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From the *Phaedo* to the *Timaeus*: The Continuity of Plato's Metaphysics of Causation

A dissertation submitted in partial satisfaction of the  
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by

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This manuscript is dedicated to Don and Pat Hellier, and to Gary Hannen.

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## ABSTRACT

From the *Phaedo* to the *Timaeus*: The Continuity of Plato's Metaphysics of Causation

by

Michael H. Hannen

I argue for the basic continuity of Plato's account of causation, from the Forms-as-*aitiai* hypothesis of his middle period to the teleology of his late period. Against the prevailing view, according to which the Timaeian teleology amounts to a retraction of the *Phaedo*'s account of *aitiai*, I contend that in the *Timaeus* the metaphysical status of physical properties and processes remains essentially the same as it had been in Plato's middle period, when he first takes up the question of the relations among what Aristotle would go on to call "formal", "material", "efficient", and "final" causes. Against authors such as Gill, Annas, Fine, Mueller, Sedley, and Johansen, I argue that Plato has not elevated the explanatory status of efficient causes in the *Timaeus*, though he does, for the first time, take up the subject of natural philosophy and its epistemological status in a thorough way, which does mark a contrast with his middle period.

The discontinuity thesis, though it has always been influential in Plato scholarship, often rests, I find, on a certain interpretation of the *Phaedo*'s Forms-as-*aitiai* hypothesis, an interpretation that is open to some significant objections. Against the interpretation of the Forms-as-*aitiai* hypothesis according to which Plato intends, in the *Phaedo*, to put forward Forms as efficient causes, Gregory Vlastos argued for a "deflationary" interpretation which,

arguably, better coheres with Plato's broad metaphysical premises. In Chapter Three I defend and extend Vlastos's argument, replying on Vlastos's behalf to later work on the topic. My aim is, as well, to place the debate over the Forms-as-*aitiai* hypothesis in the broader context of the long-standing debate over the place of natural philosophy in Plato's thought. To this end, in Chapter Two I explore some respects in which I believe it can be shown that the discussion of *anamnesis* at *Phaedo* 59a-95e sets the stage for the Forms-as-*aitiai* hypothesis. That discussion provides an account of how we can be justified in the belief that concomitance of properties in the natural world points the mind to an underlying, purposive order. Evidence acquired through the senses alone could not justify such an inference; the *Phaedo*'s discussion of *anamnesis* emphasizes, however, concomitance of properties among certain kinds of geometrical objects, objects of pure thought. In the apprehension of these regularities, perception does not play a justificatory role, it only prompts the recollection. The *Phaedo*'s discussion of the Forms-as-*aitiai* hypothesis then mixes *a priori* and *a posteriori* examples, in order to bring out the justification for teleological inferences to a rational order underlying the flux of phenomena. We know of regular connections among properties from *a priori* cases. In Chapter Four I explain how the understanding of the Forms-as-*aitiai* hypothesis fits into the teleological natural philosophy of the *Timaeus*, contrasting my own interpretation with those put forward recently by Sedley and Johansen, *inter alia*. In Chapter Five I take up the reconstructionist interpretation of *Timaeus* 49c7-50b5, as developed by Cherniss, Lee, and Silverman, and I argue that this reading, and its import for the metaphysical status of particulars, helps us to understand the relation between metaphysics of causation and natural philosophy in Plato's late period.

## I. Plato on Nature

“In *Timaeus*’ physics, the more appropriate or reasonable the account of some phenomenon, the greater the probability of its being true...a far cry from the empiricist philosophies of science which so many scholars have projected anachronistically back into the *Timaeus*.” – Myles Burnyeat<sup>i</sup>

### A.

Why does Plato take up natural philosophy in a sustained way, albeit only once and late in his philosophical career, in the *Timaeus*?<sup>ii</sup> Or, as G. E. R. Lloyd more pointedly put the question, “Why, when the primary study of the philosopher is clearly the world of Forms, does Plato embark on a detailed account of the world of becoming at all?”<sup>iii</sup> It would seem, after all, that many of the claims for which he has argued in the course of his philosophical career preclude there being any value to such an exercise.

I believe that, with respect to Lloyd’s question, there is an answer for which we can have strong justification. But the way that I would put the answer is not quite the way that Lloyd and others have. In this chapter and the chapters that follow, I propose to define the set of issues relevant to answering this question somewhat differently from the ways tried in previous approaches. A fresh approach to this question of the place of Plato’s philosophy of nature in his philosophy broadly construed is called for, it seems to me, because I concur with Burnyeat’s recent judgment about the approach taken by “many” scholars (perhaps even most) in connection with this question.

There has been a tendency to presume that Plato’s intention in the *Timaeus* is – to cite Burnyeat again – to give an account of “what is probable” in terms of “our best extrapolation,

from what we already know of the cosmos, to what is true of it in some part or aspect hitherto unexplored.”<sup>iv</sup> That is to say, the kinds of empiricist preconceptions about natural philosophy of which Burnyeat writes are too often brought to bear on the *Timaeus*, with the result that Plato’s aims are misconstrued.

I propose to take up Lloyd’s question – Why, at all, given his metaphysical and epistemological commitments, should Plato embark on an account of the world of becoming? – by examining the more specific issue of Plato’s metaphysics of causation, as presented in the *Phaedo* and then as presented, again, in the quite different context of the *Timaeus*. If we can get a handle on the relation between the *Phaedo*’s Forms-as-*aitiai* hypothesis, on the one hand, and the natural philosophy of the *Timaeus*, on the other hand, we will have shed some light on the broader question of the status of nature in Plato’s philosophy.

With respect to that account of the world of becoming, I intend to keep in view Burnyeat’s, to my mind correct, premise of interpretation: “*Timaeus is not trying to disclose what is true about the physical world so much as to disclose why this is the best of all possible worlds that the materials allow the Maker to make: just what Socrates wished for in the Phaedo*” (my emphasis).<sup>v</sup> But no sooner than we say that the natural philosophy of the *Timaeus* is the fulfillment of Socrates’s hopes for teleology, a problem arises: what should we make of the relation between the *Phaedo*’s Forms-as-*aitiai* hypothesis (presented as an alternative to Presocratic natural philosophy) and the natural philosophy of the *Timaeus*? The former is presented in the context of a discussion in which what we might call naturalistic, or mechanistic, causation seems to be pretty well disparaged. The latter, on the other hand, seems to posit such explanations for certain phenomena.



If, as Burnyeat contends, Timaeus's principal aim is not to disclose what is true of the physical world, to what end does he give us lengthy, detailed, well-reasoned accounts of material causal mechanisms, e.g. of the ways in which the shape of fire corpuscles explain fire's sensible qualities? A propaedeutic step for getting clear on this issue, I believe, is to understand Plato's sense in having Timaeus call the presentation of his natural philosophy an "*eikos muthos*." (29d2) Burnyeat, I contend, has given the definitive exegesis.

Burnyeat argues that typical translations such as "probable account," "likely account," "probable story," and "likely tale" distort Plato's intent, suggesting, as they do, that Timaeus's natural philosophy is provisional because it is subject to revision as our knowledge of the natural world becomes more exact.<sup>vi</sup> Glosses of this kind often reveal an anachronistic approach to Plato's aims in the dialogue. "The reason we are given why we should be content with an *eikos muthos*," on Burnyeat's reading, "leads us far away...from modern empiricist philosophies of science."<sup>vii</sup>

Though "*eikos*" does have "probable" and "likely" among its senses, the sense in which Timaeus means that his account is *eikos* is that it is "appropriate", "fitting", or "reasonable", given his aim of providing a natural philosophy that is, at the same time, a *muthos* – as Burnyeat puts it "a *peri phuseos* which is simultaneously a myth: a religious story as well as a scientifico-mathematical one."<sup>viii</sup> Burnyeat cautions us against shying away from "myth"; though it may not strike us as an apt term for a treatise on topics in what we think of as physics, astronomy, and biology, Plato would have seen no incongruity in the description. Though the treatise on nature that he gives us "is as well reasoned as any of the PreSocratic cosmogonies in the *peri phuseos* tradition," Plato regards that tradition as materialist. He is not content to add another materialist

natural philosophy to those of his predecessors; “Timaeus’s cosmogony will be a theogony too.”<sup>ix</sup>

Plato’s account of the origin and architecture of nature is theistic, and he takes it as axiomatic that the Maker made the best cosmos that the materials would allow. Given these framework principles, what counts as *eikos* has to do with how well an account satisfies the condition that explanations be reasonable, where that is understood as fitting and appropriate to the Maker’s aim of creating the best possible order. “Our present day understanding of probability, especially in scientific contexts, has very little in common with...the Platonic-Aristotelian *eikos*.”<sup>x</sup>

Indeed, Burnyeat stresses that Timaeus’s accounts are characterized as *exegetai*. That Timaeus is conceived by Plato as an exegete of nature reveals much about what will count as a reasonable or appropriate explanation of a natural phenomenon in his discourse. “Exegete”, in the sense contemporary with Plato, Burnyeat observes, “refers to a guide who takes you round a sanctuary or temple” or to one who “expounds an oracle, explains a dream, tells you the meaning of a ritual ceremony, or advises on problems of expiation.”<sup>xi</sup> It is appropriate, Burnyeat contends, “to think of Timaeus as our guide to the beautiful design of the cosmos we inhabit.”<sup>xii</sup>

If Burnyeat’s take on the sense in which Timaeus is an exegete and his accounts of phenomena are *exegetai* is correct, then it would certainly support the contention that Timaeus is not principally concerned to reveal what is true about the physical world, at least where doing so is understood as giving progressively more exact accounts of phenomena by extrapolating from physical facts that are well-established. If Timaeus is correctly understood as our tour guide through a product of craft, the most philosophically salient properties of which are aesthetic, then

we should expect him, in his explanations, to aim at what is rationally satisfying. The task of an exegete, as Burnyeat explains, is “to expound or explain the unobvious significance of an object like a dream, ritual or oracle which does not bear its meaning on its surface, because it comes from, or has some important connection with, the divine.”<sup>xiii</sup> Plato’s boldly original turn, in conceiving *Timaeus*, is to invent an exegete of nature. When we correctly understand *Timaeus*’s task as an exegete, we see “how far away we are from the cautious atmosphere of modern empiricist philosophy of science.”<sup>xiv</sup>

An opposed, and perhaps historically more influential view has, in the last century, found its classic expression in A. E. Taylor’s magisterial commentary on the *Timaeus*. In Taylor’s reading, the dialogue presents Plato’s natural philosophy as “the nearest approximation which can provisionally be made to exact truth.”<sup>xv</sup> The sense in which *Timaeus*’s discourse is *eikos* is that it lacks the “absolute finality and exactitude” of “pure mathematics.”<sup>xvi</sup>

Though Taylor acknowledges that, for Plato, natural philosophy can never rise to the status of exact scientific knowledge (as pure mathematics does) a premise of Taylor’s interpretation is that natural philosophy can approach, asymptotically, ever closer to exact scientific knowledge, narrowing the gap between the study of nature and pure mathematics. The way that Plato sees natural philosophy advancing, according to Taylor, is ever-closer scrutiny of phenomena: “Physical laws are always being revised and corrected in the light of newly-discovered facts or more accurate measurements of facts which were already familiar.”<sup>xvii</sup>

It seems to me doubtful that Plato construed natural philosophy as progressive, at least in the sense that Taylor claims. I strongly suspect that Burnyeat comes much closer to revealing Plato’s true intentions and aims. How can we arrive at a basis for choosing between these two

broad perspectives? I would like to suggest that if we could get clear on the relation between the *Phaedo*'s Forms-as-*aitiai* hypothesis and the natural philosophy of the *Timaeus*, doing so would contribute much to the task of making an informed choice between these two broad interpretive approaches.

