabji's positive arguments, and my reasons for rejecting them, see the longer version of this paper.

is really a composite of prime matter and substantial form. Sorabji does not say this, but in truth his view must ultimately come down to the same thing, since, as we have already seen, corporeity—even in the indeterminate sense—cannot actually be identified with prime matter. So what they are both really suggesting is that there is some substantial form common to all physical things. And that, according to Simplicius, is impossible.

Recall that Aristotle's distinction between generation and alteration rests on the fact that prime matter, which is itself no determinate thing, is the subject of opposite determinate forms which change one into the other. It rests, in other words, on the identification of physical and metaphysical prime matter: the ultimate, changeless substrate of change must also be the ultimate, indeterminate subject of all predication. It seems, however, that there is no opposite of body, with which it might alternate. One might even wonder how there could possibly be such an opposite, given that *every* physical substance is corporeal. Every transformation of one element into another, on this view, would be a mere change in state of the underlying corporeal substance. "And thus not only celestial body, but also sublunar, will be ungenerable and incorruptible."[40] In other words: all of Aristotle's hard work in proving the possibility of true generation would be in vain; it would turn out that all changes are mere alterations of a single underlying substance.

We have arrived at the following situation. All physical substances are bodies. But they are not so because of some substantial form which all have in common. It seems to follow that physical substances are not essentially corporeal, and that body is not, as such, a true genus of substance. Simplicius does not say this, however: he says that body is a substance, and even makes a clear distinction between body as quantity and as substance.[41] How can body be a kind of substance, as opposed to a kind of (accidental) quantity, if there is no substantial form of corporeity?

The clue to the solution of this difficulty is found in the argument which Simplicius uses, finally, to show that "body" must, at least in some sense of the word, refer to matter: "That which exists in common in all physical and sensible things as such must itself be matter.... But what is common to all of them is extension in volume and dimension."[42] Matter, in other words, is "body" (and "volume" and "dimension") in the sense that it is

[40] Simplicius, *In Ph.* 1.7, 232,8–11; see also 228,1, and see *Cael.* 1.3, 270^{a}12–22.
[41] See *In Ph.*, *Corollarium de loco*, 622,21 and 623,16–17, and see *In Cat.* 6, 125,13–15.
[42] *In Ph.* 1.7, 230,17–20.

what all corporeal substances have in common, in virtue of which each of them, taken individually, is a body. Matter therefore corresponds to what we might normally think of as the *form* of body: the form of ox, for example, is something that all individual oxen have in common, in virtue of which they are called oxen.

If we look more closely into this parallel, however, we can see that it only goes so far. Recall that what I have called the metaphysical version of the distinction between form and matter is a distinction between determination and determined, or between predicate and subject. The form of ox is the quiddity or essence of oxen as such: it is the essential characteristic, or the sum of essential characteristics, by virtue of which something is an ox. This form, however, even though it is called "ox" (or even "the ox"), is something quite different from the individual oxen, because each individual ox has not only form but also matter—which matter must, since an ox is a substance, and the form of ox is therefore a (complete) substantial form, be prime matter.

In the case of body, on the other hand, Simplicius claims that the opposite is true. If body is taken as a kind of substance (rather than as a kind of accidental quantity), then the quiddity or essence, so to speak, of body as such is prime matter. This matter, even though it is called "body," is quite different from individual bodies, because each individual body must have not only matter but also a substantial form. These forms, however, are completely different from one another: even though body is a genus of substance, there is nothing which the substantial forms of all bodies have in common. The common essential characteristic of all corporeal substances, by virtue of which they belong to a single genus, is not a form at all, but simply matter.

This seems paradoxical. If prime matter is completely indeterminate, "defined" only negatively, by its complete privation of all form, then how can it serve to distinguish between one kind of substances and another? Doesn't such a distinction amount exactly to a difference in form? The answer is that, in Neoplatonic metaphysics, there is another way, besides formal differentiation, in which two kinds of things can differ from each other. Forms themselves can subsist in different ways—can be of different degrees or ranks of being, or in other words different degrees of closeness to the One. Matter indeed distinguishes the low-ranking corporeal substances from the incorporeal substances of the intelligible world, but not because materiality is some positive differentia: it is rather a defect in the way in which such

substances have form. It is, as Simplicius says, the "deviation" of sensible form away from absolute unity, its "turning away from There and being carried down towards non-being."[43] An incorporeal substance, which is to say an incorporeal form, is *unique*, i.e. does not have more than one instance, and is *impartible*, i.e. is not potentially many; corporeal substance lacks both these kinds of unity. This double lack of unity is prime matter.

Now since prime matter in itself is nothing more or less than these kinds of disunity (though it is possible to describe it with other privative predicates, as well), it is in itself disunity without limit—i.e., "the infinite."[44] Corporeal substance, considered with respect to its matter alone, therefore "tends" toward infinity, and in two ways: it tends towards infinite "dispersion," i.e. towards utter lack of uniqueness, and towards infinite "extension" or "outpouring," i.e. towards utter lack of impartibility. Substantial forms, moreover, do not directly halt this tendency towards the infinite: measuring and unification requires the accidents of quantity. Thus the double nature of quantity (continuous and discrete) follows from the double nature of the infinite disunity which must be measured.[45] The discrete quantity in question is aggregate multitude, or number, and the continuous quantity is spatial magnitude, or dimension.

