PRIME MATTER OR INDETERMINACY IN NATURE: PT.1 – THE PROBLEM OF MOTION

By John G. Brungardt

PHIL 753 – Aristotle's *Physics*
Dr. Richard F. Hassing
November 3rd, 2010

And so things can't be held assembled by / Some overpowering lust to reach the center.[1]

Aristotle maintains, near the end of *Physics* 1, that "there being something divine, good, and desirable, we say the contrary of this exists, and also another exists which by its nature strives for and desires this."[2] "Another" is glossed in 192a22 as "matter." Now, matter is for the sake of form.[3] If form is the end of matter, is this the same as saying that matter desires form (something *divine*, *good*, and *desirable*)? Is this desire found even in prime matter? How can this be true and why is it important to maintain?

The first step to answering these questions is to see to what problem prime matter is the solution. This problem is "[t]he legacy of the Presocratics," who teach "that nothing real can come into being or perish, unless it is an aggregate, which can be synthesized from or dissolved into its parts."[4] Aristotle's solution alone (he claims) saves the phenomenon of change by showing how one can say "being" of what is at the heart of change. The solution, according to the tradition, manifests form as the terminus of change, matter as its *per se* principle, privation being accidental to these as principles of change, and hence some sort of "directionality" is revealed. Summoning some scholastic semantic sorcery, one easily slides from 'potency is ordered to act' to 'hence ordered to being' to 'hence ordered to good' but 'the good is what all desire,' thus 'potency or matter desires form *qua* ordered to it as a good.' Yet has it any real depth or is it a mere word game? Basing itself upon an exposition of the solution to the Pre-Socratic problem, the second part of this paper will attempt to answer this question.

⋇ 1: Overview of the Problem and Its Solution

First, let us outline Aristotle's texts describing the problem, then the texts giving his solution.

The knot about change is tied by Heraclitus and Parmenides. It is a dilemma between the contradiction which seems to accrue to changing things (as Heraclitus noted:[5] opposites or contraries

1 Lucretius, *De Rerum Natura*, ed. and trans. by A. M. Esolen (Baltimore: John's Hopkins University Press, 1995) I:1078-79.
2 Aristotle, *Physics*, 1.9, 192a16-17, trans. R. Glen Coughlin (South Bend, IN: St. Augustine's Press, 2005).
3 See *Physics* 2.8, 199a31. Another text for this is *De Anima* 2.4, 415a15-22: the soul is the final cause of the body.
4 A. R. Lacey, "The Eleatics and Aristotle on Some Problems of Change," *Journal of the History of Ideas* 26.4 (1965): 460.
5 See Heraclitus, DK 88: "And what is in us is the same thing: living and dead, awake and sleeping, as well as young and old; for the latter having changed becomes the former, and this again having changed becomes the latter." In *Ancilla to the Pre-Socratic Philosophers*, trans. K. Freeman (Cambridge, Mass.: Harvard University Press, 1983) 30.

become the other) and the axiom about contradiction (as Parmenides teaches:[6] what-is is and what-is-not is not; one cannot say being of non-being and vice versa). The contradictions in change that the senses report the mind cannot stand.[7] Aristotle refers to this difficulty in the opening of *Physics* 1.8:

> [T]hey say that nothing among beings comes to be or is destroyed because it is necessary that the thing coming to be either comes to be from being or from non-being, but it is impossible that it be from either of these. For being does not come to be (for it already is) and nothing can come to be from non-being, for something must be underlying. And thus, then, gradually building up this result, they said that there are not many things but only being itself.[8]

This statement of the problem by Aristotle is found in the fragments known as Parmenides DK 6-8 and Melissus DK 1-2. A key section from Parmenides' DK 6-8 is the following:

> One should both *say* and *think* that Being Is; for To Be is possible, and Nothingness is not possible. . . . [B]eing has no coming-into-being and no destruction, for it is whole of limb, without motion, and without end. . . . How, whence [could it have] sprung? Nor shall I allow you to *speak* or *think* of it as springing from Not-Being; for it is neither *expressible* nor *thinkable* that What-Is-Not Is. . . . How could Being perish? How could it come into being? If it came into being, it Is Not, and so too if it is about-to-be at some future time.[9]

The Monist's denial of motion comes from the principle of contradiction. It is impossible to maintain (say *and* think) both sides of a contradiction about the same at the same time.[10] However, this is what happens when one speaks about change. Being is, and if it were to change, it could only change from or to what it is not, and thus would be non-being either before or after its change. Conversely, non-being isn't, and if it were to change, it could only change from or to what it is not, namely being, and thus non-being would be being either before or after its change. Aristotle recasts this dichotomy somewhat: it is either redundant (being already is a being of a predicamental kind and hence cannot become that kind—deny this and you must assert that it is non-being at the end of the 'change') or needs an underlying (non-being in any category, especially substance, cannot underlie—deny this and an underlying nothing comes to be and

6 See Parmenides, DK 7-8, in *Ancilla*, 43-44.
7 See Parmenides, ibid., 43: "You must debar your thought from this way of search, nor let ordinary experience in its variety force you along this way, [allowing] the eye, sightless as it is, and the ear, full of sound, and the tongue, to rule."
8 Aristotle, *Physics* 1.8, 191a27-33.
9 Parmenides, DK 6-7, in *Ancilla*, 43-44. My emphases.
10 See Aristotle, *Metaphysics*, 4.2, 1005b24-26.

exists).[11] Since there is nothing besides being and non-being, the dilemma is complete. The Eleatic's monolothic monism comes from this ground, for all distinction involves the opposition of contradiction (this is not that). Eleaticism is generated by, rather than generative of, the problem of motion. Physics is therefore aborted outright.[12]

Empedocles, Anaxagoras, and Democritus try to blitz the Eleatic Roadblock by admitting either the pre-existence of all in all or the existence of non-being (taking the side of either being or non-being). Empedocles holds to a finite, Anaxagoras to an infinite, number of principles, yet they share the following:

> It seems Anaxagoras believed things to be infinite in this way because he accepted as true the common opinion of the students of nature, that nothing comes to be from non-being. For it is because of this that they say "all things were together," and laid down that coming to be was this sort of thing, i.e., alteration, though for some it is collection and separation.
>
> Moreover, he was led to this also because contraries come to be from each other; so they were present. For if it is necessary that all things which come to be either come to be from beings or from non-beings, but one of these is impossible, that coming to be is from non-being (for all [who speak] about nature agree with this opinion), they thought the remaining [position] right away happened of necessity, that coming to be is from beings and from things which are present, but from things insensible to us because of the smallness of their bulks. Whence, they say that all things are mixed in all things, because they saw everything coming to be out of everything.[13]

With this adjustment, that Empedocles' theory entails the mixtures of only four root elements in various ratios, Aristotle's evaluation applies in common to both physicists. Both thinkers eliminate all changes except the collection and separation of sub-sensible parts.[14] Both, not wanting to fall into the absurdity of

11 This dilemma is in terms of changes in kind. See Sean Kelsey, "Aristotle *Physics* I 8," *Phronesis* 51 (2006): 335-38. This will be developed in part two of this paper. Compare the "underlying" here to Epicurus' "seeds" in fn. 16, below.

12 See Aristotle, *Physics* 1.2, 185a4: "For there is no longer a principle, if there is only one thing and it is one in this way. For a principle is a principle of some thing or things."

13 Ibid., 1.4, 187a27-b2. See Anaxagoras DK 6, in *Ancilla*, 84. See also DK 17, p. 85: "The Greeks have an incorrect belief on Coming into Being and Passing Away. No Thing comes into being or passes away, but it is mixed together or separated from existing Things. Thus they would be correct if they called coming into being 'mixing', and passing away 'separation-off'." And Empedocles, DK 8-9, p. 52: "And I shall tell you another thing: there is no creation of substance in any one of mortal existences, nor any end in execrable death, but only mixing and exchange of what has been mixed; and the name 'substance' [*physis*] is applied to them by mankind. But men, when these [elements] have been mixed in the form of a man and come into the light, or in the form of a species of wild animals, or plants, or birds, they say that this has 'come into being'; and when they separate, this men call sad fate [death]. The terms that Right demands they do not use; but through custom I myself also apply these names." And DK 11, ibid.: "Fools!—for they have no long-sighted thoughts, since they imagine that what previously did not exist comes into being, or that a thing dies and is utterly destroyed."

14 See St. Thomas, *Commentaria in Octo Libros Physicorum Aristotelis* (Romae: Ex Typographia Polyglotta S.C. de Propaganda Fide, 1884) Book 1, lect. 9, n. 3, p. 28. The monistic materialists would make all change alteration and local motion.

the one horn of the dilemma (that things come from nothing), thought that their only option ("they thought the remaining [position] right away happened of necessity") was to hold that all things that apparently come to be pre-exist actually. And since induction from experience leads one to surmise that all things eventually come from all things (consider the cycles of birth, metabolism, life, death, and chemical change) all things pre-exist actually by parts, either of the required infinity of like kinds (Anaxagoras' homoeomeria) or of finite stuffs available to the ratios demanded (Empedocles).[15]

Democritus "speaks of the full and the void, one of which he says is being, the other is non-being."[16] Thus non-being is admitted as an explanatory principle, and natural kinds are reduced to differences in atomic shape, order, and position. Substantial change, alteration, and growth are eliminated. However, the local motion of these atoms is still left unexplained (since they are supposed to move through themselves).[17] Generally, for Empedocles, Anaxagoras, and Democritus, parts are present in things actually, and so things "come to be" or "pass away" as a house from bricks or bricks from a house.[18]

In summary, the aporia is this. Either there is no motion because there can be no otherness in being (hence the termini of motion are eliminated) nor principles and a principled (hence exterior and interior principles of a moving thing are eliminated). Harder options remain for those admitting that "one and many are."[19] Democritus (and Plato in a different way) admits the existence of non-being, eliminating all

15 While Aristotle says in *Physics* 1.4, 188a18 that "it is better to take fewer and a finite [number of principles], which Empedocles does," Anaxagoras's position "which he must have accepted if any one had developed his view," comes to the same, for "he must say the principles are the One (for this is simple and unmixed) and the Other, which is of such a nature as we suppose the indefinite to be before it is defined and partakes of some form." Aristotle, *Metaphysics* 1.8 989a34, b15-19, trans. W. D. Ross, in *The Complete Works of Aristotle*, ed. J. Barnes, v. 2 (Princeton: Princeton University Press, 1984). St. Thomas identifies "the One" as Anaxagoras' Nous and "the Other" as prime matter, the nature of which Anaxagoras partially grasped because of the likeness between the infinity of all things present in all things and the indeterminacy of prime matter—this infinity and indeterminacy is taken away when named or enformed (see *Physics* 1.4, 187b3-4). See *In Metaphysicam Aristotelis Commentaria*, ed. M. R. Cathala (Taurini: Marietti, 1835) lib. 1, lect, 12, n. 198.

16 Aristotle, *Physics* 1.5, 188a22. Plato also makes non-being a principle in a way, but this will be treated later in part two. The connection of Democriteans and his followers (such as Epicurus) to Parmenides' problem about change is strong. See Epicurus, *Letter to Herodotus*, nn. 38-39, in *Hellenistic Philosophy*, trans. B. Inwood and L. P. Gerson (Indianapolis: Hackett Publishing Co., 1988) 6: "The first point is that nothing comes into being from what is not; for [in that case] everything would be coming into being from everything, with no need of seeds." This "need of seeds" echoes Aristotle's rationale that an underlying is required, and *qua* seed, an underlying *proportionate to* what can come to be.

