Francis of Marchia on the Heavens

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Abstract

Francis of Marchia (c. 1290-†1344) is said to have challenged Aristotelian orthodoxy by uniting the celestial and terrestrial realms in a way that has important implications for the practice of natural philosophy. But this overlooks Marchia's vital distinction between bare potentiality, which is actualizable only by God, and natural potency, which is the concern of the natural philosopher. If due attention is paid to this distinction and to its implications, Marchia's position no longer seems to be revolutionary.

1. *Introduction*

> "One of the most important innovations of the mature Galileo was the assertion that the celestial and terrestial realms are made of the same fundamental matter and therefore follow the same basic natural laws. Francis of Marchia put forth a similar hypothesis in his commentary on book II [of the *Sentences*], qq. 29-32. Contrary to contemporary Aristotelian theory, Marchia argues that the heavens are not made up of a fifth, incorruptible, nobler element, which radically differentiates the supralunar realm from the sublunar one. On the contrary, the basic matter is the same everywhere, and just as Marchia considers the natural world to follow predictable patterns, he also thinks that those patterns are universally applicable. These two tenets have important implications for the practice of natural philosophy."[1]

Or so we have been led to believe. Francis of Marchia's writings on the nature of the heavens have been in print for the past fifteen years thanks to Notker Schneider's production of a critical edition with a commentary.[2] But that commentary has not yet been supplemented by independent

[1] C. Schabel, *Francis of Marchia*, in: E.N. Zalta (ed.), *The Stanford Encyclopedia of Philosophy (Winter 2001 edition)*, §3 (URL = <http://plato.stanford.edu/archives/win2001/entries/francis-marchia>).

[2] N. Schneider, *Die Kosmologie des Franciscus de Marchia: Texte, Quellen und Untersuchungen zur Naturphilosophie des 14. Jahrhunderts*, Leiden 1991.

studies, and its main interpretative claims—that Marchia denied Aristotle's radical distinction between the sublunar and supralunar realms, and that this allowed him to apply to the heavens physical laws discovered on earth—have percolated through to the tertiary literature unchallenged.[3] This article undermines those claims.

In his concluding chapter, Schneider gives a summary of what he calls the important and fundamentally innovative results of Marchia's cosmology: (1) that the whole cosmos is unified and essentially homogeneous, inasmuch as essentially the same principles and causes are to be found throughout it; (2) that the whole cosmos can be interpreted uniformly, so that there is no need for a special physics of the heavens as a separate realm; and (3) that all discovered and confirmed observations and laws are in principle transferable and applicable to all events in the cosmos, so that, as a matter of methodology, we can make well-founded statements about things which elude our direct grasp.[4] This would of course be in stark contrast to the standard mediaeval view, derived ultimately from Aristotle, that the sublunar and supralunar realms are fundamentally different.[5]

Marchia's own views are expressed in his commentaries (henceforth '*S*' and '*M*') on Peter Lombard's *Sentences* and on Aristotle's *Metaphysics*, where he asks whether or not celestial matter is of the same nature (*ratio*) as the matter of inferior generables and corruptibles (*S* II.32.iv) or the matter of the elements (*M* III.9). His answer, to put it briefly, is that yes, celestial and terrestrial matter are of the same nature. But the devil is in the details, and it is to these that I now turn.

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[3] See for instance R.L. Friedman, *Francis of Marchia*, in: J.J.E. Gracia and T.B. Noone (eds.), *A Companion to Philosophy in the Middle Ages*, Oxford 2002, 254, and §3 of Schabel, *Francis of Marchia* (cit. n. 1 above).

[4] Schneider, *Die Kosmologie* (cit. n. 2 above), 326-27: "im Augenblick soll nur gezeigt werden, welche Resultate diese Entscheidung . . . schon bei ihm zeitigte. Formal lassen sich vor allem drei wichtige Ergebnisse benennen, die allesamt fundamentale Neuerungen bedeuteten . . . 1. Der Kosmos ist in seiner ganzen Erstreckung . . . ein einheitliches und wesentlich homogenes Ganzes, in dem an jeder beliebigen Stelle wesentlich gleiche Prinzipien und Ursachen anzutreffen sind. 2. Dieser Gesamt-Kosmos, das Universum, kann einheitlich interpretiert werden . . . es ist nicht nötig, für besondere, ausgezeichnete Bereiche eine besondere Physik mit eigenen Erklärungsmustern zu schaffen (z.B. eine spezielle 'Himmelsphysik')." For (3), see n. 47 below.

[5] See e.g. E. Grant, *Cosmology*, in: D.C. Lindberg (ed.), *Science in the Middle Ages*, Chicago 1978, 286-88.

2. *Marchia's Arguments*

There is, as one would expect, a significant overlap between the arguments Marchia gives for his position in the two commentaries. Three arguments are more or less common to both works, and *S* provides a further one of its own. I label these four lines of argument as follows:

1. The Argument from Comparative Nobility (*S* §59, *M* §11)[6]
2. The Argument from Material Incorruptibility (*S* §60)
3. The Argument from Material Potentiality (*S* §61, *M* §10)
4. The Argument from Celestial Quantity (*S* §2, *M* §12)

Let us now examine each of these in turn.

2.1 *The Argument from Comparative Nobility (S §59, M §11)*

Marchia's first argument makes extensive use of the concept of nobility (*nobilitas*). Roughly speaking, something's nobility is its closeness to God in the cosmic hierarchy.[7] The precise sense of the concept is unimportant here; what matters for us is the use to which Marchia puts it.

The argument purports to be a *reductio ad absurdum* of the notion that incorruptibles and corruptibles—specifically, celestial and elemental substances—have matter of different natures. Suppose that this notion is correct. Then, on the tacit assumption that things of different natures cannot be equally noble, celestial and terrestrial matter cannot be equally noble. But Marchia argues that neither type of matter can be nobler than the other. So the notion must be incorrect.