It is also possible, however, to use the terms "multitude" and "magnitude" or "dimension" metaphorically, to refer to the respective tendencies towards non-being which make these quantitative forms necessary.[46] It is in this way that matter comes to be spoken of as indeterminate quantum, or indeterminate magnitude. It is also in this abstract sense that Simplicius uses the phrase "indeterminate dimension," or, synonymously, "material dimension": not for the accident of continuous quantity in abstraction from its finitude, but for prime matter as the indeterminateness which quantity, finite or infinite, must determine.[47] What *we* have called "indeterminate dimension" (and what Philoponus, Avicenna and Averroes all call by that name), Simplicius calls "the form of body," "the form of magnitude," or "the dimension of magnitude." He explicitly distinguishes between it and "material dimension," which "is not a measured quantity or a form, since it does not participate in the form which corresponds to quantum and to magnitude,

[43] *In Ph.* 1.7, 231,20 and 25–7; see also *Corollarium de loco*, 623,10.
[44] *In Ph.* 4.2, 537,30 (referring to *Ph.* 3.6, 207^{a}21).
[45] *In Cat.* 6, 133,31–4.
[46] See, for example, *In Ph.*, *Corollarium de loco*, 640,35–641,2.
[47] See *In Ph.* 4.2, 537,13–15.

but is an indeterminate pouring-out."[48]

True, the accidental, quantitative "form of magnitude," is common to all physical substances, just as much as they are all material. This commonality does not, however, imply that anything determinate is conserved under all physical change. An indeterminate *substantial* magnitude of the kind proposed by Wolfson and Philoponus would put an end to the distinction between generation and alteration, because it would have to be generated from an opposite, which it does not possess. But accidents do not survive the corruption of their subject. When one corporeal substance is corrupted and another generated in its stead, the accidental form of magnitude does not just change its limits, but is completely annihilated and replaced with a new one.[49] In substantial change, it is the substantial qualities that perish into, or come to be out of, their opposites. The accompanying accidents of quantity are not generated and corrupted at all: they simply replace one another.

So far, we understand how matter can be called (indeterminate) "magnitude," "quantity," or "dimension." But this is not a complete answer to our problem, because we want to know how matter can be called "body." "Body" as a kind of quantity is distinguished from other spatial magnitudes by its three-dimensionality. But three-dimensionality is, or so it would seem, just the kind positive differentia that matter cannot have. What is it about matter that makes it (indeterminately) corporeal rather than planar or linear?

The answer lies in Aristotle's demonstration, at the beginning of the *De caelo*, that three is the maximum number of spatial dimensions. "Demonstration" is perhaps too strong a word, since this is one of the least clear and least convincing passages in which Aristotle discusses so fundamental a point—ultimately he must rely on Pythagorean number mysticism. The details of the argument are not important to us here, however; it is enough to know the conclusion: that more than three dimensions are impossible, and hence that "in three ways" ($\tau\rho\acute{\iota}\chi\eta$) is equivalent to "in every way" ($\pi\acute{\alpha}\nu\tau\eta$).[50] This is the source of matter's "three-dimensionality": material extension is $\tau\rho\acute{\iota}\chi\eta$ insofar as, and only insofar as, it is $\pi\acute{\alpha}\nu\tau\eta$. Matter, in other words, is the completely indeterminate tendency towards infinite extension, and because it is *com-*

[48] *In Ph.* 4.2, 537,24–6; see also *Corollarium de loco*, 623,14–19.
[49] See *In Ph.* 1.7, 232,18–21.
[50] *Cael.* 1.1, 268^{a}24–5.

pletely indeterminate, it requires every possible spatial determination—i.e., all three of them.

We are now in a position to give the correct interpretation of the long passage with which I began this section (*In Ph.* 1.7, 230,21–29). Simplicius describes not two, but *three* different things: (a) "body" as "existent according to form and logos and determined by three dimensions"; (b) "body" as "remission and extension and indeterminateness of the incorporeal and impartible and intelligible nature," which is not "formally determined by three dimensions," but rather "remitted and released out in every way [πάντῃ], and emanating out in every direction from being to non-being"; and (c) "corporeal form" which "has already measured and defined the infinity and indeterminateness of such dimension." We can now see that (a) is the accident of three-dimensional continuous quantity, in abstraction from its limits. This is what other commentators call "indeterminate dimension"; Simplicius calls it "the form of body" or "the form of magnitude." One could possibly, as Wolfson and Sorabji want to do, construe (c) as identical to (a). But although quantitative measure is needed to determine matter, it is not sufficient. For that one needs also the substantial qualities: "As the form which determines the matter one must take the whole form, along with the qualities."[51] The substantial "qualitative" form is logically prior to any accidents, including the accidents of quantity.[52] It is probably best, therefore, to regard "corporeal form" here as synonymous with "sensible form," as that phrase is used on the next page (231,25): as a name for any substantial form, insofar as it is the form of a body. As for (a), it is prime matter, regarded as the tendency to infinite extension, which is τριχῇ because it is πάντῃ. This is what Simplicius himself calls "indeterminate dimension."