The sense in which Forms are responsible for the phenomenal realm being as it is receives little discussion in *Timaeus*'s discourse, indeed surprisingly little given what one might have expected if one had the *Phaedo*'s sketch of teleology in mind. Material, mechanistic causal structures in nature, which were diminished by Socrates in the *Phaedo*, come in for extensive discussion. Not surprisingly, there has been a tendency to read into the *Timaeus* a shift in Plato's thinking about the metaphysics of causation and the epistemic status of our beliefs about connections among phenomena. But this inference may reveal more about the empiricist preconceptions of which Burnyeat speaks than about Plato's aims in the *Timaeus*.

If the causal relevance of Forms to the natural world receives relatively little discussion in the *Timaeus* because the plausibility of that metaphysical premise has waned in Plato's mind, then that would be good reason to believe that Taylor's broad view is correct: Plato now believes that inquiry into phenomena will become progressively more exact by dint of closer scrutiny of apparent material-*aitiai* (as Aristotle would go on to term them), the very candidates for *aitiai* so disparaged by Socrates in the *Phaedo*. Perhaps Plato's intention is to elevate the causal status of such material and efficient *aitiai* as fire corpuscles, and his commitment to the thesis of the *Phaedo* that Forms are true *aitiai* has fallen by the wayside.

If Burnyeat is correct, however, that *Timaeus*'s ultimate criterion is "the more appropriate or reasonable account of some phenomenon," i.e. the more rationally satisfying account, as

against “extrapolation from what we already know of the cosmos,” then there is good reason to believe that the importance of the Forms-as-*aitiai* hypothesis has not diminished in Plato’s mind. It is quite tenable that even amidst the *Timaeus*’s lengthy, detailed accounts of nature’s mechanisms Plato retains a principled skepticism about the explanatory value of material and efficient *aitiai*. The odd juxtaposition of this skepticism with the extensive theorizing about the domain with respect to which he is skeptical becomes somewhat less surprising if we think, as Burnyeat does, that the purpose of the *Timaeus*’s *peri phuseos* is to imagine what causal structures in the natural world *would* be appropriate given, as axiomatic, “the one unchallengeable proposition about the cosmos that we must hold true...that the Maker made it the best possible the materials allow.”<sup>xviii</sup> Theorizing about the properties and characteristic motions of various natural kinds of bodies is, in that case, for the sake of speculation upon how the Maker might have brought it about that Forms are imaged in the phenomenal realm. That ultimate responsibility for the natural world being as it is lies with Maker and models remains Plato’s conviction. What we get in the *Timaeus* is a follow up to the Forms-as-*aitiai* hypothesis: Plato’s account of how we would most fittingly conceive the Demiurge’s craft of imaging Forms in the realm of becoming.

It seems fair to say that in recent decades a reading much closer to Taylor’s than Burnyeat’s has become the predominant view. According to this reading, the natural theorizing of the *Timaeus* is intended by Plato as a contribution to “a unified science,” (Kung) or “an integrated theory of scientific explanation,” (Lennox) or a “conception of proper scientific methodology” (Mueller).<sup>xix</sup> What I find problematic about the predominant view is that it would attribute a higher epistemic status to Plato’s speculative natural theorizing than I think he intended it to have. Such a reading does not come to grips, it seems to me, with the weight of the

problem that motivates Lloyd's question, cited above: why, given the broad metaphysical and epistemological commitments that Plato devotes much of his philosophical career to defending, should he embark on a detailed account of the phenomenal realm at all? His broad philosophical principles would seem to entail that is in principle not possible for natural philosophy to acquire the status of a science.

I will be arguing that it is, indeed, Plato's consistent and considered view that natural philosophy, in principle, cannot acquire the status of a science. I should hasten to add that this debate is not new. Indeed, it goes back to Plato's own time (his students, Aristotle and Xenocrates, disagreeing over how the natural philosophy of the *Timaeus* was to be taken).<sup>xx</sup> But what I have called the predominant reading has been, in recent decades, a notable trend in some Plato scholarship of the highest caliber. Nonetheless, I think that, given three theses, discussed below, the onus of the argument must be on those who take Plato to be attributing a relatively high epistemic status to natural philosophy: 1) the two-worlds metaphysics, 2) the flux of the phenomenal world, 3) reference failure. Further, I think that much excellent scholarship in recent decades, particularly in defense of the "reconstructionist" reading of *Timaeus*, affords some new perspectives to take on the old debate; I will also bring insights to bear on the topic, my own and those of others, that stem from research on the relation between the *Phaedo*'s Forms-as-*aitiai* hypothesis and the teleology of the *Timaeus*; I believe that these fresh approaches to the topic will be fruitful.

To set the stage, by "two-worlds metaphysics" I mean Plato's thesis that there are two, metaphysically distinct, kinds of thing: eternal, immutable entities – the Forms – that exist in a transcendental realm, and the entities that are given to us in experience, the sensible particulars

of the phenomenal realm. Only the former are objects of knowledge; science, correctly understood, is only possible for a domain of immutable entities.

The thesis that the phenomenal realm is in flux is the closely-related claim that sensible particulars undergo continuous change. Their ephemeral nature precludes them being objects of knowledge, for they are ever “rolling around as intermediates between what is not and what purely is.”(*Republic* 479 d4) The point I shall press in what follows is that, given that phenomenal individuals cannot be objects of knowledge, ostensible connections between them – i.e. causal connections – *a fortiori* cannot be objects of knowledge.

Further, it is arguably the case that Plato believes that language never even gets a grip on phenomenal particulars. Attempts to refer to particular instances of, say, fire, fail. This “reference failure” reading of the *Timaeus* is controversial, but I intend to show that it would fit well with other, well-established commitments that Plato has in mind. When *Timaeus* contends that “what we ever see coming to be at different times in different places...slips away and does not abide the assertion of ‘that’ and ‘this’ or any assertion that indicts them of being stable,” I take Plato to be indicating a principled distinction between discourse about phenomena, on the one hand, and inquiry into the nature of true existents, on the other hand.(49 d3 – e4) This distinction accords with *Timaeus*’s oft-repeated cautions that talk about the world is talk about a shifting image, and it marks such discourse off from branches of knowledge.<sup>xxi</sup> “The proper objects of our discourse about the physical world,” as Mary Louise Gill aptly sums up this reading, “are entities of a quite different sort,” namely, the Forms.<sup>xxii</sup>

The choice of the reference-failure reading of *Timaeus* over the traditional reading “reflects”, to follow Gill again, “a decision about the status Plato grants to physical

phenomena.”<sup>xxiii</sup> I believe that, indeed, each of these three theses, correctly understood, yields a view of the status of phenomena according to which phenomena cannot constitute a domain of knowledge. I concur with Lloyd’s considered judgment that “at no stage in Plato’s life, either during or after the composition of his chief cosmological dialogue, did he consider that what we should call natural science is science in the fullest or highest sense of the term.”<sup>xxiv</sup>

To return to the question of my opening paragraph – why Plato should take up such a discourse, given his broad philosophical commitments – he does, of course, offer us an answer: it is edifying to theorize about the ways in which necessary causes were adapted by Intelligence to serve divine causes. I take Plato at his reasonably-clearly signaled indication that his motive is ethical. But given how detailed and elaborate a story we then get of the mechanisms by which the Craftsman brought about his teleologically-organized ends, readers have found it difficult to suppose that that story is not being advanced as something reasonably like what we should call science.

The view that I will advance is broadly, as stated above, that it is Plato’s consistent position that natural philosophy in principle cannot attain the status of a science; and more specifically the view that I will advance is that Plato’s metaphysics of causation does not undergo any substantive shift from the *Phaedo* to the *Timaeus*. The thesis that Forms are responsible for phenomenal particulars being as they are is Plato’s considered view, even in the *Timaeus*. Although the causal relevance of Forms recedes from the focus of discussion in *Timaeus*’s discourse, Plato’s exegete of nature, in laying out a picture of nature’s workings, is not in any substantive way revising the Forms thesis.



My view is that the apparent tension between the rich, concrete story that we get from *Timaeus* about nature's mechanisms, on the one hand, and the Forms-as-*aitiai* hypothesis, on the other hand, is diminished when we keep in mind a premise that is axiomatic for Plato: as Burnyeat puts it, *Timaeus* is teaching us to be "connoisseurs of a product of practical wisdom," and "practical wisdom cannot aspire to the same standards of rigor as theoretical wisdom can."<sup>xxv</sup> *Contra* Taylor, Kung, Lennox, and Mueller, *Timaeus* is not giving us a model for a science of phenomena that can become progressively more exact. *Timaeus* is an "exegete of the reasonable order of things."<sup>xxvi</sup> That explanations be reasonable – i.e. fitting and appropriate to Plato's teleological premises – trumps all other criteria of adequacy in Plato's mind. That a posited natural causal structure be the best, most reasonable way that the Divine Craftsman could have imaged the Forms to which He looked as models is a constraint on observation, or, perhaps better, a framework principle within which observation occurs.

## **B.**

Just as debate over the general question of the place of natural philosophy in Plato's thought extends back to his contemporaries, the more specific issue of his metaphysics of causation and the nature of its development has prompted a range of interpretations. It will be helpful at this juncture to make an overview of how other authors have handled this matter – i.e. of who believes what regarding continuity – and of how I plan to position my own interpretation.

As I have indicated above, Taylor's commentary is, by dint of its unsurpassed erudition, the point of departure for all modern *Timaeus* interpretation. With respect to the question at hand – the continuity of Plato's metaphysics of causation, or the lack thereof – Taylor's interpretation is complex.

On the one hand, Taylor's reading may well be the high-water mark of scholarship that would deny a basic continuity to Plato's metaphysics of causation from the *Phaedo* to the *Timaeus*: because he denies that either dialogue reflects Plato's own views. "It is a mistake," Taylor wrote, "to look in the *Timaeus* for any revelation of distinctively Platonic doctrines."<sup>xxvii</sup> He was even more confident that, in so far as the *Timaeus* touches on the causal relevance of Forms, what is said there does not represent Plato's view. Indeed, "Plato did not reach a distinctive doctrine of his own," about Forms, Taylor contends, "until late in life," and that "distinctively Platonic doctrine is not to be found in the *Timaeus*."<sup>xxviii</sup>

On the other hand, however, Taylor's scholarship may well be the greatest buttress for my continuity thesis. Given that he believes that the Forms-hypothesis of the *Phaedo*, too, is not Plato's doctrine, he has no objection to saying that "so far as the Forms and their relation to 'things' are concerned, there is no substantial difference between the teaching of *Timaeus* and that of the *Phaedo*."<sup>xxix</sup> After careful exegesis of *Timaeus* 51b7-52a7, Taylor finds that "the only difference" in Forms doctrine between the two dialogues "is the purely verbal one that whereas the *Phaedo* speaks of the 'participation' of sensible things in Forms or of the 'presence' of Form to thing, the *Timaeus* speaks always of 'things' as 'images' which 'imitate' the Forms which are called their 'models'."<sup>xxx</sup>

I am glad to take on board Taylor's forcefully argued thesis that there is no substantive difference between the Forms doctrine of the *Phaedo* and that of the *Timaeus*. It supports my more specific thesis to do with the continuity of Plato's metaphysics between the two dialogues, to some extent. On the other hand, it is unclear how much support for my thesis can be drawn from Taylor's reading of *Timaeus* 51b7-52a7. For as I indicated above, Taylor epitomizes those interpreters who find in the *Timaeus* a profound shift in Plato's thinking about natural

philosophy. Even if the Forms doctrine has undergone no substantive revision between the *Phaedo* and the *Timaeus*, that fact has no broad significance, for Taylor, because given the shift, as he sees it, in Plato's thinking about natural philosophy, the Forms-as-*aitiai* hypothesis is now of ancillary importance – at most – to Plato's interests in the *Timaeus*. “A great part of the dialogue,” Taylor wrote, “is really a treatise on mathematical physics inspired by the thought that the ‘appearances’ of the sensible world are to be explained by the geometrical structure of the corpuscles of bodies. This goes far beyond anything in the *Republic*.”<sup>xxxix</sup> Indeed, “Socrates's silence,” in the *Timaeus*, “about *Republic* VI-VII,” where inquiry into Forms is held up as the true focus of the philosopher, and the study of phenomena is clearly subordinate, is to be explained, according to Taylor, by the fact that “the account of the sciences given in the *Republic* would no longer be adequate, now that they had been advanced so notably.”<sup>xxxix</sup> Solid geometry, for example, “which is said in the *Republic* to be a still unexplored field, had been enormously advanced by Theatetus; the study of quadratic surds had been placed on a scientific basis and the beginning made with the geometry of conic sections.”<sup>xxxix</sup>

In short, Forms come in for little discussion in the *Timaeus*, as Taylor sees it, because Plato was so impressed, at the time he wrote the dialogue, by how much scientific theorizing had advanced since he had written the middle dialogues. This interpretation seems problematic in many respects, but for the moment I will just call attention to one of its questionable assumptions: Taylor seems to presuppose that the geometrical account of particulars cannot be shown to complement the formal account particulars. But it is by no means clear that this is correct. Indeed, in Chapter Five I will discuss Alan Silverman's version of such a reading, in some depth.