17 See Aristotle, *Metaphysics* 1.4, 985b15-20; also St. Thomas, *In Meta*., lib. 1, lect. 7, n. 116-18.

18 See Aristotle, *Physics* 1.4, 188a13-17; also *Metaphysics* 5.24, 1023a26-29, a31-32.

19 Aristotle, *Physics* 1.4, 187a21. Note that those who admit that "one and many are" include the monistic materialists, such as Hesiod, Thales, Anaximenes, and Heraclitus (earth, water, air, fire). They would reduce change to alteration (condensation and rarefaction) and likewise have no counter for Parmenides' roadblock.

changes except for local motion (rejiggeration of atoms).[20] Anaxagoras and Empedocles bar non-being from existence, yet must let in all things that appear to come to be as already existing, and since things appear to be different things at different times, sub-sensible parts and proportions must be posited. All change is eliminated except for the "mixing" of parts, a sort of local motion. However, the Eleatic Problem still applies to local motion.[21] Therefore, the solution we are looking for saves local motion as well. *All* these thinkers saw the difficulty of "from" in this statement: how can being come *from* anything?

Aristotle claims to untie the knot: "[T]he difficulty of the ancients is solved in this way alone."[22] He even includes Plato among those in need of his solution.[23] The solution is divisible into two main parts. First comes the solution itself, which itself falls into two parts, *Physics* 1.5-6 and 1.7. In *Physics* 1.5, it is shown that the principles of change are contraries, but in 1.6, that the principles of change cannot be contraries alone, but must include some third. Together, 1.5 and 1.6 form an antinomy,[24] which is resolved in 1.7 through the preparation for (189b30-190b16) and discovery of the two *per se* principles of change (190b17-191a22).[25] Second, after the solution, Aristotle mops up. First, in 1.8, he clarifies the ancient's troubles with "the phrases 'to come to be from being or from non-being,' or 'non-being or being does or suffers something or comes to be any 'this' '."[26] He claims to have solved the problem without denying the completeness of the dilemma's horns: "[W]e do not do away with [the claim] that everything either is or is

20 See ibid., 1.9, 191b36-192a1: "For, first, they agree, insofar as [they think that] Parmenides speaks rightly, that for something to come to be simply is [to come to be] from non-being."

21 See Glen Coughlin, "Appendix 2: Matter and the Reality of the Physical World," in Aristotle, *Physics*, pp. 223-24.

22 Aristotle, *Physics* 1.8, 191a23.

23 See ibid., 1.8-9, 191b33-35. Apostle translates, "If they had perceived this [underlying] nature, this would have released them from all their ignorance. Other thinkers, too, have perceived this nature, but not adequately." From *Aristotle's Physics*, trans. with commentaries and glossary by H. G. Apostle (Grinnell: Peripatetic Press, 1980). Greek transliteration based on text of Aristotle, *Physica*, ed. W. D. Ross (Oxford: Clarendon, 1950).

24 Aristotle, *Physics* 1.6, 189b28-29. Sean Kelsey clarifies how this in an antinomy in "The Place of I 7 in the Argument of *Physics* I," *Phronesis* 53 (2008): 192: "In I 6, Aristotle presents two problems that arise from making contraries the only principles, each of which undermines one of two reaons given in I 5 for making the principles contraries in the first place. The first problem suggets that things do not after all come to be from a contrary (from something that is therein destroyed), but rather from something else (from something that is therein made into something). The second problem suggests that contraries do not after all have the sort of priority we demand in a principle; it is not true that there is nothing prior to them, nor is it true that they are what everything else consists of."

25 Although it must be noted that Aristotle never explicitly says that matter is the *per se* principle of change.

26 Aristotle, *Physics* 1.8, 191a35-b1.

not."[27] So his solution addresses both Heraclitus (change involves contrariety) and Parmenides (but not an unintelligible contrariety). Then, in 1.9, Aristotle compares his solution and Plato's position: how non-being is found differently among their principles (192a4-7), how their three principles differ from each other (192a8-12), and how "the Receptacle" of the *Timaeus* differs from matter (192a13-25) which Aristotle defines and shows to be indestructible and ungenerable (192a26-33). This third point of comparison, given the context, can demand no more than an understanding of Plato's doctrine of the receptacle and Aristotle's exposition of the principles of change in order to draw the conclusion that matter desires form.

※ 2: Difficulties

Ancients and moderns alike have difficulty comprehending Aristotle's solution to the Eleatic Problem. The principle that solves the problem is difficult to know (say the traditionalists) because it is sheer ability to be. A lengthy debate about prime matter has occupied the past fifty years of Aristotelian scholarship.[28] Difficulties directly gainsaying the traditional understanding of prime matter (that it is pure indeterminacy and ordered to natural form) will be briefly mentioned from six areas.

First, the 'coherence' of prime matter as traditionally understood is questioned from at least three aspects. Some say "pure indeterminacy" discredits it as a real principle.[29] Others see that any formal determination to make it a real principle is fundamentally at odds with this indeterminacy.[30] Others find textual and philosophical requirements obliging prime matter to have extension in a primitive, pre-predicational way.[31]

27 Aristotle, *Physics* 1.8, 191b27. See Apostle, comment n.8 *ad loc.*

28 For some statements to illustrate the evolution of this scholarship from textual to philosophical approaches to the problem of whether prime matter exists and what it is, see: William Charlton, "Prime Matter: A Rejoinder," *Phronesis* 28.2 (1983): 197; Daniel W. Graham, "The Paradox of Prime Matter," *Journal of the History of Philosophy* 25.4 (1987): 475-76; Christopher Byrne, "Prime Matter and Actuality," *Journal of the History of Philosophy* 33.2 (1995): 197; Margaret Scharle, "A Synchronic Justification for Aristotle's Commitment to Prime Matter," *Phronesis* 54 (2009): 339, 341. I will draw upon this series of scholarship (listed separately in the bibliography) to the extent that it provides philosophical stimulus pertinent to the problem presented in the *Physics*, since many of the texts discussed are in other works of Aristotle.

29 See Robert Sokolowski, "Matter, Elements, and Substance in Aristotle," *Journal of the History of Philosophy* 8.3 (1970): 284-85; Graham, "Paradox," 480: unless matter is something determinate, "Aristotle cannot answer the Eleatic challenge."; Byrne, "Prime Matter and Actuality," 220-23, esp. 220: "If we are to avoid the difficulties involved in the traditional doctrine of prime matter, then we must abandon the view that something has a discernible nature only if it has a formal cause."

30 See ibid., 477, and 489-90.

31 See Robert Sokolowski, "Matter, Elements, and Substance in Aristotle," *Journal of the History of Philosophy* 8.3 (1970): 276-78; Byrne, "Prime Matter and Actuality," 207-209, and "Matter and Aristotle's Material Cause," *Canadian Journal of Philosophy* 31.1 (2001): 106, fn. 51, and 111; Paul Studtmann, "Prime Matter and Extension in Aristotle," *Journal of Philosophical Research* 31

Second, various difficulties are raised concerning prime matter as revealed through the examination of substantial change.[32] If it is the persisting substratum of substantial change, but derives its determination entirely from form (for prime matter is sheer indetermination), then substantial change requires destruction *ad nihilum* and emergenence *de novo*. Hence, form acts as the source of change's continuity, while it is matter and the composite that are generated.[33]

Third, if prime matter underlies all substantial generation, there is one common matter. This seems to do away with both the doctrine of the relativity of matter (for a different form there is a different matter) and the notion of proximate matter.[34]

Fourth, the good is that which all things desire, and is the object of an appetitive power.[35] However, appetite is clearly a power of soul, and matter is not the soul. Therefore matter cannot desire. Further, this power or potency is determined in its desire on the part of the object. Yet the object of prime matter's supposed desire is any substantial form. Hence it is either indecisive or covetous amidst such a vast array of forms. Finally, it is clear from such expressions that attributions of desire to matter, especially prime matter, are metaphorical.[36]

Fifth, even if this is not metaphorical speech, it is not possible for prime matter (or the first elements) to have an intrinsic *telos* because they lack substantiality. They only benefit higher beings by sharing in their substantiality and the hypothetical necessity of their ends (i.e., elements and prime matter are not subject to hypothetical necessity in themselves).[37]

Sixth, even if prime matter desires form, it does not belong to the natural scientist to discuss this, or if it does in some way, Aristotle does it in an unfitting place. As to the former, to see something ordered

(2006): 171-84.

32 Some avoid this approach altogether: see Scharle, "Synchronic Justification," 326-45.

33 See Byrne, "Prime Matter and Actuality," 204; Hugh R. King, "Aristotle Without Prima Materia," *Journal of the History of Ideas* 17.3 (1956): 375.

34 See Aristotle, *Physics* 2.2, 194b9. See Kathleen C. Cook, "The Underlying Thing, the Underlying Nature and Matter: Aristotle's Analogy in *Physics* I 7," *Aperion* 22 (1989): 115. The doctrine of substantial form's unicity motivates this objection.

35 See Aristotle, *Nicomachean Ethics* 1.1, 1094a3; *De Anima* 2.3, 414b1-6; 3.10, 433b16.

36 These three objections are raised by Avicenna; see St. Thomas, *In Phys.*, lib. 1, lect. 15, n. 9, 53.

37 See Sokolowski, "Matter, Elements, and Substance," 274-75, and fn. 22.

to what is divine, good, and desirable as such, namely form, requires an investigation of form as such. But this belongs to another investigation, as Aristotle himself says, namely, not to physics, which considers natural and destructible species, but to first philosophy.[38] As to the latter, Aristotle does not discuss matter being for the sake of form until Book 2. Hence this conclusion is prematurely advanced at the end of Book 1.

These difficulties will be expanded upon and addressed in the second part of this paper.

38 See ibid., 192a34-b7. Compare *Metaphysics* 7.3, 1029a33.

+ Bibliography +

Aristotle. *Physics*. Translated by Hippocrates G. Apostle. Grinnell: Peripatetic Press, 1980.

———. *The Complete Works of Aristotle.* Edited by Jonathan Barnes, in two volumes, v. 2. Princeton: Princeton University Press, 1984.

———. *Physics or Natural Hearing*. Translated with notes and essays by Glen Coughlin. South Bend, IN: St. Augustine's Press, 2005.

Byrne, Christopher. "Prime Matter and Actuality," *Journal of the History of Philosophy* 33.2 (1995): 197-224.

———. "Matter and Aristotle's Material Cause," *Canadian Journal of Philosophy* 31.1 (2001): 85-111.

Charlton, William. "Prime Matter: A Rejoinder," *Phronesis* 28.2 (1983): 197-211.

Cook, Kathleen. "The Underlying Thing, the Underlying Nature and Matter: Aristotle's Analogy in Physics I 7," *Apeiron: A Journal for Ancient Philosophy and Science* 22.4 (1989): 105-119.

Freeman, Kathleen (translator). *Ancilla to the Pre-Socratic Philosophers*. Cambridge, Mass.: Harvard University Press, 1983.

Graham, Daniel. "The Paradox of Prime Matter," *Journal of the History of Philosophy* 25.4 (1987): 475-490.

Inwood, Brad and Gerson, Lloyd P. (translators). *Hellenistic Philosophy.* Indianapolis: Hackett Publishing Co., 1988.

King, Hugh R. "Aristotle without Prima Materia." *Journal of the History of Ideas* 17.3 (June 1956): 370-389.

Kelsey, Sean. "Aristotle Physics I 8." *Phronesis* 51, no. 4 (January 1, 2006): 330-361.

———. "The Place of I 7 in the Argument of Physics I." *Phronesis* 53 (2008): 180-208.

Lacey, A. R. "The Eleatics and Aristotle on Some Problems of Change," *Journal of the History of Ideas* 26.4 (1965): 451-468.

Lucretius Carus, Titus. *De Rerum Natura.* Edited and translated by Anthony M. Esolen. Baltimore: John's Hopkins University Press, 1995.

Scharle, Margaret. "A Synchronic Justification for Aristotle's Commitment to Prime Matter," *Phronesis* 54 (2009): 326-345.

Sokolowski, Robert. "Matter, Elements, and Substance in Aristotle," Journal of the History of Philosophy 8.3 (1970): 263-288.