The difficult part of this argument is the lemma that neither type of matter can be nobler than the other. In order to prove this, Marchia helps himself to some data about comparative nobility: that nobler matter is in potency towards nobler form, that (living) intellective souls are nobler than (non-living) celestial forms, and that (incorruptible) celestial forms are nobler than (corruptible) elemental forms. He also uses the straightforward observation that terrestrial matter is in potency towards both intellective souls and elemental forms. His overall strategy is then

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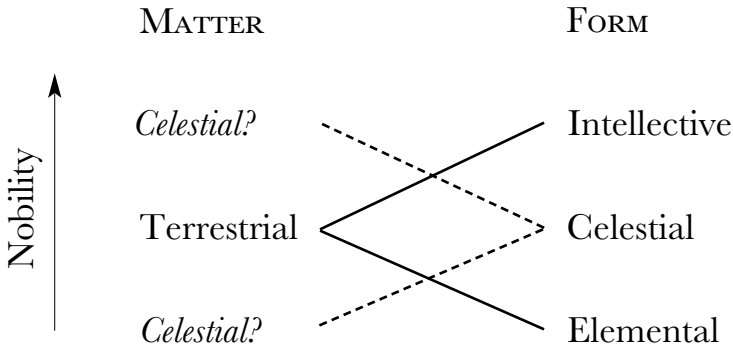
[6] Section numbers refer to the helpful divisions in Schneider's edition of *S* II.29-32 and *M* III.9 in *Die Kosmologie* (cit. n. 2 above). I use the brief forms '*S* §*n*' and '*M* §*n*' to refer to section *n* of *S* II.32 and *M* III.9 respectively.

[7] The idea was derived from Aristotle. See A.O. Lovejoy, *The Great Chain of Being*, Cambridge, MA 1936 (reprint 1964), 58-59.

to employ a pincer movement against any supposed difference in nobility between celestial and terrestrial matter. The manoeuvre can best be explained with the help of a diagram:



Terrestrial matter, Marchia argues, cannot be nobler than celestial matter, because that would violate the matter-form nobility correlation when comparing elemental form to celestial form, which is nobler.[8] And celestial matter cannot be nobler than terrestrial matter, because that would violate the matter-form nobility correlation when comparing celestial form to intellective souls, which are nobler.[9] (These correlation violations are represented in the diagram by crossings of the matter-form lines.) So the heavens—whose form is wedged in between those of living men and the elements, both of which have terrestrial matter—must themselves have terrestrial matter.

Schneider praises the clarity and decisiveness of this argument, and defends Marchia against an anticipated charge that the yardstick of nobility is "mediaeval in the worst sense", claiming instead that it is an excellent way of ordering disparate objects by the one thing that they have in common, namely, being.[10] But as I see it the argument faces at least three possible lines of objection.

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[8] *S* §59, ll. 448-450; *M* §11, ll. 66-68.

[9] *S* §59, ll. 451-455; *M* §11, ll. 68-76.

[10] See Schneider, *Die Kosmologie* (cit. n. 2 above), 302-03, and in particular n. 271: "handelt es sich um ein wegen seiner Relativität ganz ausgezeichnetes Kriterium, anhand dessen sich tatsächlich Verschiedenstes miteinander vergleichen und in eine relative Zuordnung bringen läßt, und zwar hinsichtlich genau eines Parameters, den aber all' dies Verschiedene gemeinsam besitzt: hinsichtlich des Seins."

The first stems from a distinction between nobility *simpliciter* and nobility *secundum quid* (in a certain respect) that Marchia makes in *S* II.29 whilst arguing that the heavens are inanimate. He considers the following objection: living things are nobler than non-living things; the heavens, being incorruptible, are nobler than many living things; so the heavens must be living and thus animate.[11] He responds:

> I say that one thing can be nobler than another *simpliciter*, and yet be less noble than it *secundum quid*. Example: any substantial form is nobler *simpliciter* than prime matter with respect to its degree of being, because form is a being simply in actuality, while matter is a being only in potency. And yet, contrariwise, prime matter is nobler than [a given substantial] form *secundum quid*, e.g. with respect to some measure (*modus*) of necessity. For prime matter is unbegotten and incorruptible, whereas [substantial] form is corruptible. For everything incorruptible is as such nobler than [anything] corruptible.
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> Likewise, I say in response to the problem that as far as degree of being is concerned, every living thing is nobler *simpliciter* than any non-living thing, and hence than the heavens; but *secundum quid* the opposite is the case, just as has been said about matter and form.[12]

Now, the argument from comparative nobility relies on two supposed impossibilities: corruptibles cannot be nobler than incorruptibles,[13] and the heavens cannot be nobler than intellective souls.[14] But the first involves nobility *secundum quid*, while the second appears to involve nobility

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[11] *S* II.29 §15.

[12] *S* II.29 §18: "Dico quod aliquid potest esse simpliciter nobilius alio et tamen esse ignobilius eo secundum quid. Exemplum: Quaelibet forma substantialis est nobilior simpliciter materia prima quantum ad gradum entitatis, cum forma sit ens in actu simpliciter, materia autem ens in potentia tantum. Et tamen e contrario ipsa materia est nobilior forma secundum quid, puta quantum ad modum aliquem necessitatis. Ipsa enim materia est ingenita et incorruptibilis, forma autem corruptibilis. Omne autem incorruptibile ut sic est nobilius corruptibili. Consimiliter dico in proposito quod omne vivum quantum ad gradum entitatis est nobilius simpliciter quocumque non vivo, et per consequens ipso caelo, tamen secundum quid est e contrario, sicut de forma et materia dictum est." Aquinas gave a similar solution to a similar argument in *Summa Theologiae* I.70.3 ad 2.