I am far from the only reader to have found Taylor's broad interpretation most questionable. Francis Cornford took the strongest exception to the "Taylorian heresy" of "dividing the substance of Plato and *Timaeus*."<sup>xxxiv</sup> As Cornford observes, "All the ancient Platonists from Aristotle to Simplicius and all medieval and modern scholars to our own day have assumed that this dialogue contains the mature doctrine of its author. Professor Taylor holds they have been mistaken."<sup>xxxv</sup> Suffice it to say that such a sharp break with the tradition in *Timaeus* commentary would only be justified by the strongest of evidence. The improbability that the dialogue represents not Plato's mature view of natural philosophy, but is rather an amalgamation of Empedoclean and Pythagorean elements, elements of which Plato "largely disapproved," as Cornford points out, is great; and the evidence for such an interpretation, Cornford notes, "could hardly have been overlooked by all those ancient authorities whose knowledge of Platonism and its antecedents was far greater than we can ever hope to possess."<sup>xxxvi</sup>

My own reading is in many respects quite close to Cornford's. He finds a basic continuity to Plato's metaphysics of causation, from the *Phaedo* to the *Timaeus* (and unlike Taylor he sees both dialogues as broadly expressive of Plato's considered views, at different stages in their development). On Lloyd's question – Why does Plato embark on an account of the world of becoming? – Cornford takes an approach that emphasizes continuity. Such "physical transactions" as those between our sense organs and material objects, e.g. in the case of eyesight, "we need to study;" but "they will not reveal the true reason or explanation of vision, the purpose it is rationally designed to serve. They tell us 'how' we see, but not 'why'."<sup>xxxvii</sup> Which is to say that the *Timaeus* preserves the *Phaedo*'s distinction between "true" causes (as

Plato conceives of such, i.e. rationally satisfying accounts of the reason(s) Mind had for choosing a given arrangement) and that without which the cause could not be a cause.

Cornford stresses the continuity between the metaphysics of causation in the *Phaedo* and in the *Timaeus*. Whether the natural means under discussion in the *Timaeus* are the mechanisms of vision or the concomitance of properties in the elementary corpuscles, the “notion of hypothetical necessity of means to an end and of the partial subordination of the given means goes back to the *Phaedo*.”<sup>xxxviii</sup> The premise that only the reason for an arrangement truly bears a share of the responsibility for it (along with Mind), that only the purpose for an arrangement is truly explanatory, as distinguished from the means of bringing it about, is not in any substantive way revised for the *Timaeus*. “Socrates in the *Phaedo*,” as Cornford points out, “says that this distinction [between a true cause and the means chosen to bring it about] ought to be applied to the explanation of the world as a whole, but that he himself had been unable to attempt that task...the task which, many years afterwards, Plato set himself to accomplish in the *Timaeus*.”<sup>xxxix</sup>

Cornford is far from the only *Timaeus* scholar who would affirm that “the task which, many years afterwards, Plato set himself to accomplish in the *Timaeus*” is that of carrying out the teleological natural philosophy sketched in the *Phaedo*. More recently, Thomas Keller Johansen, for example, writes that “the *Phaedo* set the terms for the kind of teleological cosmology that would find its fulfillment in the *Timaeus*.”<sup>xl</sup> But to explain how the *Timaeus* is the fulfillment of a task conceived by Plato in his writing of the *Phaedo*, Johansen finds it necessary to posit a substantive revision in Plato’s metaphysics of causation and to read Plato as raising the epistemic status of natural philosophy (as I have discussed above, this strategy has been the prevailing trend in recent decades). I discuss Johansen’s reading in depth in Chapter 4. Suffice it to say,

for the moment, that I find Cornford's reading much closer to the mark: he sees the *Timaeus* as the fulfillment of the teleological natural philosophy sketched in the *Phaedo*, but connects the two dialogues in a way that preserves the *Phaedo*'s clear distinction "between the true reason or cause (*aition*) and 'that without which the cause would not be a cause';" and he finds the fulfillment of that project, in the *Timaeus*, to be consistent with the principle, which I believe is Plato's firm conviction, even in the later dialogue, that "no one can ever really know" for example "the ultimate constitution of body," because "there can be no such thing as physical science."<sup>xli</sup>

My difference with Cornford is that I think he doesn't go far enough in coming to grips with the tension between, on the one hand, Plato's conviction that inquiry into nature *in principle* cannot rise to the status of knowledge and, on the other hand, his confidence that nature is teleologically and providentially organized. The juxtaposition of these first principles in the *Phaedo* has always struck me as perplexing. To reconcile them, I think that the reconstructionist reading of the *Timaeus* proposed by Reginald Hackforth, E. N. Lee, and Allan Silverman, *inter alia*, is needed. According to this reading, there is a principled basis for thinking that natural philosophy cannot yield knowledge – natural philosophy is inquiry into images – and yet we can have some justification for believing that nature is purposive – the regularities of succession and concomitance to the images are what they are for our benefit and improvement. I discuss the difference between my view and Cornford's in depth, in this connection, in Chapter 5.

Despite the above-mentioned differences that I have with Cornford, I do believe that he's closer to the mark on many of these issues than the equally formidable and always erudite W.K.C. Guthrie, from whom I've learned much. What I have called the prevailing trend of interpretation in recent decades – the reading that emphasizes discontinuity in Plato's

metaphysics of causation, between the *Phaedo* and the *Timaeus* – received a concise expression in 1978 in the fifth volume of Guthrie’s history of Greek philosophy.

Contrasting the place of Forms in the *Timaeus* with the *Phaedo*’s Forms-as-*aitiai* hypothesis, Guthrie writes that “the Forms are now...formal causes only, having resigned to a separate power the quasi-efficient function which they, rather obscurely, possessed in the *Phaedo*.”<sup>xlii</sup> I think that a reading of the *Phaedo*’s Forms-as-*aitiai* hypothesis according to which the Forms possess a quasi-efficient function is mistaken. I discuss this reading, especially Guthrie’s version of it, but many others in the same vein as well, in depth in Chapter Three. Suffice it to say, for the moment, that I concur with, and defend, Gregory Vlastos’s reading of the Forms-as-*aitiai* hypothesis, according to which the causal relevance of the Forms is not to be construed as some efficiently-causal power.

In part because I disagree with Guthrie’s contention that the Forms-as-*aitiai* hypothesis has undergone substantive revision by the time of the *Timaeus*, I take issue with his broad interpretation of that dialogue’s metaphysics of causation. In contrast to the *Phaedo*, now, in the *Timaeus*, what Aristotle would call formal and material *aitiai* are on a par. Plato has elevated the metaphysical status of physical mechanisms and processes. Guthrie writes that “the error of most earlier philosophers,” according to Plato, “had been to regard [physical mechanisms and processes] as primary. In the *Phaedo* he had castigated this neglect of final causation as ‘absurd’ and ‘sheer laziness’, and dismissed as a waste of time the attempt to explain the world by ‘airs, ethers, waters and other strange things’.”<sup>xliii</sup> But according to Guthrie “now [in the *Timaeus*] his attitude has changed. Under the title ‘what happens of necessity’, material conditions and processes occupy at least a third of the whole work, and detailed explanations are given of the ingenuity with which the Demiurge adapted them to good ends.”<sup>xliv</sup>

I do not concur with Guthrie's judgment that in the *Timaeus* Plato's attitude has changed. From the fact that detailed explanations of the Demiurge's ingenuity in adapting his materials make up a third of the dialogue, Guthrie's inference does not follow. That fact is equally compatible with Burnyeat's reading, according to which "the exegesis *Timaeus*...offer[s] is an...exposition or revelation of the rationality embodied by the Maker in the cosmos he produced."<sup>xlv</sup> Which is to say that normative considerations – considerations to do with what would make for an appropriate, fitting, rationally-satisfying explanation of a given phenomenon – alone are genuinely explanatory. For all that, it may well be that *Timaeus* is offering a myth that is *eikos* not only in the sense that "it is like what is true, but also" in the sense that "it is like what ought to be."<sup>xlvi</sup> For all that, it may well be that the one-third of the *Timaeus* of which Guthrie speaks is about "a likeness of an eternal rational order."<sup>xlvii</sup> And inquiry into a likeness *in principle* cannot rise to the status of knowledge. Because material conditions and processes belong only to the likeness, not to those entities with respect to which they are like – the Forms – it may well be that the metaphysical status of material *aitiai* – were it possible for something material to be truly *aitios* – has not changed from the period of *Phaedo*'s composition. It is not clear that Plato's conviction that material causation – if there be such – is not genuinely explanatory has been revised. Arguably, Plato still holds, in the *Timaeus*, that it would be "absurd" and "sheer laziness" to explain the world by "airs, ethers, waters" and the like, i.e. by material *aitiai*.

*Timaeus* is attempting, as Burnyeat puts it, "to disclose the reasonableness of the cosmos in all its aspects, even – or perhaps especially – when it comes to the Divine Craftsman's dealings with the realm of necessity."<sup>xlviii</sup> But the material conditions and processes that figure in the realm of Necessity are not – given Plato's broad epistemological and metaphysical



commitments – objects of possible knowledge. Thus, any account that tries to exhibit the rationality of the cosmos must be, to borrow again Burnyeat’s translation of *eikos muthos* – “a reasonable/rational *myth*.”[my emphasis]<sup>xlix</sup> I concur with Burnyeat’s judgment that we should not shy away from translating *muthos* as “myth”. It is because material conditions and processes – whatever in the end they may be – cannot be objects of knowledge that Plato quite possibly sees no contradiction in, on the one hand, devoting one-third of a long dialogue to discussion of them, *and*, on the other hand, *not* elevating their explanatory status, relative to how he conceived of that status in the *Phaedo*.

It is true, of course, that the material conditions and processes of which Guthrie speaks are called “auxiliary causes” (*sunaitiai*) in the *Timaeus*. Certainly, that marks a shift of tone, as compared with Socrates’s sketch of teleology in the *Phaedo*. But, of course, the context has shifted as well. The context of the relevant *Phaedo* passages is Socrates’s critique of the Physicists, his explanation of his objection to the effect that they neglect final causation, as Guthrie correctly notes. In that context, it would be odd of Socrates to emphasize the supplementary, but ancillary, role of materials in a production of practical wisdom. As Burnyeat emphasizes, Plato regards the *peri phuseos* tradition as materialist.<sup>1</sup> And the *Phaedo* is the pivotal moment in the history of Western philosophy in the emergence of a non-materialist natural philosophy. Again, in that context it would be odd for Plato to take up the issue of the ancillary role of materials in Mind’s crafting of the cosmos – a story sketched in only the barest terms in the *Phaedo*. Further, as Stephen Menn has emphasized in recent work on connections between the *Phaedo* and the *Timaeus*, the notion that mind, in imposing order, always does so through some instrumental means is clearly present in the *Phaedo*, even if it is only touched on very briefly.

