

## Epiphenomenalisms, Ancient and Modern

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[T]here is assuredly no more effectual method of clearing up one's own mind on any subject than by talking it over, so to speak, with men of real power and grasp, who have considered it from a totally different point of view. The parallax of time helps us to the true position of a conception, as the parallax of space helps us to that of a star.

—T. H. Huxley, "On the Hypothesis that Animals are Automata"  
(1901, 202)

Comme une corde de Violon, ou une touche de Clavecin, frémit & rend un son, les cordes du cerveau frappées par les raisons sonores, ont été excitées à rendre, ou à redire les mots qui les touchent.

—Julien Offray de La Mettrie, *L'homme machine* (1960, 163)

Stretch or contract me, thy poore debter:  
This is but tuning of my breast,  
To make the musick better.

—George Herbert, "The Temper" (1633)

Recent skeptics have asked, Could Aristotle's philosophy of mind still be credible? The answer to that question depends, quite obviously, on what one takes to be plausible in the philosophy of mind.<sup>1</sup> And the ground has shifted somewhat as a result of recent debates over mental causation. Nonreductive materialists appear to be caught in a dilemma. Either mental events cannot bring anything about in virtue of being mental, a position that resembles epiphenomenalism; or they can, in which case we seem to have the emergence of new nonphysical causal powers. But embracing

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I would like to express my profound gratitude to a number of individuals who have helped in the writing of this paper—especially Myles Burnyeat, Willie Charlton, Verity Harte, Jaegwon Kim, Geoffrey Lloyd, David Sedley, Richard Sorabji, and Bob Sharples—as well as audiences in Ann Arbor, Cambridge, Edinburgh, Helsinki, London, Sheffield, and Stanford. Although I cannot pretend to have satisfied all (or even many) of their objections, this piece is far, far better for their criticisms. I would also like to thank the National Endowment for the Humanities and Clare Hall, Cambridge for their extremely generous support during this project.

<sup>1</sup>*Pace* Burnyeat, who insists that Aristotle's philosophy of mind must be "junked" because his *physics* is hopelessly irreconcilable with our own "post-Cartesian" physics (Burnyeat 1992 and 1993; for a related view, see Code 1991, Code and Moravcsik 1992). See below, 338–39.

epiphenomenalism has always seemed anathema, except to the hard-hearted. The question is whether nonreductive materialists ought to feel any more comfortable in the arms of emergentists. Given certain widely shared assumptions, there is no third alternative.<sup>2</sup>

This debate, I shall argue, has everything to do with Aristotle. Aristotle raises the charge of epiphenomenalism himself against a theory that seems to have close affinities to his own, and he offers what has the makings of an emergentist response. This leads to controversy within his own school. We find opponents ranged on both sides, starting with his own pupils, several of whom are stout defenders of epiphenomenalism, and culminating in the developed emergentism of later commentators. Aristotle's theory and the debate that ensued are thus quite relevant to contemporary discussions. But first we need to get clear on terms.

### 1. Epiphenomenalisms and Emergentism

The textbook account of epiphenomenalism goes something like this. Although our thoughts, desires, and other mental states seem to affect what happens in the world, by bringing about changes in our behavior or subsequent mental states, this is *only an appearance*, cast off by the real physical sequence of cause and effect that underlies our mental life. Mental states, in and of themselves, are completely inefficacious. To use a favorite simile of nineteenth-century epiphenomenalists, our mental life is like a melody: beautiful, perhaps, but impotent and superfluous. The notes in a musical phrase follow each other temporally and melodically, but not as cause to effect. Each note is rather the effect of physical changes in the instrument, the sequence their aggregation. To assume there is causation between the notes themselves is just to commit the fallacy of *post hoc, propter hoc*. Nor does the melody have any effect on the instrument (although here the metaphor strains).<sup>3</sup> It

<sup>2</sup>One can escape the dilemma, of course, by denying one or more of these assumptions. But this turns out to be more difficult than it seems. See below, 315–18.

<sup>3</sup>Sounds surely have some direct physical effect on the instrument, which the comparison treats as negligible. In most cases, there will be also indirect effects, insofar as a musician will normally alter his playing as a result of what he hears. But this difficulty can be easily circumvented, by refining the example—consider a player piano instead.

is a mere concomitant of the real causal work and no part of its efficacy, like the shadow of a moving object, or foam on the crest of a wave, or the scream of a steam locomotive's whistle. These epiphenomenalists take Descartes's position a step further: if animals' behavior can be explained as though they were automata, without appeal to a separate substantial soul, so too can humans' behavior. Alongside *la bête machine* stands *l'homme machine*. Both are "conscious automata," and consciousness just a "secretion of the brain."<sup>4</sup>

<sup>4</sup>The technical use of 'epiphenomenon' and 'epiphenomenalism' is fairly late: according to the *OED*, we owe the term originally to William James (1981, 1.133). For much of the nineteenth century, it is referred to as "Conscious Automatism," made popular in the English-speaking world by Huxley (1901); but he derives it from Descartes's claim that animals are nothing more than automata or machines (part 5 of his *Discours sur la méthode*, AT 6.46, 55–56, 58–59; cf. also his replies to the fourth set of objections to his *Meditations*, AT 7.229–30). In calling animals "automata," of course, Descartes meant to *distinguish* them from humans as *nonconscious* beings. Huxley's innovation was to claim that humans and animals do not differ in this respect after all: both are conscious *and* machines (1901, esp. 238, 244). A similar claim had been made a century earlier, as Huxley well knew, by La Mettrie in his notorious *L'homme machine* (1960). But Descartes was already familiar with the idea himself: it had been raised against him in the fifth, sixth, and seventh sets of objections to his *Meditations* (AT 7.268–71, 414, and 490, respectively). References on the controversy over the Cartesian thesis of animal automatism until La Mettrie can be found in Rosenfield 1968, and on the controversy caused by La Mettrie's *L'homme machine* in Vartanian 1960 (chaps. 3–6). Still useful is Lange's *Geschichte der Materialismus* (1873–75).

Regarding the position itself, the clearest statements of epiphenomenalism can be found in Huxley (1901, 239–44) and Hodgson (1870, 1.335–38, 417–36). Both make clear that conscious states are *caused* by physiological states without having any further effects themselves. Elsewhere, Hodgson vacillates: in an earlier work, he thinks it is only true of *most* mental states (1865, 278–83), while later he obfuscates, claiming physical states are not *causes* of mental phenomena, but "real grounds," by which he seems to mean only a necessary condition (1898, 1.416–20, 2.282–88, 300, 318–19; cf. 1.327–33). La Mettrie, in contrast, openly refuses to say whether mental events are caused by physical events: "... quoiqu'il faille avouer que notre foible entendement, borné aux observations les plus grossières, ne puisse voir les liens qui régissent entre la cause & les effets. C'est une espèce d'*harmonie* que les Philosophes ne connoîtront jamais" (1960, 159–60). Well-versed in ancient philosophy, La Mettrie is clearly alluding to the *harmonia* theory of the soul we shall discuss below, in which case he may have been more comfortable with ancient and contemporary versions of epiphenomenalism than with that of Huxley and Hodgson.

Regarding the various similes for inefficacy, one finds the locomotive's

Stripped of its metaphors, we might represent the core position as follows. Call this idealization “classical epiphenomenalism”:<sup>5</sup>

- (1) Necessarily, all mental events are caused by physical events.
- (2) No mental event can cause anything whatsoever.

Superficially, these two theses concern the causes and effects, respectively, of mental states. But this antithesis masks the position’s underlying structure and motivation. The first proposition concerns the relation of the mental to the physical. Against substance dualism, it holds that the mental cannot occur separately from the physical: mental events *depend* on physical events, insofar as they are produced exclusively by them. The motivation for this usually issues from a more general view, according to which every effect throughout nature has a sufficient physical cause. Such a view

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steam-whistle in Huxley 1901 (240; cf. Bradley 1895, 177–78); the melody in Hodgson 1865 (279–80); the shadow in Ribot 1881 (3); the foam on the crest of a wave in Hodgson 1865 (279–80). James depicts epiphenomenalism as making awareness “a simple passenger in the voyage of life, [which] is allowed to remain on board, but not to touch the helm or handle the rigging” (1983, 38), though he concludes that we are not in fact “impotently paralytic spectators of the game” (61). Cabanis is responsible for the remark that thought is just “a secretion of the brain” (1956, 195–96), made infamous in the English speaking world by Carlyle’s satirical “Signs of the Times” (1888, 237–38). Paul Churchland has recently revived the tradition for colorful metaphors by suggesting that, on this view, conscious states might be thought of as “little sparkles of shimmering light that occur on the wrinkled surface of the brain” (1988, 11).

Huxley, we should note, also works out the position in terms of a clock simile (1901, 242), which occurs significantly in Descartes’s description of animals (*Discours* 5, *AT* 6.59). But the comparison of animal behavior to the functioning of a clock can already be found in Thomas Aquinas: as a clock, the product of human artifice, operates without choice, so too does an animal, the product of divine artifice (*ST* 1a2ae, q. 13, art. 2 ad3). This attitude contrasts significantly with Aristotle’s, who also compares animals to puppets—literally, τὰ αὐτόματα (*On the Motion of Animals* 7, 701b2). But his analogy is clearly meant to apply to *all* animals, including humans; and it only concerns the operation of the sinews and bones, not choice. For Aristotle’s view of action, see 330 below; on ancient automata, see Nussbaum 1976, 146–52; also Brumbaugh 1966, chaps. 3, 5, and 9.

<sup>5</sup>For the sake of simplicity, what follows has been formulated in terms of a “thick” conception of events (namely, concrete particulars that can fall under more than one type). Nothing hinges on this choice: parallel theses can easily be formulated for events conceived “thinly” (as property exemplifications). I have also treated the mental and the physical as jointly exhaustive classifications (but see 319, below), though this simplification can be forgone without affecting the substance of the positions.

straightforwardly excludes causes that are not physical (if overdetermination is ruled out); and classical epiphenomenalists may have thought this reason to take the stronger view that no mental event could be a cause. On their view, whatever appears to be produced by a mental event derives instead from a common causal ancestor, which is invariably physical. Mental events are thus “epiphenomena” in the original medical sense of the term: they are merely *symptoms* of our underlying condition.<sup>6</sup> They may prove reliable indicators of various changes, but they do not in any way serve to explain them.

Such a position cannot satisfy a physicalist, though, despite the motivations they share in common. The assumption that all causes are physical does *not* entail (2): a mental event *could* cause something, provided that it was *also* physical and physical events in general can be causes. (2) excludes this possibility: if no token mental event can cause anything, then it cannot be identical with any token physical event. This is not substance dualism, to be sure. But it is a strain of dualism nevertheless—call it “token dualism.”<sup>7</sup> This weaker form is problematic enough. If no token mental event is identical with any token physical event, then there will be some effects that are not physical at all. This anomaly violates the “causal closure of the physical”: it will not be the case that all and only physical events are causally related.<sup>8</sup>

Part of the difficulty here stems from taking the relation of the mental to the physical to be a *causal* relation. In the last twenty-five years, physicalists have flirted with a weaker relation, “supervenience,” which captures only the regularity with which the mental accompanies the physical. Supervenience is simply a form of (nonsymmetric) *covariation*: events that do not differ in one respect

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<sup>6</sup>See Nieke 1972, 586. Huxley explicitly invokes the character of mental states as symptoms or signs of physiological conditions (1901, 244; cf. 210).

<sup>7</sup>Type dualism—the thesis that mental types are distinct from physical types—is presupposed by epiphenomenalism too, as it is by most of the positions discussed here. It can, of course, be called into question (see 315–16 below).

<sup>8</sup>On the causal closure of the physical, see esp. Kim 1993b, 336–39; cf. 1984b/1993a, 96 and 106; 1989b/1993a, 280. (Note: Where Kim references are given as 19nn/1993a, the first date indicates the original publication date, and the date by which the work is ordered in the bibliography; ‘1993a’ refers to the collection in which the work was reprinted; page numbers refer to the reprinted version.)

could not differ in another; sameness in the first respect entails sameness in the second.<sup>9</sup> To say that the mental supervenes on the physical, then, is to say that any two events that do not differ physically cannot differ mentally. Supervenience has two important consequences. First, it permits *token monism*, the thesis that every mental event is also a physical event, a single event falling under *both* types. Second, it leaves open the possibility of *multiple realization*—namely, that events falling under a *single mental* type might nevertheless belong to *different physical types*—since supervenience only requires covariation in the other direction.

For our purposes, it is token monism that is more important. If all mental events are physical events, and all physical events can bring something about, then *mental events can too*—classical epiphenomenalism, that is, would be false. Yet one might be a monist and still have reservations about the efficacy of the mental. For if mental events were causes *solely* in virtue of being physical, and not at all *qua* mental, then it seems one could speak of the “efficacy of the mental” only by courtesy.<sup>10</sup> Much as in classical epiphenomenalism, it is the physical side of things that is responsible for doing the work: all effects are due to the normal aggregation of basic physical powers. Call this second position “contemporary epiphenomenalism”:

(1') *Supervenience of the mental*: The mental supervenes on the physical.

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<sup>9</sup>Being nonsymmetric, supervenience is *compatible* with the converse covariation, but does *not* entail it. More formally, for any two families of event-types,  $\Psi$  and  $\Phi$ ,

$\Psi$  supervenes on  $\Phi =_{df}$  Necessarily, if any two  $\Phi$  events agree in all their  $\Phi$ -respects, they cannot differ in any of their  $\Psi$ -respects.

This covariation is intended to hold “across worlds”—the events compared need not be present in the same possible world. Consequently, this formulation is equivalent to what is usually called “strong supervenience” (cf. Kim 1987/1993a, 81). For the classic account, see Kim 1984a/1993a; and on the difference between covariation and dependence, 1990/1993a, 142–49.

<sup>10</sup>I have left the locution “in virtue of” unexplicated here, since it will be given a different account by different theories of causation. But the core intuition is that a cause’s bringing about one effect rather than another must be *grounded* in some fact about the cause (for example, that one of its causal powers is operative, or that it is subsumed by the relevant causal law insofar as it falls under a certain type  $\mathcal{P}$ ). For further discussion, see McLaughlin 1989, 114–15.