Thus Simplicius is able to solve the dilemma of the essential corporeity of material substance. Material substances are essentially material in that their form or essence is such as to subsist in prime matter; they have no other essential character in common. But prime matter, although it possesses no positive property of its own, is that in virtue of which every composite substance stands in need of three-dimensional quantity. It is that in virtue of which corporeal substances are bodies, and in that way can itself be called "body." Material substances are essentially corporeal, in other words, because corporeity, in the relevant sense, just *is* materiality: it is the defective-

[51] *In Ph.* 4.2, 538,20–21.

[52] *In Cat.* 6, 122,16–18.

ness in being of corporeal substances, in virtue of which they tend to flow out indeterminately into infinite extension and non-being.

5 Avicenna: Substantial Corporeity as Continuity

Avicenna, it will be recalled, faces the same problem that we have just seen Simplicius solve. He agrees that (prime) matter is pure potentiality, completely without any positive determination; and he agrees all material substances are essentially corporeal. But whereas Simplicius solved this problem by explaining how corporeity, in the relevant sense, is a characteristic of matter—i.e., not really a positive characteristic at all—Avicenna argues that corporeity is the first substantial form in matter: a form which all material substances share.

Talk of substances which differ in species sharing a single substantial form, or of one substantial form being prior to another one in matter, gives the impression that the prior, generic substantial form is supposed to serve as subject for the posterior, specific one. There may be some Aristotelians who hold this view, but Avicenna is not among them: he holds that substantial form is not in a subject at all, but in prime matter, which is not, strictly speaking, a "subject."[53] This leaves two other ways in which corporeity might be thought of as prior to other forms: it might have either the priority of a part to a whole, or that of a universal to a particular.[54] As it turns out, both of these alternatives are correct, though in different ways.[55] Whichever way one looks at it, what is definitely ruled out is that this generic or partial form should occur in reality without specification or completion: i.e., there can be no "absolute body" in the external world (just as there is, for example, no "absolute animal").[56] Yet such an absolute body is nevertheless conceivable—unlike, say an absolute number (i.e., a number which is not any specific number), or an absolute measure (i.e., a magnitude which has no specific dimensionality).[57] It should therefore be possible to explain what substantial corporeity is in itself, without reference to the specific forms which all actual bodies must have. Avicenna's task is to give such an explanation, and then to show, based on that explanation, that the

[53] See *Sh. M.* 2.1.6, 46,2–47,1; *Sh. Ṭ.* 1.1.2, 14,15–15,1; *Najāh* 3.1, 237,10–18.
[54] See *Sh. M.* 2.3.3, 103,2–3.
[55] See *Sh. M.* 5.1.10, 100; *Sh. Il.* 2.2, 69,9–10; *Sh. M.* 2.3.4, 114,2–3.
[56] See *Sh. Ṭ.* 1.1.1, 8,13–9,1.
[57] *Sh. Il.* 2.2, 70,12–14.

partial or generic form of corporeity is conceptually inseparable from materiality: not, that is, from prime matter itself (which is rather essentially formless), but from the "need" (*ḥāja*) for matter. He must show, in other words, that all and only substantial forms having corporeity as a part or genus are inconceivable except as forms subsisting in matter.

He offers, first of all, the following traditional "description": that "body is a substance which is long and wide and deep."[58] But this, as he points out, and as we have already seen, cannot be taken as referring to body as quantitative—i.e., to either the determinate or to the indeterminate dimensions. The description of body as three-dimensional must rather mean that corporeity is a substantial form by virtue of which certain substances are susceptible to such accidents.[59] That is why the above "description" of body is merely a description, and not a proper definition: a definition, as opposed to a description, must be in terms of essential attributes.[60] A true definition of substantial corporeity would have to name the essential characteristic by virtue of which substances receive their accidental three-dimensional quantity. Avicenna says, in some places, that the characteristic in question is continuity.[61] In other places, however, he is more cautious, asserting only that corporeity "is either continuity itself, or a nature to which continuity is concomitant."[62]

To understand both the identification and the hesitancy about it, we need to look into the various meanings of the ambiguous word "continuity." Officially, Avicenna recognizes three basic meanings of this word. (1) A thing can be called continuous to something else if the two share a common limit or extremum.[63] (2) More loosely, a thing can be called continuous to something else if the two are attached, possibly just by contact, in such a way that motion in one of them is necessarily accompanied by motion in the other.[64] (3) A thing can be called continuous absolutely, without reference to anything else, if it is one in actu, but divisible into continuous parts—i.e.,

[58] *Sh. Il.* 2.2, 61,6–7. He refers to this expression as a "description" a few pages later (63,4). Cf. *Najāh* 3.1, 238,6–8; *Sh. M.* 2.3.4, 113,9–11 and 5.1.10, 99,16.