Menn compares the ordering of the cosmos with the ordering of speech by a human agent. He elaborates on Socrates's examples at *Phaedo* 98c4-99b1 – such as the explanation for why he is sitting where and when he is: according to Socrates, it is by mind (*nous*), not sinews and bones. Similarly, the ordering of words in speech is by mind, not by breath and vocal cords. In conversing, “ordering the things said, like ordering the cosmos, means bringing them at least to some extent under the control of *nous*, choosing and imposing a rational pattern, and it is only the soul that can do that, not the body, although of course the soul can do it *using* the breath and vocal cords as instruments,” just as, as Menn points out, the soul “can see using the eyes and sit using bones and sinews.”<sup>li</sup> Thus, the idea that anytime mind (or Mind) orders it orders through material conditions and processes given antecedently is already present in the *Phaedo*, as is the idea that Intelligence must have so acted in crafting the cosmos; the presence of both of these philosophical elements in the *Phaedo* Menn does a superb job of bringing out.

It might be objected that because Socrates characterizes material conditions and processes in merely instrumental terms, something is lacking in the *Phaedo*, as contrasted with the Timaeian idea of *sunaitiai*: namely, the idea that the materials contribute something to the nature of what is produced. Again, it would be odd for Socrates to introduce such a relatively fine-grained distinction in this context. Is it plausible, then, that it has not occurred to Plato at this juncture in his thinking that the material and structure of, say, the eyes, for example, contribute something to the nature of the visual images produced? It seems more likely that this point is not taken up in the *Phaedo* because Plato is quite focused in the dialogue on non-experiential knowledge. He is focused not on the mechanisms by which, say, for example, color images are produced, but with such workings of mind on the materials as the understanding that red and blue are not the same color, or that two shades of yellow are shades of the same color;

the pure concepts of identity and difference are not themselves given in the perceptual experience. Plato's focus in the dialogue is to a great extent on what we would call *a priori* knowledge, as well as such related considerations as *anamnesis* and immortality. It would have been jarringly out of place, in the context, for him to have taken up the fine-grained distinction between what we might call contributing-instrumental causes and merely-instrumental causes.

In his recent survey of causation in ancient Greek thought, R. J. Hankinson also emphasizes what he takes to be the substantive continuity between the *Phaedo* and the *Timaeus*. The passage of the *Timaeus* in which Plato elaborates the concept of a *sunaitiai*, 46c-e, Plato's account of the physiology of vision, according to Hankinson "mirrors the *Phaedo* account...the *sunaitiai* may be compared with the prerequisites, the 'things without which,' of which Socrates speaks in the *Phaedo* and which he distinguishes from true *aitiai*."<sup>lii</sup> The "teleological hypothesis" of the *Timaeus*, as Hankinson reads it – "a regulative principle on explanatory adequacy" – is, in Hankinson's presentation of it an "extension of the teleological principle" of the *Phaedo*.<sup>liii</sup> "Once again," [in the *Timaeus*] Hankinson concludes, "material explanations are not so much false as inadequate." (my emphasis)<sup>liv</sup> Which is to say that even in the sketch of teleology in the *Phaedo*, Socrates does not deny that material conditions and processes will have some role to play in the full explanation of a phenomenon. This point is often neglected by those who would read Plato's later precissifications on this point, in the *Timaeus*, as a change of attitude, as with, e.g., Guthrie, cited above. I pursue this point in depth, in connection with the recent work of Sedley and Johansen, in particular, in Chapter Four.

In the chapters that follow, I plan to position myself, with respect to scholars such as Menn and Hankinson, who find broad continuity to the metaphysics of causation between the *Phaedo* and the *Timaeus*, and thus with whom I agree on this broad issue, by going farther in

explaining the nature of the continuity. I believe that more needs to be said on this issue. There is a genuine, indeed a profound, tension between the teleological hypothesis, on the one hand, and Plato's broad theory of knowledge, on the other hand. The former involves us in observing natural phenomena and making certain inferences on the basis of these observations. Plato's very high standards for knowledge, however, as well as the intertwining of his metaphysics and epistemology, with the consequent restriction of knowledge to objects of thought, would seem to preclude the teleological thesis from having the clearly central importance to his natural philosophy, and to his metaphysics more broadly, that it clearly does have. I will be discussing a broad range of issues that will clarify the nature of the continuity involved.

Given the difficulty of explaining the reconciliation of these broad currents in Plato's thinking, tendencies which are indeed in tension, a tension that does not admit of any obvious resolution, it is not unreasonable or surprising that many great scholars have read a shift in attitude into Plato's different statements on these issues. Like Guthrie, Donald Zeyl, for example, in his recent commentary on the *Timaeus*, takes there to be such a shift in Plato's attitude. Contrasting the goal of the *Timaeus* with Plato's thinking in *Phaedo* 95e-105c, Zeyl writes that "the goal of Intellect is to fashion a world that is as good and as beautiful as the character of the materials out of which it is made will allow. These materials, too, [Plato] now [in the *Timaeus*] concedes, figure in an explanatory account of the world."<sup>lv</sup>

In allowing, in the *Timaeus*, that the nature of the materials will play a role in the explanation of phenomena, is Plato making a concession from his earlier view? Does anything that Plato's Socrates says in *Phaedo* 95e-105c rule out that possibility? Consider how Socrates puts the issue at 96b3-6: "Do we think with our blood, or air, or fire, or none of these, and does

the brain provide our senses of hearing and sight and smell, from which come memory and opinion, and from memory and opinion which has become stable, knowledge?”

Plato’s way of framing the issue at hand – i.e. how to properly conceive “investigation of the cause of generation and destruction,” in the specific context of 96a1 ff., but more broadly, in 95e-105c as a whole, how to properly conceive natural philosophy – clearly indicates his dissatisfaction with the Physicists’ reliance on material *aitiai*. Clearly, Plato has pretty well indicated the implausibility of the implicit principle of transitivity from material conditions and processes (e.g. blood, or the brain) to knowledge. But just as clearly he leaves open the question of whether we think *with* “blood, or air, or fire.” Perhaps, in the end, material *aitiai* will play no role in the generation of thought – “or none of these” – but he is clearly not committing to that thesis here. He leaves open the possibility that one or more of the various material *aitiai* under consideration may contribute something to the nature of the phenomenon – thought. Yet, at the same time he indicates what will remain his considered view of natural explanation, in the *Timaeus*: even if material *aitiai* do contribute something to the nature of a phenomenon, it would be implausible to think that they, without appeal to the good to be brought about – i.e. what Aristotle would later call the “final cause” – and the role that they play in bringing about that good, could ever be explanatory.

### C.

Efforts to assess the status that Plato assigns to phenomena, and by extension the status that he assigns to inquiry into phenomena – natural philosophy – often proceed by way of contrast and comparison with Aristotle’s stance on these questions. In the chapters that follow, these comparisons will be taken up at numerous points. But I would like to begin by suggesting

some ways in which we can gain perspective on Plato's, perhaps puzzling, attitude toward inquiry into nature, by way of comparison with the views taken on this topic by certain early-modern thinkers.

Because the natural philosophy that Timaeus lays out has to do with “that which becomes,” and because it must proceed from “sense perception,” it can only rise to the status of “opinion”; thus, Timaeus tells us, the account that he offers can only be a “likely tale on these matters.”(27 d6 – 28 a3; 29 d1) Because the account of phenomena that follows is so thorough and extensive, scholars such as Gill have concluded that “we ought to reconsider the force of Plato's repeated claims...that he is telling a merely likely story.”<sup>lvi</sup>

In particular, Gill has in mind the thorough accounting that Timaeus offers of the ways in which ultimate material simples “give permanence to physical objects such that language can get a grip on them.”<sup>lvii</sup> Given the richly detailed corpuscular theory that Timaeus offers, in which the properties of the primary material substances are generated from configurations of Plato's material *archai* – the right-angled scalene and half-equilateral triangles – Gill finds it implausible that the account is meant merely as a likely story.

I do not concur with Gill's judgment that we ought to reconsider Plato's repeated claims that he is telling a merely likely story, or, again, with Guthrie's judgment, cited above, that Plato's attitude toward explanations that involve material conditions and processes – mechanistic explanations – has shifted. Indeed, as I have indicated above, in my comments on Burnyeat, I would not balk at translating *eikos muthos* as “appropriate myth.” Clearly Gill, Guthrie, Johansen, Kung, Mueller, and many other scholars discussed in the following chapters have found it implausible that Plato retains his skepticism about mechanistic explanation amidst the

extensive, detailed theorizing about the role of material conditions and processes in explaining phenomena. Could it really be that he is only theorizing about the mechanisms that would be appropriate for a supremely rational Intelligence to use in crafting the cosmos, while sincerely disclaiming that such explanations could ever have the status of knowledge? If such is Plato's stance, it would not be without parallel in the history of philosophy; there would be especially noteworthy parallels with thinkers in early modern philosophy. Allow me to suggest an important parallel with John Locke: on a certain reading of Locke, as with Plato, they would both combine, on the one hand, the view that a corpuscularian hypothesis is to be chosen from considerations of rational intelligibility with, on the other hand, a "deep pessimism about our prospects of arriving at a genuinely explanatory natural science."<sup>lviii</sup>

Consider that Locke, who thought that "the corpuscularian hypothesis" was likely to be the "furthest" that "an intelligible explication of the qualities of bodies" could go, nonetheless did not think that such theory could rise to the status of knowledge. He was confident that the "powers of bodies" consisted "in a texture and motion of parts" which, however, "we cannot by any means come to discover."<sup>lix</sup>

Given that "our faculties are not fitted to penetrate into the internal fabric and real essences of bodies," Locke asserts the epistemic superiority of intuition and demonstrative reason, casts a pall on the prospect of science deepening our understanding of the world, and concludes the *Essay* by calling us to the study of "morality...the proper science and business of mankind."<sup>lx</sup> Of course, in contrast to the *Timaeus*, there is no speculative excursus into the microphysical constitution of primary material substances in the *Essay*; the experimental philosophy of Locke's friend Robert Boyle was winning the day, emerging as the normative framework for such discussions (which is not to say, it is interesting to note, that Boyle rejected

teleology, as recent work on his philosophy of science has emphasized).<sup>lxi</sup> The point of my comparison is that Locke, no less than Plato, and despite his profoundly different philosophical sensibility and outlook, was able to combine in his thinking the view that some corpuscular theory was the likely story about the constitution of bodies, a principled basis for denying that such natural theorizing could rise to the status of knowledge, and a position on knowledge that (despite his concept empiricism) is probably best categorized as a version of (moderate) rationalism.

Gill, Guthrie, Johansen, Kung, and Mueller, *inter alia*, have found it implausible that Plato would, on the one hand, devote a substantial part of a long dialogue to the exposition of a highly original, sophisticated mechanistic theory of natural phenomena, and, on the other hand, continue to hold that such theory in principle cannot rise to the status of knowledge, i.e. must remain at best “merely likely,” in Gill’s words. The juxtaposition of these two aspects of Plato’s thought, if they are indeed accurate descriptions of his mature, considered view, as I believe they are, would, arguably, make him unique among ancient thinkers; but, again, the position would not be without parallels. As Edwin McCann points out, “Locke is unique among the seventeenth-century champions of mechanism in emphasizing the severe limitations on our ability actually to deliver mechanistic explanations of natural phenomena.”<sup>lxii</sup> As Locke himself put it, “we are not capable of a philosophical knowledge of bodies...we are, I think, so far from being capable of any such thing, that I conclude it lost labour to seek after it.”<sup>lxiii</sup> Much of what Locke says in the *Essay*, as McCann emphasizes, “leaves it unclear to what extent he really is a mechanist.”<sup>lxiv</sup> To put my point the other way round, Locke’s distinctive position on the epistemic status of natural philosophy was not without precedent.



Two further early-modern views of the status of science, those of Berkeley and Leibniz, also bear fruitful comparison with Plato's view.