(2') *Inefficacy of the mental*: No event can have any effect in virtue of falling under a mental type—every event must have all its effects *solely* in virtue of falling under a *physical* type.

As before, the first thesis states the relation of the mental to the physical, while the second states the way in which the mental is inefficacious. On this view, *token* mental events *can* be efficacious. They just cannot be efficacious *insofar* as they fall under a mental type: an event can be a cause *only qua* physical. Or, as we might also say, physical powers are the only genuine causal powers.<sup>11</sup>

It is crucial here to see that inefficacy does *not* follow from supervenience by itself—auxiliary assumptions are required regarding the nature of causation. That suggests a counterpart to contemporary epiphenomenalism, one which accepts supervenience, but denies inefficacy, even in this weaker form:

(1') *Supervenience of the mental*: The mental supervenes on the physical.

(not-2') *Efficacy of the mental*: Some events can have some effects in virtue of falling under a mental type.

On this view, the mental is efficacious. This should be understood in a robust, realist sense: it is not simply that there are forms of explanation that make reference to mental types or contexts where such reference is especially appropriate. Rather, causation itself is *grounded* in the cause’s falling under some mental type—by having a certain mental property, for example, or by being subsumed under a causal law because it satisfies a mental predicate. According to (1'), the mental types an event falls under are fixed by its physical types. Yet some of these mental types are efficacious: causal responsibility may be assigned to the upper level, so to speak, even though it supervenes on a lower one. *The ontological question of how types covary is distinct from the causal question of which types are responsible for the occurrence of certain effects.*

The key challenge for this alternative is to show how mental causation fits in with physical causation (if, indeed, it does). As formulated above, the efficacy of the mental is quite weak: it leaves open the possibility that any event that causes something in virtue

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<sup>11</sup>These two types of epiphenomenalism were first clearly distinguished by Broad (1937, 472–73). For an excellent discussion, especially with regard to Davidson’s position, see McLaughlin 1989 and 1994.

of falling under a mental type *also* causes it in virtue of falling under a physical type. On a reductionist theory, this would follow trivially: if mental types just *are* a kind of physical type, then every mental cause will act in virtue of “both” types—type dualism would be false. But if, as is generally acknowledged, mental types are *not* physical types, it becomes less clear whether mental causation can be maintained without great cost. Suppose that every effect has a *complete* physical cause, that is, a cause that *qua* physical is a minimal total cause—in short, that the physical is *causally comprehensive*.<sup>12</sup> Then it seems that physical causation will edge mental causation out. For unless mental causation always amounts to causal overdetermination, physical causation will either *preclude* mental causation or *subsume* it via reductions.<sup>13</sup> But systematic overdetermination is not only implausible; it renders minds no less superfluous than if they were epiphenomenal.<sup>14</sup> To make room for the mental, then, *without* reduction or overdetermination, the prerogatives of the physical must be curtailed.

The only alternative left is to deny the comprehensiveness of the physical and hold instead that some effects do *not* have complete physical causes. In such circumstances, the mental would not be

<sup>12</sup>A “minimal total cause” can be defined as follows: an event (or conglomeration of events) *c* is a *minimal total cause* of some effect *e* just in case *c* is a total cause of *e* and no proper part of *c* is a total cause of *e*. For more discussion of the comprehensiveness of the physical, see McLaughlin 1989, 111, and 1994, 283.

<sup>13</sup>Suppose mental causation is not precluded: let *c*<sub>1</sub> and *c*<sub>2</sub> each be an event or conglomeration of events, such that *c*<sub>1</sub> is, *qua* physical, a minimal total cause of some effect *e*, and *c*<sub>2</sub> is, *qua* mental, also a cause of *e* (whether partial or total). But then either (A) *c*<sub>1</sub> and *c*<sub>2</sub> do not overlap or (B) they do. If (A) *c*<sub>1</sub> and *c*<sub>2</sub> do not overlap, *e* is causally overdetermined: *c*<sub>2</sub> will be a part (proper or improper) of some minimal total cause of *e* which is not identical with *c*<sub>1</sub> or any part of *c*<sub>1</sub>. If (B) *c*<sub>1</sub> and *c*<sub>2</sub> do overlap, then either (i) *c*<sub>1</sub> = *c*<sub>2</sub>, or (ii) one includes the other, or (iii) they overlap without either including the other. (i) just amounts to reduction and (ii) implies it, at least as far as causal powers are concerned (either *c*<sub>2</sub> is identical with some part of *c*<sub>1</sub>, or some part of *c*<sub>2</sub> is identical with *c*<sub>1</sub> and thus with a minimal total cause of *e*). (iii) implies reduction or overdetermination, depending on whether the remainder *c*<sub>2</sub> - *c*<sub>1</sub> is part of a minimal total cause of *e*: if it is not, the overlap is all that is efficacious, and the case collapses to (ii); but if the remainder is part of some minimal total cause, it falls under (A) above. For different arguments in this vein, see esp. Kim 1989a/1993a and Block 1990; cf. Kim 1993a, 362–67 and 1989b/ 1993a, 279–84.

<sup>14</sup>See esp. Schiffer 1987, 147–48.

superfluous at all—it could make up for the inadequacy of the physical, either in whole or in part. Modifying (not-2’) accordingly, we arrive at the following:

- (1’) *Supervenience of the mental*: The mental supervenes on the physical.
- (2\*) *Downward causation*: Some events can have some effects in virtue of falling under a mental type; and some of these effects lack a complete physical cause.<sup>15</sup>

Call this “emergentism.” As before, the mental supervenes: once the physical character of events is fixed, so is the mental, including the possession of causal powers. But some of these powers will be nonphysical, and irreducibly so, for some of their effects will occur in the absence of a complete physical cause. Thus, even though determination always works “from the bottom up,” causation may not—in some cases, causation will run (at least in part) “from the top down,” from the supervenient level. Hence the tag “downward causation” found elsewhere in the literature.<sup>16</sup> (Strictly, though, (2\*) covers not only causation from the “top down,” but also causation from the “top to the top,” from the mental to the mental, as well as nonredundant cooperation between the “top” and the “bottom.”) Downward causation does not entail a ghostly hand reaching down from above: emergentism, for example, is a theory that requires the action of downward causation to supervene on physical events. It is simply that some effects lack a complete physical cause and so are not fully explicable by physical law. More technically, reduction will fail even if supervenience grounds bridge laws, because the laws of the higher domain will not be deducible from physical laws.<sup>17</sup> Purely causal considerations frus-

<sup>15</sup>The formulation of emergentism here differs from those of Kim (1992, 125–26), McLaughlin (1992, 83), and Beckermann (1992, 108–12), who require “unexplained” bridge laws to secure the irreducibility of the mental. On emergentism generally, see McLaughlin’s superb “The Rise and Fall of British Emergentism” (1992). For further bibliography, see Blitz 1992.

<sup>16</sup>See Campbell 1974, *passim*, but esp. Kim 1992, *passim*, and 1993a, 348–53.

<sup>17</sup>Against this, Nagel claims that once we have biconditional bridge laws, derivability follows trivially (1961, 355 n. 5; though contrast 390, 434–35). But his argument hinges crucially on the assumption that we can always *augment* the reducing theory so as to include images of the laws of the reduced theory. If, in contrast, we consider sciences to be *constituted* by

trate reduction, quite apart from epistemological, pragmatic, or teleological concerns. Physical determinism will thus be false, even if causal determinism remains true.

On this view, genuinely new causal powers *emerge* from a more basic level. Some might think such a view could only stem from our evolutionary belief that life and consciousness “arose from” purely inanimate origins. But emergence over time is not essential at all. The paradigmatic case for emergentists was not life, but chemical phenomena. And they did not believe chemical phenomena evolved from a time when there were only physical phenomena. Rather they claimed that chemical phenomena, while dependent on physical phenomena, had effects that could not be explained by basic physical laws. It is the difference in causation, and not time, that leads to emergentism’s layered metaphysical view.<sup>18</sup>

To make sense of this view, we have to distinguish what is *basic* from what is *irreducible*. A domain like the mental is not basic precisely because it supervenes on a lower domain, that is, a domain that does not supervene on it. Nevertheless, it is irreducible: some of its powers are just a brute fact about higher levels of organization<sup>19</sup>—as traditional emergentists were fond of saying, it is something we must accept with “natural piety.”<sup>20</sup> Such a theory can

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certain kinds of laws—for example, only those laws that govern a range of phenomena *even in the absence of phenomena from a higher domain*—then biconditional bridge laws will *not* in general guarantee derivability. And this is not an unreasonable way to individuate the sciences unless we are *already* committed to the unity of science.

<sup>18</sup>*Pace* Burnyeat (1992, 22–23) and Broadie (1992, 148–49). For the central concern with chemical effects, see Mill 1848, 3.6.210–15; Lewes 1875, 2.412–22; Broad 1937, 61–72. The preoccupation with evolution is late by comparison, due primarily to Alexander 1934 and Lloyd Morgan 1927. It is of course absent from the ancient emergentists—their main examples are chemical, too (see section 6 below). For work on other emergentisms in ancient Greek philosophy, see especially Mourelatos 1987 and Sedley 1988.

<sup>19</sup>This distinction effectively undermines a central claim of Code 1991 and Code and Moravcsik 1992, that mental powers are both irreducible *and* basic in Aristotle’s science. In fact, the very argument offered for their irreducibility (1991, 111; 1992, 139) presupposes that they are not among the basic powers of matter. See 337–39, below.

<sup>20</sup>The phrase is originally from Wordsworth, who uses it several times. I suspect Alexander had a particular passage in mind, though—one, ironically, from “Despondency,” the third book of *The Excursion*. Having earlier refused to question our ultimate origin and destination (3.232ff.), the passage continues: “Such acquiescence neither doth imply/In me, a meekly-bending spirit soothed/By natural piety; nor a lofty mind,/By philosophic discipline prepared/For calm subjection to acknowledged law” (3.264–68).

maintain that all events are physical events and that all the characteristics of these events, including causal powers, are determined by their physical characteristics. But on their own, physical powers do not bring about everything that occurs in the realm of nature. Some effects occur in virtue of supervenient powers that do not fall within the basic domain of physics. The price is that physics will no longer be a comprehensive theory. The physical remains the foundation for everything else; but causal powers at this basic level will not account for all that happens.

Though I have formulated these positions in terms of the mental and the physical, they can be generalized to any case where two apparently overlapping causal domains are involved: the physical and the chemical, or the chemical and the biological, and so on. This is crucial since the scope of the ancient debate is somewhat wider than the modern. Classical epiphenomenalism tends to focus exclusively on conscious states and qualia, while contemporary discussions include intentional attitudes more broadly. The ancient conception of the soul is wider still: it includes all vital processes, including growth, reproduction, digestion, and breathing as well. The difference between these phenomena will affect the soundness of some arguments. But the underlying structure of these positions remains the same. From here on out, I will use ‘mental’ as a catch-all to cover anything the Greeks would have related to the *psyche* or soul, without presupposing anything about its relation to the physical. No ordinary English term is broad enough, and the cognate ‘psychic’ rings all the wrong bells.

## 2. The *Harmonia* Theory of the Soul

For the remainder of this paper, our concern will be the fortunes of an ancient theory most often referred to by the analogy that was to serve as its emblem. The soul, according to this theory, is like the *harmonia* of a musical instrument, that is, its tuning or mode.<sup>21</sup> The metaphor immediately brings to mind the classical epiphenomenalists, who no doubt were alluding to these ancient texts; and both theories were introduced to combat substance du-

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<sup>21</sup>On the meaning of “ἁρμονία,” see esp. Meyer 1932; Barker 1989, 14–17; West 1992, 177–89; and Winnigton-Ingram 1936, *passim*; and Moutsopoulos 1959, 321–47.

alism and the immortality of the soul. But as natural as this link may seem,<sup>22</sup> it is not exact. Unlike a melody (μέλος), a tuning (ἄρμονία) is not an effect produced by an instrument, but a state of it.<sup>23</sup> Therefore, if the ancient theory is epiphenomenalist at all, it will ironically be a form of *contemporary*, and not classical, epiphenomenalism (see section 4 below). The ancient and contemporary forms even play a similar dialectical role in broader debates. Much as today, few in antiquity were brave enough to admit adherence to the theory. And yet it remained a persistent source of anxiety for materialists, who struggled to distinguish their own views from it. Their worry was not the mortality of the soul, but the inefficacy of the mental.

The first appearance of the theory we can identify with any certainty is also the most famous and influential. It is offered as an objection to Socrates' views in Plato's *Phaedo*. On his last day before execution, Socrates has been arguing that death is not to be feared, because the soul is immortal. The view he defends is a straightforward form of substance dualism. He argues that the soul existed prior to birth without the body (72e–77c), and that, because the soul is similar to the Forms—which are divine, invisible, and incorporeal—it is not destroyed at death (78c–81e). He even claims that, depending on the type of life one leads, the soul may be reborn into another body (81e–84b). Not all of his companions are convinced. The two Pythagoreans, Simmias and Cebes, each present alternative conceptions of the soul as counterexamples to Socrates' arguments (85e–88b). We are concerned only with Simmias's objection and Socrates' response to it.

Simmias objects that the “divinity” Socrates attributes to the soul does not guarantee its immortality:

[Your argument seems inadequate] to me, he said, in just this respect.

<sup>22</sup>Cf., for example, A. E. Taylor 1937, 194.

<sup>23</sup>The English ‘harmony’ is thus a false friend. The rare exceptions to this distinction prove the rule (see esp. Meyer 1932, 40–41 and 43–45). Alexander of Aphrodisias makes the relevant distinction when he observes that “the cithara's being in tune [ἡρμόσθαι] is not the same as that sort of thing's making a sound [ἡχεῖν]” (*On the Soul* 25.23–26.1). C. C. W. Taylor (1983, 218–19) denies “emphatically” that this could be what Plato had in mind, on the grounds that nothing nonphysical could be realized through a combination of physical things. But that sort of position is precisely what supervenience offers. See below, 000.

One might make the same argument about a tuning, a lyre, and its strings: namely, that the tuning—something invisible, incorporeal, excellent and divine—is in the tuned lyre, while the lyre itself and its strings are bodies—corporeal, composite, earthly, and akin to what is mortal. (85e4–86a3).<sup>24,25</sup>

If Socrates' argument were valid, the tuning should exist after the instrument has been destroyed, since it too is “divine” (86a3–b5). But obviously this is not the case. The tuning is the first thing to go, while the pieces of the instrument last for some time afterwards (86c2–d3). Similarity to the “divine,” therefore, is not sufficient to guarantee life after death. The tuning of the lyre is a successful counterexample.