St. Thomas Aquinas. *In Metaphysicam Aristotelis Commentaria.* Edited by M. R. Cathala, Taurini: Marietti, 1835.

———. *Commentaria in Octo Libros Physicorum Aristotelis* (Romae: Ex Typographia Polyglotta S.C. de Propaganda Fide, 1884.

Paul Studtmann, "Prime Matter and Extension in Aristotle," Journal of Philosophical Research 31 (2006): 171-184.

— Partial Chronological Survey of Prime Matter Scholarship post-1956 —

• Seminal works:

King, Hugh R. "Aristotle without Prima Materia." *Journal of the History of Ideas* 17.3 (June 1956): 370-389.

Solmsen, Friedrich. "Aristotle and Prime Matter: A Reply to Hugh R. King." *Journal of the History of Ideas* 19.2 (1958): 243-252.

McMullin, Ernan, editor. *The Concept of Matter in Greek and Medieval Philosophy.* Notre Dame, IN: University of Notre Dame Press, 1963. Positions from this volume will be considered as required.

Lacey, A. R. "The Eleatics and Aristotle on Some Problems of Change," *Journal of the History of Ideas* 26.4 (1965): 451-468. Also contra King.

Sokolowski, Robert. "Matter, Elements, and Substance in Aristotle," Journal of the History of Philosophy 8.3 (1970): 263-288.

• A new bloodline:

Charlton, William. "Appendix: Did Aristotle Believe in Prime Matter?" in his translation of Aristotle's *Physics I & II*, 129-45. Oxford: Clarendon Press, (1970) reprinted 1999. Charlton develops a position similar to King's, but independently, as he claims in his later article.

Robinson, H. M. "Prime Matter in Aristotle." *Phronesis* 19.2 (1974): 168-188. Contra Charlton, surpa.

Dancy, Russel. "On Some of Aristotle's Second Thoughts About Substances," *Philosophical Review* 87 (1978): 372-413. Contra both King and Charlton.

• Another line:

Jones, Barrington. "Aristotle's Introduction of Matter," The Philosophical Review 83.4 (1974): 474-500. Another independent inquiry, although he acknowledges Charlton's appendix.

Brenner, William. "Prime Matter and Barrington Jones," *New Scholasticism* 50 (1976): 223-228.

Ford, Lewis. "Prime Matter, Barrington Jones, and William Brenner," *New Scholasticism* 50 (1976): 229-231.

Alan Code, "The Persistence of Aristotelian Matter," *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition* 29.6 (1976): 357-367. Also contra Barrington Jones.

• The anti-prime-matter position then makes a new resurgence.

Charlton, William. "Prime Matter: A Rejoinder," *Phronesis* 28.2 (1983): 197-211. Impugns the views of "the friends of prime matter," including Solmsen, Lacey, Robinson, and Dancy. Charlton's rejoinder also comments on C. J. F. Williams, *Aristotle's De Generatione et Corruptione* (Oxford: Oxford University Press, 1982).

• And the reputation of prime-matter continues to be battered.

Cohen, Sheldon. "Aristotle's Doctrine of the Material Substrate," *The Philosophical Review* 93.2 (1984): 171-194. Reviews the debate of the various schools, and attempts a new take on the issue.

Graham, Daniel. "The Paradox of Prime Matter," *Journal of the History of Philosophy* 25.4 (1987): 475-490.

Cook, Kathleen. "The Underlying Thing, the Underlying Nature and Matter: Aristotle's Analogy in Physics I 7," *Apeiron: A Journal for Ancient Philosophy and Science* 22.4 (1989): 105-119.

Sorabji, Richard. *Matter, Space, and Motion: Theories in Antiquity and Their Sequel*, 1st ed. Ithaca, N.Y: Cornell University Press, 1992.

Byrne, Christopher. "Prime Matter and Actuality," *Journal of the History of Philosophy* 33.2 (1995): 197-224
———. "Matter and Aristotle's Material Cause," *Canadian Journal of Philosophy* 31.1 (2001): 85-111.
Paul Studtmann, "Prime Matter and Extension in Aristotle," Journal of Philosophical Research 31 (2006): 171-184. Qualifies Sokolowski's position but fundamentally agrees with him as to the extension of prime matter.

• Some of the most recent scholarship:

Kelsey, Sean. "Aristotle Physics I 8." *Phronesis* 51, no. 4 (January 1, 2006): 330-361.
———. "The Place of I 7 in the Argument of Physics I." *Phronesis* 53 (2008): 180-208.
Scharle, Margaret. "A Synchronic Justification for Aristotle's Commitment to Prime Matter," *Phronesis* 54 (2009): 326-345.

PRIME MATTER OR INDETERMINACY IN NATURE:
PT.2 – PRIME MATTER AND ITS 'WHAT IT WANTS TO BE'

By John G. Brungardt

PHIL 753 – Aristotle's *Physics*
Dr. Richard F. Hassing
December 15th, 2010

> *Progress! . . . is the march from evil to good, from injustice to justice, from the false to the true, from night to day, from appetite to conscience, from rottenness to life, from brutality to duty, from Hell to Heaven, from nothingness to God. Starting point: matter; goal: the soul. Hydra at the beginning, angel at the end.*[1]
>
> *For, there being something divine, good, and desirable, we say the contrary of this exists, and also another exists which by its nature strives for and desires this.*[2]
>
> *The desire for form is not some action of matter but a certain bearing of matter to form, insofar as it is in potency to it.*[3] *— Thus every subject, even prime matter, which is in potency to what perfection soever, from this very fact that it is in potency, meets the definition of the good.*[4]

The problem of prime matter has three parts: does it exist, what is it, and what does it want? In name it claims to be the limit of explanation in the order of material causality, and a limit is difficult to get to know. Aristotle states the problem as follows:

> For if there is to be coming-to-be without qualification, something must without qualification come-to-be out of not-being, so that it would be true to say that not-being is an attribute of some things. For . . . *unqualified* coming-to-be is a *genesis* out of *unqualified* not being. . . . Although we have rehearsed and settled these problems at greater length in another work, we must mention them briefly here too.[5]

This aporia about change was outlined in the first part of this paper. Either one sides with saving the principle of contradiction and denies change, or one admits change and compromises on the principle of contradiction. Since either concession seems excessive, an arbiter must be found.[6] Indeed, splitting the monistic conception of "being" to reveal prime matter meets with many difficulties. I will first state key objections, then examine Aristotle's solution to the problem, and finally, address the issues of this paper: does prime matter exist, what is it, and what does it want? Prime matter is *capacitas formae*; it is the principle of sheer ability, the underlying

---

1 Victor Hugo, *Les Misérables*, trans. C. E. Wilbour (New York: Carleton, 1884) pt. 5, bk. 1, p. 46.

2 Aristotle, *Physics*, 1.9, 192a15-16, trans. Glen Coughlin (South Bend, IN: St. Augustine's Press, 2005).

3 St. Thomas Aquinas, *Quæstiones Disputate de Potentia Dei*, q. 4, a. 1, ad. s.c. 2. Latin citation, from Charles de Koninck, *The Cosmos*, trans. R. McInerny, in *The Writings of Charles de Koninck*, v.1 (Notre Dame, IN: University of Notre Dame Press, 2008) n.33, 336. All Latin translations are my own unless noted otherwise. "Bearing" translates "*habitudo*," combining the order and relation in a habit as a disposition or bearing to action; "desire" translates "*appetitus*". Compare St. Augustine, *De Natura Boni Contra Manichaeos*, c. 18, *PL* t. 42; 556-557: "Nor, therefore, should this *hyle*, which is not perceived through some species but can with difficulty be conceived through the privation of species of every sort, be called evil. For it also has a capacity for forms, since if it were not to take on the form imposed by the maker, certainly neither would it be called matter. Further, if the form is something good, whence things which excel in it are called well-formed, just as those excelling in beauty are called beautiful, without doubt even the capacity for form [*capacitas formae*] is something good." I owe this reference to Duane H. Berquist.

4 St. Thomas Aquinas, *Quæstiones Disputate de Malo*, q. 1, a. 2, c. (Leon.23.10:151-155). I owe this passage to Ryan Williams.

5 Aristotle, *On Generation and Corruption*, 1.3, 317b1-14, trans. H. H. Joachim, in *The Complete Works of Aristotle*, vol. 1, ed. J. Barnes (Princeton, N.J.: Princeton University Press, 1984). Transliteration of Greek text from Aristotle, *On Coming-To-Be and Passing-Away*, ed. by H. H. Joachim (Oxford: Clarendon Press, 1922). In commentary *ad loc.*, 91, Joachim identifies the reference as *Physics* 1.6-9.

6 See Aristotle, *Physics*, 3.6, 206a12-14: "Whenever, being so determined, a thing does not appear to be possible in either way, one needs an arbiter, and it is clear that in a way the thing is, and in a way it is not."

principle for the sake of as order to or wanting of form, which it receives at the terminus of change. Seeing how prime matter is sheer want of form (*per accidens*), we promptly see that it is sheer wanting (*per se*) in its want.

§1: Difficulties or Objections to "Prime Matter" as Solution to the Problem of Change

Traditionally, prime matter (PM) is the totipotent, indeterminate, and ingenerable first subject of substantial change. Obj's 1-3 argue that PM cannot exist as so described, Obj's 4-5 that it cannot desire form.

Objection 1: There is *a basic incoherence* within the notion of PM: it cannot be purely indeterminate, but neither can it be something determinate, therefore it cannot be at all. PM cannot be *purely indeterminate*, for this would reduce the elements to mere instantiations of formal causes in space.[7] Further, "the material elements, and possibly all perceptible substances, are what they are simply because of their formal causes. . . . it is also hard to see how prime matter can be this ultimate subject and yet be nothing by itself."[8] Still more: to say that PM's potency arises from its indeterminacy (not being anything) is to say that it is a cause as ability because it is nothing, which is surely incoherent.[9] A substance composed of being and non-being would be self destructive and there cannot be a real but entirely non-actual thing-principle.[10] So we must cease all talk of PM's indeterminacy.[11] However, PM cannot be *determinate* either. On the one hand substance is a 'this' or a real, concrete, determinate thing, but on the other hand it is a subject determined by a predicate. Descending to the lowest subject, these aspects diverge completely. Hence the lowest subject is at once real (a subject) and not real (completely undetermined). PM must be real as a substratum for change; yet it must be not real it if has no characteristics of its own (for what is such is not real).[12] The traditional interpretation cannot be right.[13]

Objection 2: Elemental generation and corruption are not the star witnesses for PM as the tradition supposes. If PM is the persisting substratum of substantial change, but derives its determination entirely from

7 See Christopher Byrne, "Prime Matter and Actuality," *Journal of the History of Philosophy* 33.2 (1995): 211.
8 Ibid., 212, and see also 223.
9 See ibid., 212.
10 See ibid., 214 and 205: "As a result, some commentators argue that prime matter is in fact real, but also entirely nonactual." See also Daniel W. Graham, "The Paradox of Prime Matter," *Journal of the History of Philosophy* 25.4 (1987): 487.
11 See Byrne, "Prime Matter and Actuality," 220. See also, Graham, "Paradox of Prime Matter," 480; Robert Sokolowski, "Matter, Elements, and Substance in Aristotle," *Journal of the History of Philosophy* 8.3 (1970): 285.
12 See See Graham, "Paradox of Prime Matter," 489, and 490, appendix titled: "Deduction of the Paradox of Prime Matter."
13 Many scholars hold that prime-matter is extended in some way. I summarize a portion of these views in the Appendix.

form (for PM is sheer indetermination), then substantial change requires destruction *ad nihilum* and emergence *de novo*. For PM is nothing without form.[14] Thus, on the traditional view, it follows that form acts as the source of change's continuity or what endures through change, while it is matter and the composite that are generated. For form is the only causal factor to which being (and hence continuity) can be ascribed in generation.[15] Yet this is not Aristotle's view, for the composite is generated.[16]

Objection 3: Finally, if PM is the matter of a thing as pure indetermination, this makes it impossible for a thing to have its own proper matter.[17] If PM is the subject of substantial generation *qua* indeterminate, all substances that come to be have oned matter, for the purely indeterminate is not differentiable. Therefore a proper relative matter for each kind of thing would be impossible.