Given that few scholars have taken Plato, by the time he wrote the *Timaeus*, to be assigning something like what Aristotle would call efficient causation to the Forms, if indeed he ever did, and given that the *Timaeus* presents a rich variety of bodies and motions as the hypothesized mechanisms of phenomena, it has seemed the natural inference, to many readers, that Plato is advancing something reasonably like what Aristotle would call efficiently-causal explanations for phenomena. My assertion that Plato retains his conviction that mechanism never gives the true *aitia* for a phenomenon, even in the midst of his elaborate natural theorizing, may seem suspiciously deflationary of his intentions.

It would be well for me to determine my use of "cause". I concur with Michael Frede's point that "generally our use of causal terms" is "strongly colored by the notion that in causation there is something which in some sense does something or other so as to produce or bring about an effect."<sup>lxv</sup> Or as Hankinson puts the point "the notion of a cause...tends to connote activity: a cause is something which does something."<sup>lxvi</sup> As Frede points out, this distinctive sense of the modern English word "cause" makes it difficult for us to understand in what sense Aristotle's final-, formal-, and material-"causes" should be construed. "An end, a form, or matter do not seem to be the right kinds of items to cause anything."<sup>lxvii</sup> Aristotle's "efficient cause," the "moving" cause, as he also puts it, seems to come closest to the sense of our word "cause". In Aristotle's paradigmatic illustration, the sculptor is the efficient-cause of the sculpture, because she looks to a form (the formal-cause) and for some purpose (the final- cause) brings it about that some parcel of matter (the material cause) comes to have that form.

On the other hand, as Frede points out, “we do not have any difficulty in understanding Kant when he talks as if a substance, an object, could be the cause of something in another object,” as the sun might be called the cause of the stone’s warming. So as Hankinson and Frede have emphasized, the modern English word “cause” typically suggests a body, or an event in which a body is involved, which, in virtue of the relevant physical properties, produces some effect in another body or physical state of affairs. Because Plato in the *Timaeus* considers explanations of this kind, in detail and at length, and because there is relatively little discussion in the *Timaeus* of the sense in which Forms are causally relevant, there has always been a tendency to read Plato as elevating the epistemic status of efficiently causal explanations and diminishing the relevance of Forms, which had been assigned such importance in the *Phaedo*; I have discussed a number of proponents of this reading above, and will do so in depth in the chapters that follow. But the inference involved in this interpretation may reveal more about the assumptions of “the empiricist philosophies of science which” according to Burnyeat “so many scholars have projected anachronistically back into the *Timaeus*,” than about Plato’s intentions.

A blunt statement of what might be called the *discontinuity* thesis (by way of contrast with my continuity thesis) can be found, for example, in Julia Annas’s paper “Aristotle on Inefficient Causes.” Contrasting the natural philosophy of the *Timaeus* with the *Phaedo*’s Forms-as-*aitiai* hypothesis, Annas writes that “in the *Timaeus*” Plato “does try to provide an improved account of coming-to-be and the world’s causal history, while apparently abandoning the search for the explanations which in the *Phaedo* are provided only by Forms. The hotness of Fire is explained, in the *Timaeus*, by the properties of triangles.”<sup>lxviii</sup>

Here we see at work the kinds of assumptions of “the empiricist philosophies of science which,” according to Burnyeat, “so many scholars have projected anachronistically back into the

*Timaeus*.<sup>lxix</sup> Two such assumptions that Burnyeat identifies are that Plato in the *Timaeus* is trying to give an account that is *eikos* in the sense that A. E. Taylor had in mind – “probable” – as discussed above, and that “what is probable is our best extrapolation from what we already know of the cosmos to what is true of it in some part or aspect hitherto unexplored.”<sup>lxx</sup> One sees the influence of these assumptions in Annas’s inference that the *eikos muthos* of the *Timaeus* is an “improved account,” as compared with the Forms-as-*aitiai* hypothesis because the former begins with an item of knowledge about sensibles – that sensibles of the kind we call “fire” have some quality, hotness – and extrapolates from that knowledge to what is true of that kind of sensible at some level hitherto unexplored – in this case the microphysical level. The influence of the kinds of assumptions that Burnyeat identifies seems particularly notable in this case. Annas’s statement “the hotness of fire is explained, in the *Timaeus*, by the properties of triangles,” while not false is certainly an oversimplification: on any reading of the dialogue, Plato emphasizes the causal relevance of several factors in such cases – space (*xora*, “the receptacle”), Forms, form copies, geometrical shapes, the Demiurge, and, arguably, matter.<sup>lxxi</sup> Annas’s readiness to pass over all of the other factors without mention in this case may reflect the kinds of assumptions of modern philosophy of science that Burnyeat highlights, notably the tendency to think that a physicalist-reductivist explanation of phenomena, given in terms of the efficiently-causal powers of microphysical bodies, is normative. Another such assumption may be revealed in Annas’s readiness to think that the corpuscular theory of the elements that *Timaeus* presents must represent a break from the teleological theory sketched in terms of Forms, in the *Phaedo*, rather than serve as a supplement to it. These assumptions may also help to explain her inference that because only the causal relevance of Forms is explored in the *Phaedo*, that discussion

precludes Plato from introducing other causally-relevant factors in the later development of his natural philosophy.

In Joan Kung's subtle and profound work on these questions, also, I find the influence of the assumption that Plato is trying to give an account of what is "probable" in the sense of being "our best extrapolation from what we already know of the cosmos to what is true of it in some part or aspect hitherto unexplored," and is elevating beliefs about the efficiently-causal properties of bodies to a domain of knowledge; indeed, such explanations, according to Kung, form now, in Plato's mind, part of "a unified science," which integrates math and geometry with a special science of phenomena.

I do not believe that Plato, in the *Timaeus*, is now of the view that branches of knowledge, such as geometry, can be unified with natural philosophy into an integrated science. Inquiry into objects of pure thought, on the one hand, and speculation about the underlying bases of phenomena, on the other hand, are still, I believe, sharply separate to Plato's mind. In the latter enterprise, knowledge is not possible. Plato's view, emphasized in such middle-period works as the *Phaedo* and the *Republic*, that sensibles "are rolling around as intermediates between what is not and what purely is," and thus are not possible objects of knowledge, is still firmly in place in the *Timaeus*. (*Rep.* 479d 3-4)

Kung supports her reading by arguing that Plato now, in the *Timaeus*, identifies fire, for example, with tetrahedra and knowledge, for example, with certain configurations of particles falling on the soul.<sup>lxxii</sup> While these identifications would be plausible *prima facie*, were we reading the *Timaeus* in isolation, Kung has to acknowledge Plato's extensive claims elsewhere (as well as, arguably, in the *Timaeus*) that perceptibles are not possible objects of knowledge,

and that our beliefs about them *in principle* cannot rise above the status of opinion, as, for example, when he writes in the *Republic* that students of astronomy will “let be the things in the heavens.”(530b 7) His theme in that middle-period dialogue – inquiry into the cosmos is never for the sake of a deeper understanding of the perceptibles themselves, rather perceptibles are for the prompting of our intuitions of harmony, order, and proportion – is reaffirmed in the *Timaeus*. There “the orbits of intelligence in the universe” are always to be studied, Plato emphasizes, not for the sake of some deeper understanding of the phenomena themselves, but so that “we may apply them to the revolutions of our own understanding.”(46b8-c1) So far from the study of sensibles being raised to the level of science, Plato tells us that the study of the celestial bodies is *not* for the sake of what is sensible – the bodies themselves – but for the sake of the revolutions that they prompt us to see with the mind’s eye; and this exercise in turn is for the sake of the goal that “we should stabilize the straying revolutions within ourselves by imitating the completely unstraying revolutions of the god.”(47c 5-6)

Again, as I have shown, above and below, in connection with many other authors, such a reading of the *Timaeus* as Kung’s would amount to positing a sharp break in the elaboration in Plato’s metaphysics of causation. And again, Burnyeat may have his finger on the assumption that inclines a scholar to posit such a break: that a natural philosophy must conform to the modern paradigm of extrapolating from what we already “know” of the cosmos (keep in mind Plato’s very high standards of knowledge) to what is true of it in some part hitherto unexplored.

To advance her own reading, Kung has to address the view of Cornford and Vlastos, *inter alia*, that Plato means, in the *Timaeus*, that the Form, Fire, “is the meaning of the name ‘Fire’.”<sup>lxxiii</sup> Kung quotes Cornford: “When we look at a fire we do not see or think of pyramids, and when we say ‘Here is a fire’ we do not mean ‘Here are pyramids’.”<sup>lxxiv</sup> She goes on to

argue, “unless we are already committed on other grounds to the interpretation that qualities correspond to meanings or that we have direct insight into the nature of our own perceptions or sensations” it is in order to ask whether Plato’s view is that “when we see fire, we see pyramids...or that what it is to be fire is to be a tetrahedron.”<sup>lxxv</sup>

I agree with Kung that Cornford’s arguments (presented only very summarily in the quote cited above) for rejecting the identification of fire with tetrahedra are not good. But as I discuss below, especially in Chapter Five, later development of a reading similar to Cornford’s, especially by E. N. Lee and Allen Silverman, do present good arguments for thinking that ‘fire’ refers not to tetrahedra, but to the Form, Fire, i.e. that natural philosophy leads not to knowledge of the kinds of sensible particulars, but rather to the characters of Forms, characters that the Divine Craftsman used sensible particulars to image.

Kung writes that “to say that the objects of science or knowledge are abstract and unchanging is not necessarily to say that the science has nothing to do with perceptible objects.”<sup>lxxvi</sup> I concur with this premise of Plato interpretation. But Kung immediately proceeds to a much stronger claim, when she asserts that it is Plato’s “idea...that perceptible, changing objects...can only be understood scientifically in so far as they can be dealt with in terms of what is unchanging.”<sup>lxxvii</sup> I do not concur that Plato ever comes to hold that perceptible, changing objects can be understood scientifically, i.e. that our beliefs about perceptibles ever rise to the status of knowledge. So the divergence of my view from Kung’s has to do with *what*, precisely, perceptibles have to do with knowledge.

What, on my view, perceptibles have to do with knowledge I discuss in the chapters that follow. Broadly, Plato’s view is that perceptibles: trigger recollections of objects of pure thought

(as I discuss especially in Chapter Two, in connection with Plato's doctrine of anamnesis); occur together according to certain regularities (regularities of compresence), e.g. the other properties fire are accompanied by hotness; and occur in succession according to certain regularities (regularities of succession), e.g. the heating of water is followed by its apparent transformation into air.

An initial reason for skepticism toward the interpretation that I am presenting would be that Plato seems to say plainly, in the *Timaeus*, that an instance of sensible fire is a set of tetrahedra. Clearly, this thesis would seem to be a scientific hypothesis, a thesis about the ultimate constituents of a natural kind, and an explanation of phenomenal qualities by reduction to microphysical properties, in this case the properties of a class of corpuscles.

But Plato also says much else in the *Timaeus*, by way of setting the stage and the context for Timaeus's hypothetical explanations of natural phenomena. And much of what is said, especially about ontology, propaedeutically to the dialogue's natural theorizing seems to entail that, as Allan Silverman put it, "there are no phenomenal particulars, as ordinarily conceived, to be named."<sup>lxxviii</sup> Strictly speaking, as E. N. Lee put much the same point, "a phenomenal particular does not have a nature."<sup>lxxix</sup> Which is to say, among other things, that in sensibles there is nothing to be scientifically understood. Plato's long-standing, principled distinction between objects of knowledge and objects of experience is preserved amidst the *Timaeus*'s natural theorizing if we keep in mind that, while phenomena image the characters of Forms, the character belongs "not to the image itself, but to that which it signifies."<sup>lxxx</sup> Which is to say that the purpose of natural philosophy, to Plato's mind, is highly elliptical. Such theorizing is not for the sake of elevating phenomena into the domain of knowledge, but, rather, for the sake of reconstructing the reasoning the Craftsman employed in determining how the realm of Forms

would be imaged in phenomena. I discuss this way of construing Plato's natural philosophy in depth in chapters Four and Five.