It is not just a counterexample, though. Simmias takes the soul to be precisely this sort of thing, “as,” he says, “Socrates himself well knows” (86b5–7).<sup>26</sup> To make his metaphor more plausible, he explains in just what sense the soul is a *harmonia*. He takes it to be a “blending” or, better still, a “tempering” (κράσις) of elemental powers:

We positively believe that the soul is just this sort of thing: when our body has been strung taut and held together by the hot and the cold, the dry and the wet, and things of that sort, our soul is the tempering and tuning of these very things, whenever they have been tempered well against each other and in measure. (86b7–c2)

This equivalence between *harmonia* and *krasis* runs throughout the tradition. Simmias himself is happy to refer to the soul as just a tempering (86d2), as well as to speak of tunings not only in musical instruments, but “in everything made by craftsmen” (86c7). The Greek for tempering, “*krasis*,” is closer to *harmonia* than it might seem in English: “*harmonia*” derives from a verb for “fitting together” (ἁρμόζω), for joining things so as to adapt or accommodate them to each other.<sup>27</sup> This is especially true of opposed or

<sup>24</sup>All translations, here and in what follows, are my own.

<sup>25</sup>Gottschalk (1971, 181) claims without argument that Plato is “surely not referring to the state of tune of a lyre but to the musical sounds it produces,” even though he acknowledges that “ἄρμονία” should be translated as “attunement” in *Phaedo* 86b5–d3. All the *Phaedo* passages make perfect sense, however, with the common meaning “tuning.” (For a similar misreading of Aristoxenus, see n. 74 below.)

<sup>26</sup>The theory may possibly trace back to Philolaus, though the evidence is sparse. For an excellent reconstruction, see Sedley 1995.

<sup>27</sup>For the early semantic history of the term, see Ilievski 1993. I would

contrary forces, as Heraclitus's reference to the "backward-turning *harmonia* of the bow and the lyre" shows (DK 22 B 51)—indeed, in myth *Harmonia* is the daughter of Ares and Aphrodite, the product of their union (Hesiod *Theog.* 933–37). Tempering is not, then, an averaging of forces. It is the balancing of one against another so as to produce a dynamic whole. When that balance is lost in a given substance, that tuning "perishes," even though the same sort of tuning can still be realized in other things.

In poetry, moreover, the lyre is associated with life and vitality. The phrases 'without lyres' (ἀνευ λύρας) and 'lyre-less' (ἄλυρος) are used in tragedy to characterize gloom and death,<sup>28</sup> no doubt because lyres were widely associated with celebration, while only reed instruments were used in funeral dirges.<sup>29</sup> In myth, the lyre can even bring the dead back to life, as Orpheus used it to reclaim Eurydice from Hades. To compare the body to a lyre and the soul to its tuning is, to use Nietzsche's phrase, supremely life-affirming. It is fitting that Simmias uses this metaphor to reject the otherworldliness and immortality of the soul as Socrates conceives it.

Associations aside, however, it is worth paying closer attention to the metaphor itself. *For it essentially expresses a supervenience thesis.* A given tuning—for example, the Phrygian mode—occurs in an instrument *whenever* that instrument has been tuned in a particular way: in the case of a lyre, whenever the tension in each string bears certain mathematical ratios to the tension in others. The tuning is *not* caused by the instrument's physical state, but rather supervenes on it—and in a particularly strong way. Harmonics clearly supports the following sort of counterfactual: if a given lyre *were* in that physical state, it *would* be tuned to that mode, as a matter of nature. Tunings, moreover, are multiply realized. A lyre and a reed instrument can both have the same sort of tuning, even though their physical states are exceedingly different. There should be at least

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add that its early connection with bolts and pegs makes the later shift to the tuning of stringed instruments quite natural.

<sup>28</sup>Aesch. *A.* 993; Soph. *OC* 1222; Eur. *IT* 146, *Alc.* 447, *Hel.* 185, *Ph.* 1028. For related texts, see Barker 1984, 69–71.

<sup>29</sup>On the celebratory uses of the lyre, see especially chapter 1 of M. L. West's excellent *Ancient Greek Music* (1992). For the connection of reed instruments with funerals, see Maas and Snyder 1989, 80; also Denniston and Page 1957, 156 *ad loc.* 990.

as many physical realizations, in fact, as there are different methods of sound production.

### 3. Against Supervenience (Plato's Objection)

Of the many objections to the *harmonia* theory from Plato onwards, most regard it as a kind of category mistake. The soul is just not the right sort of thing to be a tuning, according to this line of criticism—their concepts exhibit different logical features. In an effort to turn up disanalogies, these objections take the metaphor quite literally; and in so doing, they overlook its central claim concerning the relation between the body and the soul.<sup>30</sup> This is not the case with another strand of criticism, which involves causation. Here the dialectic is more familiar. The issues revolve around supervenience, epiphenomenalism, and emergentism, and the worries are often similar to our own.

Socrates' causal complaints about the *harmonia* analogy stem from his own dualism and in particular his view that the soul governs the body and can oppose its appetites. A *harmonia*, in contrast, cannot. Its condition is always a consequence of the instrument's:

"But how about this, Simmias," he said. "Do you think it's characteristic of a tuning, or some other type of compound, to be disposed differently than the things from which it is composed?"

"No way."

"But then, I suppose, it doesn't do anything or undergo anything different from what they do or undergo." He agreed.

"Then it's not characteristic of a tuning to lead whatever it happens to be compounded from, but to follow." He concurred. (92e4–93a7)

There is an asymmetry, Socrates claims, between the tuning and the instrument: the tuning does not lead, but follows the instrument. In Greek, "to follow" (ἕπεσθαι) indicates consequence: if

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<sup>30</sup>These objections are important, however, for understanding ancient ontology, insofar as the contrast is usually with the category of substance. But "substance" (οὐσία) is used in extremely different ways. For example, while the soul is a "substance" for Aristotle, *qua* form of the body, it is nevertheless (a) dependent on the body; (b) not an ultimate subject of predication, being predicated of something else; and (c) not a proper (καθ' αὐτό) subject of psychological predicates (cf. Shields 1988b). Such a position is compatible with supervenience, moreover (see esp. Shields 1993, 164–65; cf. 1988a, 131–35). Categorical objections are thus not decisive for our concerns here.



such-and-such occurs, then something else follows, necessarily. This need not indicate causal consequence at all. It simply indicates a modal conditional, and the type of necessity involved might range anywhere from natural to metaphysical or even analytic necessity. In the case at hand, causal consequence is clearly not at issue. The instrument does not cause the tuning—in fact, Socrates distinguishes their “leading” and “following” (ἡγεῖσθαι/ἔπεσθαι, a5–6) from “what they do or undergo” (ποιεῖν/πάσχειν, a4). All he claims is that if the instrument does something or comes to be in a certain state, then the tuning does or suffers the same sort of thing, necessarily; the type of necessity here need be no stronger than natural necessity. What Socrates notices is that musical events—what a tuning produces or undergoes (94c3–7)—are not merely accompanied by physical events; their character *covaries* with the character of these physical events. Once the latter have been fixed, so have the former, as a matter of nature. What Socrates recognizes, in short, is that musical events supervene on physical events.<sup>31</sup>

Things are otherwise, Socrates believes, with the soul. His chief argument is drawn from the conflict of desires. On some occasions, there is a sense in which I both want and do not want the same thing; and Socrates analyzes this as a difference between what my body wants and what my soul wants (94be). On other occasions, they will agree on what they want, and this Socrates describes as their “doing or undergoing the same thing,” that is, being in the same type of state. It is questionable whether Simmias should agree to this analysis, or indeed whether Plato is entitled to it given his own views in the *Republic*: Simmias ought perhaps to analyze it as a conflict between different parts of the body, and Plato as a conflict between parts of the soul.<sup>32</sup> But the whole issue of psychological conflict is in a sense incidental. The essence of Socrates’ objection relies on a much more general point. Consider some total

<sup>31</sup>Socrates’ insistence that the tuning does not undergo “anything different” from what the parts of the instrument undergo (a4) might be thought to suggest an identity theory of some sort—cf. Charlton 1985, 132. But identity is a symmetrical relation; and so, on that reading, the *instrument* would have to follow the tuning as well—the tuning, that is, would have to “lead” the instrument, contrary to what Socrates in fact claims (93a6).

<sup>32</sup>See Bostock 1986, 131–33; also C. C. W. Taylor 1983, 229.

state of the body, *G*, and some state *F*. The following, he believes, will both be true at a given time:

- (i) It is possible that the body is in *G* and the soul is in *F*.
- (ii) It is possible that the body is in *G* and the soul is in  $\sim F$ .

The soul’s condition is not determined by the condition of the body: the total state of the body remains fixed across (i) and (ii), while the state of the soul varies. With tunings, in contrast, such variation is not possible. Only the following holds:

- (iii) Necessarily, whenever the instrument is in state *G*, the tuning is in *F*.<sup>33</sup>

Psychological conflict is thus used as a counterexample to the supervenience of the mental on the physical. But Socrates might have chosen a less elaborate one. So long as there are cases that simultaneously fit (i) and (ii), the soul does not supervene on the body.

This gives Socrates the following valid argument against the *harmonia* theory:

- (A) If the soul is a *harmonia*, then mental events supervene on physical events.
- (B) But mental events do not supervene on physical events.
- (C) Therefore, the soul is not a *harmonia*.

Socrates’ evidence for (B) is controversial; and if he has nothing better to offer, his argument will have little probative value. But he probably would have insisted on the counterexample. For he could use the same account of conflict to argue that the soul is a separate substance from the body: if the body and the soul can be in incompatible states, *F* and  $\sim F$ , at the same time, then they cannot coincide in any way—such states can only belong to distinct subjects. Plato does not in fact make this argument for dualism, nor

<sup>33</sup>The instrument and tuning will “agree,” moreover, since *F* will always be the same type as a proper part of the total state *G*. Socrates argues that this holds not only for tunings, but “for any other compound” (ἢ ἄλλη τι πὺ συνθέσει, 92e4–93a1): no compound can possess any property beyond what the aggregate of its constituents already possesses—in short, there are no emergent properties. For an ancient rebuttal, framed in similar language, see Galen’s response in the appendix below (esp. *On the Elements according to Hippocrates* 70.18–19 De Lacy; = 1.428 Kühn). On the role of aggregation in emergentism more generally, see esp. McLaughlin 1992, *passim*.

does it follow from the denial of supervenience alone. But it may explain why he chose the example he did.

Plato's actual position is more radical still. Later in the *Phaedo*, Socrates complains that no physiological account could adequately explain why he was sitting in prison: physiological conditions are at most a *sine qua non* of his being there (99ab). According to Socrates, it is only his belief that it is better to obey—an intentional state—that serves as a genuine explanans. If he lacked this belief, he jokes, his sinews and bones would have fled prison long ago, led by the contrary belief (99a). He thus accepts downward causation, as a dualist should. To his mind, in fact, the explanation of behavior is *always* from the top.

#### 4. Against Inefficacy (Aristotle's Objection)

It is important to notice that epiphenomenalism has not yet become an issue. Insofar as Simmias's theory is committed to supervenience, it shares something in common with contemporary epiphenomenalism. But strictly speaking, he says nothing about the inefficacy of the mental. And Socrates' criticism can be read in either way. As literally stated, it suggests that tunings *are* efficacious: whatever the instrument does, the tuning *does* as well. But then again, Socrates' point might just be that the tuning's "doings" are nothing over and above the instrument's—of course the tuning "does" what the instrument does. The key question is whether the instrument does anything in virtue of its tuning, or whether everything it does, on the contrary, is done solely in virtue of the bodily forces so attuned. The *Phaedo* just doesn't say.

Aristotle is the first, in fact, to charge the theory with epiphenomenalism. Most of his other criticisms are of the category-mistake sort, both in the *Eudemus* (an early dialogue modeled on the *Phaedo*, frs. 37–47 Rose<sup>3</sup>) and in his mature treatise *On the Soul*. But near the beginning of his critique in *On the Soul*, Aristotle advances an entirely new line of attack, against the inefficacy of the mental. Its consequences are surprising and therefore repay close attention:

Furthermore, effecting change is not a characteristic of tunings; but practically everyone assigns this above all else to soul. It is more in tune to predicate tuning of health and the excellences of the body in general than to predicate it of soul—this is completely obvious if any-

one tries to account for the actions and passions of the soul by means of a kind of tuning. For it is difficult to bring it in tune. (1.4, 407b34–408a5)

Apart from this uncharacteristic display of wit, Aristotle is quite plain. The soul cannot be a tuning because, unlike a tuning, the soul *is* efficacious: as "practically everyone" agrees, it can "effect change" (κινεῖν). At first, this sounds as if he thought the soul were an agent itself. But Aristotle does not believe the soul "effects change" by pushing things around. That is Democritus's theory, which he ridicules: the soul would be just like the quicksilver Dædalus poured into a wooden statue of Aphrodite to move its limbs (1.3, 406b15–22). Incorporalist versions fare no better (1.4, 409a10–30). In Aristotle's view, the soul does not produce change in this way, but in virtue of its mental states: "through a given choice or thought" (διὰ προαιρέσεώς τινος καὶ νοήσεως, 1.3, 406b24–25). The soul is only an "unchanged changer," an explanans for *general* patterns of behavior and activity, *not* individual changes: it is a *standing* cause, rather than a triggering one. The triggering causes are the mental states an animal undergoes—thinking, being appeared to, choosing, wishing, and wanting—which Aristotle classifies as "changed changers";<sup>34</sup> in fact, he describes desire as the "proximate explanans of change"<sup>35</sup> and choice as the "origin of change" or efficient cause of individual actions.<sup>36</sup> Both types of changer "effect change" in *some* sense. But the agent, strictly speaking, is the animal or human, who acts *with* his soul (cf. τὸν ἀνθρώπου τῆ ψυχῆ, 1.4, 408b14–15), bringing about individual changes in virtue of his mental states.<sup>37</sup>

To say, then, that tunings do not effect change is not just to claim that the tuning is not an agent—for the soul is not an agent either. It is to claim more strongly that tunings lack efficacy. Tuned instruments, of course, have effects. But none of their effects occur

<sup>34</sup> *On the Soul* 3.10, 433a9–13, b14–18, b27–30 and *On the Movement of Animals* 6, 700b17–19, b35–701a1; 10, 703a4–6; cf. 8, 702a11–21; 11, 703b18–20.