Objection 4: Grant that PM exists as the tradition holds. Still, PM cannot desire form.[18] First, matter is a principle and cause, not a complete being. Since matter has no soul (for a soul is form), it cannot have the power of appetite like an animal. Second, if matter is sheer ability and hence sheer desire for form, it could not 'decide' by this appetite which form to seek and would never be satisfied, and hence desire in vain every form at once. Third, Aristotle clearly speaks metaphorically of the female/male and base/noble when discussing matter's desire—this is poets' stuff. Yet further, 'desire' itself is said metaphorically of PM. While rocks can desire the lower place by natural appetite, PM is not even as complete as a rock, and hence without 'desire'.

Objection 5: Even if PM desires form, it either does not belong to the natural scientist to discuss this, or if it does in some way, Aristotle does it in an unfitting place. As to the former, to see something ordered to what is divine, good, and desirable as such, namely form, requires an investigation of form as such. But this belongs to another investigation, namely, not to physics, but to first philosophy.[19] As to the latter, Aristotle does not

14 See Byrne, "Prime Matter and Actuality," 204. See also Hugh R. King, "Aristotle Without Prima Materia," *Journal of the History of Ideas* 17.3 (1956): 375.

15 See Byrne, "Prime Matter," 204: "In effect, the formal cause does double duty, acting both as one of the opposites and as the ground of continuity in these substantial changes."

16 Aristotle, *Physics*, 2.1, 193b7: "what is from these [matter and form] is not nature, but by nature, e.g., man."

17 See ibid., *Physics*, 2.2, 194b9; and Kathleen C. Cook, "The Underlying Thing, the Underlying Nature and Matter: Aristotle's Analogy in *Physics* I 7," *Aperion* 22 (1989): 115. Also, Byrne, "Prime Matter," 218-19.

18 See St. Thomas, *In Phys.*, lib. 1, lect. 15, n. 9 (Leon.2.53).

19 See Aristotle, *Physics*, 192a34-b7. Compare *Metaphysics* 7.3, 1029a33.

discuss matter being for the sake of form until Book 2.[20] Hence this conclusion is prematurely advanced in 1.9.

We will now look at key aspects of Aristotle's solution to the problem of change in *Physics* 1.6-9, all to the end of showing how prime matter desires form. Recalling texts cited at the outset, does the philosophical phalanx of Aristotle, St. Augustine, and St. Thomas prevail *sed contra*?

§2: Prime Matter and the Solution to the Problem of Change

The Eleatic Problem[21] of *Physics* 1.8 and Plato's difficulties in 1.9 follow upon Aristotle's analysis of the principles of changing things in 1.5-7. The former difficulty arises from ignorance of matter and the latter from ignorance of the nature of privation.[22] One dissolves the former through a distinction based upon the two accounts or species of the *terminus a quo* (191b25), while one answers the latter based upon the underlying nature itself. The solution for the Eleatics focuses on removing the obstacle to seeing that matter exists and "what" it is by dissolving the problem of change, while the dialogue with Plato focuses on showing that matter is not such a nature as to be ordered to its own destruction in change. Thus the problems differ by lack of knowledge of the nature prime matter against an imperfect knowledge of the nature prime matter.[23] So it seems that knowing what prime matter is seems to give rise immediately to knowing how it is said to want.

[2.1] *The solution to the problem of change*: We shall first consider the dissolution to the *aporia* about change in itself, and then we shall interpret *Physics* 1.9. The former requires three steps, labelled below.

[2.1.1] *How the aporia about change must be and cannot be solved*: The *aporia* must be solved in terms of a problem of change in kind (whether of substance or accident). This also entails that the solution explain how change is possible given that something one in being comes to be. Furthermore, it cannot be solved by holding the 'endurance' or 'persistence' or 'preservation' of some subject (even though such an endurance is always in some cases qualifiedly true or in some cases simply true).

20 See ibid., 2.8, 191a31-33.

21 See *Physics*, 1.8, 191a23-34.

22 See St. Thomas, *In Phys.*, lib. 1, lect. 14, n. 1 (Leon.2.49).

23 See Aristotle, *Physics*, 1.8-9, 191b34-35: "For, this nature having been seen, all their [the ancients, 191a23] ignorance would have been dissolved. Others [the Platonists, 192a7], too, touched upon this [nature], then, but not sufficiently." It is brought out well by Margaret Scharle, "A Synchronic Justification for Aristotle's Commitment to Prime Matter," *Phronesis* 54 (2009): 326-345, that prime matter and form do not *have* natures but *are* natures. See Aristotle, *Metaphysics*, 7.7, 1032a15-25.

The *aporia* must be solved in terms of a problem of change in kind—any other way does not result in a real *aporia* or dilemma. This is clear from the requirements of Aristotle's own phrasing of the dilemma.[24] (1) The dichotomy between 'what is' (or being) and 'what is not' (or non-being) must be exhaustive. (2) The proposal that a thing comes to be from 'what is' must be thwarted by the reply 'it is already', and likewise, (3) the proposal that a thing come to be from 'what is not' must be excluded by replying 'but something must underlie'.[25] One is left in *aporia* if 'what is' and 'what is not' are understood not of some individual, but of a kind. Take the case of substance. Thus, (1) the dichotomy is exhaustive, for what is and what is not substance is an exhaustive division (for Aristotle, the categories). Further, it follows as to (2) that things cannot come from 'what is substance' because it is substance already; and as to (3) that things cannot come from 'what is not-substance' for something must underlie. That is, as to (2), if one asserts generally the innovation of substance from substance, there is no difference where this newness could be found. If Socrates, part of whose account is 'substance', comes to be from substance, where is the change in that? Likewise, as to (3), if one asserts innovation of substance from not-substance, there is nothing from which this newness can be drawn.[26]

What this entails is that the solution to Parmenides' dilemma must show how something one in being can come to be (whether one in substantial or accidental being—a new "this something" or a new accident in a subject). St. Thomas notes that Aristotle takes this aspect as obvious, and Aristotle's resolution contrasts the underlying nature with what it principles, something "one" and a "being."[27] To consider how a multiplicity could come to be would multiply the problem. Further, this condition is essential if Aristotle is right to say that his

24 Sean Kelsey, "Aristotle Physics I 8," *Phronesis* 51.4 (2006): 334. See Aristotle, *Physics*, 1.8, 191a26-32: "[T]hey say that nothing among beings comes to be or is destroyed because it is necessary that the thing coming to be either comes to be from being or from non-being, but it is impossible that it be from either of these. For being does not come to be (for it already it) and nothing can come to be from non-being, for something must be underlying."

25 See Kelsey, "I 8," 333-34 for ways that the aporia cannot be read, namely as saying either (a) that "everything must come to be from either what is or is not (period)," or (b) that "everything must come to be from either what is or is not *it*." (Kelsey, "I 8," 333) (2) is not satisfied by (a), nor is (3) met by (b), nor can one eclectically use (b) to satisfy (2) and (a) to satisfy (3), for then (1) fails, yet it seems clear that an exhaustive dichotomy governs Aristotle's concerns in this chapter; see *Physics*, 1.8, 191b26: "Moreover, we do not do away with [the claim] that everything either is or is not."

26 Note that what I have phrased in terms of substantial change still works for accidental changes: A "being in place" cannot come to be such from "being in place", for this already obtains. Nor can a "being in place" come to be such from "not being in place", for it seems then that "being in place" is excluded as a possibility.

27 See St. Thomas, *In Phys.*, lib. 1, lect. 12, n. 7 (Leon.2.42): "Tertium autem [Aristoteles] non ponit, scilicet quod in generatione necesse est *aliquid* generari, quoniam illud manifestum est." Emphasis mine. Aristotle, *Physics*, 1.7, 190b25 and 191a12.

solution does not deny the claim that everything either is (and is one) or is not. If change can only be saved by positing a fundamental duality 'within' the thing that comes to be, Parmenides will not be satisfied.

Finally, it cannot be the case that the endurance of some subject solves the problem of change. (PM is only later shown 'to endure' in some sense.[28]) First, the notion of some 'enduring' subject of change does not set Aristotle off from his predecessors.[29] The monistic materialists, the atomists, and Empedocles and Anaxagoras maintained nothing but a persisting subject (and logically denied substantial innovation). Further, this does not solve the dilemma, for one of its horns (being cannot come from being) shows that an enduring substance is part of the problem.[30] Emphasizing perdurance misses the fact that *change is not conservative*.

> To say that in any change there is always something that survives is to say that there is always something of the changing thing that is the same both before the change and after it; in other words, it is to say that there is always something of the changing thing that in some respects the change leaves unchanged. Now, no doubt this is often true; but even supposing that it is always true, and necessarily so, it is difficult to see how it could it be anything but incidental to the nature of what change does to things.[31]

Indeed, endurance is precisely the lack of change, and to make this the condition of explaining change is just as much to say that teaching or building precisely as changes accomplish the preservation of the subjects which they work on. If change preserves, that is incidental; e.g., if teaching someone does not change their hair color, and if building a house leaves the density of the stones used untouched. Rather, *change wrecks and makes*:

> On the one hand, to change a thing is to alter it, to dislodge it from its former condition, to drive it out of its own nature; considered from this angle, change's action on things is essentially destructive. On the other hand, Aristotle thinks, to change something is not only to turn it 'out' of its own nature, but also to turn it 'in' to something new; considered from this angle, change's action is essentially constructive, inasmuch as to change something is positively to make it into something.[32]

Change 'wrecks' one thing (the ignorant man), and it 'makes' another (the educated man). Indeed, destruction is a key mark that establishes contraries and opposed terms as principles in change, and Aristotle often remarks

28 See Aristotle, *Physics*, 1.9, 192a26-34.

29 See Kelsey "The Place of I 7 in the Argument of Physics I," *Phronesis* 53 (2008): 201: "they do not disagree with him about whether *to hupokeimenon* is present in the products that come to be from it, but about whether it enters into—enters into and exhausts —their very nature and substance."

30 See Kelsey, "I 7," 199-202, and "Hylomorphism in Aristotle's Physics," *Ancient Philosophy* 30 (2010): 114-16.

31 Kelsey, "Hylomorphism," 118-19.

32 Kelsey, "Hylomorphism," 117. See also, "Place of I 7," 207.

that change is in its nature destructive and removes things from their substance.[33] Yet the basis in experience for change being constructive must also be explained.

[2.1.2] *Preparations for the solution*: Aristotle's preparations involve the construction of an antinomy in *Physics* 1.5-6 about the number of principles of change. First, he establishes that things as changing must be *from* primary or first contraries. This is reasonable, for principles are not *from* other things, nor are they *from* each other, and all things are *from* them; however, what bear these marks are the first contraries; therefore the principles of things are the first contraries.[34] It is clear that the first contraries bear the first two marks, for "through being *first things*, they are not from others; through being *contrary*, they are not from each other."[35] As for the third mark, Aristotle in the next section of *Physics* 1.5 argues by induction that change is between contraries, concluding that "all things which come to be by nature either are contraries or are from contraries."[36] This inductive argument (188a31-b25) shows that change is from contraries that are *per se* to the change at hand, acting and suffering from each other.[37] What is white or dissonant is not naturally apt to be changed by any chance thing, but to its proper contrary or some one in between. A white thing does not become sick or cultured or magnanimous, except *per accidens* (as when a white man catches a cold, learns music, or habituates himself in virtue). Rather, a white thing, when it changes precisely as white thing, i.e., changes *per se* as white,

33 See Kelsey, "I 7," 189: "'For whiteness would not be affected at all by a line, nor a line by whiteness, except perhaps incidentally, e.g. if the line happened to be white or black; for things that are not contraries or do not consist of contraries do not drive themselves out of their own nature.' [*De Gen* 323b25-29]" See ibid., fn.10: "Cf. Plato, *Rep.* II 380e3- 381b7, where it is taken for granted that when something changes at the hands of something else, it changes for the worse; cf. also Augustine, *Contra Maximin* II 12 (PL 42, 768), 'in omni mutabili natura nonnulla mors est ipsa mutatio.'" Viewed this way, change is destructive —"motion removes what is," "change, by nature, displaces all things," and "the thing moving is removed from its substance least in being borne." See, respectively, Aristotle, *Physics*, 4.12, 221b3; 4.13, 222b16; 8.7, 261a20; and see also 6.5, 235b9-12; referred to by Kelsey, "Place of I 7," 189, fn.10.