The "reconstructionist" reading of the status of phenomenal particulars, which I discuss in depth in Chapter Five, stems from a debate over the correct way to read *Timaeus* 49a 6-50a 4, and the upshot of this passage for the broader issues of the dialogue. According to the traditional reading, as Silverman puts it, Plato "abandoned his Heracliteanism" and at 49c 6 ff. is saying "that we can refer to phenomenal particulars as such...as independent entities."<sup>lxxxix</sup> I do not believe that Plato held phenomenal particulars to be independent entities. I believe that Plato thought of sensibles as *dependent* entities, more specifically as images of truly independent entities, the Forms. For this reason, in part, I side with the "alternative" or "reconstructionist" reading, according to which "phenomenal particulars...are not, strictly speaking, objects."<sup>lxxxii</sup> Zeyl puts much the same point by saying that, on the reconstructionist reading, "particulars are not 'things' at all," but are, rather, "like reflections produced in mirrors."<sup>lxxxiii</sup>

It would be well to bear in mind that other philosophers, even in quite different historical contexts, have also combined skepticism about our ability to know anything of efficient causes, on the one hand, with the view that inquiry into phenomena turns up patterns that justify teleological inferences, on the other hand. Berkeley, for example, as Laurence Carlin points out "believed that nature presents us only with uniform successions of ideas, not intelligible causal connections between corporeal events."<sup>lxxxiv</sup> Why the successions are what they are, then, becomes the focus of teleological explanation, as Berkeley conceives of it. Many of the uniformities are what they are for providential reasons. The job of scientists, as Berkeley puts it, "consists not in an exacter knowledge of the efficient cause that produces [a phenomenon]...but only in a greater largeness of comprehension whereby analogies, harmonies, and agreements" in



nature are seen. For Berkeley, as Carlin points out, “the only efficient cause in the phenomenal world is God.”<sup>lxxxv</sup>

Of course, there are profound differences of historical and intellectual context between Plato and a British phenomenalist, perhaps the most basic difference being that for Plato the world is not mind-dependent. But Berkeley’s distinctive combination of skepticism about mechanistic efficient-causal explanation with his conviction that the regularities in phenomenal experience – however they are brought about – admit of providential, teleological explanation is suggestive. There is a real question of how, in a world of flux, Plato could think that we can even get a grip on “why” questions, much less “how” questions. But in a way that is similar to Berkeley’s conception of teleological explanation, it may be the case that Plato means to combine a principled basis for saying that we cannot penetrate to the ultimate means by which the divine Craftsman made phenomena image the eternal paradigms, the Forms, but however this imaging is brought about in the mechanistic/efficient sense, it is the case that there are regularities of succession and compresence. A region of space that instantiates the character of Fire always instantiates the character of the Hot. Why this uniformity is what it is admits of teleological explanation. If we follow the reconstructionist reading of the *Timaeus* developed by Cherniss, Lee, and Silverman, among others, as I will argue we should, then Plato understands our discourse about the natural world as being about the repeatable characters that are conjoined in regular successions; language never gets a grip on the phenomenal particulars that somehow do the work of this imaging. Of course, these characters are metaphysically quite different from Berkeley’s “ideas”. But in similar fashion, Plato combines agnosticism about how they are brought about, on the one hand, with the conviction that their regularities of concomitance serve some goal had by Intelligence.

While we ought to take seriously Plato's oft-repeated thesis that sensibles are to some degree in flux, we should not lose sight of the fact that for Plato the cosmos is *cosmos*; it is organized, structured, and, indeed, it is good and beautiful. That order somehow emerges out of flux intrigues Plato; though relatively little of his philosophical work addresses the question of how this is possible, the tension between the metaphysical facts of order and flux, clearly, was a source of perennial fascination to him.

However sensibles in flux give rise to the regular succession and compresence of characters, the teleological question for Plato has to do with the purpose of these regularities. Given that knowledge is of that which is eternal and immutable, why should it be the case that the sensible world is intelligible at all?

Plato does suggest some answers. In the case of what is, for Plato, the most important regularity of sensible experience, the regular motions of the celestial bodies, he offers a teleologically-rich explanation, one that involves purposes to be realized by the Craftsman at several levels.

The Craftsman, in the activity of crafting, sought to bring "this universe to completion in such a way that it, too, would have that character [the character of the Form of Living Thing] to the extent that was possible;" he had, as a goal, to put it more succinctly, to craft "a moving image of eternity." (37d 2-3, 6)

Why did the Craftsman want to make a moving image of eternity? Like all the ancillary decisions involved in the crafting of the universe, the answer traces back to the Demiurge's goodness. "Why did he who framed this whole universe of becoming frame it?" Timaeus asks. "Let us state the reason why": he explains "He was good...he wanted everything to become as

much like himself as possible.”(29d 4-e 4) To one extent or another, as the case may be, this first principle is explanatory of all particular facts about the universe, Timaeus contends: “This [the Demiurge’s desire that the realm of becoming be as like the supremely good as possible] more than anything else was the most preeminent reason for the origin of the world’s coming-to-be. The god wanted everything to be good...so far as that was possible,” and for this reason “he took over all that was visible” and impressed upon it the varieties of order that we find.(30a 1-4)

A consequence of the Demiurge’s decision to make “a moving image of eternity,” a moving image of the Form of Living Thing, was that there should be living things; further, so that the moving image should be as good as possible, some of the living things should have a share in the immortal, i.e. the souls of some living things – humans – should have the faculty of reason, that faculty which is “divine and ruling.”(41c 8) And so the Demiurge tasked the deities – the created gods – with “weaving what is mortal to what is immortal” and “sowing souls into that instrument of time suitable” to them, i.e. human bodies.(41d 2-e 5)

What is the sense in which the human body is a suitable instrument of time? Plato discusses a number of ancillary ends in this connection; but he emphasizes that “anyone who is a lover of understanding and knowledge” will “pursue as primary causes those that belong to intelligent nature.”(46d 8-10) In connection with the faculty from which, according to Plato, we derive our sense of time – sight – the “actual” cause is the “function for which the god gave” it to us.(46d 3; 47a 1)

How should we understand sight’s function? Plato tells us that “our ability to see the periods of day-and-night, of months and of years, of equinoxes and solstices, has led to the invention of number, and has given us the idea of time and opened the path to inquiry into the

nature of the universe,” and “these pursuits have given us philosophy, a gift from the gods...whose value neither has been nor will ever be surpassed.”(47a5–b3) This ability to observe orderly motion, and to derive from it the concept of number, and consequently to be set on the path of philosophy – love of wisdom, and *a fortiori* of the wisdom of the supremely rational maker’s reasoning in fashioning creation – is the “supreme good our eyesight offers us.”(47b 4)

To compress the numerous claims that Plato makes about the regular motions of the celestial bodies, drawing on the passages cited above: they are for the sake of turning the mind toward the perfectly rational and orderly motion, which is an abstract object of pure thought. I would not say that this thesis makes Plato’s teleology uncompromisingly anthropocentric; but the anthropocentric element in it *is* a part of Plato’s view.<sup>lxxxvi</sup> Admittedly, this thesis is somewhat oblique in Plato’s presentation of the succession of reasons that are involved in the Demiurge’s reasoning. An objection to my characterization of the aim that the Demiurge had, in fashioning the motions of the celestial bodies, might run as follows: we are only told that the regular motions of the celestial bodies are for the sake of imaging in motion the character of the Form of Living Thing (37d 2-6); it is later in Timaeus’s discourse that we hear of the purpose for the sake of which the Craftsman gave us sight; so He had, antecedently, the purpose in mind of imposing order on the visible realm, before he turned to the fashioning of human vision; and He crafted sight so that rational creatures could behold an antecedently crafted cosmos.

My reply to this objection is that we have already been told, at 40a 2-3, of the close connection between the way the Maker crafted the celestial bodies and the role they were to play in human edification: He made them “mostly out of fire, to be the brightest and fairest to the eye.” This already-positied connection between the way the Demiurge fashioned the celestial

bodies and their purpose in the intellectual ascent of humans is the background to what we are told at 47b 7-9: “The god invented sight and gave it to us so that we might observe the orbits of intelligence in the universe and apply them to the revolutions of our own understanding.”

Further, we have also been told that there is no time before the creation of the regular motions of the celestial bodies: “time really *is* the wanderings of these bodies.”(39d 1) So if the fashioning of the motions of the celestial bodies is antecedent, in Timaeus’s presentation, to the fashioning of the human faculty of vision, there is no question of temporal antecedence in the Craftsman’s reasoning; the latter precedes the existence of time. Both reasons that the Craftsman had for creating visible celestial bodies in regular motion were had concomitantly: expressing the supremely rational order that was His own mind, and illuminating the path of intellectual ascent for those living things that most nearly resembled Him, the ones endowed with reason.

One of the broad points that I wish to make in this and the following chapters is that this conception of teleology – the regularities in phenomenal experience are for the sake of turning the mind toward that which is ultimately rationally intelligible – bears much similarity to the conceptions of teleology held by such early-modern philosophers as Leibniz. As Carlin points out, for Leibniz “the purpose of the laws of nature...is to lay down the conditions for finite minds to pursue greater perfection, and thus greater happiness.”<sup>lxxxvii</sup> Though it would be anachronistic to speak of laws of nature in the context of Plato’s thought, he shares with Leibniz the conviction that the regularities in sensible experience are there for our edification. As Leibniz puts it, “By understanding the laws or mechanisms of divine invention we shall perfect ourselves.”<sup>lxxxviii</sup> Though in the case of Plato, I am arguing, our best theories of mechanism do not rise to the level of “understanding”, it is by no means clear what such understanding really comes to for Leibniz either. Though he insists on many occasions that efficient causes comprise

the proper domain of physics, the status of efficient causal explanation would seem to be questionable, at best, on his metaphysical theory. After all, he is a phenomenalist. He denies that there is anything extended – i.e., that there are any bodies – outside of perception, and he denies that substances interact. It is hard to see what efficient causation really comes to on such a view.

#### *D.*

In the long-running debate over Plato's influence on the history of science, thinkers as diverse as Whitehead, Popper, and Heisenberg have pointed to Plato's "intense belief that a knowledge of mathematical relations would prove the key to unlock the mysteries of the relatedness within nature."<sup>lxxxix</sup> On this line of interpretation, Plato stands "nearer to modern physical science than does Aristotle."<sup>xc</sup> As my remarks above would indicate, I do not go so far as to say that Plato believed that we could unlock the mysteries of relatedness within nature. But that the varieties of relatedness are what they are in virtue of mathematical (especially geometrical) facts is, I suspect, beyond doubt in Plato's mind. Indeed, as Lloyd points out, geometrical considerations trump any others in the Timaeus theory of matter. Plato accepts an anomalous exception to the transformation of the kinds, not allowing earth to change into any of the other kinds, as Lloyd points out, "because of the geometry of his theory...rather than because of any empirical considerations."<sup>xcii</sup>

Nonetheless, Plato's vision of reality being what it is in virtue of mathematical facts has, no doubt, been an impetus to much of modern science. I would like to suggest, by way of analogy, that Plato's thinking about teleology is in many ways quite close to the conceptions had by the early-modern philosophers discussed above. Like them, he combines, on the one hand, a

conviction that our knowledge of nature is sharply constrained with, on the other hand, the belief that such order as phenomena evince serves some teleologically-conceived goal.<sup>xcii</sup>

The purpose of the chapters that follow is not to extend this analogy (at least, not directly). I simply propose it by way of preface. I believe that the analogy lends some historical perspective to my more specific aims. As I read him, it seems to me that for Plato nature must be sufficiently orderly to serve the teleologically-conceived ends in virtue of which it exists as it does. That Mind imposed the best order possible, and that, consequently, nature has a role to play in our ascent to knowledge is, I believe, Plato's consistent view, from the *Phaedo* to the *Timaeus*. As a contribution to this very broad interpretation of Plato, I propose to focus in on his metaphysics of causation. My thesis is this: from the middle to the late period, Plato's metaphysics of causation, broadly understood, is consistent. The apparent discontinuities, from the *Phaedo* – with its abruptly broken-off discussion of teleology and its Forms-as-*aitiai* hypothesis – to the *Timaeus* – with its perhaps perplexing juxtaposition of divine and necessary causes – are shifts of emphasis within a broad approach to nature, and its relation to knowledge, that is basically continuous.