[59] *Sh. Il.* 2.2, 63,14–15.

[60] See *Sh. M.* 1.1.9, 49,3–7.

[61] *Sh. Il.* 2.2, 64,6–7; *Sh. Il.* 2.2, 70,2–3.

[62] *Najāh* 3.1, 238,27–239,1.

[63] *Sh. M.* 2.3.4, 116,16–17; *Sh. Ṭ.* 1.3.2, 182,2–3; *Sh. Il.* 3.2, 98,16–17; cf. *Ph.* 5.3, 227^{a}11-12.

[64] *Sh. M.* 2.3.4, 117,12–13; *Sh. Ṭ.* 1.3.2, 183,3–4; *Sh. Il.* 3.2, 99,1–2; cf. *Metaph.* Δ.6, 1016^{a}5–6.

partible in such a way that the potential parts, at least before the division, share a common limit or extremum, or are continuous to each other, in other words, in the first sense.[65] Of these three definitions, the two relative ones are not suitable as differentiae of substance. Sense (3) is the only one that might work. There are, however, two problems with a straightforward identification of corporeity and that kind of continuity, i.e., divisibility.

The first problem arises from Avicenna's theory of mixture. The main difficulty about mixtures is that the composite substance is uniform, and uniformly unlike its component elements, but can be analyzed back into them. The elements must be somehow absent, and yet somehow still present, when the mixture is complete. Avicenna's solution is as follows.[66] Composite bodies consist of very many small simple (i.e., elemental) bodies. These small bodies are actual substances: they retain their substantial forms in actu. Recall, however, that, according to Avicenna, substantial form is not itself qualitative, but is simply the power to produce certain sensible qualities. It naturally produces such qualities, *if* there are no impediments. The reciprocal action of the small elemental bodies in a composite is just such an impediment: it leads instead to the production of a single, intermediate quality, which all the components then have in common. A mixture of fire and water, for example, contains actual small pieces of fire and water, but the pieces are only potentially hot and cold, respectively; both have in actu the same, intermediate degree of heat. The mixture itself consists of such intermediate qualities—i.e., it is an accident. In some cases, however, this accident of mixture is such as to dispose the matter of the components to receive a new, additional substantial form or entelechy from the "giver of forms," which phrase refers (in Avicenna) to God or to one of the separate intelligences.[67]

The problem from our present point of view is that bodies composite in this way cannot be strictly speaking continuous: they have parts not just in potentia, but in actu.[68] The parts are united by "cohesion": they are continuous to each other, that is, in our sense (2), but they do not make

[65] *Sh. M.* 2.3.4, 116,9–14; *Sh. Ṭ.* 1.3.2, 183,7–8; cf. *Cat.* 6, $4^{b}25$–$5^{a}14$.

[66] For details, see *Sh. Ṭ.* 3.6, 126,17–127,12; *Sh. Ṭ.* 4.2.1, 253,5–10 and 256,9-14, and cf. *GC* 1.10, $327^{b}21$–6, upon which both Avicenna's theory and its various competitors are based.

[67] See *Sh. Il.* 9.5, 411,9.

[68] See *Sh. Ṭ.* 1.3.3, 184,7 and 12–14.

up a continuous unity in sense (3).[69] Hence Avicenna says that "the true continuous subject is a simple body."[70] Composite bodies, however, are really supposed to be bodies: body is supposed to be the genus or partial form which is common to all material substances, including minerals, plants, and animals. As such it must be equally present in all of them: "the form of corporeity which is its substantial form is that by which no body exceeds any other."[71] We will therefore have to admit that the "continuity" which is identified with corporeity is not exactly of type (3). Since, however, the other two types of continuity on Avicenna's list are relative, rather than absolute, the meaning of "continuity" in question must be one that is not mentioned on the official list.

The second problem will ultimately force us to admit the same thing. Avicenna often says or implies that substances are not per se divisible. He says, for example, that a single simple body does not receive multiplicity by virtue of its own nature: "its multiplication is in a nature which has unity adapted to multiplicity only because of something other than itself."[72] This "something," as he elsewhere makes clear, is nothing other than the accident of continuous quantity.[73] But if continuity is a kind of partibility or divisibility, and divisibility is accidental to body, then continuity itself must be an accident in body. And in fact, when Avicenna discusses the ontological status of continuity, he says that it can be a differentia of quantity, or an accident concomitant to magnitude, but does not mention it as a differentia of substance.[74]

These statements cannot be taken completely literally, however, or, in any case, they cannot apply to divisibility and continuity in all senses of these words. It is not just that the conclusion (that corporeity is not continuity) contradicts Avicenna's own statements elsewhere: on that point he is a times hesitant, as we saw above. The real problem is that, if divisibility is a mere concomitant to corporeal substance, then such substance can be conceived without it—can be conceived, that is, as in itself either having or lacking divisibility. This, however, as we are about to see in some detail, would lead

[69] See *Najāh* 2.3, 178,6–7; *Sh. Il.* 3.2, 99,3–8.