[13] To be more precise, *M* §11 (ll. 67f.) calls it absurd for the matter of corruptibles to be nobler than the matter of incorruptibles, while *S* §59 (ll. 449f.) says that corruptible forms are not nobler than incorruptible forms. (Strictly speaking, corruption applies only to substances, that is, to composites of matter and form. But in a difficult passage, *S* §6, Marchia argues that a material substantial form—*forma substantialis materialis*—is corruptible inasmuch as, being extended, it has parts which remain after division though it does not.)

[14] *S* §59, ll. 451f.; *M* §11, ll. 70f.

simpliciter.[15] Marchia is right that the only way to force the comparative nobility of celestial and terrestrial matter into a simultaneous correlation with both of these different hierarchies of form would be to lump celestial and terrestrial matter together, but his distinction between nobility *simpliciter* and nobility *secundum quid* dissolves the need for such a simultaneous correlation. To put it another way, the diagram conceals a third dimension: Marchia's pincers are skew, and therefore cannot close.[16]

On the other hand, the hierarchy of nobility *simpliciter* is supposed to correspond to degrees of being, and is not determined simply by the presence or absence of life. (The above passage, for instance, places form above matter because actuality trumps potency.) So Marchia might be entitled to use a single hierarchy of forms—intellective (men), sensitive (animals), vegetative (vegetables), celestial (heavens), and elemental (minerals)—without recourse to nobility *secundum quid*. But in that case Marchia would need to argue explicitly for this hierarchy, which he has not done here.

The second objection concerns the details of Marchia's argument that the celestial matter of incorruptibles cannot be nobler than the terrestrial matter of corruptibles:

> [Suppose that it is.] Nobler matter is in potency towards nobler form. But celestial form is not more noble, but rather less noble, than an intellective soul. Therefore celestial matter is in potency towards intellective soul, and consequently towards the dispositions which precede the intellective soul in matter, e.g. towards active and passive qualities. But this is false, because in that case the heavens would be corruptible.[17]

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[15] I say "appears to involve" because, although in neither version of the argument does Marchia say what grounds his assertion that celestial form is not nobler than intellective soul, the above passage strongly suggests that it is the inanimation of the heavens.

[16] The picture becomes even more complicated if we take into account the full range of souls. Intellective, sensitive, and vegetative forms are nobler *simpliciter* than celestial and elemental forms; celestial and intellective forms are nobler *secundum quid* than sensitive, vegetative, and elemental forms. (Cf. *S* II.29 §7 and *S* §37.)

[17] *S* §59, ll. 451-455: "Nobilior materia est in potentia ad nobiliorem formam. Sed forma caeli non est nobilior, immo ignobilior anima intellectiva. Ergo materia caeli est in potentia ad ipsam animam intellectivam, et per consequens ad dispositiones ipsam in materia praecedentes, puta ad qualitates activas et passivas. Hoc autem est falsum, quia tunc caelum esset corruptibile." (Schneider reads 'ad dispositiones ipsas'.)

The trouble is that an opponent could deny that celestial matter would have to be in potency towards intellective soul if it were nobler than terrestrial matter. Marchia himself says elsewhere:

> If celestial matter were of a different nature, then it would not be in potency towards intellective soul, because the same form cannot inform several matters of different natures.[18]

But the position of his opponents is precisely that celestial matter *is* of a different nature.

The third objection is that Marchia's reduction of all matter to essentially one type casts doubt on one of his premisses, namely, that nobler matter is in potency towards nobler form. The most obvious motivation for this premiss would be the claim that not all matter is equally noble, so that for instance the matter of a man might be nobler than the matter of a mineral; but Marchia has taken it for granted that all terrestrial matter is of the same nature and thus equally noble.

In order to be clear about this, we must distinguish "between what the scholastics called *materia prima*, the absolutely undetermined substrate, and *materia secunda*, like wood, which has definite properties."[19] The objection can then be put in the form of a dilemma. If Marchia is concerned with prime matter (as is strongly suggested by the next three arguments), his reduction of all terrestrial matter to essentially one type is admissible, but his nobility-correlation premiss has lost its obvious motivation. And if he is concerned with second matter, his nobility-correlation premiss is admissible, but its obvious motivation is incompatible with his reduction of all terrestrial matter to essentially one type.

Decisive or not, these objections suggest that the argument from comparative nobility should not, *pace* Schneider, "win us over by the clarity with which it proves that the matter of the heavens and that of the elements must be equally noble and thus of the same nature."[20]

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[18] *M* §11, ll. 72-75: "Sed si materia caeli esset alterius rationis, tunc materia caeli non esset in potentia ad animam intellectivam, quia eadem forma non potest informare plures materias alterius rationis."

[19] M.L. Gill, *Aristotle's* Metaphysics *Reconsidered*, in: Journal of the History of Philosophy, 43.3 (2005), 235 n. 54. See also J. Owens, *The Doctrine of Being in the Aristotelian* Metaphysics: *A Study in the Greek Background of Mediaeval Thought*, 3rd ed., Toronto 1978, 334-35.

[20] Schneider, *Die Kosmologie* (cit. n. 2 above), 302: "Dieser . . . Beweis besticht durch die Klarheit, mit der auf indirektem Wege nachgewiesen wird, daß die Materie des Himmels und der Elemente . . . gleichwertig und damit gleichartig sein müssen."

2.2 *The Argument from Material Incorruptibility (S §60)*

The second argument, by contrast, is very simple. If the matter of incorruptibles is of a different nature to the matter of corruptibles, Marchia argues, then there ought to be a corresponding difference between their forms, because "even according to my opponent, matters are distinguished in accordance with their forms."[21] And presumably the difference in form between corruptibles and incorruptibles has to do with corruptibility. So, correspondingly, the matter of corruptibles ought to be corruptible and that of incorruptibles ought to be incorruptible. But Marchia has already shown (§§3-7) that the matter of corruptibles is itself incorruptible. Therefore the matter of incorruptibles and the matter of corruptibles must be of the same nature.