34 See Aristotle, *Physics*, 1.5, 188a27-29; St. Thomas, *In Phys.*, lib. 1, lect. 10, n. 3 (Leon.2.33).

35 Aristotle, *Physics*, 1.5, 188a29-30. Emphases mine.

36 Aristotle, *Physics*, 1.5, 188b25. Kelsey, "Place of I 7," 187: holds that Aristotle does not address the third mark in this chapter, and takes this as a sign of the growing antinomy, for as will be shown in 1.6, ". . . some things do not consist of contraries, namely substances." St. Thomas, *In Phys.*, lib. 1, lect. 10, n. 3 (Leon.2.34), in contrast, observes "Yet the third [condition], in what way every thing comes to be from contraries, requires more diligent investigation." He reads 188a31-b25 (nearly the rest of the chapter) as establishing this. Commenting on 1.6, St. Thomas notes that it is true that contraries are from each other insofar as a contrary thing becomes the contrary thing—that is, the subject must be included in this expression "from", as above, fn. 29. But this is the solution to the dialectic: see *Physics* 1.7, 190b34. So there is no real disagreement, just differing aspects on the developing dialectic. That is, trouble arise from systematic equivocation on the word 'from': see Aristotle, *Metaphysics*, 2.2, 994a22-31; 5.24. See also Kelsey, "Hylomorphism," 120.

37 See Aristotle, *Physics*, 1.5, 188a33-35: "On must first grasp, then, that, among beings, nothing is naturally apt to make or to suffer any chance thing from any chance thing, nor does anything whatever come to be from anything whatever, unless someone should take things accidentally."

becomes darker or some color in between. For destruction too, *per se* contraries are found. Aristotle is calling our attention to our experience of change, and it makes some sense that things do not come from any chance thing (a tree from burning paper), yet why hold that they suffer by their *per se* contrary? Action and passion imply contraries because a fundamental opposition exists between them: action is the act of motion *as from another*, passion is that act *received in a subject*.[38] Contraries allow for this opposition—they cannot be in the same subject at the same time and respect. Action and passion require *per se* contraries because only these cannot be simultaneously in the same subject.

That is, contraries cannot act on each other simply.

> [T]here is some reason not to make them [the principles] be only two. For someone would be at a loss as to how either density is naturally apt to do something to rarity or rarity to density. So too for any other of the contrarieties. For friendship does not gather strife and make something out of it, nor does strife make something out of friendship, but both [work on] some other third thing. Some thinkers even take more than one such thing from which they build up the nature of beings.[39]

If the contraries cannot act on each other because they exclude each other through contradictory opposition, neither can they be principles *from* which a thing is made, or better what it is *made out of*. In contrast to the destructive view of change that 1.5 relies upon, 1.6 highlight the constructive view of change. Some third is built up into the nature of beings. Not only is its view of change contrary, but 1.6 also moves in the direction that a principle must be what a thing is made from or out of—as Aristotle glosses later in the chapter, the principles sought are *elements* of the thing, i.e., *inside it* in some way.[40] In sum:

> If we assume that things "are made" from whatever they "come to be" from, this will also be a reason for not making contraries principles at all. If something is not "made" from a contrary, then neither will it "come to be" from one.[41]

This is especially pointed in the case of substance—what could be the contrary or contradictory of substance? Is there some "third thing" worked up into the nature of substantial being?

A second argument in *Physics* 1.6 casts doubt on the priority of the contraries.

38 See Aristotle, *Physics*, 3.3, 202b22. Note that the act of motion is the same act in number, 202b7ff.
39 Aristotle, *Physics*, 1.6, 189a21-27. Thus Empedocles takes four root elements that friendship and strife 'work on' in turns.
40 See Aristotle, *Physics*, 1.6, 189b17.
41 Kelsey, "Place of I 7," 191.

> [W]e see that the contraries are not the substance of any beings. But the principle must not be said of something underlying. For there will be a principle of the principle. For the underlying is a principle, and it seems to be prior to the predicate. Moreover, we do not say that substance is contrary to substance. How, then, could substance be from non-substances? Or how could non-substance be prior to substance?[42]

This argument offers two points that undermine the priority of the contraries as principles.[43] The first is that, since contraries are predicates (accidents), they are said of, and hence posterior to, their subjects. This makes them principled first principles, a clear absurdity. The second closes up this line of thought: only among accidents can contrariety be found, and hence contraries cannot be the principles of substance (for then substance would be from non-substance).

Thus, the two arguments make an antinomy or dialectic with the points raised in 1.5.[44] The contraries will be neither *first* (for substance is prior, according to the second argument) nor will *all things be from them* (for nothing is *made from* contraries, by the first argument). Thus the first and third marks of first principles have been dubiously attributed to contraries. All that seems intact is the second: contraries are not from each other. Hence, the counting problem at the end of *Physics* 1.6, "that the element is neither one nor [are there] more than to or three [elements],"[45] is not merely a counting problem, but rather "whether the points made in I 5 and I 6 *can* be combined."[46] The difficulty is acute for substantial change, for contraries cannot be principles of substance, nor can not-substance or substance principle coming to be, for Parmenides would protest.

This antinomy or dialectic also introduces aspects of goodness in contraries and improvement in change. The hot thing acts on the cold thing, which suffers by heating up. Viewed this way, change is destructive. Yet contraries are divided by being better or worse: Empedocles' friendship, Democritus' full (or being), and Parmenides' heat are better; strife, void (non-being), and cold are worse.[47] The former are possessions, the latter, lacks.[48] A living thing must have parts that are in concord (harmonious working order),

42 Aristotle, *Physics*, 1.6, 189a29-34.
43 See Kelsey, "Place of I 7," 187-88; St. Thomas, *In Phys.*, lib. 1, lect. 11, nn. 10-11 (Leon.2.38).
44 At this point my debt to Kelsey, "Place of I 7," should be clear.
45 Aristotle, *Physics*, 1.6, 189b28.
46 Kelsey, "Place of I 7," 204.
47 See Aristotle, *Physics*, 1.5, 188a19-25.
48 See St. Thomas, *In Phys.*, lib. 1, lect. 10, n. 7 (Leon.2.35).

fully proportioned, with a proper internal heat. To lack these leads to death. Thus, since one aspect of change is constructive, 1.5-6 points out that the change to a contrary as terminus of change is a good for the subject that changes. Is this the case for substances undergoing substantial change?

[2.1.3] *The solutions to the antinomy of 1.5-6 and to the problem of change*: The difficulties are cleared away using a two-fold thesis that Aristotle establishes in the first half of *Physics* 1.7: "[T]here must always be something underlying the coming to be. And this is not one in species even if it be one in number."[49] Aristotle argues as follows. Some changes are spoken about as 'simple things' (e.g., "The man becomes musical," and "The not-musical becomes musical") others as 'composite things,' (e.g., "The not-musical man becomes a musical man"). These simple or composed speeches about the *termini* of change reveal two differences.[50] *First*, in some cases we say that 'this comes to be', and in other cases that 'that comes to be *from* this'—with the exception of certain cases of change, where only the first option applies, "For musical did not come to be from man, but the man came to be musical."[51] *Second*, among the 'simple things' that come to be, some remain in our speech, while others do not, "For a man endures when man is coming to be and is musical, but the non-musical and unmusical endure neither simply nor as a composite."[52] Now, the second fold of the thesis of a14-16 is established from these two differences (the first fold is not[53]). Of these differences, the use of 'this comes to be from that' is *exclusive* to the non-enduring parts of the speeches ("The musical comes to be from the unmusical," but not "The musical comes to be from the man"), while *both* characterizations ('this comes to be that' and 'that comes to be from this') are used of the non-enduring and enduring parts alike (as long as the latter are put into in composite descriptions).[54] Since a diverse way of speaking is found about the enduring part and the non-enduring opposite part of the *terminus a quo*—the use of *from* is exclusive to opposites *qua* unenduring—what undergoes change is two in account: the 'ignorant' and 'man'.

49 Aristotle, *Physics*, 1.7, 190a14-16.
50 See St. Thomas, *In Phys.*, lib. 1, lect. 12, n. 4 (Leon.2.41), who anticipates these as the *termini* of change.
51 Aristotle, *Physics*, 1.7, 190a8.
52 Ibid., 190a11-12.
53 This will be taken up below, see fn. 59.
54 See Aristotle, *Physics*, 1.7, 190a28-30: "For musical comes to be from the unmusical and the unmusical comes to be musical. . . . [and] musical is said to come to be from unmusical man and unmusical man is said to come to be musical."

The first part of the thesis, that in things that come to be there is always something underlying, is established of both qualified and simple coming to be.[55] In the case of unqualified coming to be, Aristotle advances two arguments. The first holds that it is *apparent merely by looking into it* that substances have an underlying *from* which they come to be. Just look at what is always there when plants and animals come to be: "seed."[56] Coughlin cautions:

> One might think that the seed is what underlies the change, but this cannot be Aristotle's meaning. The seed is either the unfertilized seed, which no longer exists when the plant or animal comes to be, or it is the fertilized seed, in which case it has already changed what it is. What Aristotle probably means is that there is a 'prepared' or 'disposed' matter *from which* the plant or animal comes to be. . . . [I]f there were *nothing* underlying the change, there could be no explanation of the need for a disposed matter.[57]

That is, without disposed matter, anything could *come from* any chance thing. The second argument is as follows. It notes first that substances are primed for generation or destruction via a series of accidental changes. One can destroy an animal by changing its shape or heating it, and one can generate something by certain alterations and local motions (hydrogen and oxygen must be electrolysed, and the egg and sperm must come together).[58] However, it is clear that accidental changes require an underlying of which they are said. Therefore, just as the first argument implies that there must be some disposed subject *per se* to the kind of change at hand, so here there are only certain subjects in which accidental changes can lead to a change of substance (2 H and O make something drinkable, 2 H and 2 O do not). These arguments show that the underlying or subject has two aspects, as *subject of predication* and as *subject that underlies the change as prepared materials*. Yet a common subject to substantial change cannot be the whole story, for the first horn of the Eleatic Problem is unimpressed by the assertion that a substance comes to be from a substance. In reply, note that seeing disposed matter is required for substantial changes is an induction from our experience of *motion*, but this is not the same as seeing a first subject in the line of *predication* (which is what the *aporia* cannot see—what sense does it make to say "Being becomes being"?). The natural scientist will need only the discovery of the twofold species of 'what changes' to

55 See Aristotle, *Physics*, 1.7, 190a32. As Aristotle assumes the existence of substantial and accidental change, we will too.
56 Aristotle, *Physics*, 1.7, 190b5.
57 Coughlin, translator's notes, n.53, p. 21; Aristotle, *Physics*.
58 See Coughlin, translator's notes, n.54, p. 21; Aristotle, *Physics*.

obviate the difficulties about predicated subjects, leaving unharmed his experience of disposed subjects.[59]

The real "argument" for hylomorphism, then, is what follows.