[70] *Sh. Il.* 3.2, 99,11.

[71] *Sh. M.* 2.3.4, 114,2–3. Cf. *Metaph. B*.3, 999^{a}6–13, *EN* 1.6, 1096^{a}17–23, and *Enn.* 6.1.25.16–21.

[72] *Sh. Il.* 3.2, 100,16–101,2.

[73] *Sh. M.* 2.3.4, 118,5–7.

[74] *Sh. M.* 2.3.4, 116,6–8.

to absurd consequences. As we are also about to see, moreover, true physical division (in reality, as opposed to in thought) requires matter—i.e., must take place in a substrate. But this substrate, ultimately, is prime matter, and so what is ultimately physically divisible must be a substance, not an accident. Avicenna hints at this immediately after one of the passages just cited: only quantity, he says, is required for "partition in which there is only a mere singling out of the part," but "partition with which there is motion and separation in place" requires matter.[75]

We can concede, then, that a simple body receives *conceptual* division in actu only by virtue of the accident of continuous quantity which inheres in it. A *physical* division of this same body, however, after which division the original corporeal substance would no longer exist, must be possible, not by virtue of any accident, but directly through the substantial corporeal form itself. Continuity, in the sense in which we originally defined it, requires the first of these, rather than the second: it involves the possibility of positing two parts within the whole by means of a posited limit which is common to both. Whether this single shared limit is *merely* posited, so that the body remains continuous (in sense [3]), and the two parts remain continuous (in sense [1]) to each other, or whether the single limit instead becomes two in the instant of partition, so that the parts become physically divided, is not relevant.[76] But the most general account of continuity is that "what is one by continuity is that which is one in actu in some respect, and in which there is also multiplicity in some respect."[77] Even though it does not show up on the list of particular senses, the physical, substantial kind of divisibility also deserves to be called "continuity" according to this general account. And any corporeal substance at all, whether simple or composite, insofar as it is unified by some material substantial form, deserves to be called "continuous" in this way.

The doubt of the *Najāh*, about whether corporeity is continuity itself or is merely a nature which implies continuity, can therefore be resolved by saying that both are true. "Continuity" is slightly more equivocal than Avicenna lets on. In one sense, it is a differentia of quantity, and in fact serves to mark out the genus of which quantitative corporeity (i.e., three-dimensional continuous magnitude) is a species. In another sense, however, it

[75] *Sh. M.* 2.3.4, 118,10–16.
[76] See *Sh. Ṭ.* 1.3.3, 184,13–14.
[77] *Sh. Il.* 3.2, 98,12–13.

is a differentia of substance, or the form corresponding to that differentia, and in that sense is to be identified with substantial corporeity. But substantial corporeity implies quantitative corporeity, and so the first kind of continuity is a concomitant of the second.

6 Avicenna: Corporeity and Materiality

Let us proceed with the assumption that corporeity is this kind of substantial divisibility-in-unity.

The first thing to notice is that this definition neatly solves the problem which plagued Simplicius: that there is apparently no opposite of body, so that, if corporeity were some substantial form, then, since generation is from opposites, body as such would be incorruptible. If corporeity is continuity, in the sense of divisibility, then it does indeed have an opposite: namely, actual division. Bodies as such are therefore corruptible, not because they may somehow become non-bodies, but simply because they are potentially divided. This, moreover, is already enough to show that corporeal form is essentially material, i.e. that it "needs" matter. The argument is just an adaptation of Plato and Aristotle's general proof that generation and corruption require physical matter as a subject. Opposite cannot receive opposite: the continuous as such cannot receive division; there must be a *tertium quid*, matter, which receives them both.[78] Since what is continuous is by definition susceptible to division, it follows that every corporeal substance is by definition material.

It remains only to show that every material substance is essentially corporeal: i.e., that substantial form in matter cannot be conceived except as including corporeal form. This direction of proof presents a far more difficult problem, for reasons which should already be familiar. Prime matter, recall, has no positive essence of its own: it is pure potentiality. From this it follows, indeed, that prime matter cannot be found in actu without any substantial form whatsoever.[79] But why must it always have this particular form, which we have identified with continuity? How can that be, unless matter has some positive character of its own, by which it demands one kind of form rather than another?

Avicenna's solution rests on two things: first, an equivalence between the metaphysical potential to receive corporeal form and the physical potential to

[78] See *Najāh* 3.1, 239,1–8; *Sh. Il.* 2.2, 66,15–67,7.
[79] See *Sh. Il.* 2.3, 72,4–7.

gain or lose it through change, and, second, the role of place in individuation. Let us examine each of these points in turn.