At first blush, this argument looks double-edged. For given such a correspondence between differences in matter and differences in form, we could turn the argument on its head and question Marchia's assertion that the matter of corruptibles is also incorruptible: shouldn't the difference in form between corruptibles and incorruptibles correspond to a difference in matter?

An initial rejoinder is that obviously not every difference in form corresponds to an essential difference in matter; a man is different in form to a mouse, but both have terrestrial matter.[22] But in that case why would a difference in matter have to correspond to a difference in form? Why could terrestrial matter not be different from celestial matter, and yet still be just as incorruptible? My tentative answer on Marchia's behalf is that once we have accepted the incorruptibility of terrestrial matter, we no longer have any *positive* reason to suppose that the matters are different, because it was only the observed immutability and inferred incorruptibility of the heavens that suggested such a difference to us in the first place.

We therefore need to look at Marchia's argument for the incorruptibility of terrestrial matter, which he gives in *S* §§3-7. The argument is less complex than its length may suggest; much of it is devoted to rebutting the facile objection that matter is corruptible because material substances are divisible. Marchia deals with this objection by distinguishing

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[21] *S* §60, ll. 457-58: "Materiae distinguuntur in ordine ad formas etiam per te." Schneider reads 'parte', but (a) it is hard to make good sense of this, and (b) Marchia is here quoting verbatim from a notional opponent in §53. I thank Chris Schabel for alerting me to this misreading.

[22] Marchia makes a similar point in *S* §63, in reply to an opposing argument given in §53.

between two senses of corruption, of which the one used by the putative objector corresponds to division or resolution into constituent parts. He defines the proper sense of corruption as follows:

> Something is corrupted *simpliciter* if it disintegrates in such a way that one of its components does *not* remain: there remains only the subject or matter in which the resolution occurs, and not the form. And corruption taken in this sense is similar to annihilation. For annihilation is that by which a thing is totally corrupted in such a way that nothing of it remains; but corruption is that by which a thing is corrupted in such a way that something of it remains, such as its matter, and something does not remain, viz. its form.[23]

And in this sense, Marchia argues, matter cannot be corrupted but only annihilated. But annihilation, unlike corruption, is the preserve not of natural agents but of God alone.

An obvious response to this argument would be to complain that it is question-begging—indeed, that it is not an argument at all. Marchia has simply defined corruption in a way that explicitly denies its applicability to matter. Likewise, in §4 he had simply defined matter in a way that explicitly denies its susceptibility to corruption:

> Everything which is corrupted is corrupted into some being [which was previously] in potency. Therefore if matter is naturally corruptible, one can give some being which is in potency towards that matter. I ask whether that being is corruptible. Because if it is, then one can give another being prior [to it], and either this will go on *ad infinitum* [which is impossible], or we can arrive at a first incorruptible, which I call 'matter'.[24]

But such a complaint would be ignorant of the context. Marchia was not begging the question, but merely helping himself to common definitions

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[23] *S* §5, ll. 40-46: "Illud autem corrumpitur simpliciter, quod sic dissolvitur quod alterum componentium non manet, tantum manet subiectum sive materia in quam fit resolutio, non autem forma. Et isto modo corruptio sumpta appropinquat annihilationi. Ipsa enim annihilatio est qua res sic corrumpitur totaliter quod nihil eius manet. Corruptio autem est qua res sic corrumpitur quod aliquid eius manet, sicut materia, et aliquid non manet, videlicet ipsa forma."

[24] *S* §4, ll. 29-33: ". . . omne quod corrumpitur corrumpitur in ens aliquod in potentia. Ergo si materia naturaliter est corruptibilis, est dare aliquod ens in potentia ad ipsam, de quo quaero, si est corruptibile. Quia si sic, est dare aliquod aliud prius et ita vel ibitur in infinitum vel est devenire ad incorruptibile primum. Hoc autem dico esse materiam."

of matter and corruption derived ultimately from Aristotle. Matter, in the Aristotelian tradition, just *is* the subject that persists through different kinds of change, including substantial change (generation and corruption).[25]

In sum, then: Marchia has shown that terrestrial matter is incorruptible by definition, and it is taken for granted that celestial matter is incorruptible. So, his second argument runs, there is no reason to suppose that matter down here (*hic*) and matter up there (*ibi*) are of different natures. This argument can only succeed if there is no alternative way to distinguish between the natures of celestial and of terrestrial matter.

2.3 *The Argument from Material Potentiality (S §61, M §10)*

The third argument is given in a compressed form in *S* and a little more fully in *M*. Prime matter itself—that is, matter in the most proper sense of the term—has no actual substantial form, but instead is in potency towards every substantial form. "Therefore [all] matter is of the same nature in those things that have matter."[26] In other words, since matter has no essential nature (except perhaps pure potentiality, which might however be described as the lack of an essential nature), the answer to the question is straightforward and incontrovertible: there simply cannot be essentially different types of matter.[27]

Schneider says that the argument from material potentiality "pursues an entirely similar thought" to the previous one,[28] but it seems to me that there is an important difference between the two. The argument from material incorruptibility leaves open the possibility that celestial bodies differ from terrestrial ones in other ways (besides corruptibility) that

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[25] See Owens, *The Doctrine of Being* (cit. n. 19 above), 344-45. Aristotle's own conception of matter, which is not our concern here, is the subject of much debate. For an overview, see Gill, *Aristotle's* Metaphysics *Reconsidered* (cit. n. 19 above), 233-37; see also L.M. de Rijk, *Aristotle: Semantics and Ontology*, vol. 2, Leiden 2002, 384-95.

[26] *M* §10, l. 63: "Ergo materia est eiusdem rationis in habentibus materiam." The other version concludes prematurely with "ergo etc." (*S* §61, l. 467); this is common for the *Doctor Succinctus*, but rarely is it as abrupt and unhelpful as it is here.