> Whence, it is clear from what has been said that everything which comes to be is always *composed*. And there is something coming to be and there is something which comes to be this, and the latter is twofold: for it is the underlying or the opposite. I say that the unmusical is opposed and the man underlies, and the unshaped and the unformed and the unordered are the opposite, but the bronze or the stone or the gold is the underlying. [/b17]
>
> It is then apparent that, if there are causes and principles of things which are by nature, from which things they first are and come to be, not accidentally, but what each is according to its substance, all things come to be from the underlying and form. For musical man is *in some way composed* from man and musical. For you resolve the accounts into the accounts of these. It is clear, then, that things which come to be would come to be from these.[60]

The first paragraph of this text finalizes the conclusions of the first half of 1.7, and the second paragraph reveals the grand conclusion. The first paragraph does not contain the "doctrine of hylomorphic composition" while the second paragraph does. As Kelsey points out,[61] the first paragraph above cannot be a statement of hylomorphism, first, because the components are wrong—the "two" pointed to are the underlying and the opposite, not matter and form (all this does is indicate the 'composition in' the *terminus a quo*). Second, the mode of composition is wrong—the underlying is one in number though two in account, while form and matter are rather one in being, and they make up parts of one account.

So the "argument" for hylomorphism is not a deduction. Rather, Aristotle merely observes that since

59 See Kelsey, "Hylomorphism," 116-17: "[H]ylomorphism is not meant to resolve the ancient aporia about coming into being, but is rather part and parcel of the very position threatened by it. This is because hylomorphism presupposes, what the aporia purports to show impossible, that substances come into being. . . . I think that in an important sense the doctrine is not argued for, at least not directly, but is rather regarded as a kind of default. It is true that Aristotle thinks this default position was felt by earlier thinkers to be unavailable, on account of certain difficulties standing in the way of the idea that substance (or anything else that is unqualifiedly real) could ever unqualifiedly come into being. Aristotle's response to this dialectical situation is not to try to establish the default position, as it were in the face of these difficulties, by direct and positive argument, but rather to try to clear away the difficulties, on the assumption that once this is accomplished, the default position will thereby be restored of its own accord." See also St. Thomas (Leon.2.42): "Et hoc quidem *per rationem* probare pertinet ad metaphysicum, unde probatur in VII *Metaphys*.; sed hic probat tantum *per inductionem*." (My emphases.) I take the reference to be to *Metaphysics* 7.3, 1029a7-25. See St. Thomas, *In Meta.*, lib. 7, lect. 2, nn. 1283-89. Here is where the readings of St. Thomas and Coughlin differ from Kelsey's. I have followed Kelsey by raising his objection ("I 7," 200-201), namely that the Parmenidean would be unimpressed by this appeal to a persisting matter (even if it is 'disposed' as I have added). Kelsey interprets the two arguments for the presence of a subject in substantial change to be a *subject of predication*. However, as St. Thomas observes in the *Metaphysics* commentary, n.1287, "Attamen diversitatem materiae ab omnibus formis non probat philosophus *per viam motus*, quae quidem probatio est per viam naturalis philosophiae, sed *per viam praedicationis*, quae est propria logicae, quam in quarto huius [*Meta* IV] dicit affinem esse huic scientiae." (My emphases.) This is essentially the same line as Coughlin takes—*by the way of experience of motion*, we see that a *per se* subject is required for substantial change—i.e., a subject appropriately ordered by what it is to the change. Hence Kelsey seems to be resorting to the metaphysical reading. The two readings are not opposed as such.

60 Aristotle, *Physics*, 1.7, 190b11-b24. My emphases.

61 See Kelsey, "Place of I 7," 197-99, and "Hylomorphism," 112-14.

there is one thing that is coming to be *not accidentally* (but rather *per se*), and at that according to *what that thing is in its* substance, if there are causes and principles of it by nature, these must be the underlying and the form. The only account given is that "musical man" is "*in some way composed from* man and musical" since the account of the former resolves to the latter. That one can resolve the account of what comes to be in such a way is motivated by the antinomy of 1.5-6 and its resolution in the first half of 1.7, for we have seen that contraries or *termini* (one of which is the form) and a subject are required for what comes to as such. Thus, the underlying nature must be a cause and principle of the thing that comes to be, not accidentally (i.e., *per se*, a conclusion for which we have been prepared by the 'disposed matter' arguments), and one in being with the form as principles and causes of the substance that comes to be.[62]

Aristotle solves the antinomy of 1.5-6 before solving the Eleatic *aporia*. Kelsey notes of the former:

> The *first difficulty*, about whether things come to be from a contrary or from a subject, is simply dissolved by the point that *(at least "in form") ta gignomena are never one*. With this point in hand Aristotle can now say that everything comes to be from both: *from* a kind of contrary or opposite, which is therein destroyed, and *from* a kind of subject, which is therein made into something. As for the *second difficulty*, about whether contraries have the kind of priority we expect in a principle, this difficulty too can now be, if not dissolved, then effectively side-stepped. Again, the fundamental points behind Aristotle's reasoning in I 5 were that coming to be is always from contraries and "what things come to be from" should be reckoned among their principles. Invoking the two-part thesis introduced in the first part of I 7, Aristotle can now say that *there are two kinds of "what a thing comes from," and that although one of these is indeed always a contrary or some kind of opposite, it is the other that natural substances consist of* (and that is thus to be reckoned among their principles). In this way he can side-step the difficulty about priority, without giving up his deep-seated commitments about the fundamental place of contrariety and opposition in processes of change and coming to be.[63]

That is, the antinomy is dissolved by seeing the systematic equivocation on the use of "from." One belongs to the *termini* of the motion, the other belongs to the subject.

So what does this tell us about the underlying nature—and in particular the underlying nature for substantial change? It was seen that contraries cannot be principles of substance, nor can not-substance or substance principle coming to be for substance. Now, the underlying is two in account but one in number. One of its accounts is as material, which "is more a 'this something,' and what comes to be does not come to be

62 See Aristotle, *Metaphysics*, 8.6, 1045b18-22: "But, as has been said, the proximate matter [*eschatê hulê*] and the form [*morphê*] are one and the same thing, the one potentially, the other actually. Therefore to ask the cause of their being one is like asking the cause of unity in general; for each thing is a unity, and the potential and the actual are somehow one [*hen pôs estin*]."

63 Kelsey, "Place of I 7," 204. My emphases.

from it accidentally."[64] The other account, as privation or contrariety, is accidental, for the privation does not compose the being that comes to be. For substantial change, the form alone suffices for the condition of opposite terminus, i.e., "one of the contraries is sufficient to make the change by its absence and presence."[65] That is, the presence or not-presence of a substantial form fills the role of contrariety in substantial change.[66] This means that the lack of substantial form is the accidental privitive principle to the change. By eliminaton some underlying nature must be the *per se* principle. Is this the case? If so, it cannot be a contrary to the substantial form (for then the same problem would arise), nor could it be not-substance or substance.

So is there some "third thing" worked up into the nature of substantial being? While the so-called counting problem arises because "it is impossible that the contraries suffer by each other," (which in the case of substance means that the substantial form as a principle cannot "act on" its lack), this problem "is solved by the other being the underlying. For this is not a contrary."[67] So the subject of substantial change is not a contrary to substantial form. Why? One aspect of change is constructive, since change is from a lack to a possession. However, the subject is what is able to attain this state of being improved and worked up into a being, for it is disposed matter. This is to say that the subject is in potency to the form it receives, it is not the lack itself—it is not not-substance.[68] Yet is it substance? How could we know?

> The underlying nature, however, is scientifically knowable according to proportion {analogy}. For as bronze is to statue or as timber is to bed or as material and the formless before it takes on form is to whatever else has form, so is this underlying nature to substance and 'this something' and a being. This, then, is one principle, though it is not one or being as a 'this something' is; and one is the [principle] which is the account; and, moreover, [one principle is] what is contrary to this, the privation.[69]

The analogy is between complete things and their material principles (for the *form received* cannot be meant by "substance and a 'this something' and a being," nor by "whatever else *has* form"). Just as in artificial things

64 Aristotle, *Physics*, 1.7, 190b27.
65 Aristotle, *Physics*, 1.7, 191a6.
66 See St. Thomas, *In Phys.*, lib. 1, lect. 13, n. 7 (Leon.2.46): "Sic igitur in omni mutatione naturali requiritur subiectum et forma et privatio. Non autem ratio motus salvatur in omni generatione et corruptione, sicut patet in generatione et corruptione substantiarum. Unde subiectum et forma et privatio salvantur in omni mutatione; non autem subiectum et duo contraria."
67 Aristotle, *Physics*, 1.7, 190b35.
68 See Coughlin, "Matter and the Reality of the Physical World," 225-26.
69 Aristotle, *Physics*, 1.7, 191a8-10.

something is made out of matter, so in things that come to be by nature there must be some corresponding principle.[70] Knowledge of this principle is had through observing that things are constituted by forms which are received as *termini* of substantial changes. The arguments that there must be some subject for this change and that this subject must be disposed in some way to the *terminus* of the change fortify such observations. So, in contrast to the thing that comes to be (the thing which *has* a form), the underlying nature is a principle that is not 'one' or a 'being' or a 'this something' *to the same extent as the composite*. The same must be said of the other *per se* principle, the form, otherwise a multiplicity is coming to be, not something fundamentally one.[71]

Now, given that this subject-principle or underlying nature, since it is a *per se* principle along with the form, the privation of which form is *per accidens* to what comes to be, the solution to the Eleatic problem is fairly straightforward. The *aporia* is resolved through the distinction of being or non-being taken *per se* or *per accidens*. Things come to be neither from being nor from non-being *per se*, but *per accidens*.[72] For accidental changes, the shape possessed and then lacked at the *terminus a quo* is *per accidens* to the shape which the shapeable thing receives insofar as it changes. It is necessary that it lack the shape it receives, yet this necessity of a lack is not *per se* to the thing insofar as it gains a new shape.[73] However, our inquiry is about substantial change. On the side of the *terminus a quo*, a substance does not come from a substance as such. Rather, this substance excludes the substance which is to come to be, and hence only enters into the account of change as a *per accidens* principle of the changing thing. Thus, *to the extent that* this substantial form grips the being of the thing that will be changed (e.g., a tree), to that degree the thing which is to come to be *is not present* (e.g., ashes). (Otherwise the problem will still remain—the substance already is.) Similarly, substance does not come to be from what is not-substance as such. Rather, the lack of the substantial form received as *terminus ad quem* is a principle of the change only because it happens to the underlying as *per se* principle of change. Thus, *to the extent that* this

70 See St. Thomas, *In Phys.*, lib. 1, lect. 13, n. 9 (Leon.2.46).

71 See Coughlin, fn. 58, p. 22: "In some way, similar remarks might be made about the form of a substance, since it too is not so much a thing as a principle of a thing, though a different sort of principle from the material."

72 See Coughlin, "Matter and the Reality of the Physical World," 224-25.

73 See Coughlin, translator's notes in Aristotle, *Physics*, n.19, 141: "Leaving a place is temporally simultaneous with entering another place, but entering is prior to leaving in notion: a mobile leaves insofar as it enters some other place."

substantial lack is accidental to the substance insofar as it is changeable, the thing which is to come to be *is present* in the subject (in some way). (Otherwise the aporia will still remain—there is no underlying.) So, what is the extent of these "to the extent that's"?