A holistic approach to Plato's metaphysics of causation will show, I believe, that Plato's conception of teleology has much in common with early-modern conceptions discussed above. In particular, Plato's view of natural philosophy accords with Berkeley's view that inquiry into the natural world does not turn up true causal connections; at the same time, Plato's view of natural philosophy has in common with Leibniz's view the conviction that inquiry into the nature improves the mind by encouraging us to imagine how Intelligence might have used efficiently-causal mechanisms in its providential design of the world.

## ***E.***

One of the respects in which nature must be sufficiently orderly to serve the teleologically-conceived ends for which it exists as it does, a respect that I will focus on, has to do with its role in recollection (*anamnesis*). Nature must be organized with a sufficient degree of regularity to stimulate recollection of true necessary connections: those that exist between, e.g. mathematical entities (three-ness and oddness, two-ness and evenness, the diagonal of a square and its area) and those that exist, to Plato's mind, by conceptual entailment (fire-heat, fever-illness). For Plato, logical necessity is underwritten by the Forms. Further, our knowledge of the Forms is recollection, triggered by phenomenal experience. Thus, nature must be sufficiently orderly to fulfill this epistemic role.

To bring out this interpretation, I examine, in Chapter 2, the structure of Plato's discussion in *Phaedo* 59a -95e. I try to show that Plato's exploration of the metaphysical question of the different ways in which properties can be connected, and his reflection on *anamnesis*, set the stage for his introduction of the Forms-as-*aitiai* hypothesis.

A central theme of the dialogue – the instability of our judgments about phenomena – poses a problem for another item on Plato's agenda in the *Phaedo*: the broaching of Plato's broad teleological principle that “Mind directs and is the cause of everything.”(97c2) Any evidence that we could have for this thesis necessarily involves the senses. Yet Plato is insistent throughout that true inquiry is inquiry with the mind alone, detached so far as possible from the senses. Knowledge is of that which is eternal and immutable. This relatively low epistemic status that Plato assigns to true beliefs that are based on perception (by way of contrast with true beliefs about the eternal and immutable objects of inquiry with the mind alone) potentially



undermines any foundation for a teleological natural philosophy (or, indeed, any natural philosophy).

I argue that Plato introduces the Forms-as-*aitiai* hypothesis in order to reconcile these strands in the dialogue. By Plato's lights, we have good reason to believe, on the basis of *a priori* inquiry, that the metaphysical ground of concomitance of properties is, at least in some cases, the interrelations that are involved in Form participation. That which participates in the immutable nature of the trio, for example, necessarily participates in the immutable nature of the odd. The nature of the respective Forms that are involved is the reason for this necessary connection between entities that instantiate them.

The analogical inference that is involved, from the realm of immutable entities to the realm of phenomena, is that entailments are involved in the case of those Forms that correspond to empirical concepts as well. The regularities that we find in nature, e.g. regularities of succession and of compresence, are underwritten by the Forms. This inference does, however, involve us in the use of our senses. Yet, I find that the structure of Plato's discussion, and his examples, from *Phaedo* 59a to 95e, suggest that there is a scale of justification to our beliefs about phenomena. An oft-repeated theme of Socrates's discourse in this dialogue is that detachment of the mind from the body is a matter of degree. In so far as judgments are not distorted by bodily contributions, so far have they a claim to count as knowledge. If detachment of the mind from the body is a matter of degree, then the justification that we can have for judgments, even when they are about phenomena, is matter of degree as well.

Nonetheless, it is an equally emphatic theme of the dialogue that beliefs about phenomena do not rise to the status of knowledge. True necessary connections of properties are

discovered by mind acting alone, or as we would say *a priori*. How can truths discovered in this way provide justification for thinking that necessary connections underwrite the regularities given to us in the flux of sensation and perception? I argue that Plato's discussion of *anamnesis* precedes the introduction of the Forms-as-*aitiai* hypothesis precisely for the purpose of bridging this gap, at least by analogical inference, if not ever strictly in fact. We are told that sensibles, e.g. apparently equal sticks, prompt the memory of Forms, i.e. the Equal itself. Although the sources of our beliefs about empirical connections, e.g. that whatever is an instance of fire is an instance of hotness, are necessarily bodily, the role of sensible in *anamnesis*, combined with the Forms-as-*aitiai* hypothesis, warrants the inference that necessary connections underwrite at least some of the apparent regularities that we find within the flux of phenomena. With this inference thus justified, Plato has secured the possibility of a rationally coherent teleology, and prepared the way for teleological speculation later, in the *Timaeus*.

I close Chapter 2 by considering a potential objection to my interpretation that stems from Dominic Scott's reading of *anamnesis* in *Phaedo*. Scott argues that the lesson of Plato's further examination of the doctrine (first developed in the *Meno*) is that all empirical belief is equally irrelevant to knowledge. He takes Plato to be saying that all experience, without distinction, must be scraped off the mind, as it were, before the mind can begin its ascent to knowledge. In addition to textual reasons that I offer for rejecting Scott's reading, I argue that the relation between sensibles, *anamnesis*, and knowledge is such that we must reject it. It is the appearance of order within the flux of phenomena that prompts the mind to contemplation of the divine, teleologically-organized order. Given the role that experience plays in triggering recollection, I argue that not just any sensible experience will do. Already in the *Phaedo* there are indications of a notion for which Plato will argue explicitly in the *Timaeus*: certain

phenomena are what they are, have the character that they do, precisely for the purpose of stimulating apprehension of the true, eternal, immutable natures.

To state more concisely my disagreement with Scott: he denies that Plato advanced the recollection thesis as an explanation for our grasp of common *a priori* concepts; I believe that this was, indeed, Plato's purpose. Further, I disagree with Scott's concomitant thesis that only very few people have recollection, i.e. only philosophers and, indeed, few of them and only at the heights of inquiry with pure reason. I present a number of textual reasons for thinking that Scott is mistaken on this point, and I review Gallop's argument against Scott's reading as well. My main reason for rejecting Scott's thesis lies, however, with the links between common *a priori* concepts and certain features of Platonic teleology. I argue in Chapter Two, and I believe this is uncontroversial, that Plato sees the teleological view of nature as the common sense view; the natural philosophy that he sketches in the *Phaedo*, and that he develops out of that sketch later, in the *Timaeus*, is presented, as Burnyeat has emphasized, as a "*peri phuseos* which is...a religious story as well as a scientifico-mathematical one," as an alternative to the natural philosophies of the *pysiologoi*, theories that he regards as "materialist".<sup>xciii</sup> As I argue in the chapters that follow, there is good reason to believe that Plato sees the order imposed on nature by the Craftsman as serving, in part, to stimulate recollection of common *a priori* concepts; and, again, the teleological view of nature Plato regards as one that accords with common sense metaphysical intuitions. Given the close connection for which I argue between common *a priori* concepts and teleology, there is good reason to believe that Plato does not mean to restrict recollection to a few.

With the stage thus set, by the discussion of *anamnesis*, Plato takes up a basic metaphysical question: when any particular *x* comes to have any determinate character *F*, such

that we can have some justification for saying that  $x$  is  $F$ , in virtue of what has it come to have the character that it has? As I have discussed above, central themes of the *Phaedo* are the exclusive access to knowledge of pure reason, untroubled by the senses, and the unreliability of perception. So the answer to this question cannot be anything given to us in sensation or perception, though these sources may somehow stimulate our awareness of the kind of entity that is truly responsible for there being fixed characters, in a world where, given everything that Socrates has said up to 95e, it is surprising that there should be.

In Chapter 3, I examine Plato's answer to this question: the Forms-as-*aitiai* hypothesis. When Plato advances the hypothesis that any  $x$  comes to be  $F$  in virtue of a transcendental, eternal, immutable Form, such as the Good itself, or the Beautiful itself, and says that this paradigm, or model, is the true *aitia*, it is by no means clear in what manner we should take this Greek term. Its range includes "reason", "explanation", and "cause".

I take up the long-running debate over how the Forms-as-*aitiai* hypothesis should be construed, and I defend the "logical" interpretation put forth by Gregory Vlastos, according to which the hypothesis should not be understood as the proposal that Forms are causes. In his seminal paper on *Phaedo* 95e -105c, Vlastos took Plato to be proposing that Forms, while lacking causal efficacy, have causal implications. The denial of causal efficacy to the Forms made this a controversial interpretation, for reasons that are not, however, always clear. I sort through this controversy and find that certain conceptions of the relation between the *Phaedo*'s Forms-as-*aitiai* hypothesis, on the one hand, and the inquiry into metaphysics of causation in the *Timaeus*, on the other hand, have often had the consequence of leading commentators to reject the reading put forth by Vlastos. The argument of Chapter 3 will be that the logical

interpretation of the Forms-as-*aitiai* hypothesis does not rule out an interpretive unification of these respective accounts of causation.

To construe Forms broadly, as reasons or explanations, squares with Plato's central, deeply held conviction that Forms are transcendent. Given their freedom from spatial or temporal bounds, any causal influence emanating from them in an efficient sense, as Vlastos, observes, would have to be toward every particular simultaneously; their explanatory value, in such a state of affairs, would be null. I do not find that the alternative readings that I survey get around this fundamental metaphysical problem.

Having said that, the hypothesis is introduced in the context of a conversation about coming-to-be; this would seem to warrant the inference that the kind of entity introduced by the hypothesis is something that can be responsible for change, in some sense. I find that Vlastos's discussion of causal relevance suffices to capture the sense in which Forms can be understood as involved in coming-to-be.

On Vlastos's reading, Forms are causally relevant in the sense that they determine a field of interrelated logico-metaphysical truths; and these interrelated logico-metaphysical truths underwrite the invariant concomitance of properties that we find in certain phenomena. No Form initiates the coming-to-be *F* of any particular. In this sense, Forms lack causal efficacy. Plato does not think, Vlastos writes, "that the Form, Snow, chills selected regions of the universe; but what Plato does assert" in saying that the Form of snow is the *aitia* of cold "is nevertheless tied firmly to the causal structure of the world...for example, to the fact that if we raise the temperature beyond a certain point snow must change to water."<sup>xci</sup> This "must", Vlastos believes, "is a causal one."<sup>xcv</sup>

We have to distinguish, I argue, between *a*) relations of entailment between instances of Form-participation being the justification for causal inferences of a general kind, on the one hand, and *b*) Forms being causes, on the other hand. Construing the Forms-as-*aitiai* hypothesis in the former way helps us to see how Plato establishes the possibility of justified belief, though not of knowledge, about connections between immanent particulars, while heeding the parameters that he sets around Forms and their relation to the world.

So in the case of the sophisticated *aitia* “hot-because-of fire,” the property *F*, on-fire, and the property *G*, hot, are always found together. When *x* is *F*, *x* is *G*, because *F* always brings *G* with it. The justification for the causal inference “hot-because-of-fire,” as Vlastos construes Plato, is the hypothesized field of interrelated logico-metaphysical truths that underwrite the invariant feature of the world such that if *x* participates in the Form of *F*, it also participates in the Form of *G*. As Vlastos reads Plato, the regular compresence of the properties is not itself the justification for the causal inference. Plato already understood that experience cannot establish that any proposition about the world is universal or necessary, anticipating Humean skepticism about any empirical basis for causation.