<sup>35</sup> *On the Motion of Animals* 7, 701a35. Cf. *On the Soul* 3.10, 433a31–b1, b27–30.

<sup>36</sup> *Nicomachean Ethics* 6.2, 1139a31–33; cf. 3.1, 1111a22–23.

<sup>37</sup> Against Granger 1990, 39. I am in agreement with Frede (1992, 95–96) when he argues that the soul is not an agent, but not when he claims the soul has nothing to do with causation in our sense.

in virtue of the tuning itself—their effects occur solely in virtue of the instrument’s physical powers. Any effects that might be attributed to differences in the tuning will always be due instead to differences in the underlying physical states of the instrument. Thus, while differences in tuning covary with the relevant physical differences, the former do not themselves enter into the causal laws that govern an instrument’s behavior. Aristotle does not say why he believes this. But if true of tunings in general, it would commit the *harmonia* theory to contemporary epiphenomenalism.

All this is enough to give Aristotle the following valid argument against the *harmonia* theory:

- (D) If the soul is a *harmonia*, then no behavior occurs in virtue of mental states.
- (E) But at least some behavior occurs in virtue of mental states.
- (F) Therefore, the soul is not a *harmonia*.

In the passage quoted above, however, Aristotle seems to have something even stronger in mind. He intimates that the “actions and passions of the soul” cannot be explained by the body’s tuning, even if health and other bodily excellences can. On the face of it, this denial is total: it suggests that an account that assigns *any* causal responsibility to the body—and not merely those that assign *complete* responsibility—will be inadequate. But there is no need to insist on the stronger reading. Even if we construe it only as the weaker claim that

- (G) Some behavior lacks a complete physical cause

it reasonably follows that Aristotle is committed to downward causation.

To some, this result might seem unduly strong. After all, Aristotle defends explanatory pluralism in his doctrine of the four “causes” or, better, explanantia (αἰτίαι)—why should mental causation lead him to exclude a complete physical cause? But in fact the compatibility of material, formal, final, and efficient causal explanations is irrelevant here: we are concerned with only one of these, efficient causal explanation. The only relevant question, therefore, is whether Aristotle allows multiple efficient causes. And while he permits multiple descriptions of a given efficient cause, he sharply

distinguishes those that are accidental (κατὰ συμβεβηκός) from those that are properly stated (τὰ οἰκείως λεγόμενα)<sup>38</sup> and insists that our inquiries should concern proper descriptions stated in their most specific form.<sup>39</sup> To deny (G) in the relevant sense, then, Aristotle would have to hold that bodily states are always *properly* described as complete efficient causes of behavior, even if on some occasions mental states can be so described as well—for (G) to be false, that is, a bodily state could never be a merely accidental cause.<sup>40</sup>

Aristotle is plainly committed to (G), though. His most explicit statements concern a case we would be reluctant to describe as “mental,” but which he believes is due to the soul, namely, the organic unity or integrity of a living body. It is all the more striking, then, that he takes this to be a case of downward causation. Aristotle claims that the elements composing a plant should tend to separate in virtue of their elemental natures. On his theory, fire tends upwards and earth downwards, unless something prevents it (*On the Soul* 2.4, 416a6–7); and he does not think that in this case the elements counteract each other.<sup>41</sup> But plants don’t explode—they remain intact. Aristotle concludes from this that it is the soul which keeps them from flying apart (416b8–9; 1.5, 411b7–9). In contrast, when the elements start to reassert themselves and tend towards their natural places, our mental powers deteriorate and become decrepit (*On the Heavens* 2.6, 288b13–18). Healthy organic functioning thus occurs *in spite of* the elemental powers, *not* in virtue of them: it occurs solely in virtue of the soul. One could not ask for clearer evidence of downward causation.<sup>42</sup>

<sup>38</sup> *Physics* 2.3, 195a32–b12; *Metaphysics* 5.2, 1013b34–1014a15.

<sup>39</sup> *Physics* 2.3, 195b21–25; cf. *Metaphysics* 8.4, 1044b1–2.

<sup>40</sup> As Nussbaum once claimed (1978, 88, 152–53, 188; though see n. 48 below). Sometimes Charles denies (G), holding that psychological processes are causally efficacious for Aristotle *only* in virtue of the bodily state underlying them, and so construing the mental causation mentioned in (E) as merely accidental (1984, 234–35). But at other points he seems to allow (G)—cf. 240–41.

<sup>41</sup> His view is thus precisely contrary to what Simmias had claimed (ὡς περ ἐντεταμένον τοῦ σώματος ἡμῶν καὶ συνεχόμενον ὑπὸ θερμοῦ καὶ ψυχροῦ καὶ ξηροῦ καὶ ὑγροῦ καὶ τοιούτων τινῶν, *Phaedo* 86b7–9).

<sup>42</sup> Code (1991, 111; Code and Moravcsik 1992, 139) rightly argues that these cases commit Aristotle to causal powers that cannot be *reduced* to elemental forces. But it is wrong to infer that these powers are therefore *basic* (see n. 19 above and 337–39 below).

In the case of action, Aristotle is again careful to differentiate the roles of the body and the soul. Most of the bodily motion involved in action is simply a consequence (τὸ κινούμενον)<sup>43</sup> and therefore as external to the basic action as a stick or rudder is to the hand.<sup>44</sup> Aristotle even compares the muscular and skeletal apparatus to the strings and pulleys of an automaton, which from an initial impulse carries out a complex sequence of motions on its own (*On the Motion of Animals* 7, 701b2–32). The crucial question, therefore, concerns the nature of this initial impulse, the “changed changer” (τὸ κινῶν καὶ κινούμενον, *On the Soul* 3.10, 433b15–18) that gets the subsequent changes going. Aristotle consistently identifies this changed changer in mental terms, as a combination of desire and thought or phantasia—they are the efficient cause, properly described.<sup>45</sup> Naturally, these changes entail a concurrent bodily change, which in turn affects the muscles (*On the Motion of Animals* 10, passim, but esp. 703a4–6). But these changes are not on a par. Aristotle treats the bodily change as an *instrument* (ὄργανον) of the mental change,<sup>46</sup> “that by which” desire effects change (ἄ κινεῖ),<sup>47</sup> something which he distinguishes sharply from the changer itself (433b13–18; cf. *On Youth and Old Age* 4, 469b1–2). Voice, for example, is produced when part of the animate body strikes the larynx with inhaled air; but the striking itself is due to the soul (ὑπὸ τῆς ψυχῆς) via phantasia (*On the Soul* 2.8, 420b27–421a1). In such cases, bodily changes do not as such constitute a complete cause; it is rather mental changes *qua* mental that properly speaking are the cause. Aristotle thus accepts downwards causation in the case of action, too.<sup>48</sup>

<sup>43</sup> *On the Soul* 3.10, 433b14, 19; cf. *On the Motion of Animals* 6, 700b35–701a1; 8, 702a17–21.

<sup>44</sup> *On the Motion of Animals* 8, 702a32–b11; cf. *On the Soul* 3.10, 433b18.

<sup>45</sup> See esp. *On the Motion of Animals* 6, 700b17–20; cf. *On the Soul* 3.10, 433a9–20. Neither thought nor phantasia can produce motion by themselves (433a21–30).

<sup>46</sup> *On the Motion of Animals* 10, 703a20; cf. *On the Generation of Animals* 5.8, 789b7–12.

<sup>47</sup> *On the Soul* 3.10, 433b19–27 (cf. 2.4, 416b20–27); *On the Motion of Animals* 10, 703a28–29. In nourishment and growth, elemental forces are also instrumental (συναίτιον, *On the Soul* 2.4, 416a8–18; χρωμένῃ οἴον ὀργάνοις, *On the Generation of Animals* 2.4, 740b29–34). More generally, Aristotle says the soul *uses* (χρησθαι) the body to implement mental causation, just as tools are used to implement the principles of an art (*On the Soul* 1.3, 407b25–26; cf. 2.4, 415b18–20; *On the Parts of Animals* 1.1, 642a12).

<sup>48</sup> I thus agree with Nussbaum (1986, 277–81) when she argues against

None of this need violate the causal closure of the physical: it may still be the case that only physical events cause other physical events. What downward causation violates is rather the comprehensiveness of the physical: in Aristotle’s terminology, it would not be the case that every efficient cause of behavior *qua* physical is its cause properly speaking. Aristotle may simply hold that some psychophysical events, rather than being ghostly hands reaching down from above, are causes *qua* mental, even in the absence of complete physical causes.<sup>49</sup>

It is therefore significant that in his criticism of the *harmonia* theory Aristotle does not challenge supervenience. Unlike Plato, he has no objection to so intimate a relation between the mental and the physical. On the contrary, he insists on a form of token monism.<sup>50</sup> It is not simply that in mortal creatures all mental states, including thinking, require “the action or passion of the body” as a necessary condition (*On the Soul* 1.1, 403a3–19). The best definitions of states like anger identify their instances as instances of bodily changes, as well as instances of intentional states (403a24–b1), the two types being related as matter to form (403ab1–b9). In general, body and soul are one in the way a piece of wax and its shape are one, that is, as matter and form (2.1, 412b6–9).

Plato and Aristotle thus find contemporary epiphenomenalism unacceptable for quite different reasons. Plato rejects supervenience in general, and so (1’) above; while Aristotle targets (2’), namely, the inefficacy of the mental. Plato no doubt finds (2’) objectionable as well—as a dualist, he is also committed to downward causation. But Plato has ontological worries about the mental

her 1978 (see n. 40 above). She puts the position forcefully: “the physiological story not only does not, but, given Aristotle’s overall view of explanation, *could not*, provide a causal explanation of an action . . . this is no philosophical problem for Aristotle, who sees the philosophical issues more clearly than his reductionist opponents, both ancient and contemporary” (1986, 278, my emphasis).

<sup>49</sup> Again, cf. Nussbaum 1986, 281: “This division of questions need not presuppose or imply any form of dualism: it need not imply that *orexeis* are odd sorts of non-physical substances, or that the activities of the animal are not in every concrete case realized in some suitable matter or other. It simply recognizes that desires and cognitions, not physiological states, are the proper causes of the action.”

<sup>50</sup> Against Charles (1984, 221–24), Shields (1988a, passim; 1993, 157–72), and Heinaman (1990, 92–99), all of whom take Aristotle to deny token identity, even while accepting supervenience (for most mental states).

and the physical that Aristotle does not share. Aristotle's primary concern is to secure the efficacy of the mental in a strong sense, without reduction. He does not find supervenience a threat at all.

### 5. Aristotle and Emergentism

All of this suggests that Aristotle might tend towards an emergentist solution, that is, one that accepts downward causation while upholding the supervenience of the mental.<sup>51</sup> As we have just seen, he is committed to monism as well as to downward causation. But as regards supervenience, he is not as forthcoming as some have thought;<sup>52</sup> at any rate, it is not something he emphasizes. He does say enough, however, to commit himself to it; and this strongly suggests that emergentism captures the underlying structure of his position. The evidence for supervenience is of two sorts: (I) concerning the relation of mental states to physical states, and (II) concerning the relation of the soul to the body.

(I): Aristotle clearly believes that at least some mental events supervene on physical events. While arguing that the body always undergoes something during a passion (*On the Soul* 1.1, 403a16–19), he offers three pieces of evidence:

The following indicates this is the case. (1) At times we are not irritated or afraid, even though powerful and manifest provocations<sup>53</sup> occur, while (2) at other times we are moved by trivial and faint ones,

<sup>51</sup>Aristotle has recently been dubbed an “emergentist” by Heinaman (1990, 90–91), Robinson (1991, 221, 223), and Scaltsas (1994, 208–9), but apart from nonreductivism, all mean something quite different from what is meant here. Heinaman requires that the mental be dependent on the physical, but he does not specify this more than to say that the physical provides necessary conditions and in some cases supervenience (cf. 98 n. 30). Robinson takes Aristotle to deny supervenience: the body provides merely necessary, and not sufficient, conditions for the soul. Scaltsas, in contrast, requires supervenience but not downward causation—in fact, he actually assimilates the soul on Aristotle's conception to the tuning of the lyre.

<sup>52</sup>See Charles 1984, 214, 246; Shields 1988a, 106, 131–34; 1993, 164–65; Wedin 1992. Charles (1984, 255) and Shields (1990, 381–82) in fact are willing to extend supervenience to form/matter relations generally. (Shields sometimes concedes that not all mental states supervene, though; cf. his 1993, 165.) This line of interpretation has been criticized vigorously by Granger 1990 and 1993 and by Robinson 1991; cf. also Burnyeat 1992, 23.

<sup>53</sup>On the translation of παθημάτων, see Hicks 1907, 198 *ad loc.*

[for example] whenever the body swells and is in the same state one is in whenever one is angered. But (3) the following is clearer still: even though nothing terrifying is happening, people have the passions of a frightened person. But if so, then evidently the passions are enmattered reasons. (403a19–25)

In each case, external stimuli fail to determine our mental state. Aristotle concludes from this that our passions must somehow be encoded in our body, as “enmattered reasons” (λόγοι ἐνυλοί).

The first case shows that stimuli that ordinarily provoke anger or fear do not do so on all occasions. This mental difference is due to a difference in our internal bodily states: if our body is not in a certain state, we do not become angry or afraid, no matter how powerful the external stimuli. Being in such a bodily state is thus at least a necessary condition for the passion in question. The second case demonstrates slightly more. Whenever we are in a certain bodily state—the same bodily state, in fact, we are in whenever we are angry—we respond to stimuli we would not otherwise react to. Here the external stimuli would not ordinarily trigger the passion in question. But our bodily state is sufficient to make us respond.<sup>54</sup> The only question left is whether the bodily state is sufficient by itself, even in the absence of such “trivial and faint” provocations.