It is common in anti-prime-matter literature to consider only the instances of elemental transmutation as cases where PM could 'act' as material cause.[74] However, this is not necessary. Take the case of an animal coming to be.[75] As an ensouled being, it will have as secondary matters elemental (calcium, iron), vegetative (generative organs), and animal (sense organs) material causes. Even if (*per impossibile* and contra Aristotle's pronouncements otherwise) these matters could exist separately as enformed material parts, being incorporated via the process of generation into the animal, to assert that these matters endure as actual parts of what they become is to fail the problem about change (Aristotle would be a befuddled Democritus). Nor could one assert that the potency to a higher form (e.g., the vegetative matter coming from compounds) is present in the proximate matter alone. Why? That such a potency is present in the proximate matter there is no doubt, but this 'kind-ed' matter as "coming to be" the animal depends upon its own subject. Thus its potency towards any higher form, as a feature of its substance, is drawn from its subject. So, even apart from the question of the unity of substantial form, the array of formally distinct matters that compose an animal entails that the ultimate subject of generation must underlie them all as a *totipotent* matter, while the order-founding type of these matters grants them a *dispositive* relation to being certain complete things. While seeing this order requires a much more developed view of nature, i.e., the definition and investigation of nature and various physical forms, the generality of the treatment in Book 1 demands that a totipotent subject ground the reality of the entire array of generations and destructions in the physical world. Why? For, to the extent that substance (animal, vegetal, elemental) is *either* present *or* lacking, to that extent must some principle other than the present form or lack of form received explain the ability (albeit not the disposition) for the coming to be of the new substance. In the being that comes to be, one principle is as potency that explains the origin of all its determination. Due

74 See King, "Aristotle Without *Prima Materia*," 371; William Charlton, "Prime Matter: A Rejoinder," *Phronesis* 28.2 (1983): 198; Graham, "Paradox," 490; Byrne, "Prime Matter and Actuality," 204.

75 I think that, even if one were to take into account Aristotle's "succession" theory of generation, my point remains the same.

to its potency, the indeterminacy of this principle follows, which, if understood as a lack, is to be taken *per accidens*, for the principle is *per se* ability to substance. This is the traditional account of prime matter.[76]

[2.2] *The desire of prime matter; interpretation of Physics 1.9, 192a13-25*: Aristotle makes three points when comparing his theory of the principles of change with Plato's theory. The third concerns the material principle.

> For the enduring is a joint cause with the form of things which come to be, like a mother. But the other part of the contrariety might often be imagined, if, in thought, one stares at its evil doing, not to be at all. For, there being something divine, good, and desirable, we say the contrary of this exists, and also another exists which by its nature strives for and desires this. But for these [thinkers], it happens that the contrary desires its own destruction. And neither can the species desire itself, because it is not lacking, nor [can] the contrary [desire it], for contraries are destructive of each other. But this [which desires] is material [*hê hylê*], as the female [desires] the male and the base the noble. Yet it is not in virtue of itself base, but is so accidentally, and it is not in virtue of itself female, but is so accidentally.[77]

In this text, Aristotle uses key points derived from the investigation in 1.5-7. Considering the contraries that structure change, *the other part* or privation *might often be imagined not to be at all*, as an *evil* or lack in things, for it is the contradictory or lack of what is *divine, good, and desirable*—form.[78] Hence the privation cannot be the same cause as *the enduring* or receiving matter, if matter is to be *a joint cause*, as *a mother*.[79] That is, it is *we* who *say* and recognize that *the contrary exists*, distinguishing it from matter, for matter is *another* principle altogether, which *exists* and *by its nature strives for and desires* form. This is what Plato(nists) failed to see fully, which is clear because

76 As we move forward, however, we shall assume that Aristotle held to the unicity of substantial form. Once this is assumed, regardless of what generation is taken as an example, the above argument can be adapted and applied much more directly and forcefully, for the argument hinges upon separating in thought (the parts of the substantial form) what would not be separated granted their real union. It seems likely that Aristotle held to the unicity of substantial form. See *Metaphysics*, 7.13, 1039a4ff, that a substance is not from substances existing actually.

77 Aristotle, *Physics*, 1.9, 192a13-25. Coughlin and Sachs both translate *hê hylê* as "material", Apostle as "matter".

78 This is in agreement with Plato. In contrast to the *per se* privation of the Receptacle, the Form is divine, good, and desirable, and the receptacle is said to take part (somehow) in the Form. See *Timaeus*, trans. D. J. Zeyl, in *Plato: Complete Works*, ed. J. M. Cooper (Indianapolis: Hackett Publishing Co., 1997) 51b (the receptacle shares in the intelligible, see above, fn. 101); 50c (the receptacle receives imitations of the things that "always are, imprinted after their likeness in a marevellous way that is hard to describe,"); and 51c (these Forms are intelligible and "by itself"); and 28-31 (the Forms imitated by the Demiurge allow for the beauty and goodness of the universe, in particular 30a); and 39e (the motions of the world, especially the motion of the Same or sphere of the fixed stars, is ordered to imitation, "The purpose was to make this living thing as like as possible to that perfect and intelligible Living Thing, by way of imitating its sempiternity"). See also *Republic* 6, 505a-510. For Aristotle, *Parts of Animals*, 645a9, the "Demiurge" is the nature of the thing, for form is not separate in reality from what it perfects: ". . . the nature that crafted [the animals] [*hê dêmiourgêsasa phusis*]."

79 See St. Thomas, *In Phys.*, lib. 1, lect. 15, n. 6 (Leon.2.53). St. Thomas takes this as an "ostensive" proof, and the rest of the paragraph as a *reductio* proof. Again, Aristotle alludes to *Timaeus*. This receptacle is a joint cause with Forms, and this is compared to the relationship between mother, father, and offspring; see ibid., 49a, 50d, 51a-b. 50d: "For the moment, we need to keep in mind three types of things: that which comes to be, that in which it comes to be, and that after which the thing coming to be is modeled, and which is the source of its coming to be. It is in fact appropriate to compare the receiving thing to a mother, the source to a father, and the nature between them to their offspring." Also, 49a. The Forms and their copies are insufficient to explain becoming, so some third must be specified: "a receptacle of all becoming—its wetnurse, as it were."

for them*, it happens that the contrary desires its own destruction*, an impossibility.[80] This is clear from an exhaustive review of the principles. *The species* [*eidos*] *cannot desire itself* such as to become that kind, *because it is not lacking* this form, rather it is it already; neither can matter desire the form "insofar as it is under that form, because it does not yet lack being [*esse*] through it (however, every desire is due to a lack, because of what is not had)."[81] (So it seems that Aristotle with wonted economy defines 'desire' for this context—otherwise this exclusion of form from desiring itself fails as an argument. 'Desire' is a simultaneous lack of and order to form. The latter, order to form, is required insofar as this argument excluding form and the next excluding privation require for their understanding the dialectic about contrariety and its insufficiency to explain things coming to be *from* something and being made *out of* something.) However, *nor can the contrary [desire]* form, for while as contrary it lacks its opposite, *contraries are destructive of each other*—they cannot make something out of each other (friendship cannot build up beings from strife). The contrary is *per se* a lack of the opposite term, in this case substance. Nor does matter desire form precisely insofar as it is deprived of form, for this would take away its being a substance of any sort. By elimination, and confirmed by the arguments about the subject of substantial change, *this [which desires] is material*, the matter [*hê hylê*] of the material thing. Hence Aristotle's homage and twist on the *Timaeus*: *the female [desires] the male and the base the noble*. But we have distinguished between the *per se* and the *per accidens*. So the material *is not in virtue of itself base* or *in virtue of itself female*, that is, it is not privation or non-being *per se*, but it *is so accidentally*. Positively, Aristotle's cosmos has a *telos* from the ground up. Matter *per se* desires form.

This last assertion must be made more precise. It was established above that PM is revealed by the dissolution of the Eleatic Problem (eliminating the *per accidens* principles that obstruct sight of the underlying nature) and the traditional account of the underlying nature established as a *per se* principle of substances along

80 Again, consider the *Timaeus*. As a characterless receiver, it is that non-being into which things are destroyed by the "evil doing" of the contraries, active amongst the work of the lower-gods who completed the cosmos by making corruptible living things. See ibid., 41a-42e, in particular 41b: "[O]nly one who is evil would consent to the undoing of what has been well fitted together and is in fine condition." And 42e, "Having set out all these ordinances to them—which he did to exempt himself from responsibility for any evil they might afterwards do . . ." Recall that Aristotle states earlier in *Physics*, 1.9, 191b27, that the Platonists, having accepted Parmenides' dilemma and siding with being coming from non-being, make the material *per se* non-being—whereas, rather, "the material, is close to and somehow is substance." (192a7).

81 St. Thomas, *In Phys*., lib. 1, lect. 15, n. 8 (Leon.2.53).

with form, "from which things they [the substances] first *are* and *come to be*, not accidentally."[82] The extent to which form and matter are "layered" according to proximate matters is irrelevant as to PM's potency. Rather, PM is the potency *from which* anything of the substance comes to be—it is the order to the new form, lest the Parmenidean problem reappear if PM were a complete, "static" thing. PM is the subject required for substantial change, and it, "*close to* and somehow . . . substance,"[83] is built up into a complete being when it attains its *terminus*—substantial form. That is, PM is not removed, as a lack is, by change, and since it is intrinsic to what comes to be, it follows that the form is its good, for form determines or perfects it. So PM is order to a lacked form *qua* the principle *from which* (i.e., *out of which*) the being comes to be. What it is to be substance in potency is to be, as principle, 'order to reception of what is lacking'. However, this was the definition of desire Aristotle established with brevity above. Therefore, prime matter *is* desire for form—or to speak more loosely (as if it *had* a nature instead of *being* a nature), prime matter desires form.

§3: Answers to Objections

To the first and second: The first objection is caught on the horns of the dilemma about change. The subject of change, PM, is only sheer indeterminacy *per accidens* (if indeterminacy is taken as a *per se* lack), and it cannot perdure precisely insofar as the *per accidens* subject of change.[84] Indeed, the unity of substantial form requires that no 'part' of it perdures in the sense that the objector wants. Rather, it 'endures' insofar as mutability is negated from it, for all mutability arises from it as material principle, and PM's indeterminacy as lack or non-being is not its reason for being the potency for any substance, but rather vice versa. PM is real as the ultimate principle of potency in things generable by nature, and hence there is no fundamental dichotomy or paradox of "reality and unreality" in the natural world.[85] The above reply suffices to answer the brunt of the second objection also. Elemental generation and corruption are not the star witnesses for PM.

82 Aristotle, *Physics*, 1.7, 190b18. My emphases.

83 Ibid., 192a7. My emphasis.

84 See ibid., 192a26-27: "Material is in a way destroyed and comes to be, but in a way not. For as what is in it, it is destroyed in virtue of itself. For the privation, which is what is destroyed, is in this.'

85 See above, fn. 62. The difficulty is that thinkers treat potency and act as things and seek a way to unite them. See Aristotle, *Metaphysics*, 8.6, 1045b16: "[P]eople look for a unifying formula, and a difference, between potentiality and actuality." Byrne in particular, "Prime Matter and Actuality," 219, makes the mistake which Scharle warns against ("Synchronic Justification," 331-32), making PM *have* a nature, instead of *being* a nature.

To the third: This objection confuses the unity of a kind (which is not differentiable as to potency) with the unity of matter (which is not differentiable as to actuality). That is, secondary and proper matters of composite things are "worked up" into composing a higher substance, and hence have natures (e.g., the elements).[86] Secondary matters thus have a unity that PM does not.

To the fourth: St. Thomas answers Avicenna's objections. St. Thomas first notes generally that anything which desires another either has an awareness of this ordering to another (and hence directs itself to the object desired), or tends to that other by the direction of something knowing. The latter case is a natural appetite.