The first point may seem problematic. Pure potentiality does mean that matter, as such, is "adapted" to any material form. But it does not mean that matter can lose any particular form and gain any other material form in its stead. Consider the case of the celestial bodies. Like all other bodies, they must have the form of corporeity, and they must therefore be material. But they are also supposed to be ungenerated and incorruptible. Some material forms, apparently, are such that matter is capable of receiving them, but not capable of gaining or losing them through change.

One response to this argument would be to maintain that the celestial "bodies" are not bodies. We showed that bodies are material by showing that they are all potentially divisible, which followed in turn from our definition of them as continuous. But the celestial bodies cannot be (physically) divided. It seems to follow, therefore, not that celestial bodies combine materiality and incorruptibility, but that they are not material, and hence not really bodies at all. Averroes, based on these or similar considerations, reaches just that conclusion: that celestial "bodies" are not bodies, or at any rate that celestial and sublunar bodies are equivocally so called, and that the two do not share a common matter.[80] This view faces both textual and conceptual problems, however, and Avicenna, in any case, is not even aware of anyone who holds it: he regards the conclusion that "body" is equivocal, or in other words that body is not a true genus, as an evident absurdity.[81] His solution is different. All body as such, he explains, is divisible and hence corruptible, but it is possible for the generic form of corporeity to be "conjoined" with some specific form which prevents individuals of that species from being corrupted, and hence from being really divided.[82] The specific form which in fact has this effect is the form of aether—the element whose natural motion is circular, and whose form can therefore have no opposite.[83] From the details of this solution, however, it is already clear why the existence of ingenerable and incorruptible material forms will pose no difficulty for arguments about corporeity. For corporeity itself, obviously, is not such a form: no body is

[80] *Sermo de substantia orbis*, c. 3, Hebrew pp. 41–2, ll. 103–4; Latin 10^{r}B. See also *Tafsīr* (*Long Commentary*) on the *Metaphysics*, ed. Maurice Bouyges, 2nd edition (Beirut: Dar el-Machreq Éditeurs, 1967), *yā'* (=*I*), comm. 26, 1387,9–1388,2.

[81] *Sh. M.* 2.3.1, 92,1–3. Cf. Philoponus *In Ph.* 1.2, 39,9–10.

[82] See *Sh. Il.* 2.2, 66,11–12; *Sh. Ṭ.* 1.1.3, 22,4–7.

[83] See *Cael.* 1.3, 270^{a}12–22; *Sh. Ṭ.* 2.4.

ingenerable or incorruptible by virtue of its corporeity alone. That will be enough to make Avicenna's arguments go through.

As to the second point, about place and individuation: the key issue is what it takes for a material substance to be "designated." Avicenna defines "designation" (*išāra*) as "a sensible or intellectual reference to a thing in itself which it does not have in common with any other thing, even if that other thing is of its species."[84] The talk of sensible or intelligible reference may make it sound like the need for designation is purely subjective—i.e., something which we need in order mentally to refer to an individual, but which is not necessary for an individual to exist. Avicenna, however, thinks that an individual falling under a species can be conceived of only as something which is designatable.[85] Whatever the reasons for this—and there is no room to go into them here—it makes designation, or rather the possibility thereof, into an objective metaphysical necessity.

Now designation as we have just defined it is a matter of distinguishing something from everything else. There are several ways in which such a distinction can come about. In the case of things which exist in a subject (i.e., of accidents), there can be a distinction between otherwise identical things by way of the different subjects in which they inhere. This allows for a kind of designation per accidens, by means of the designation of their subjects, which, ultimately, must be substances.[86] As for substances themselves, they can differ by possessing different substantial forms—i.e., by belonging to different species. As Avicenna indicates in his very definition of designation, however, this will not always be sufficient: there are sensible substances of the same species which are nevertheless distinct. The distinction in such cases must be by means of accidents.[87] Not just any accidents, however, will serve this purpose. True, it might happen to be the case that there has only ever been, and will only ever be, one person of a particular color, or one person who is the son of so-and-so, is tall, and is a philosopher. But designation requires not only that the designated thing be unique, but that this uniqueness be known a priori to the designator.[88] The individuating accidents must therefore be such that no two individuals of the same species could *possibly* share them. The accidents which fulfill this condition are place

[84] *Sh. M.* 2.3.3, 103,15–16.
[85] See especially *Sh. M.* 1.1.12, 65,19–66,11 and 70,9-20.
[86] *Sh. M.* 2.3.3, 103,16–17.
[87] *Sh. M.* 1.1.12, 70,9–10.
[88] *Sh. M.* 1.1.12, 70,17–18.

and time.[89] Two things of the same species which come into being at the same time must therefore be in place.[90]

With these two points in mind, and recalling our identification of corporeity and continuity, we are ready to follow Avicenna's proof that prime matter cannot exist without corporeal form, or in other words that any substantial form in matter must be corporeal. The proof is by reductio ad absurdum. Assume that the prime matter can exist without corporeal form—i.e., that it can exist with some substantial form that is not corporeal. There are two possibilities: either corporeity is not the first form in matter, so that the proximate matter of body is already a composite, or prime matter itself can take on (at least) two different forms, one corporeal and the other not.[91]

To take the first case first: assume that there is some composite substance (i.e., prime matter together with its hypothetical pre-corporeal form) which can be either corporeal or incorporeal. Even though there are ingenerable corporeal substances, they are not so by virtue of their corporeity alone, nor can they be so by virtue of their pre-corporeal form (since even sublunar bodies must share it). We can assume, therefore, for the sake of argument, that some incorporeal pre-body becomes a body—i.e., that an incorporeal substance which possesses the pre-corporeal form comes to have corporeal form as well. Call this substance A.