The last case clinches it. Without any object of the appropriate sort nearby, we can still become afraid<sup>55</sup>—in fact, what we are afraid of may never exist, as when a child is afraid of ghosts. This case

<sup>54</sup>Against Burnyeat (1992, 23) and Heinaman (1990, 101), who have both argued that this case implies a *denial* of supervenience, because it shows that one can be in the same bodily state one is in when one is angry without actually being angry. But Aristotle's contrast is between (i) the ordinary case where we do not become angry when confronted with “trivial and faint” provocations and (ii) the case where we do get angry because in this case our body is in the same state as when we are angry. He thus does not say that we can be in the same state as (ii) and fail to be angry, as Burnyeat and Heinaman claim; on the contrary, the absence of anger in (i) seems to be due to the absence of that bodily state. But if so, the mental does covary with the physical.

<sup>55</sup>The phrase “they have the passions of a frightened person” (ἐν τοῖς πάθεσι γίνονται τοῖς τοῦ φοβομένου) is just a pleonasm for “they are afraid.” In the Aristotelian corpus generally, “ἐν τοῖς πάθεσι” signifies occurrences of a passion *simpliciter*, and not merely the bodily affects of a passion. When Aristotle wants to signify just the bodily affects, as at *Polit.* 8.5, 1340a34–35, he adds an explicit restriction mentioning the body (ἐπὶ τοῦ σώματος ἐν τοῖς πάθεσιν, following the mss.).

shows that internal conditions are sufficient by themselves for intentional states like fear, even in the absence of external stimuli. Aristotle draws a stronger conclusion, though—namely, that the relevant *bodily* states are sufficient on their own. These bodily states encode intentional content in matter, so that whenever we are in that bodily state, we are in the corresponding mental state, necessarily. Passions can thus be understood to be “enmattered reasons,” the grounds and causes of future action.<sup>56</sup>

Aristotle does not explicitly extend this claim to other mental states. But he immediately proceeds to discuss how mental states should be defined quite generally, using this analysis as a basis (403a25–b9). This suggests he might be willing to accept that all mental states found in mortals supervene, including thought. Nothing he says is incompatible with this.<sup>57</sup>

(II): Aristotle also seems committed to the supervenience of the soul on the body. The core notion of supervenience is easily adapted for covariance in other domains.<sup>58</sup> Let us say that souls supervene on bodies just in case there can be no difference in the type of soul involved without a corresponding difference in the type of body—necessarily, if there are bodies of a given type, there will be souls of a certain type belonging to their composites as well.

Aristotle is straightforwardly committed to such covariation. He criticizes his predecessors for not explaining why a certain sort of soul occurs in a certain sort of body, for not being concerned with how these types *covary*—they act as if it were possible for “any chance soul to pass into any chance body” (1.3, 407b20–23; cf. 15–

<sup>56</sup>I am grateful to Amy Meselson for extremely valuable comments on this passage (personal correspondence).

<sup>57</sup>The intellect has sometimes been thought to pose a counterexample to supervenience (for example, Robinson 1991, 211; Shields 1993, 165). But against this, see Charles 1984, 219 n. 15. The intellect differs from other mental powers in lacking a specific organ as the center of its activity. Unless Aristotle believes there could be something exactly like a human in all other respects, but lacking this power—as I doubt he would—then he must allow the ability to think to supervene on the body as a whole. The activity of thinking would supervene in the same way: thoughts supervene on the entire bodily state, either at a time or up to and including that moment. In contrast, the so-called “agent intellect” mentioned in *On the Soul* 3.5 is just God and so does not belong to human psychology; see my 1996.

<sup>58</sup>See esp. Kim 1988/1993a; also the appendix of Caston 1992 for various applications to Aristotle.

16). But obviously this is not the case. “Each body,” he says, “seems to have its own form and structure” (407b23–25), which Aristotle later identifies with the soul. Assuming this is not a merely contingent truth, it follows that type-identical bodies cannot have different types of soul: a certain type of body is always accompanied by a certain type of soul, necessarily. Souls thus supervene on bodies. In fact, Aristotle argues that such a relationship (κοινωνία) between bodies and souls is necessary, if mental causation is to be possible at all (407b17–19).

More generally, Aristotle believes that bodily states provide non-trivial sufficient conditions for the generation, persistence, and demise of individual souls. In *Physics* 7.3, he explicitly states various supervenience claims.<sup>59</sup> His claim about substances is especially relevant:

It would be absurd to claim that a human, a house, or anything else that has come to be had been altered, though it is probably necessary that *each comes to be whenever something alters*, such as when the matter condenses, rarifies, heats or cools. (246a4–8, my emphasis)<sup>60</sup>

If the generation of a living animal, such as a human, supervenes on such changes, *a fortiori* the generation of its soul will as well: on Aristotle’s view, the living animal cannot exist without a soul and

<sup>59</sup>Wedin 1992 argues that *Physics* 7.3 commits Aristotle to strong psychophysical supervenience. While I agree that Aristotle is committed to such a position in general, I have argued elsewhere that this passage on its own is not sufficient to guarantee that: it states several weak supervenience theses and never extends them to the supervenience of everything mental on the physical (see Caston 1992). The worries I raised there about reduction, however, can be answered: if I am right that Aristotle accepts downward causation, he will be committed to the denial of reduction even if he accepts strong supervenience, *without having to appeal to any considerations beyond the efficient causal story*, such as, for example, teleological or epistemological considerations. See 317–18 above.

<sup>60</sup>The changes in matter are expressed here by a genitive absolute, while the supervenient consequences are said to occur “necessarily” (ἀναγκαιῶν), a construction we find elsewhere in Aristotle to express the same idea, most importantly at *Post. An.* 2.11, 94a21–22, but also, for example, at *On the Parts of Animals* 4.2, 677a18. Whether we take the genitive absolute to have conditional, causal, temporal, or circumstantial force, in each case it implies at the very least a material conditional with the genitive absolute serving as an antecedent; and the addition of the word ‘necessarily’ transforms it into an entailment. Aristotle himself compares such conditions to the way the premises in a valid deductive argument entail their conclusion (*Phys.* 2.3, 195a15–18; *Metaph.* 5.2, 1013b17).

the soul cannot exist in actuality prior to the living animal (*On the Generation of Animals* 2.1, 735a6–7). The specific alterations he mentions, moreover, evade familiar homonymy problems,<sup>61</sup> since the matter that is heated or rarified in the production of the living animal is not the animal's living body, but matter that pre-exists it. Independently identifiable bodily changes thus constitute a sufficient condition for the generation of the soul.<sup>62</sup>

But bodily states also provide sufficient conditions for the soul's demise as well as its continued existence. Since the soul is in the body naturally, it perishes whenever the body perishes (φθείρεται φθერიομένου σώματος, *On the Length and Shortness of Life* 3, 465a27–31), specifically whenever the natural heat of the body—which Aristotle identifies with ordinary fire<sup>63</sup>—is extinguished or otherwise made sufficiently cold.<sup>64</sup> Finally, whenever the soul ultimately “departs,” the body begins to decay and rot,<sup>65</sup> changes that properly speaking belong to an inanimate body, the corpse (*Meteorology* 4.1, 379a11–b8; *On the Parts of Animals* 1.1, 641aa19–21). But then the absence of such changes from the living body constitutes a non-trivial sufficient condition for the persistence of the soul. In general, Aristotle believes that length of life and the onset of senescence are determined by material differences, in particular the

<sup>61</sup>See Ackrill's classic discussion (1972/73, esp. 129–30), which argues that given Aristotle's notion of homonymy, the existence of the body in the proper sense is a trivially sufficient condition for the presence of the soul, since an inanimate body, like a corpse, cannot *properly* be described as the body, but only “homonymously.” It is worth noting, however, that Ackrill concedes that the relation of the animate body to antecedent physical material must be made out in similar terms to our own: homoeomerous parts, like flesh and bone, “have powers and characteristics that, though explicable by reference to the power of their ingredients, are *new, emergent powers and characteristics*” (132–33, emphasis mine).

<sup>62</sup>These sufficient conditions are to be distinguished from the efficient cause that produces the living thing, which in Aristotle's view would be another living thing or more generally nature (cf. *Meteorology* 4.12, 390b2–14, esp. b9–14; *On Generation and Corruption* 2.9, 335b31–33).

<sup>63</sup>*On Youth and Old Age* 14, 474b10–24, esp. τοῦ φυσικοῦ πυρός, b12–13, and ἐπὶ τῶν ἐμψύχων καὶ τῶν ἀψύχων, b17–18. Cf. also *On the Parts of Animals* 2.7, 652b7–11.

<sup>64</sup>*On Youth and Old Age* 4, 469b6–20, esp. b14–17; 23, 478b31–33; 24, 479a32–b5; cf. 6, 470a19–20; *Meteorology* 4.11, 389b9–12.

<sup>65</sup>*On the Soul* 1.4, 408a24–28; cf. 1.5, 411b7–9. ‘Departs’ here is used euphemistically for *ceases to exist*—just as when sight is said to “depart” from the eyes at 2.1, 412b20.

proportions of the four elemental qualities (*On Length and Shortness of Life* 5, passim; cf. *Meteorology* 4.1, 379a2–11).

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If all this is right, then it becomes natural to view Aristotle's approach as emergentist: one that maintains that the mental supervenes on the physical, while having distinctive causal powers of its own. On this view, which properties a living thing has, including its causal powers, will be fully *determined* by its elemental constitution. Nevertheless, not all behavior will be *caused* by its elemental powers. Some behavior will result from the contributions of new, emergent causal powers that arise, necessarily, from matter (see section 1 above).

On Aristotle's view, transitions in the natural world—from the inanimate to the animate and from the nonconscious to the conscious—are in some broad sense gradual and continuous (*On the Parts of Animals* 4.5, 681a12–13). Yet life and awareness are not to be found among the basic building blocks of the universe. Aristotle is no panpsychist: large stretches of his universe are not animated by soul (*On the Soul* 1.5, 411a7–23). Nor does he accept the existence of “mind dust,” an elemental stuff that, in sufficient quantities, would explain the occurrence of mental states. He rejects this notion completely, regardless of whether it is claimed to be material or immaterial.<sup>66</sup> For Aristotle, none of the elements is alive or conscious in any way.

Yet the elements together exhaust the constitution of the sub-lunary world, including living things: every body is composed entirely from the four elements.<sup>67</sup> *Metaphysics* Z 17 shows that the forms of material objects are not further elements. They are the organization of material parts that make the resulting compounds the kind of things they are.<sup>68</sup> But such organization is not adven-

<sup>66</sup>Against material “mind dust,” see *On the Soul* 1.3, 406b15–25; 1.5, 409b24–411a2. Against immaterial “mind dust,” *On the Soul* 1.4, 409a10–15; 1.5, 409a31–b18.

<sup>67</sup>*Meteorology* 4.12, 389b26–28. This is of course implicit in the very definition of “element” (*Metaph.* 5.3, 1014a31–34), but see also *On Generation and Corruption* 2.7, 334b16–20; *Meteorology* 1.2, 339a19–20 (cf. a13–16), a27–28; *On the Parts of Animals* 2.1, 646b12–24. For a more precise characterization of “exhausts,” see Hellman and Thompson 1975, 553–55.

<sup>68</sup>*Pace* Heinaman (1990, 88–89), who argues that Aristotle rejects this view, because he distinguishes the soul from an “arrangement,” “mix-

titious—Aristotle is no vitalist. Rather he sees form as inseparable from the disposition of matter, something that arises whenever one finds matter in the appropriate arrangements. But in contrast with Democritus, Aristotle does not believe that all explanations can be grounded in the basic properties of the elements. Many explanations, including those he thinks most important, are grounded instead in the supervenient structure that arises from the elements. Emergentism thus accounts for the preeminence Aristotle gives to form, without undercutting the supporting role matter plays.

Psychology thus belongs to the study of nature for Aristotle, what he calls “ἡ φυσική.” Lest this be thought a “deeply alien conception of the physical”—as Myles Burnyeat has claimed (1992, 26)—we should simply note that ἡ φυσική is *not* the analog of what *we* would call “physics,” which is only one of the natural sciences, the study of the most basic constituents of the universe. For Aristotle, that would be found in his study of the elements, and their explanatory capacity is decidedly limited: the simple chemical phenomena discussed in *Meteorology* 4 are already pressing beyond it, not to mention life and awareness.<sup>69</sup> Matter, for Aristotle, is not “pregnant with consciousness” (*pace* Burnyeat 1992, 19). If, on his theory, seeing takes place in transparent material, it does not occur in just any sample of transparent material—it occurs only when this transparent material is part of a certain complex and functioning being. No doubt Aristotle would consider consciousness to be an *irreducible* property of certain kinds of material beings. But it is not a *basic* property of elemental matter.

That’s a view a post-Cartesian *can* accept, though—it’s just emergentism. Earlier in this century, emergentism was widely accepted to explain chemical phenomena. That was reasonable before the advent of quantum mechanics: there was a clear gap between

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ture,” “combination,” “state,” and “condition” in his criticism of the *harmonia* theory. But “organization” and “system” are clearly not equivalent to any of these—they express a *functional* notion that Aristotle is one of the first to articulate in his conception of form (εἶδος).

<sup>69</sup>Especially the eighteen pairs of chemical powers listed in *Meteor.* 4.8–9. These are neither identical with nor reducible to the four elemental qualities of hot, cold, wet, and dry. They *supervene* upon these four (ἀκολουθεῖ, *Meteor.* 1.3, 340b16–17; ἐκ τούτων, *On Gen. and Corr.* 2.2, 329b32–34, cf. 329b34–330a29)—all higher level differences can be “traced back” to differences at the elemental level and no further (ἀνάγονται, *On Gen. and Corr.* 2.2, 330b24–26).

chemical explananda and physical explanantia. Its demise was due, moreover, not to Cartesian scruples, but to scientific advances.<sup>70</sup> The same would hold, I assume, for Aristotle’s views on why plants don’t explode. Whether we find emergentism plausible for action will depend on whether we think the explananda here are genuinely caused by physical powers as such.