[27] Schneider, in *Die Kosmologie* (cit. n. 2 above), 259, n. 174, quotes Marchia as saying in *M* VII.5 that prime matter "has some actuality, inasmuch as it is not in potency towards natural corruption" (*habet aliquid actualitatis inquantum non est in potentia ad corruptionem naturalem*), so that matter has more to its essential nature than pure potentiality. But if the corruption of matter is a conceptual impossibility, this is surely wrong; it adds nothing to something's nature that it is not in potency towards being a round square.

[28] Schneider, *Die Kosmologie* (cit. n. 2 above), 304: "Einen ganz ähnlichen Gedanken verfolgt das Argument".

point to a difference in their respective matter.[29] But the argument from material potentiality is not so lenient: its conclusion—which is undeniable, given an Aristotelian conception of matter—is that *any* distinction in nature between celestial and terrestrial matter is doomed to be a distinction without a difference.

2.4 *The Argument from Celestial Quantity (S §2, M §12)*

The fourth argument is given fully only in *M*, though *S* contains a shorter version with similar wording. The general premiss on which it relies is that accidents (inessential properties) of the same nature can only belong to subjects (property-bearers) of the same nature. But quantity, which is an accident, is of the same nature in the heavens and on earth (and, Marchia adds in the fuller version, in the sea). So the subject of quantity in the heavens must be of the same nature as the subject of quantity on earth. And what is the subject of these quantities? It cannot be form, because celestial forms are of a different nature to terrestrial forms. On the implicit assumption that it must be either matter or form, then, it must therefore be matter.[30]

If the general premiss works at all, it must be at a very high level of generality. A man and a mineral both have colour (and can even have exactly the same colour), but only in a very fundamental sense could we conclude from this that men and minerals are of the same nature. This observation supports the notion that Marchia's concern is with prime and not second matter.

The other crucial premiss here is that *quantitas est eiusdem rationis omnibus quantitatibus in caelo et in terra et in mari*. But in neither version of the argument does Marchia argue for this. Moreover, the selfsame assertion undergirds three of his four arguments for the very existence of matter in the heavens (*S* §§30-32), where again it is stated without argument. We might think that at least the existence of quantity in the heavens is obvious, but

[29] One such way might be that celestial bodies are only capable of locomotion, whereas terrestrial bodies are also capable of augmentation, diminution, and alteration; cf. Aristotle, *Metaphysics* VIII §4, 1042b5-6.

[30] Marchia does not consider the possibility that the subject of quantity might be substance rather than matter or form. But this possibility, together with his general premiss, would lead to the conclusion that celestial and terrestrial substances are of the same nature, which he would surely reject.

Schneider tells us that Siger of Brabant had maintained that "in celestial bodies there is no quantity."[31]

I am not sufficiently familiar with mediaeval debates on celestial quantity to be sure of this, but it seems to me that Marchia's fourth argument is not strong enough to establish his conclusion.[32]

3. *Interpreting Marchia's Theory*

From the arguments examined above, we can extract a more precise version of the thesis for which Marchia is arguing: that celestial and terrestrial matter are of the same nature inasmuch as they are equally noble, equally incorruptible, possessed of the same bare (*nuda, S*) or pure (*pura, M*) potentiality, and equally quantified. What I now hope to show is that, in advancing this thesis, Marchia is not asserting an innovative and exciting homogeneity between the two realms. The reason for this is contained embryonically in the above summary: celestial and terrestrial matter share the same *bare* or *pure* potentiality, but for Marchia, as we will soon see, this type of potentiality is so empty as to be of no consequence without the intervention of the first agent (*agens primum*), God.

Marchia uses the distinction between bare potentiality and natural (*naturalis*) potency to deal with four objections based on differences between celestial and terrestrial matter.[33] He does not deny that these differences exist, but he does deny that they point to a difference in nature between celestial and terrestrial matter. Instead, he says, they point to a difference in the aptitudes (*aptitudo*) or dispositions (*dispositio*) which are added (*superadditus*) to the common nature of celestial and terrestrial matter. It is in his response to the first objection that Marchia is most explicit about this:

> *Objection.* Matter of the same nature is followed by potency of the same nature. From this it follows that matters of the same nature are in potency towards forms of the same nature. But elemental matter is not

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[31] *Questions on the Metaphysics* q. 20, quoted in Schneider, *Die Kosmologie* (cit. n. 2 above), 254: "in corporibus autem caelestibus non est quantitas."

[32] Note, though, that Aquinas had written in *Quaestiones Disputatae de Potentia Dei*, q. 7 a. 10, that "since the nature of quantity is abstracted from every sensible thing, quantity is of the same nature in all natural bodies" (cum quantitatis ratio sit ab omni sensibili abstracta, eiusdem rationis est quantitas in omnibus naturalibus corporibus).

[33] *S* §§64-68.

in potency towards celestial form, and celestial matter is not in potency towards elemental form. Therefore etc.[34]

Reply. The potency of matter is of two sorts. One is simple potency, which is the bare potentiality and essence of matter without any additional disposition. The other is natural potency, which includes some additional aptitude besides the essence of matter.

Then with regard to the objection that matter of the same nature is followed by potency of the same nature, this is *bare* potentiality of the same nature. And [in this sense] I say that celestial matter is in potency towards elemental form, and elemental matter towards celestial form. But that potency or bare potentiality relates only to the first agent, for God Himself would have been able in the beginning (just as in fact He is now able) to place celestial matter under elemental form, and conversely elemental matter under celestial form.

But *natural* potency,[35] which includes a disposition or aptitude, does not follow immediately from the bare essence of matter, but only via an additional disposition. And therefore such potency of matter differs according to the different dispositions of matter.[36]

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[34] *S* §54: "Potentia eiusdem rationis consequitur materiam eiusdem rationis. Ex quo sequitur quod materiae eiusdem rationis sunt in potentia ad formas eiusdem rationis. Sed materia elementorum non est in potentia ad formam caeli, nec materia caeli ad formam elementi; ergo etc."