Now A, first of all, cannot, while it is incorporeal, have any position or location. For A, when it is incorporeal, is not continuous, i.e. not divisible; but an indivisible thing which has position is a point, and a point is a limit, not a substance.[92] The question is, then, whether it is conceivable that

[89] See *Sh. Ṭ.* 6.5.3, 198,13–15; *Sh. Ṭ.* 1.2.5, 112,2–3.

[90] There is actually another possibility, namely that the two things in question merely have some *relation* to things which are in place. This is what Avicenna says about rational souls. He seems not to take that possibility into account, however, in the argument I am about to present. I discuss (and try to answer) the various objections to which this omission gives rise in the longer version of this paper.

[91] I am departing somewhat from the way in which Avicenna presents the first case. He assumes without proof, at *Sh. Il.* 2.3, 72,4–7, that "corporeal matter" is "ultimate," i.e. prime, matter. He then goes on to assume, for the sake of argument, that this matter might not be purely receptive, but might have "a proper constituted existence" of its own (*Sh. Il.* 2.3, 74,13–14, although such an assumption is really already in place on the previous two pages). Matter without form, however, obviously cannot have such a proper existence, while, on the other hand, it is by no means self-evident that corporeal matter and prime matter can be identified. I therefore think it best to understand the argument as I have represented it.

[92] *Sh. Il.* 2.3, 72,8–12; *Najāh* 3.1, 240,1–5. Limits (such as points, lines, and surfaces)

A, having no position, could become a body. When it *is* a body, it will be in place: it will have three-dimensional continuous extension, and, since an infinite body, though conceivable, is physically impossible, it will have a limiting surface, which in turn will be surrounded by the surfaces of other bodies—i.e., by a place.[93] Now, place individuates because no body can be in more than one place at the same time; it is *necessary* for individuation because neither the substantial forms of a body, nor any of its other accidents, uniquely determine what place it will occupy, so that otherwise identical things can always exist in different places. So A, once it becomes a body, must be in some particular place, but nothing about A qua body can determine which place that will be. A cannot therefore simply acquire a place in the instant in which it becomes corporeal.[94] A must therefore already have been located *before* the change occurred: "it necessarily found it in the location which it was in, and that substance [i.e., the pre-corporeal A] was located.... But it was posited as not located at all. This is a contradiction."[95] Another argument which is based on continuity alone (i.e., without reference to place) works in the same direction. We are supposed to imagine that A, before the change, has a form by which it is one, but not by continuity; in other words, by which it is one and indivisible; in other words, by which it is not many either in actu or in potentia. After becoming a body, however, it can be divided. Therefore its original pre-corporeal form must have left it, contrary to what was assumed.[96]

These arguments eliminate the possibility that there is some pre-corporeal form common to both corporeal and incorporeal things. It remains possible, however, that prime matter is directly receptive of two inconsistent forms: one corporeal, the other not. In that case, we may no longer assume that an incorporeal substance becomes corporeal, since such a process would now have to involve the loss of the incorporeal form by corruption, and we have

cannot be substances: see *Metaph.* B.5, $1002^{a}4$–$^{b}11$, and see also K.2, $1060^{b}12$–19 and N.3, $1090^{b}8$–13. For Avicenna's arguments on this issue see *Najāh* 3.1, 140,5-13; cf. also *Sh. Ṭ.* 6.5.3, 187,11–188,17.

[93] This is the standard Aristotelian definition of place: the surface which is the limit of the containing body (*Sh. Ṭ.* 1.2.9, 137,8–9 = *Ph.* 4.4, $212^{a}6$).

[94] *Sh. Il.* 2.3, 73,4–9.

[95] *Sh. Il.* 2.3, 72,15–73,3. Note that Avicenna is implicitly appealing here to a principle of sufficient reason (i.e., he would not allow the kind of thing modern physicists call "spontaneous symmetry breaking"—which may or may not be a real feature of modern physics, depending on one's interpretation of quantum mechanics).