## 6. Reaction in the Lyceum

At the outset of his criticisms of the *harmonia* theory, Aristotle says in frustration that it is believed “by many people to be no less persuasive than any other, in spite of the audit it has received, so to speak, in public discussions” (*On the Soul* 1.4, 407b27–29). He could easily have been speaking about his own backbenchers in the Lyceum. The *harmonia* theory is attributed to no less than four of his colleagues and students, and the third head of the school, Strato, even defends it against a category-mistake objection.<sup>71</sup> Such sympathy cannot be written off to ignorance of Aristotle’s criticisms or to backsliding. These philosophers seem fully conscious of the stakes involved. Two in particular—Aristoxenus of Tarentum and Dicaearchus of Messene—just bite the bullet, openly embracing the epiphenomenalist consequences of the theory. Our sources are so stunned, in fact, that their view is often conflated with eliminativism.<sup>72</sup> As we shall see, this is at best a half truth. The real threat is to the efficacy of the mental.

Aristoxenus is best known for his musical treatises. But somewhere he found occasion to speak about the soul. As Cicero notes, the tuning analogy was naturally attractive:

Aristoxenus, who was a musician as well as a philosopher, [said that the soul is] a certain tension of the body itself, just like what is called ἄρμονία in singing and in lyres: various changes are thus produced from the nature and configuration of the entire body, just as tones are in singing. (Cicero, *Tusc. disp.* 1.10.19; = Aristoxenus, fr. 120a Wehrli.)

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<sup>70</sup>See McLaughlin 1992.

<sup>71</sup>Olympiodorus *In Phaed.* 2.134 (= Strato fr. 118 Wehrli). Strato’s argument is directed at Plato, who makes the objection at *Phaedo* 93a–94a.

<sup>72</sup>Similar moves are made in contemporary discussion: Kim characterizes Davidson’s anomalous monism as being “virtually indistinguishable from outright eliminativism” *on the grounds* that it does not allow sufficient efficacy to the mental (1989b/ 1993a, 270). For discussion of this parallel, see my “Dicaearchus’ Philosophy of Mind” (forthcoming).



This is confirmed in other sources, which add an interesting detail. Aristoxenus took the soul to be a tuning of organs and limbs, which are of course closer to the pegs and strings of the lyre than the four elemental forces Simmias speaks of.<sup>73</sup> But just as before, the *harmonia* is not a melody or series of sounds. It is a state of the body.<sup>74</sup> Aristoxenus distinguishes it here explicitly from the tones (*sonos*) it produces, describing it rather as a kind of *intentio*, a tension or “tightening” of the body, much as Simmias had (ἐντεταμένον τοῦ σώματος, *Phaedo* 86B7). This usage accords with his extant musical works, where *harmonia* has its contemporary meaning of tuning or mode.<sup>75</sup>

The text above also suggests Aristoxenus was committed to the inefficacy of the mental. Behavior issues not from the soul, but from the “nature and configuration of the entire body,” as sounds do from an instrument. In both cases, the aggregate of material forces is entirely sufficient to cause the effects that follow. Nothing here requires distinct mental powers.

Numerous sources also attribute the *harmonia* theory to one or another of Aristoxenus’s contemporaries in the Lyceum: Dicaearchus, Clearchus, and Deinarchus. But the similarity of their names and almost identical wording of reports arouse suspicion. Judging from collateral evidence about Clearchus and Deinarchus, all of

<sup>73</sup>Cicero *Tusc. disp.* 1.18.41 (= Aristoxenus fr. 120b Wehrli); Lactantius *Instit.* 7.13 and *De opif. Dei* 16 (= Aristoxenus fr. 120c and d Wehrli, respectively).

<sup>74</sup>*Contra* Gottschalk (1971, 183). The only text that identifies *harmonia* with the sound produced is Lactantius *Instit.* 7.13: *sed sicut in fidibus ex intentione nervorum effici concordem sonum atque cantum quem musici harmoniam vocant* (= Aristoxenus fr. 120c Wehrli). But in another passage, Lactantius changes his tune: he identifies the *harmonia* with the tension in tuned strings (*intentionem concentumque nervorum in integros modos*), which is parallel to the power of sensation (*vim sentiendi*); it is the *animus* instead that is compared to melody and sound (*De opificio Dei* 16, = Aristoxenus fr. 120d Wehrli). This may be sufficient reason to emend “*quem*” in *Instit.* 7.13 to “*quam*,” thus referring back to “*intentio*,” and so in agreement with Cicero *Tusc. disp.* 1.10.19.

<sup>75</sup>For example, *Elementa harmonica* 1.2.10, 23.21, 24.21, 26.31; 2.35.9, 35.12, 44.24, 48.20, 48.25, 49.14, 49.15, 52.7; 3.64.12, 65.1, 69.30, 70.14, 73.18, 74.5. (Cf. Barker 1989, 126 n. 5.) The only difference, Aristoxenus notes (2.36.31), is that others use ‘*harmonia*’ more broadly for octochords, while he reserves the term for a particular genus of tetrachords and thus a proper part of modes.

these attributions should be made to agree in reading “Dicaearchus.”<sup>76</sup> One report, however, goes beyond the rest:

Dicaearchus [says the soul is] a “tuning” of the four elements in place of “a tempering” or “concord of the elements.” For he does not mean a tuning composed of notes, but rather the harmonious tempering and concord in the body of hot, cold, wet, and dry things. (Nemesius *De nat. hom.* 2, 17.5–9 Morani, = Dicaearchus fr. 11 Wehrli)<sup>77</sup>

Nemesius confirms Dicaearchus’s exact choice of expression: he uses the word ‘*harmonia*’ in place of (ἀντί) more mundane terms, like ‘*krasis*’ or ‘*sumphônia*’; and unlike Aristoxenus, he takes it to be a tuning of the four elements, not parts of the body. This might be equivalent to a tuning of the four elementary qualities, as Nemesius thinks. Or it might be a Peripatetic twist to the account found in the *Phaedo*.<sup>78</sup>

But the situation is not so simple. Many of our sources portray both Dicaearchus<sup>79</sup> and Aristoxenus<sup>80</sup> as outright eliminativists, who firmly maintain that there is no soul at all. This sounds wrong on the face of it. For if (a) souls are identified with tunings of a certain sort, and (b) there are no souls, then (c) there are no such tunings either. But no one denies that the body has a “tuning” of a certain sort—the debate is solely over (a). Clearly, something else must be going on. If someone were to claim both (i) that there are no witches and (ii) that witches are just nonconformist women,

<sup>76</sup>For a thorough discussion of the evidence with references, see Sharples forthcoming.

<sup>77</sup>Emending Δείναρχος to Δικαίαρχος in line 5 with Wehrli. See n. 76.

<sup>78</sup>Gottschalk has argued that we should reject this text and all the others like it (Dicaearchus fr. 11, 12a–e Wehrli) as due to a conflation with Aristoxenus’s views (1971, 185–87; see also 1973, 91f.). But his arguments are not convincing—see my “Dicaearchus’ Philosophy of Mind” (forthcoming).

<sup>79</sup>Cicero *Tusc. disp.* 1.11.24 (= Dicaearchus fr. 8c Wehrli), 1.22.51 (= Dicaearchus fr. 8e Wehrli), *Acad.* 2.39.124 (= Dicaearchus fr. 8f Wehrli); Sextus Empiricus, *Pyrr. hyp.* 2.31 (= Dicaearchus fr. 8b Wehrli); Atticus *ap. Euseb. Praep. evang.* 15.9.10, 2.370.16–18 Mras (= Dicaearchus fr. 8i Wehrli). Tertullian assimilates Dicaearchus’s position to Asclepiades’ denial of a “commanding faculty” of the soul (*De an.* 15, = Dicaearchus fr. 8h), but this is surely a conflation due to their neighboring reports in the doxography: Ps.-Plut. *Plac. philos.* 4.2.7–8 and Stob. *Ecl.* 1.49 (= Diels *Doxogr.* 387.5–9).

<sup>80</sup>Cicero *Tusc. disp.* 1.22.51 (= Aristoxenus fr. 118 Wehrli); Lactantius *Instit.* 7.13 and *De opif. Dei* 16 (= Aristoxenus fr. 120c and 120d Wehrli, respectively).

we would not normally take him to imply that there are no non-conformist women; we would attend to the equivocation. There are no witches, if we mean someone who has magical powers. But the people we *refer to* as witches are just nonconformist women.

This strategy is confirmed by Cicero, who quotes directly from Dicaearchus's dialogue on the soul, which he had sent from Athens just before writing the *Tusculan Disputations*.<sup>81</sup> What Dicaearchus denies, it seems, is the existence of the soul *as it is customarily understood*:

In the remaining two books, [Dicaearchus] introduces a certain Pherecrates, an old man from Phthia, said to be a descendant of Deucalion, who maintains the following. The soul is nothing at all and this name completely vacuous—animals and animate things are so-called in vain, for there is neither soul nor spirit in either man or beast. That whole power by which we act or are aware extends evenly through all living bodies and is not separable from the body. In fact, [that power] is nothing, nor is there anything else, apart from the body just alone by itself, so configured that it lives and is aware by the tempering of its nature. (Cicero *Tusc. disp.* 1.10.21, = Dicaearchus fr. 7 Wehrli)

Pherecrates does not deny that there is life, awareness, or action. Nor does he reject the ordinary categories we use to characterize mental phenomena or “folk psychology” (as contemporary eliminativists do). What he rejects is a metaphysical theory. As the sequel makes clear, he is just making the sensible claim that substance dualism is false: there is no mysterious, separate substance that is responsible for our vital and conscious behavior. What is striking about Pherecrates is that he is not willing to quibble over terms. Let the dualists have their words for soul and for spirit—in Cicero's Latin, ‘*animus*’ and ‘*anima*,’ respectively.<sup>82</sup> The only result will be that these terms are “completely vacuous”; and insofar as other expressions, such as ‘animals’ (*animalia*) and ‘animate things’ (*animantis*), derive from them, they will be tainted, too.<sup>83</sup> We are better

<sup>81</sup>*Epist. ad Atticum* 13.32 (= Dicaearchus fr. 70 Wehrli).

<sup>82</sup>On Cicero's use of ‘*animus*’ for soul and ‘*anima*’ for spirit, see the etymological discussion that immediately precedes the passage cited above, *Tusc. disp.* 1.9.19. Contrast, for example, Lucretius *De rerum nat.* 3.136–44.

<sup>83</sup>As David Sedley has suggested to me, in Greek the point would surely have been put not in terms of “animals” (ζῷα), but “animate things” (ἐμψυχα), a word which is derived from ‘soul’ (ψυχή). This point is explicitly confirmed by Simplicius (*In Categ.* 216.15; = Dicaearchus fr. 8g Wehrli), who says that Dicaearchus held that there *are* living things, but denied that the soul was the explanans for this.

off without such words in trying to account for the reality of the mental.

Having rejected substance dualism, Pherecrates goes on to offer a positive account of mental events. He acknowledges a “power” (*vis*) by which we act or are aware, and he equates this with a “tempering of the nature” of the body. It is easy to see how our sources might have just taken this tempering to be the soul, as Iamblichus did:

or [they say that the soul is] something that has been naturally compounded or that belongs to the body like the state of being animate, it not being possible, in fact, for the soul itself to exist in any way at all, which are just the sorts of thing Dicaearchus of Messene says about soul. (*ap.* Stobaeum 1.49.32, 367.4–9 Wachsmuth; = Dicaearchus fr. 8k Wehrli)<sup>84</sup>

But the result is confused. As Iamblichus reports it, the soul is both something and nothing at all. A straightforward way to resolve this inconsistency is, as before, to take it as a denial of substance dualism, and not a rejection of mental phenomena more generally. This is made clear in a passage of Plutarch that reports without attribution what is almost certainly Dicaearchus's view:

Or is this the case? Namely, that the substance of the soul isn't anything at all; rather, it is the tempered body which possesses the power of thinking and living. (*Against Colotes* 1119ab)

The theory in question denies the existence of a substantial soul, but not the powers usually associated with it, of living or thinking. It simply reassigns these powers to the “tempered body” (τὸ σῶμα κεκραμένον). This phrase, much like Iamblichus' “what is naturally compounded” (τὸ τῆ φύσει συμμεμιγμένον) and Cicero's “tempering of nature” (*temperazione naturae*), is a clear allusion to the *harmonia* theory.

Other sources attribute the same distinction to Aristoxenus as well. Lactantius has him denying the existence of the soul in the same breath that he speaks of a “power of awareness” (*vis sentiendi*); and it is the latter, notably, that Aristoxenus is said to identify with the *harmonia*, not the soul.<sup>85</sup> The rejection of the “soul,”

<sup>84</sup>I follow Wachsmuth's text here, including his suggestion in the apparatus to read ὁπωσοῦν instead of ὡσπερ at 367.7.

<sup>85</sup>Lactantius *Instit.* 7.13 and *De opificio Dei* 16 (= Aristoxenus fr. 120c and 120d Wehrli, respectively).

therefore, need not be incompatible with the *harmonia* theory, so long as the *harmonia* is identified with something like this power. Mental events, then, are the product of *bodily* powers.<sup>86</sup>

We can distinguish two planks in Pherecrates' positive proposal. The first concerns the intimate relation of mental events to the body. As Pherecrates says, there is nothing beyond the body configured in a certain way. Sextus Empiricus records a similar point in Stoic terminology, when he says that for Dicaearchus, thinking (*διάνοια*) is "nothing apart from the body disposed in a certain way" (*παρά τό πῶς ἔχον σῶμα*, *Adv. math.* 7.349, = Dicaearchus fr. 8a Wehrli). The Stoic terminology is appropriate. A fist is nothing other than the hand in a certain state, and whenever the hand is in that state, there is a fist.<sup>87</sup> So too, thinking is nothing other than the body's being in a certain state, and whenever the body is in that state, it necessarily thinks—thinking, that is, *supervenies* on a bodily state. But Pherecrates takes the same attitude towards "the whole power by which we act or are aware" (*vimque omnem eam, qua vel agamus quid vel sentiamus*). On his view, then, all mental events supervene on physical ones.