[35] The two sections quoted here are the only ones edited by Schneider in which Marchia uses the word 'potentialitas' (potentiality) instead of 'potentia' (potency). It seems clear from his usage that the former covers purely theoretical possibilities while the latter covers genuine potential; indeed, Schneider's *apparatus criticus* shows that certain MSS have 'possibilitas' instead of 'potentialitas'. If my interpretation is correct, then I think Schneider is wrong here (l. 485) to choose the incongruous '*potentialitate* naturali' (with B) over '*potentia* naturali' (with ACLW). Hence my translation.

[36] *S* §§64-65: "Dico quod potentia materiae est duplex, quaedam simplex, et haec est nuda potentialitas et essentia materiae sine omni dispositione superaddita, et alia est potentia naturalis quae includit aliquam aptitudinem superadditam essentiae materiae. Tunc ad rationem quod materiam eiusdem rationis consequitur potentia eiusdem rationis, haec est nuda potentialitas eiusdem rationis. Et sic, isto modo loquendo de potentia materiae, dico quod materia caeli est in potentia ad formam elementi et materia elementi ad formam caeli. Ista tamen potentia sive nuda potentialitas solum respicit agens primum. Ipse enim deus potuisset a principio, sicut etiam posset modo ponere materiam caeli sub forma elementi, et e contrario materiam elementi sub forma caeli. Loquendo autem de potentialitate/potentia [cf. n. 35 above] naturali, quae includit dispositionem sive aptitudinem, talis potentia non consequitur nudam essentiam materiae immediate, sed mediante dispositione superaddita. Et ideo huius potentia materiae diversificatur secundum diversitatem dispositionum materiae."

Marchia says nothing further here about these dispositions or aptitudes, but there is a slight hint in an earlier passage, where he uses the same distinction to argue that the existence of celestial matter would not make the heavens corruptible:

> Concerning potency of contradiction, I reply that it is of two sorts. One is bare [potentiality] of matter, by which matter of itself is able to exist under this or that form or under the privation thereof; and this sort is absolute, not compared or in relation to (*in ordine ad*) this or that agent. The other sort is natural potency of contradiction, by which matter is in potency towards a given form because it has a certain disposition or inclination towards that form. And this sort of potency of contradiction relates to (*respicit*) a natural agent.[37]

This tells us that a disposition, aptitude or inclination somehow predisposes matter towards certain forms. But where do these dispositions come from, and how strong are they? Marchia does not say.

Schneider gives only a brief mention of this omission, and then only at the very end of his commentary.[38] His discussion of the argument of §§64-65 had concluded that it seemed "extraordinarily successful", allowing Marchia to assert the fundamental homogeneity of celestial and terrestrial matter whilst denying the possibility of "unregulated and arbitrary transmutation".[39] But Marchia's stance is more restrictive than that: all celestial-terrestrial transmutation is naturally impossible, and can occur only with God's supernatural intervention. The reason for this, which we now know to involve superadded dispositions, can also be expressed in the intriguing phrase that celestial and terrestrial substances "have matter of the same nature dissimilarly":[40]

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[37] *S* §44: "De potentia contradictionis dico quod potentia contradictionis est duplex: Una nuda materiae qua quidem ipsa materia de se est possibilis esse sub ista forma vel sub illa et sub privatione eius, et hoc absolute, non in comparatione sive in ordine ad istud vel illud agens. Alia autem est potentia contradictionis naturalis qua materia est sic in potentia ad talem formam quod habet aliquam dispositionem vel inclinationem ad ipsam. Et talis potentia contradictionis respicit agens naturale."

[38] Schneider, *Die Kosmologie* (cit. n. 2 above), 312: "er schweigt sich allerdings darüber aus, auf was die unterschiedlichen Dispositionen oder 'aptitudines', das unterschiedliche 'Haben' der Materie zurückzuführen ist."

[39] Schneider, *Die Kosmologie* (cit. n. 2 above), 308-09: "Diese Lösung erscheint außerordentlich gelungen . . . Andererseits ist da, wo Prozesse stattfinden, die Materie und ihre Potentialität so modifiziert, daß eine ungeregelte und beliebige Umwandlung ausgeschlossen ist, ohne daß die gleichartige Wesensbeschaffenheit berührt wäre."

[40] Schneider calls this phrase "hard to understand": *Die Kosmologie* (cit. n. 2 above), 312 ("schwer zu verstehen").

> Against the argument of the Philosopher, when he says that things which have matter of the same nature are transmutable into each other, etc.,[41] I say . . . that two things can have matter of the same nature in two ways, that is, similarly or dissimilarly. To have matter of the same nature similarly is to have it in the same arrangement/manner (*ordo*) and equally. And I concede that those things which have matter of the same nature in this sense do act when they are acted upon and are transmutable into each other. But those things which have matter of the same nature *dissimilarly*, that is not in the same arrangement/manner, are not necessarily transmutable into each other, nor is it necessary that one of them acts on the other when it is acted upon by it. And so it is in the case of the matter of corruptibles and incorruptibles, which is what is being asked about here.[42]

If this is supposed to be a dramatic rejection of the Aristotelian position that the sublunar and supralunar realms are fundamentally different and have different physics, it calls to mind J.L. Austin's wry remark about the theory of perception as taking place indirectly via sense-data:

> One might well want to ask just how seriously this doctrine is intended, just how strictly and literally the philosophers who propound it mean their words to be taken . . . for, strange though the doctrine looks, we are sometimes told to take it easy—really, it's just what we've believed all along. (There's the bit where you say it and the bit where you take it back.)[43]

In Marchia's defence, there is no obvious reason to believe that he did take his theory to involve a radical break with the Aristotelian tradition. Schneider himself reports Giles of Rome (d. 1316) as having argued that if there is matter in the heavens at all, it must be of the same nature as

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[41] Marchia raised this objection on Aristotle's behalf in §58; cf. *On Generation and Corruption* I §7, 324a34f., and §10, 328a19-22. For some discussion of what Aristotle himself meant, see C.J.F. Williams, *Aristotle's* De Generatione et Corruptione, Oxford 1982, 148-49.