[96] *Sh. Il.* 2.3, 75,3–6.

no reason to think that that is possible. We *may*, however, assume that some body becomes incorporeal. For corporeal form itself is not one of those forms which, when conjoined with matter, makes the resulting composite incorruptible. If it is possible for matter to exist without corporeal form, then it is possible for it to lose it.[97]

Avicenna argues as follows. Consider a corporeal substance—call it B. As corporeal, it is continuous, i.e. divisible. Imagine that it is divided into two parts—call them B_1 and B_2. Since we are assuming that matter can lose corporeal form, we can imagine any of these three bodies (B, B_1, or B_2) becoming incorporeal, in the sense that its corporeal form is lost and replaced by an incorporeal one. Call the resulting incorporeal (but material) substances C, C_1, and C_2. C is in a sense the sum of C_1 and C_2: all the matter that is in C is, or rather would be, in one of its "pieces." Yet it is impossible to say how C might differ from one of them, say C_1. Certainly they cannot differ in place—Avicenna does not even bother to mention this, presumably because it is so obvious, in light of the previous discussion. He does mention another obvious point: that they do not differ in "measure," i.e. in the accident of continuous quantity. They might conceivably differ in substantial form or in quality. But we are considering B and B_1 purely as bodies (that is: we cannot assume that *they* are quantitatively or substantially different), so if the loss of corporeity in B results in a certain form or quality in C, the loss of corporeity in B_1 must have the same result in C_1. If, similarly, we were to assume that B was annihilated by the loss of corporeal form (i.e., that there is no C at all), then the same would have to be true of B_1. Nor, finally, can we say that C is literally the union of C_1 and C_2. For it is not literally possible for two different substances to be united. Their *matter* can be united, but they themselves are then no longer present; they are replaced by some third substance, and this third substance must, in some way or other, be different from each of them. But this lands us back with our original problem: that we could not explain the difference between C and C_1. If, however, C and C_1 are in every way identical, then the matter of C_1 itself is identical to the matter of C_1 together with with the matter of C_2: "the nature of some of the subject [i.e., prime matter] and the nature of all of it is one in every respect." This is impossible.[98]

[97] Of course, the *real* way in which matter "loses" corporeal form—i.e, division—does not result in its becoming incorporeal. See below for more discussion of this point.

[98] *Sh. Il.* 2.3, 75,12–77,4.

We can sum up all of these arguments up by noting that they all depend on the distinctive nature of corporeal form. In assuming that corporeity could, in one way or another, alternate with incorporeity in matter, we were thinking of corporeity as being similar to other forms, in that its opposite would either be simply it absence, or would be some other form inconsistent with it. But if corporeity is continuity, then its true opposite is division, and division purely as such means division into parts which are of the same nature as the whole. That is why corporeity is the form that requires measure and position (because it is by measure and position that the parts differ from the whole and from each other). It is also why matter, if it can ever have corporeal form at all, must always have it: body as such is a kind of substance, the only kind, whose corruption is necessarily accompanied by its own generation. Hence material substances are essentially corporeal.

> In general, every thing for which it is possible, at any time at all, to become two, has among its essential characteristics an aptitude for division, from which it can never part ... and this aptitude is impossible except by conjunction of measure with its essence.[99]

7 Conclusion: Avicenna and Simplicius

Simplicius and Avicenna face the same difficult problems, and both reach interpretatively and conceptually radical solutions. The interpretative radicalness is reflected in that their discussions of this issue are unusually disengaged from Aristotle's text. The main discussion in Simplicius is in the commentary on *Ph.* 1.7—a chapter in which Aristotle does not mention body at all—and begins on its own, without reference to any particular textual segment; Avicenna's main discussion of corporeity at *Sh. Il.* 2.2–3 is likewise, and unlike most other chapter-length parts of the *Shifā'*, not easily associated with any one locus in Aristotle. Both Avicenna and Simplicius, moreover, introduce terminology—"corporeal form," "indeterminate dimensions," "deviation"—which is not Aristotelian (or even Plotinian). The conceptual radicalness can be summed up by saying that both of these solutions reduce corporeity, in the relevant sense, to something extremely abstract. Both refuse to identify it with any of the familiar and easily picturable properties of bodies (extension, volume, surface, three-dimensionality, rigidity, resistance, inertia, weight). This resort to a high degree of conceptual abstraction, and

[99] *Sh. Il.* 2.3, 77,5–8.

to a high degree of interpretative independence, reflects both the extreme difficulty of the metaphysical problems and the extreme pressure to achieve systematically maintainable solutions where such fundamental issues are at stake.

The two solutions agree to a great extent in detail. The abstract property with which both Simplicius and Avicenna wish to identify corporeity is divisibility or partibility: the potency or aptitude by which a material substance, one in actu, is at the same time potentially many. The difference between them is subtle. Avicenna thinks of corporeity, roughly speaking, as the kind of unity (ultimately: substantial unity) which possesses such divisibility. He therefore identifies corporeity with a certain substantial form. Simplicius, on the other hand, thinks of corporeity as the privation by which an enmattered substantial form "deviates" from its intelligible archetype—i.e., by which it deviates from true unity and true being. He therefore identifies corporeity with matter. Both solutions are relatively tenable within their own systematic contexts; neither, probably, could survive transplantation to the other system. Simplicius' solution relies ultimately on a full-blown Neoplatonic theory of emanation that Avicenna does not share, while Avicenna's is dependent on his non-Neoplatonic views about essential and accidental properties, and about the coexistence of multiple substantial forms in a single composite substance.