This leads to the second, and more striking, feature of Pherecrates' claim. He believes that all action and intentional states are entirely brought about by the body's powers, "by the tempering of its nature," just as Aristoxenus believes it is brought about by the "nature and configuration of the entire body." That tells us that mental events occur in virtue of physical ones. But do they occur *solely* in virtue of physical events as well? The answer is already hinted at in Pherecrates' lineage. According to myth, his ancestor

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<sup>86</sup>An objection of Cicero's supports this more nuanced reading: "I can understand that a mode [is constituted] from the intervals of notes, whose varied combination results in still more modes; but I do not see how, when it is empty of soul, the position of limbs and configuration of the body can produce a mode" (*Tusc. disp.* 1.18.41; = Dicaearchus fr. 7d Wehrli; = Aristoxenus fr. 120b Wehrli). If the theory identified the *harmonia* of the body with the soul, then Cicero commits the fallacy of *ignoratio elenchi*—a *harmonia* theorist would agree that there can be no mental events apart from the *harmonia*. If, however, the *harmonia* is identified instead with various powers, including the power of awareness, Cicero's objection is perfectly in order: he complains there cannot be awareness in the absence of a *substantial* soul. That is exactly what divides the Platonist from the *harmonia* theorist.

<sup>87</sup>Sext. Emp. *Adv. math.* 7.39 (= *SVF* 2.132), *Pyrr. Hyp.* 2.81; Alex. Aphr. *In Top.* 360.12 (= *SVF* 2.379).

Deucalion recreated the human race after the flood from mere sticks and stones—that is, from lifeless matter.<sup>88</sup> But it receives explicit confirmation from a passage of Plutarch's *On Desire and Grief*, again without attribution, but again almost certainly reporting Dicaearchus's and Aristoxenus's view:

Some straightforwardly extend belief and calculation into the body, saying that the soul is not an explanans at all, but rather such things are brought about by the difference, quality, and power of the body. For some people think the book titled *On the Underworld*, in which it is argued that the soul is dependent on the substance, does not belong to Heraclides at all, while others [think] it was composed as a polemic against what others had said about the substance of the soul. But whoever wrote it, it destroys the substance of [the soul] straightaway, since the body possesses within itself all of the powers mentioned. (*On Desire and Grief* 5, 54.10–20 Pohlenz–Ziegler; = Heraclides Ponticus fr. 72 Wehrli)

The only person named in this passage, Heraclides Ponticus, could not have held the view in question: he believed the soul was composed of light and traveled without the body through the Milky Way.<sup>89</sup> The only plausible hypothesis, as the ancient sources suggest, is that Heraclides presents a contemporary theory in order to criticize it; and he is known to have tangled with other Peripatetics of this period.<sup>90</sup> Dicaearchus and Aristoxenus are clearly the target here—the details are strongly reminiscent of our other reports, especially Cicero's. Nor is it accidental that this view is described as "extending" or, more literally, "stretching" (*κατατείνουσαν*, 54.11) belief and reasoning into the body, a punning reference to the *harmonia* theory itself.

The position is straightforwardly epiphenomenalist. First, it rejects a substantial soul without denying the reality of the mental, in terms that strongly suggest supervenience: the soul is *dependent*

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<sup>88</sup>Thus modifying Wehrli's suggestion (in his commentary on Dicaearchus *ad loc.*): "Der Beweisgang ist wohl, daß Erweckung von Menschen aus Steinen eine Seele als geistige Substanz ausschließe."

<sup>89</sup>Fr. 96–100 Wehrli, together with fr. 92. See also Gottschalk 1980, 98–110, 153–55.

<sup>90</sup>According to Diog. Laert. 5.92 (= Heraclides fr. 176 Wehrli), he accused Chamaeleon of plagiarism; he also shows evident affinity with, for example, the Peripatetic Clearchus of Soli (fr. 5–10 Wehrli). Cf. Wehrli 1983, 523. Gottschalk (1980, 143–45) attempts to explain the evidence away, but unconvincingly. Even if Heraclides was not a member of the Lyceum, he seems abreast of work going on there well after Plato's death.

on the substance (τῆ οὐσίᾳ παρνπάρχειν, 54.15). Second, it plainly rejects mental causation at the beginning and end of the passage: the soul is “not an explanans in any way at all” (οὐδ’ εἶναι αἰτίαν τὸ παρπάν, 54.11);<sup>91</sup> on the contrary, the body possesses “all these powers *within itself*” (ἐν αὐτῷ τὰς εἰρημένας δυνάμεις πάσας, 54.19–20). Mental states are thus “brought about by the difference, quality, and power *of the body*” (τῆ τοῦ σώματος διαφορᾶ καὶ ποιότητι καὶ δυνάμει συντελεῖσθαι, 54.12–13).

The rejection of mental causation is significant. If the version of the *harmonia* theory in the *Phaedo* is just a supervenience thesis, compatible with epiphenomenalism, reductionism, and emergentism, this version is not. Both emergentism and reductionism insist that there *is* mental causation. The present position denies this: it holds that all events come about solely in virtue of the physical powers of the body. It thus firmly embraces epiphenomenalism.

The commitment to the inefficacy of the mental is more far reaching than the denial of a substantial soul. *For it is a rejection of Aristotle’s theory as well.* Aristotle thinks that vital and conscious behavior cannot be completely explained in terms of the tempering of the body, even if it always accompanies such behavior and cannot be found apart from it. For Dicaearchus and Aristoxenus, in contrast, there is no other story to tell: once we have accounted for the motions and tendencies of the elements, we have said all that can and needs to be said. It is a disagreement between materialists, all of whom are committed to the supervenience of the mental on the physical. The issue is purely one of whether anything occurs in virtue of the mental at all.

<sup>91</sup>Reading αἰτίαν with the mss. Pohlenz’s conjecture, οὐσίαν, is unnecessary. Not only is the question of causal responsibility explicitly addressed in 54.12–13 and again at 54.19–20, but it is the point of the whole treatise: the present view is contrasted with the view that all responsibility should be assigned to the soul (4, 53.10–54.9) and the view that body and soul are both to be held responsible (5–6, 54.21–56.20); in fact, the author insists that even when someone claims the person as a whole is the agent, responsibility must still be assigned either to the body or the soul (8, 57.23–58.19). All the philosophers discussed, moreover, are materialists: Democritus, Theophrastus, Strato, Aristotle, Zeno, Posidonius, Diodotus, and (if I am right) Dicaearchus and Aristoxenus. The main concern is thus not an ontological one, pitting dualists against materialists, but a *causal* one (8, 58.3–6). For a more thorough discussion of this source, see my “Dicaearchus’ Philosophy of Mind” (forthcoming). I would like to thank Bob Sharples for extensive discussion of these issues.

## 7. Return to Orthodoxy: Neo-Aristotelians

The final chapter of our story turns to the late second and early third centuries C.E., to the great commentator on Aristotle, Alexander of Aphrodisias. Although his commentary on Aristotle’s *On the Soul* is no longer extant, we still have Alexander’s own treatise titled *On the Soul*, which is notable both for its overall faithfulness to Aristotle and its subtle departures. Alexander’s treatment of the *harmonia* theory might seem to be just such a departure. Officially, he defends the letter of Aristotle’s position, condemning the *harmonia* theory roundly and loudly; yet he adopts a position that seems to approach that theory even more closely than Aristotle’s theory had. Alexander’s denunciations might thus seem false, a desperate attempt to preserve appearances.<sup>92</sup> He was, after all, under some pressure to vindicate the orthodox position. He was surely aware of the indictment made by the Platonist Atticus,<sup>93</sup> that Dicaearchus was only *following out the consequences of Aristotle’s theory* when he completely denied the existence of the soul (*ap. Eusebeium Praep. evang.* 15.9.10, 370.17–18 Mras; = Dicaearchus fr. 8i Wehrli). To protect Aristotle, then, Alexander might have felt the need for strong words against the *harmonia* theory, despite his own sympathies.

This picture, I suggest, does an injustice to Alexander’s motivations. Like the other Aristotelians we have considered, he understands the nature of the debate with great clarity, and he has the virtue of stating the emergentist position forthrightly and systematically. His aim is to secure downward causation consistent with supervenience, a position that would permit him to accommodate the common ground shared with the *harmonia* theory, without conceding the crucial point regarding efficacy. One is tempted here to agree with the verdict of a recent authority in another context: Alexander understands Aristotle very well, “*comme d’habitude.*”<sup>94</sup>

To begin with, Alexander embraces psychophysical supervenience right across the board. Not only vital activities, such as being

<sup>92</sup>One finds this sort of critique in both Moraux (1942, 29–49, esp. 32–34 and 48) and Robinson (1991, 214–218, esp. 216).

<sup>93</sup>Alexander certainly responds to Atticus on other issues; see Sharples 1987, 1178, esp. nn. 14–15.

<sup>94</sup>The phrase is Burnyeat’s (1993, 268), who appeals to *In Sens.* 134.11–19 to show that Aristotle does not believe that the illumination of the air supervenes on any material alterations.

nourished, growing, and reproducing, but also sensing, desiring, being angry or afraid, being appeared to, striving, and even thinking, take place whenever a certain kind of bodily change occurs:

For it is not possible for a given mental functioning to occur apart from a bodily change, just as a motion in accordance with natural tendencies is not either, since *when the body functions, they occur* in accordance with the ability in it. For being nourished, growing, and reproducing another like oneself all occur in accordance with a mental ability, while the changes belong to the body. But the animal also perceives *through the sense organs*, which are bodies, and *desires themselves clearly occur when a certain body undergoes change*. For appetites, states of rage and anger, all occur in animals this way. In fears, too, there is both alteration and a contraction. Being appeared to is *through the body* as well, given that it depends upon functioning perception, as will be shown. No one would deny that in striving to act, too, what undergoes change is a body. Even thinking, if it does not occur without our being appeared to, would itself also occur *through the body*. But if one cannot conceive of any mental functioning apart from bodily change, it is clear it is a [feature] of the body and inseparable from it. (*On the Soul* 12.9–22; my emphasis)

For Alexander, this is a natural way of understanding Aristotle's claim that mental functioning does not occur "without the body" (*On the Soul* 1.1, 403a3–19). It is necessary for mental events that there be *some* bodily change; but it must also be the sort of bodily change that is *sufficient* for that functioning to occur. Mental events, that is, supervene on bodily changes.

Alexander makes a similar move regarding the definition of the soul. Predictably enough, he toes the official Aristotelian line: the soul is the form of the body (for example, *On the Soul* 19.21, 21.22). But he takes this to be a power that quite literally "supervenes" (ἐπιγινόμενον) on the temperament of our body:

For soul is the power and form which supervenes on a tempering of bodies in accordance with a proportion of this sort. (*On the Soul* 25.2–3; cf. 26.21–22)

That "supervenience" is meant in our sense of the word, as a co-variation with bodily states, is clear from a passage in the collection of texts known as the *Mantissa*:<sup>95</sup>

while the soul is a certain kind of power and substance that supervenes

<sup>95</sup>I thus disagree with Sharples (1994, 168 n. 20), who claims the passage is more "evidently un-Aristotelian" than others in Alexander's corpus.

upon these [states of the body]. The body and its temperament are also the explanans of the original generation of the soul. This is clear from the differences of animals with respect to their parts. For souls do not fashion the shapes of animals; rather the different souls were a consequence of (ἐπηκολούθησαν ἐπὶ) animals' structure being of a certain sort and they vary with one another. . . . Because the difference in soul follows (ἐπεται) from the temperament of the body's being of a certain sort, it is clear that beasts possess a distinctive soul due to the temperament of the body's being of a certain sort. (104.27–34)

Alexander sometimes adds the following variation: the soul is a higher power that is "begotten upon"—or as we might say, *emerges from*—a given kind of temperament (γεννωμένη ἐπὶ τῇ τοιαύτῃ κρᾶσει).<sup>96</sup> For this new, higher power is precisely *not* a physical power. It does not belong to any of the ingredients alone, nor is it a mere aggregate of their powers. It is a distinct new power that arises necessarily from the "tuning" of material bodies, *without* being reducible to it (25.2–26.3).<sup>97</sup> Like Aristotle, moreover, Alexander believes in downward causation. The soul is the efficient cause of vital activities (τῶν ζωτικῶν κινήσεων ποιητικῆ) and uses the bodily organs as instruments (24.4–13). But it does not move them "in a bodily fashion" (σωματικῶς, 21.25–22.6). Rather, mental states such as desire, sensation, imagination, or thought cause the muscles around the heart to expand or contract, while the body plays an entirely "subservient" role (ὑπηρετικόν), only intensifying or weakening the peripheral effects (76.14–77.23).

Interestingly, Alexander does not take emergence to be anything peculiar to living things. Lightness, the form of fire (5.11–12), is "begotten upon" fire's elemental qualities, the hot and the dry (5.4–6); and it is in virtue of this new power, not its matter, that fire moves upwards (5.9–11, 15–19). Similarly, chemical blends often exhibit powers not possessed by their ingredients, whether singly or in combination. In both of these cases, Alexander draws an explicit analogy with the soul.<sup>98</sup> But he also seems to think that

<sup>96</sup>*On the Soul* 24.22–23, 26.26–27, 29–30; cf. 80.16–23.

<sup>97</sup>Against Robinson (1991, 214–15), who fallaciously infers a "strongly reductive account of properties" from Alexander's claim that neither the soul nor the body can exist without the other. Moraux similarly describes the soul as a "mechanical" result of tempering on Alexander's view (1942, 43) and claims throughout his first chapter that Alexander's theory deprives the soul of efficient causality. But this is only an inference on Moraux's part; it actually conflicts with Alexander's explicit statements (as Moraux seems to be aware—cf. 46–48).

<sup>98</sup>*On the Soul* 11.6–7, 24.20–25.1; cf. 22.7–12, *Mantissa* 106.5–8.

forms at all levels emerge from the tempering of items at lower levels. He speaks of rising levels of forms, starting with the elements, through chemical blends, to the vital functions of plants, the awareness of animals, and finally the rationality of humans (8.13–9.10, 10.14–19; 16.20–17.1). Each higher level is distinguished by powers of its own, which cannot be identified with or reduced to powers on the preceding levels, even though each ingredient contributes to its overall nature (8.5–13). Still, as with the mental, these new powers supervene on lower ones: differences in forms are a consequence of differences in the underlying bodies, “in accordance with the amount and type of tempering, blending, and structure” (κατὰ τε πλῆθος καὶ κατὰ ποιὰν κρᾶσιν τε καὶ μίξιν καὶ σύστασιν διαφορῶν, 10.17–19; cf. 10.19–26, 11.5–13).<sup>99</sup> Far from advocating the unity of science, where everything can ultimately be reduced to physics, Alexander offers a genuinely layered, emergentist view of reality.<sup>100</sup>

The allusion to medicinal drugs is revealing. Its use as a philosophical example is not peculiar to Alexander; and he certainly knew of its deployment in the Stoic theory of mixture.<sup>101</sup> But Alexander’s use is more reminiscent of Galen, who frequently speaks of a “four-fold drug” (τετραφαρμάκος) to illustrate the notion of an emergent power.<sup>102</sup> This is no accident. Galen is, so to speak, Alexander’s philosophical uncle: Galen’s teacher taught Alexander’s teacher in Pergamum.<sup>103</sup> Relations do not always agree, of

<sup>99</sup>In Alexander’s opinion, the ingredients from which a new substance arises are, in some sense, preserved in its tempering (*On Mixture* 230.14–15) and so can serve as a supervenience base (*pace* Ellis 1994, 78–79). We might therefore speak of these ingredients as submerging into the new emergent substance, rather than “perishing” (as Ellis does, 79)—their powers merge into a single new power (*On Mixture* 230.25–34).