> Therefore, natural appetite is nothing other than the ordination of something according to its proper nature to its end. Now, not only is a being in act through an active power ordered to its end, but also matter insofar as it is in potency, for form is the end of matter. Therefore, that matter desires form is nothing other than for it to be ordered to form as potency to act.[87]

This answers Avicenna's first objection. The second is satisfied by pointing out that this potency to other forms is retained by matter not because of an aversion to the form it has or because it seeks a contradiction, but through its nature as potency. Finally, to the third, just as an analogy is used from a statue and unformed bronze to know PM as matter, here the analogies to the female/male and base/noble are used to apply the *ratio* of desire to PM "insofar as they [the analogates] have something of the *ratio* of matter."[88] However, St. Thomas grants that, since Aristotle is addressing Plato, he more readily assumes a metaphorical mode of speech—but this concession refers to the use of female/male and base/noble, not of "desire" as applied to PM.

To the sixth: This objection is partly right, but partly wrong. It is wrong in this, that PM is desire for form is prior to a discussion of form as its end.[89] However, to the extent that PM is ordered to the generation of the human form, this discussion involves metaphysics, for the human form is spiritual. Still, insofar as PM is discovered within the resolution of the aporia about change, and seeing "this nature" solves a Platonic error

86 See Scharle, "Synchronic Justification," 332, fn.9.

87 See St. Thomas, *In Phys.*, lib. 1, lect. 15, n. 10 (Leon.2.53-54).

88 Ibid.

89 See Aristotle, *Physics*, 2.8, 199a31-33. See Coughlin, "Appendix 5: The Final Cause in Nature," 244: "Finally, Aristotle argues that matter is ordered to form, and so, since matter and form are both nature, nature is both an end and is ordered to an end. That matter is ordered to form is clear from what we saw in Book I, namely, that matter is as such just an *ability for* form. If, as in natural changes, the form is a good for the thing which gets it (as I said, this is evident from induction), this will be a perfection of the thing, a perfection to which it is ordered as to an end." Perhaps this observation can be rephrased as follows: any *telos* in complete beings would be incoherent with a prime matter that did *not* desire form.

about the principles of becoming, the conclusion that prime matter desires form is made at a fitting place.

§4: Conclusion — The 'What-It-Wants-To-Be' of Prime Matter

It was argued that prime matter is the subject of substantial change as such. Its discovery does not solve the Eleatic problem about change, rather, the dissolution to the problem allows for its discovery. This occurred *via* distinctions made in *Physics* 1.7 that resolved the dialectical antinomy raised in 1.5-6. Prime matter as the *per se* subject of change was seen by removing the Parmenidean confusion of taking being and non-being *per se* with respect to the *termini* of change. I then argued for the full extent of the potency of prime matter, which entailed as an immediate consequence, insofar as the underlying nature is a co-principle that constitutes one being together with the form, that prime matter is ordered to form, and on this account is desire for form, or as Aristotle says, matter desires form, which certainly is divine.[90]

In itself, prime matter has no explanatory value, for one knows its potency only by seeing what is generated by nature. However, its discovery assures the physicist that his area of investigation, mobile being, is scientifically grounded in something real. The natural forms which are achievable by prime matter as their material principle are its "what it wants to be." This is not to say that prime matter is merely a confusion of forms that come from it (an Aristo-Anaxagorean prime matter). Rather, prime matter is the 'one' seed for all achievement according to *telos*, both within and at the limit of what can come to be by nature. Matter is the starting point, the goal is human soul.[91] Aristotle has made only the first beginning of the science of nature, but it is a scientific seed for the entire cosmic realm.

---

90 St. Thomas sees in this a scientific outline or seed for the *reditio* of the order of nature to God as first principle. *In Phys*., lib. 1, lect. 15, n. 7 (Leon.2.53): "*Divinum quidem* est, quia omnis forma est quaedam participatio similitudinis divini esse, quod est actus purus: unumquodque enim in tantum est actu in quantum habet formam." My emphasis.

91 See Charles de Koninck, *The Cosmos*, 263, "Form is matter's reason for being: potency is essentially ordered to act. Matter is thus a *need for form*. If it were indifferent to its reason for being, that would be contradictory. We say that matter is a desire for form, not a desire in the order of exercise, but a desire that is matter itself. This desire attains its goal in the eduction of forms, in the generation and achievement of the composite. . . ." 264, "The being in which resides the end of the cosmos must be both immobile and cosmic; both spirit and matter must be found in it, its essence must be composed of a spiritual principle which integrates the cosmos. The essence of the being that is the terminal point of the whole of nature will be composed of a spiritual form and prime matter. Man is manifestly the raison d'être of the whole of nature. Moreover, nature could not be ordered to God except through man. God being the end of the universe, it is necessary that the universe be capable of a return to its Universal Principle—of a *reditio ad principium*. But only an intellectual creature is capable of such a return." 302, "Evolution is the world's effort to communicate itself and thus to imitate its First Principle—*the Thought of Thought*."

Appendix: Prime Matter and Extension

Many scholars hold that Aristotle's prime-matter is extended in some way. Indeed, the desire to hold that something extended is either identical with (Descartes) or actually underlies substance (Newton) is strong in view of the goal of the mathematization of natural science. Hence, referring (I think) to the Platonists and Pythagoreans, St. Thomas points out that holding that quantity is substance is in a way reasonable, because quantity is the closest accident to substance and only it of the accidents can be divided *per se* into parts.† As for prime matter, some claim that it must be extended because of such passages as *Physics* 6.4, that all mobiles must be extended. See Byrne, "Prime Matter," 207-208. It is clear that all of the positions he lists about the requirements for bodies to act upon each other in generation and corruption are Aristotelian. (Byrne makes similar arguments from the prerequisites of substantially changing things later in the article, see 208-209, 211-13. He rehearses his position in "Matter and Aristotle's Material Cause," *Canadian Journal of Philosophy* 31.1 (2001): 85-111.) Matter, he holds, *qua* ordered to elemental generation and destruction, must have extension, divisibility, and mobility to be the perduring subject of change. The basic problem with this view is that it requires that what changes, precisely as subject to change, *not be changed*. It also makes the mistake of confusing what *happens* to a changing being insofar at it changes substantially (e.g., it is moved about in space) and what is *necessary* to the thing as a principle that allows for substantial change as such. Now, this is not to belittle those saying that the underlying nature was extended (e.g., Plato, St. Bonaventure, and Richard Sorabji). See also Sokolowski, "Substance in Aristotle," 278: "For Aristotle the underlying matter is simply formless, unqualified, space-filling stuff. Its extension is not an attribute, quality or predicate, but is as primary as matter itself." Sokolowski develops this position using *Metaphysics* 7.3, 1029a16-26 (see 276-77) and *Physics* 4.2, 209b5-11 and 4.4, 209b6-19 (see 277-78), concluding that a "non-extended matter," to Aristotle, would be a contradiction. See, however, Paul Studtmann, "Prime Matter and Extension in Aristotle," *Journal of Philosophical Research* 31 (2006): 171-84. Studtmann qualifies Sokolowski's position with regard to the proto-extended nature of the ultimate substratum. Prime matter is, 182: "that set of objects that results from de-structuring extension." He states, "I think that Sokolowski is right to think of extension as matter at some very basic level of hylomorphic analysis. But, unlike Sokolowski, I think that one can de-structure extension so as to arrive at prime matter that serves as the ultimate matter of a material composite." That is, extension is arguably too determinate, so instead, 179: "I suggest that we understand Aristotelian prime matter as the ontological correlate to the completely unstructured set of objects that is 'the matter' for the relations *defined on* them. It is the fundamental bare something or other that allows for the very possibility of extension at all. It would be, so to speak, the ground for any contentful mathematical structure that could characterize extension and hence the spatiality of material substances." That is, the individualization of the parts of an ordered extension could not explain themselves through their order (a problem Newton's account of absolute space encounters), and cannot be left merely unexplained. Studtmann's account of "prime matter" could be likened to St. Thomas' view of the principle of individuation, namely, matter *insofar as* it is subject to extension; see *Super Boetium de Trinitate*, q. 4 (Leon.50).

† See St. Thomas, *In Meta*., lib. 5, lect. 15, n. 983: "Sciendum autem est, quod quantitas inter alia accidentia propinquior est substantiae. Unde quidam quantitates esse substantias putant, scilicet lineam et numerum et superficiem et corpus. Nam sola quantitas habet divisionem in partes proprias post substantiam. Albedo enim non potest dividi, et per consequens nec intelligitur individuare nisi per subiectum. Et inde est, quod in solo quantitatis genere aliqua significantur ut subiecta, alia ut passiones."

+ Bibliography +

Aristotle. *On Coming-To-Be and Passing-Away*. Edited by H. H. Joachim. Oxford: Clarendon Press, 1922.

———. *Physics*. Translated by Hippocrates G. Apostle. Grinnell: Peripatetic Press, 1980.

———. *The Complete Works of Aristotle*. Edited by Jonathan Barnes, in two volumes, v. 2. Princeton: Princeton University Press, 1984.

———. *Aristotle's Physics: A Guided Study*. Translated by Joe Sachs. New Brunswick, NJ: Rutgers University Press, 2004.

———. *Physics or Natural Hearing*. Translated with notes and essays by Glen Coughlin. South Bend, IN: St. Augustine's Press, 2005.

St. Augustine. *De Natura Boni Contra Manichaeos*. In *Patrologiae Cursus Completus – Series Prima*, edited by J. P. Migne, t. 42. Paris: 1841.

Byrne, Christopher. "Prime Matter and Actuality," *Journal of the History of Philosophy* 33.2 (1995): 197-224.

———. "Matter and Aristotle's Material Cause," *Canadian Journal of Philosophy* 31.1 (2001): 85-111.

Charlton, William. "Prime Matter: A Rejoinder," *Phronesis* 28.2 (1983): 197-211.

Cook, Kathleen. "The Underlying Thing, the Underlying Nature and Matter: Aristotle's Analogy in Physics I 7," *Apeiron: A Journal for Ancient Philosophy and Science* 22.4 (1989): 105-119.

Graham, Daniel. "The Paradox of Prime Matter," *Journal of the History of Philosophy* 25.4 (1987): 475-490.

Hugo, Victor. *Les Misérables*. Translated by C. E. Wilbour. New York: Carleton, 1884.

King, Hugh R. "Aristotle without Prima Materia." *Journal of the History of Ideas* 17.3 (June 1956): 370-389.

Kelsey, Sean. "Aristotle Physics I 8." *Phronesis* 51, no. 4 (January 1, 2006): 330-361.

———. "The Place of I 7 in the Argument of Physics I." *Phronesis* 53 (2008): 180-208.

———. "Hylomorphism in Aristotle's *Physics*." *Ancient Philosophy* 30 (2010): 107-124.

De Koninck, Charles. *The Cosmos*. Translated by Ralph McInerny, in *The Writings of Charles de Koninck*, v.1. Notre Dame, IN: University of Notre Dame Press, 2008.

Plato. *Plato: Complete Works*. Edited by John M. Cooper. Indianapolis: Hackett Publishing Co., 1997.

Scharle, Margaret. "A Synchronic Justification for Aristotle's Commitment to Prime Matter," *Phronesis* 54 (2009): 326-345.

Sokolowski, Robert. "Matter, Elements, and Substance in Aristotle," Journal of the History of Philosophy 8.3

(1970): 263-288.

Studtmann, Paul. "Prime Matter and Extension in Aristotle," Journal of Philosophical Research 31 (2006): 171-184.

St. Thomas Aquinas. *In Metaphysicam Aristotelis Commentaria.* Edited by M. R. Cathala. Taurini: Marietti, 1835.

———. *Opera omnia iussu impensaque Leonis XIII. P. M. edita,* t. 2: *Commentaria in octo libros Physicorum Aristotelis.* Romae: Ex Typographia Polyglotta S. C. de Propaganda Fide, 1884.

———. *Opera omnia iussu Leonis XIII P. M. edita,* t. 23: *Quaestiones disputatae de malo*. Roma-Paris: Commissio Leonina-J. Vrin, 1982.

———. *Opera omnia iussu Leonis XIII P. M. edita,* t. 50: *Super Boetium De Trinitate*. Roma-Paris: Commissio Leonina-Éditions Du Cerf, 1992.