[42] *S* §69: "Ad illud Philosophi, quando dicit quod illa quae habent materiam eiusdem rationis sunt transmutabilia ad invicem etc. Dico . . . quod dupliciter possunt aliqua habere materiam eiusdem rationis, quia vel similiter vel dissimiliter. Habere materiam eiusdem rationis similiter est habere ipsam eodem ordine et aequaliter. Et quae isto modo habent materiam eiusdem rationis concedo quod agunt repatiendo et sunt ad invicem transmutabilia. Sed ista quae habent materiam eiusdem rationis non similiter, sed dissimiliter, hoc est non eodem ordine, non oportet quod sunt transmutabilia ad invicem nec quod unum eorum agit ad aliud repatiendo ab ipso. Sic autem est in proposito de materia corruptibilium et incorruptibilium, quare quaeritur."

[43] J.L. Austin, *Sense and Sensibilia*, Oxford 1962, 2.

terrestrial matter, and as having claimed that only some "more modern teachers" take refuge in the compromise of matter of a different nature.[44] If Marchia did make an original contribution, then, I think it must lie in his attempt to explain the traditional distinction between the sublunar and supralunar realms in the following way: matter needs superadded dispositions of some kind in order to have natural potencies, and celestial and terrestrial matter have superadded dispositions of different kinds. If I am right, then in order to assess Marchia's contribution we must investigate the lineage of the notions of *potentia naturalis, nuda/pura potentialitas, aptitudines/dispositiones superadditae*, and the *ordo* in which substances have their matter.

One final suggestion concerning Marchia's theory of the heavens. Chris Schabel has written that "Schneider has shown how [Marchia] did away with the notion of the Quintessence of the supralunary realm".[45] But not once in the texts edited by Schneider does Marchia mention the quintessence, the aether, or the fifth element; moreover, his theory does not preclude celestial substances from being made up of the fifth element. Marchia takes it that terrestrial and celestial matter have the same bare potentiality, but differ radically in their natural potencies. One consequence of this difference is that, naturally speaking, terrestrial matter can and does receive elemental but not celestial form, whereas celestial matter can and does receive celestial but not terrestrial form. I hope it is not too far-fetched for me to suggest on Marchia's behalf that whereas terrestrial matter naturally combines with elemental form to give the four terrestrial elements, celestial matter might naturally combine with celestial form to give a fifth, celestial element.[46]

4. *Methodological Consequences of Marchia's Theory*

I shall call the third of Schneider's interpretative claims 'the methodological claim': that all discovered and confirmed observations and laws are in principle transferable and applicable to all events in the cosmos,

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[44] *Die Kosmologie* (cit. n. 2 above), 159-60. See also n. 46 below.

[45] C. Schabel, *On the Threshold of Inertial Mass? Francesco d'Appignano on Resistance and Infinite Velocity*, in: D. Priori (ed.), *Atti del Primo Convegno Internazionale su Fr. Francesco d'Appignano*, Appignano del Tronto 2002, 176. Cf. Schneider, *Die Kosmologie* (cit. n. 2 above), 339-40.

[46] Richard Sorabji suggests that this position—that the heavens and the earth have the same prime matter but different elemental matter—was actually Aristotle's in the first place. See his *Matter, Space, and Motion: Theories in Antiquity and Their Sequel*, London 1988, 15.

so that, as a matter of methodology, we can make well-founded statements about things which elude our direct grasp.[47] The aim of this section is to test this claim—firstly in general, by seeing whether it would hold for any contemporary who accepted Marchia's theory, and secondly for Marchia himself, by examining a passage that seems to confirm the claim.

A 14th-century natural philosopher who accepts Marchia's arguments knows that, deep down, there is something in common between the heavens and the earth, namely, their (prime) matter.[48] But as a natural philosopher he is interested in how things behave naturally, rather than in how they might behave under supernatural intervention;[49] and he knows that celestial and terrestrial substances do not behave in the same way simply because they have the same (prime) matter.[50] Rather, if he is to understand the behaviour of celestial and terrestrial substances, he must take into account the superadded dispositions, aptitudes or inclinations that differentiate the matters of the two realms. For instance, he must take into account the fact that celestial substances, unlike terrestrial ones, are naturally incorruptible and naturally incapable of qualitative or quantitative change.[51] But this puts him in the same position, methodologically speaking, as any other 14th-century natural philosopher.

As for Marchia himself, one aspect of his cosmology that might initially appear to support the methodological claim is his theory of celestial locomotion, in which he applies to the heavens his terrestrially-derived theory of the *virtus derelicta* (roughly, a self-expending impetus).[52] But a

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[47] Schneider, *Die Kosmologie* (cit. n. 2 above), 327: "3. Methodologisch ergibt sich aus der universalen Konzeption die prinzipielle Übertragbarkeit und Anwendbarkeit aller gefundenen und bestätigten Beobachtungen und Gesetze auf jedes Ereignis im Kosmos, so daß auch über solches begründete Aussagen gemacht werden können, das sich dem direkten Zugriff entzieht."

[48] *S* §62.

[49] "Physics in the Middle Ages concerned the normal course of nature and not the supernatural or what God might do miraculously." Thus E.D. Sylla, *Physics*, in: F.A.C. Mantello & A.G. Rigg (eds), *Medieval Latin: An Introduction and Bibliographical Guide*, Washington DC 1996, 359.

[50] *S* §§64-69.

[51] Marchia allows in *S* §31 that celestial substances have active and passive qualities as well as quantity, but he denies in §59 that they are in potency towards active and passive qualities. The upshot must therefore be that (again, naturally speaking) they cannot *change* in quality—or, presumably, in quantity.