<sup>100</sup>Against Robinson (1991, 217).

<sup>101</sup>Chrysippus: *ap. Alex. On Mixture* 216.24, 218.6 (= *SVF* 2.473); *ap. Philonem De confus. ling.* 187 (= *SVF* 2.472). Boethus: *ap. Philonem De aetern. mundi* 79 (= *SVF* 3, fr. 7).

<sup>102</sup>The following passages—*De elem. ex Hipp.* 1.455 K; *De meth. med.* 10.281, 352, 353, 882, 883 K; *Ad Glauconem de med. meth.* 11.84, 138 K; *De simpl. medic. temp. ac fac.* 12.328 K; *De comp. medic. sec. locos* 12.602, 604, 610 K; *De comp. medic. per gen.* 13, 593 K; *In Hipp. de nat. hom.* 15.18 K; *Adv. Lycum* 18a.240, 241 K; *In Hipp. lib. de fract. comm.* 18b.598 K—can be added to those cited by Moraux (1984, 740, n. 214), namely, *De elem. ex Hipp.* 1.452 K; *In Hipp. de nat. hom.* 15.32 K; *De const. art. med.* 1.242 K; *De causis cont.*, CMG Suppl., 2.3.2.

<sup>103</sup>As Todd has argued (1976, 3), in 145–47 C.E. Galen attended the lectures of the Aristotelian Aspasius (5.42 K; cf. 19.42 K), who also taught

course, especially philosophical ones; and these two are no exception to the rule.<sup>104</sup> But in some cases, a shared doctrine might be explained through their common ancestry.

That Alexander’s characterization of the soul resembles Galen’s has been noticed at least since the Byzantine commentator Michael of Ephesus.<sup>105</sup> It is naturally suggested by the title of one of Galen’s essays, “That the Powers of the Soul Follow the Temperaments of the Body” (commonly referred to by the mistranslation “*Quod animi mores . . .*”). But in that essay, Galen argues in a way that suggests he actually accepts the *harmonia* theory:

I commend (Andronicus the Peripatetic) highly, because he dared to declare the substance of the soul as a free man, without wrapping it up in obscurities; and I approve this man’s choice, for I have found him to act this way in many other matters as well. But when he says [the soul] is either a temperament or a power following on the temperament, I fault his addition of the word “power.” (*Quod an. mores* 44.12–20 Mueller; = 4.782–83 K)<sup>106</sup>

Galen appears to be arguing precisely *contrary* to Alexander: he seems to state quite clearly that the soul is *not* an emergent power, but the temperament that gives rise to it. If that is right, then Alexander can be seen as defending Andronicus, the great editor of Aristotle’s works:<sup>107</sup> in Alexander’s eyes, Galen would have rejected the wrong half of the disjunction. And Galen does, admittedly, maintain this position in two other passages in the treatise (37.5–23 Mueller, = 4.773–74 K; 44.20–45.3 Mueller, = 4.783 K),

one of Alexander’s teachers, Herminus (Simpl. *In De caelo*, 430.32–33 and 431.10–11). On Alexander’s education more generally, see Sharples 1987, 1178.

<sup>104</sup>For a summary of the evidence, see Sharples 1987, 1179.

<sup>105</sup>*In Parva nat.* 135.22–30. Other references can be found in Moraux 1984, 742 n. 223; see also Todd 1977.

<sup>106</sup>The important identifying phrase (‘*Ἀνδρόνικον δὲ τὸν Περιπατητικόν*’) is absent in the Greek mss.; but it is present in a ninth-century Arabic translation, as well as Renaissance editions of the Greek. For an extensive discussion of the evidence and reasons for its acceptance, see Moraux 1973, 134–35 n. 9.

<sup>107</sup>Gottschalk claims (1986, 251–57) that Andronicus and his student Boethus “anticipated most of the constituents of Alexander’s teaching” (257). But the evidence is indirect and circumstantial, and so the more moderate claims in Gottschalk 1987 (1113–14) are to be preferred. Both articles, though, incorrectly lump Alexander and Andronicus together with Dicaearchus and Aristoxenus.

insisting that Aristotle should have identified the soul with the temperament. But he is not consistent. Throughout most of the treatise, he argues for the position represented in its title, that the soul is actually a power that follows on the temperament of the body.<sup>108</sup> Galen may thus have agreed with Alexander after all, in spite of himself.<sup>109</sup>

For rhetorical effect, Galen sometimes says that the soul is a slave to the body,<sup>110</sup> inverting Plato's frequent claim that the soul is the master of the body—a claim Socrates notably makes in his criticism of the *harmonia* theory (*Phaedo* 94be). But Galen intends nothing more than that the powers of the soul “obey” or follow (ἑπείσθαι) the tempering of bodies—that is, they are *fixed* by the state of the body.<sup>111</sup> And that is just to assert that they supervene, which is compatible with their status as emergent powers. In arguing that mental powers are a consequence of the state of the body, he is precisely *not* denying their efficacy.<sup>112</sup>

In any case, Galen should have agreed with Alexander, as his treatise *On the Elements according to Hippocrates* shows. In that essay, Galen offers what is perhaps the lengthiest account of emergent effects before John Stuart Mill, focusing on the crucial case of sensation. (For a translation of the passage in question, see the Appendix.) Some characteristics are nothing more than an aggregation of simpler ones: the compound does not have any type of

<sup>108</sup>For an excellent analysis of the rhetoric (and poor arguments) in this treatise, see Lloyd 1988.

<sup>109</sup>Or he may have simply wavered on this issue: he often takes the stance, here as elsewhere, that he does not have certain knowledge about the ultimate nature of the soul. See Moraux 1984, 775, esp. nn. 363–64; and Lloyd 1988, 14.

<sup>110</sup>For example, *Quod an. mores* 41.15–18 Mueller (= 4.779 K); 44.5–8 Mueller (= 4.782 K); 48.5–12 Mueller (= 4.787 K); *De subst. fac. nat.* 4.763 K.

<sup>111</sup>Lloyd (1988, 33–39) correctly points out that talk of “following” is compatible with a wide variety of positions, and he argues that Galen runs the gamut. Nevertheless, supervenience seems the most charitable reconstruction, especially since it is weaker than causation; see n. 112 below.

<sup>112</sup>Hankinson (1993, 220–22) worries how Galen can preserve our ability to initiate actions as rational agents, while also holding that all psychological powers are a consequence of the body. Hankinson, however, interprets Galen as holding that the mental is *caused* by the physical (220). If instead Galen only holds that the mental *supervenes* on the physical, he can consistently maintain the downward causation emergentism allows: we act *in virtue of* our rational powers, even though they “follow upon” the temperament of the body.

characteristic the ingredients lack themselves (70.18–20 De Lacy). A house, for example, and its constituent materials both possess shape, extension, heft, hardness, and even color; in fact, they will even have the same heft, hardness, and color (70.24–72.16). But in other cases, a “novel characteristic” (νεωτέραν ιδέαν, 70.20) arises that “belongs to a different type” (κατὰ γένος ἕτερον, 70.20–23) and is therefore “heterogeneous” (τι τῶν ἑτερογενῶν, 72.18–22). The ability to perceive is just such an effect, regardless of whether one thinks (like the atomists) that the elements have only primary qualities or (like most other ancients) that they possess secondary qualities as well (74.9–13): “to speak generally, the type to which sensation belongs *differs from all the other properties* that belong to bodies” (74.12–13). Galen concludes that either (i) some of the elements already have the ability to perceive or (ii) none do, in which case sensation emerges (74.16–20). The choice for Galen is thus between mind-dust and emergentism. Without resolving the issue, he notes that some elements do *not* have the ability to perceive, since there are compounds that cannot sense (74.21–23). But if he believes that regimen and environmental factors affect our cognitive abilities—as he argues throughout the *Quod animi mores*—then he ought to accept emergentism. He does not think that we should imbibe more mind-stuff to become more intelligent. Rather, cognitive powers develop when matter has been treated and trained in the appropriate way.

What we find in both Alexander and Galen, then, is a thoroughgoing emergentism. They offer a clear notion of mental powers that do not belong to the elements, but arise only at certain levels of complexity. These powers depend nomically on the constituents in the blend—they supervene on them—but they are not simple aggregates of the powers at this lower level. Neither author, moreover, appeals to an evolutionary development of life and awareness. Both are simply trying to explain, consistent with supervenience, the diversity of causal powers evident in the world.

Alexander's response to Atticus is simple, then. When Atticus accused Aristotle of being in the same boat as Dicaearchus, he was wrong: Aristotle is an emergentist, not an epiphenomenalist. Emergentism shares some common ground with the *harmonia* theory, insofar as both accept supervenience. But they differ regarding efficacy. Dicaearchus believes that mental phenomena occur solely in virtue of the body's tempering, without emergence. But in Al-

exander's eyes, it is only the presence of new causal powers that distinguishes the animate from the inanimate: without emergence, we would not even be alive. Tempering is important, therefore, insofar as it provides a basis for supervenience. But it is downward causation that secures the reality of the mental.

## 8. Conclusion

What these debates show is a struggle to work out the consequences of a monistic theory of mind committed to supervenience. The original *harmonia* theory seems to be committed to nothing more than this—Aristotle's accusation of epiphenomenalism seems based on auxiliary assumptions, while his own tendencies are towards emergentism. But he never develops these views in a systematic or explicit fashion. Our unsung heroes are thus the later Aristotelians, who are reacting from a clear understanding of the issues: Aristoxenus and Dicaearchus, who oppose Aristotle and formulate an epiphenomenalism worthy of the name; and Galen and Alexander, who develop the rich metaphysics true emergentism requires. The choice between them is especially stark, since they do not try to soft-pedal their commitments in any way. But this is advantageous. For we face the very same Scylla and Charybdis today.

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## Appendix

### Galen on Resultant and Emergent Effects

Galen *On the Elements according to Hippocrates*, 1.3, 70.15–74.23 De Lacy (10.16–14.6 Helmreich; = 1.428–32 Kühn)

70.15 Consider the first elements. Even though these substrata are unable to perceive, a body capable of perceiving can at some point come into being, because they are able to act on each other and be affected in various ways in many successive alterations.

For anything constituted out of many things will be the same sort of things the constituents happen to be, should they continue to be such throughout; it will not acquire any novel characteristic from outside, one that did not also belong to the constituents. But if the constituents were altered, transformed, and changed in manifold ways, something of a different type could belong to the composite that did not belong to its first elements.

Perhaps the argument needs an example for the sake of clarity. I claim that a house, which has come to be from stones, bricks, planks, and tiles, did not acquire anything of a different type that did not already belong to its constituents. Each of them, at any rate, had the hardness, shape, color, heft, and extension that also belong to the product. For the hardness, color, heft are strictly speaking the same as the constituents', since it is not in fact the case that they are hard, while it is soft; or that they are heavy, while it is light; or that they are red, while it is black. The house also has shape and extension, because they belong to the constituents too; although strictly speaking neither the extension nor the shape of the constituents is the same as the whole.

But it does not matter here whether the house is larger than the bricks or whether it is oblong, while the bricks are square, but whether it has extension and shape because the constituents have them too. After all, who isn't aware that the straight diagonal cuts a square area into two triangles? And that when those two triangles meet, a single square is formed? But both the triangle and the square



15 are shapes. And indeed two semicircular constituents produce a whole circle, too. So we acknowledge that one thing comes from other things; but not, indeed, that they are heterogeneous. For shapes can produce shapes and smaller extensions larger ones; but shapes cannot produce extensions nor extensions shapes.

Consequently, something heterogeneous cannot come  
20 from elements that do not change their qualities. But it is possible from ones that do. For through many intermediate changes what was previously black can be white afterwards, or what was previously white [can be] black afterwards, or what is presently [ $\nu\bar{\nu}$ ] incapable of sensation [can become] capable of sensation afterwards.

Those who think that if bodies constituted by fire, air,  
74.01 water, and earth change, blend, and alter, then something capable of sensation comes to be, claim that these things are possible; while those who think they remain just the sorts of things they are and only combine with each other as happens in a heap of wheat, barley, chick peas, and  
05 beans, argue that these things are impossible. For in general it makes no difference to claim that earth, or water, or fire, or air, produces a body capable of sensation when it comes together, or [that this happens], as those before them said, [when] atoms [do].

A single body capable of sensation cannot be produced from many which are incapable of sensation, if the elements are incapable of being affected. For it has been shown that nothing heterogeneous can belong to constituents [that are incapable of being affected].

But sensation certainly is of a different genus than  
10 shape, weight, or hardness, which belong to the atoms, or again than the others that belong to fire, air, earth, and water. For the genus of sensation also differs from colors, flavors, smells and, to speak generally, all the other properties of bodies.

Consequently, the body that is capable of sensation cannot be constituted either from atoms or from fire, air,  
15 earth, and water, so long as they remain unchanged and are just the sorts of things they are in accordance with the nature of each.

Therefore, it is necessary that that which is going to sense be constituted either (i) from first elements capable of sensation or (ii) from ones incapable of sensation, but naturally such as to change and alter.

These [arguments] surely show that the elements are more than one and that they can be affected. But as to  
20 whether all of the first elements are capable of sensation or incapable of sensation, they have not yet shown. That, however, there are certainly some elements that are incapable of sensation is manifest from the fact that there are even some composites that are not.

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