[52] In this connection, Fabio Zanin writes of Marchia's project of unifying celestial and terrestrial dynamics and kinematics. See §2.1.1 of his paper *La Rielaborazione del Concetto di*

closer look at the details of this application shows that, if anything, it disconfirms the methodological claim.

Marchia argues in *S* II.30 that celestial bodies are moved not by an internal principle, such as their form, but by an external mover, such as an intelligence,[53] and that this external imposition of motion on the heavens is contingent.[54] His arguments rest on commonly accepted premisses, such as that natural motion has a restful *terminus ad quem* and that nature does nothing in vain, and not on his theory of the *virtus derelicta*. For his application of this theory to the heavens, we must look to a different context: the question of whether there is any supernatural power in the sacraments.[55]

As part of his discussion of this question, Marchia concludes that "the heavens, moved by an angel, receive from it some force (*virtus*) or form which is neutral," i.e. produces neither natural nor violent motion, "accidental, different from locomotion, and which inheres formally in the heavens."[56] This force is his *virtus derelicta*:

> If the intelligence stopped moving the heavens, they would still keep moving or revolving for a time via this force's following and continuing of their circular motion, as is clear from a potter's wheel, which keeps revolving for a time after its prime mover has stopped moving it. For there seems to be the same *ratio* here as there is there and vice versa, namely, a force left behind (*virtus derelicta*) by the prime mover in the mobile both here and there.[57]

Vis Derelicta *in Nicole Oresme*, in: Priori (ed.), *Atti del Primo Convegno* (cit. n. 45 above), 119-20. For Marchia's theory of the *virtus derelicta*, see the articles by Schabel and Zanin in the present volume.

[53] *S* II.30 §§15-18.

[54] *S* II.30 §§8-12.

[55] The context may seem unconnected; Schneider provides a clear explanation in *Die Kosmologie* (cit. n. 2 above), 226, as does Steven Livesey in *Accessus ad Lombardum: The Secular and the Sacred in Medieval Commentaries on the Sentences*, in: Recherches de Théologie et Philosophie Médiévales 72.1 (2005), 165-67.

[56] *S* IV.1.2 §1, ll. 4-6. The section and line numbers refer to the extract in Schneider, *Die Kosmologie* (cit. n. 2 above), 50-52, but see also Chris Schabel's new edition of *S* IV.1 in the present volume (the source of the text in n. 57 below).

[57] *S* IV.1.2 §3, ll. 20-25: "intelligentia cessante movere caelum, quod adhuc caelum moveretur sive revolveretur ad tempus per huiusmodi virtutem, huiusmodi circularem motum exequentem et continuantem, sicut patet de rota figuli quae revolvitur ad tempus, cessante primo movente movere. Eadem enim ratio videtur esse hic quae est ibi et e converso, videlicet virtus derelicta a primo motore in mobili hic et ibi."

In this passage, the *virtus derelicta* is said to be the *ratio*, so that the sense of 'ratio' here must be that of a reason for or cause of something—namely, the continuation of the mobile's motion after the mover has stopped.

Now, in order for this admittedly suggestive passage to support the methodological claim, Marchia's celestial application of his terrestrial theory of the *virtus derelicta* must be somehow licensed by the universality of the physics of motion. But in practice he licenses the application by trying to show that the standard distinctions between the sublunar and supralunar realms do not present a problem for this application. To paraphrase the *Doctor Succinctus* a little, his arguments are:

> (1) The motive force of an angelic mover is more noble and perfect than that of any inferior mover, and yet inferior movers manage to impress in their mobiles a force which continues the motion. Therefore all the more does an angelic mover manage to do this.[58]
> (2) There is no obvious reason why the heavens should not be receptive of a *virtus derelicta*, because the *virtus derelicta* has no contrary. For a *virtus* or form (such as light) which has no contrary is neutral, and therefore would not introduce into the heavens any alteration.[59]
> (3) The heavens must be receptive of a *virtus derelicta* because the latter, being a principle of locomotion, is no less perfect than locomotion itself (of which the heavens are obviously receptive), and so cannot be dismissed from the heavens unless any other reason is given, besides imperfection, for its being repugnant to the heavens.[60]
> (4) The heavens are less resistant to and more proportionate to their mover than any inferior mobile is to its mover; so they are more apt to receive their mover's influence.[61]

These arguments are specific to the heavens and to their angelic movers, and make no appeal to a general claim about the universal applicability of physical laws as revealed by the fundamental homogeneity of celestial and terrestrial matter. Marchia clearly agrees with his contemporaries that the heavens cannot naturally admit of imperfections or of qualities that

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[58] *S* IV.1.2 §2, ll. 9-13.

[59] *S* IV.1.2 §2, ll. 14-18. Presumably this is because darkness is just the privation of light.

[60] *S* IV.1.2 §4, ll. 28-32. Note that Schabel has 'nisi detur' where Schneider had the less modest 'neque datur'.

[61] *S* IV.1.2 §5, ll. 34-36.

have contraries. His strategy is not to appeal to the methodological claim, but instead to argue that celestial bodies can be held to accept a *virtus derelicta* without doing violence to the usual special physics of the heavens.

5. *Conclusion*

For Francis of Marchia, the heavens and the earth are similar only in an attenuated sense: they have the same prime matter and thus the same bare potentiality, but their natural potencies (and presumably their second matter) are very different. Accordingly, while his cosmology allows that physical principles may apply to both the heavens and the earth, it does not guarantee that they will. The peculiar dispositions superadded to celestial matter mean that Marchia still needs Aristotelian celestial physics to determine what is naturally possible in the supralunar realm, that is, how the heavens behave without divine intervention. To be sure, he is prepared to apply terrestrial principles to the heavens, provided that Aristotelian celestial physics presents no barrier. But once this vital qualification is made explicit, Marchia's cosmology no longer seems to be the radical break with tradition that we have been led to believe.[62]

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