I examine attempts by Fine, Menn, Meuller, and Kelsey, *inter alia*, to relate the Forms-as-*aitiai* hypothesis to the inquiry into metaphysics of causation in the *Timaeus*, and I consider the grounds on which each of these authors reject the logical, or “deflationary” interpretation of the hypothesis advanced by Vlastos. In each case, I find textual and conceptual reasons for believing that the reasons offered for attributing causal efficacy to the Forms are outweighed by Plato’s consistent signals that he has in mind for the Forms a much broader conception of responsibility, one which would include responsibility for properties that we discover *a priori*, where there is no element of efficient causation.

It is by no means clear why a reading of the *Phaedo* passage that considers the causal role of Forms in the light of the teleology developed in the later dialogues should entail that Forms be efficiently causal. Further, although recent scholarship on the *Phaedo* has tended to reject the logical interpretation of the Forms-as-*aitiai* hypothesis, I find that much of the best work being done on causation in the *Timaeus* proceeds from premises that are in harmony with that interpretation. Lennox gives great weight to Plato's attributions of efficiently causal power to the activity of intentional, purposive, crafting mind, and marshals support for the view that in the absence of such activity, Plato does not regard Form-participation as causal. Strange sheds much light on how the networks of inclusion and exclusion that characterize Form-participation in the *Phaedo* are employed in the ordering of nature by the Demiurge, and this reading too emphasizes the efficiently causal power of intentional agency in arranging materials.<sup>xvii</sup> Silverman, in his thorough defense and extension of the "reconstructionist" reading of the *Timaeus*, proceeds from the premise that Forms are explanations, or explanatory factors, rather than causes, and shows how that dialogue's two accounts of causation, Formal and geometrical, can be seen as complementary.

The grounds that scholars have had for rejecting Vlastos's interpretation vary. The criticisms advanced by Fine, Menn, Mueller, and Kelsey, *inter alia*, criticisms that I discuss in Chapter Three, make this point clear. I do not find any one reason why Vlastos's interpretation has made scholars uncomfortable; I try to do justice to the particulars of each argument. But I do find some common elements.

One theme that I find in the criticisms could be put as follows: the Timaeon teleology is, in some way or another, the fulfillment of the initial attempt to give an account of causation in the *Phaedo*; in the natural philosophy of the *Timaeus*, we are given accounts of kinds of bodies

and corporeal properties that act as efficient causes (see my account of Frede and Hankinson on efficient causation above, pp.29-30); but in the *Timaeus* there is relatively little discussion of the causal relevance of Forms, and there is no discussion of the *Phaedo*'s Forms-as-*aitiai* hypothesis, as such; therefore, Plato must have replaced the notion of Forms-as-efficient causes with the notion of certain kinds of bodies and corporeal properties as efficient causes; thus, Vlastos's interpretation of the *Phaedo*'s Forms-as-*aitiai* hypothesis, according to which Plato is not attributing efficient causation to Forms, must be wrong.

But the narrative reconstructed above may well rest on mistaken premises about Plato's intentions in the *Timaeus*. Burnyeat, as I have discussed above, believes that to be the case. He argues that "many scholars have projected anachronistically back into the *Timaeus*...empiricist philosophies of science." The fresh approach that Burnyeat advocates to Plato's aims in the *Timaeus* suggests to me that Vlastos's interpretation of the Forms-as-*aitiai* hypothesis is worth reconsidering. If, as Burnyeat suggests, Plato's aim in presenting a *peri phuseos* in the *Timaeus* is consistent with skepticism about the epistemic status of *peri phuseos*, then the view that Vlastos finds in the *Phaedo* – only Mind and Forms are truly explanatory, never material *aitiai* (to use the conceptual distinction that Aristotle will later make explicit) – may well still be Plato's considered view in the *Timaeus*. The consistent view in both dialogues may well be that Forms are causally relevant only in virtue of the field of logico-metaphysical truths that they underwrite, logico-metaphysical truths that determine certain causal implications.

In Chapter Four, I develop further my thesis that Plato's thinking about the metaphysics of causation is, from the *Phaedo* to the *Timaeus*, broadly continuous, by examining the metaphysical status of the reasons had by the Demiurge. In the light of this examination, Plato's middle-period thinking about causation can be seen as continuous with the metaphysics of



nature, and the theism, of his late period. To be more specific, I find that in both dialogues only *a*) the reasons, or goals, had by Mind (in the *Timaeus* the Divine Craftsman) in virtue of being what Aristotle would go on to call final causes, *b*) the Forms, in virtue of being what Aristotle would go on to call formal causes, and *c*) and the activity of Mind (which is not discussed, as such, in the *Phaedo* but is discussed at length, in the *Timaeus*, as the crafting of the Divine Craftsman), in virtue of being what Aristotle would go on to call an efficient cause, are truly *aitios* – responsible – for particulars having definite characters, such that we can form true beliefs, if not come to have knowledge, about them. I do not concur with Sedley and Johansen that the metaphysical status of – *ex hypothesi* – material causes has been fundamentally revised between the two dialogues; and I do not concur with Gill that Plato has changed his mind with respect to the epistemic possibilities for the study of particulars, by the time of the *Timaeus*. I discuss these respective views in depth in chapters four and five.

The basic axiological premises from which the Craftsman reasoned can be understood as what Aristotle would go on to call final causes. I try to show that Plato holds, throughout the *Timaeus*, even in his discussions of mechanism, that the goals had in mind by the divine reason (which are final causes) are ultimately responsible for the causal structure of the cosmos. With this reading of the creation myth in place, a plausible way of understanding Plato's metaphysics of causation as a unified project comes into view: true *aitiai* are, on the one hand, the reasons had by an agent (Mind, the Divine Craftsman), i.e. final causes; *and*, on the other hand, true *aitiai* are the models, or paradigms, to which an agent looked in creating; these models, or paradigms, are formal causes. Both explanatory factors bear a kind of basic responsibility for things coming-to-be in the way that they do; but the material means with which Forms are imaged, the means by which particulars come-to-be anything determinate at all, in so far as they do, are plastic; in part

for this reason, I argue, Plato regards the material media in which Forms are imaged as not truly *aitios*. Further, I argue, in chapters four and five, because a particular only has a determinate character in virtue of the Form that it images, and that character is, strictly speaking the character of the Form (though imaged in the spatial-temporal, immanent realm) candidates for (*ex hypothesi*) material causes are items that *in principle* cannot be objects of knowledge. Thus, Plato has not revised the epistemic status of natural philosophy. He conceives teleology as an ethical exercise; not as a provisional statement of a knowledge of connections among particulars, a statement to be revised on the basis further observation of phenomena.

An obstacle to the interpretation that I propose is the *Timaeus*'s more nuanced account of *aitiai*, particularly Plato's introduction of a distinction between primary and secondary causes. I examine two recent studies, those of Sedley and Johansen, that take this Timaeus distinction to mark a departure from Plato's middle-period thinking about the metaphysics of *mere* necessary conditions and *instrumental* necessary conditions. The arguments that Sedley and Johansen advance for the fundamental discontinuity to Plato's metaphysics of causation seem to me – for logical, conceptual, and textual reasons that I discuss – not sound; but I do incorporate certain of their insights into my reading. If we approach the relevant *Phaedo* and *Timaeus* passages bearing in mind Vlastos's distinction between causal relevance and causal efficacy, then the ostensible divergence can be dispelled. Further, close attention to certain contextual considerations involved in Socrates's intellectual autobiography help to account for the *prima facie* tensions between the respective discussions.

To bring out the distinction between causal relevance and causal efficacy in Plato, I draw, in the first instance, on Vlastos's work; but my understanding of the distinction is also drawn from the work of other scholars, including some who have been critical of Vlastos. I do think

that Vlastos's work on this distinction should be supplemented, in certain respects, by the work of Sedley and Fine, in particular.

By "causal efficacy" I understand (where  $x$  is a particular and  $F$  is a property) making  $x$  to be  $F$  in the sense of initiating the change of  $x$  from non- $F$  to  $F$ . I do not believe that Plato thinks that natural philosophy can attain to explanations of this kind. It is arguably the case that he thinks genuine explanations of this kind (as distinct from speculative hypotheses) can be given only in the case of agents: e.g. Socrates (to give an example of a causal inference that supports a counterfactual) would have been in Megara rather than Athens, had he judged it better to flee than to stay; the universe was changed from chaos to cosmos because the Demiurge judged that there should be a moving image of eternity. Forms, for example, on Vlastos's reading of the Forms-as-*aitiai* hypothesis, were never understood by Plato to be causes in this sense. "When Socrates maintains that the Form, Snow, is the *aitia* of cold," Vlastos writes, Plato is not asserting "the metaphysical absurdity that the Form, Snow, chills selected regions of the universe."<sup>xcvii</sup>

On the interpretation for which I am arguing, Plato's thinking about *ex hypothesi* material *aitiai* does not undergo a substantive metaphysical change between the *Phaedo* and the *Timaeus*. I believe it is his consistent view that natural philosophy can be a rational inquiry only to the extent that we accept the premise that, as Vlastos characterized it, "the laws of nature, could we but know them, would have the same necessity as do the truths of logic."<sup>xcviii</sup> On this view, the laws of nature (again, bearing in mind Vlastos's qualification, which seems to me critical, "could we but know them") lay down "the regular concomitance of the properties which make up [a] natural kind;" and these regularities are underwritten by "relations of entailment between Forms."<sup>xcix</sup> Consequently, Plato credits "those laws with absolute immutability" and implies

“that they may be known *a priori*.”<sup>c</sup> But immutable laws that lay down necessary relations (relations which could in principle be discovered *a priori*) by their very nature do not give explanations couched in terms of agents of change, explanations that purport to explain what effected the change of a particular from non-*F* to *F*.

These laws underwritten by Forms do, however, have causal implications: “the invariance of the concomitance of the characteristic properties” of a natural kind “signifies a multitude of causal interconnections with other kinds of matter in the universe,” and is, thus, “firmly tied to the causal structure of the world – for example, to the fact that if we raise the temperature beyond a certain point snow must change to water.”<sup>ci</sup> This is the sense in which Forms are causally relevant.

I think that our understanding of causal relevance in Plato should be supplemented, as well, by Fine’s notion of “a factor one cites in explaining change.”<sup>cii</sup> To take the example of Forms, even if a Form does not itself effect the change of a particular from non-*F* to *F*, it could still figure as the constituent of an event, as when an agent looks to a Form as the model, when she imposes a change of form on matter for some end. This form of explanation is, of course, particularly relevant to the *Timaeus*. In the *Phaedo* we are only told that Mind ordered the universe for the best. But in the *Timaeus* we are told that the divine Intelligence ordered the world for the best by looking to Forms as his models. *Ex hypothesi* material *aitiai* could well also be causally relevant, in the sense of being constituents of an event productive of change (to draw further on Fine’s terminology).<sup>ciii</sup> But I do not believe that they are ever truly *aitios*, to Plato’s mind; they cannot of themselves explain why a particular changes from non-*F* to *F* where and when it does.

Indeed, it seems to me unlikely that Plato thought such explanations could be had in natural philosophy. I believe that it was his consistent view that, as Vlastos put it “there can be, strictly speaking, no such thing as knowledge of nature.”<sup>civ</sup> The natural philosophy of the *Timaeus*, to the extent that it offers genuine explanations, couches them in terms of what is rationally satisfying, i.e. what can we reconstruct of the Demiurge’s reasoning, given certain first principles, such as that there were Forms, and a desire, expressive of the Demiurge’s essential goodness, to represent the realm of Forms in a moving image, as nearly as possible.

To the extent that natural philosophy can be a rational inquiry, Plato’s view is, as I think Vlastos correctly describes it, based on the premise that “all intelligible necessity, physical no less than mathematical, must be grounded on logical necessity, since it represents the interrelations of eternal Forms, be these articulated in discourse or imaged in the physical world.”<sup>cv</sup>

If we juxtapose the interpretation that I propose of the *Phaedo*’s Forms-as-*aitiai* hypothesis with my reading of the *eikos muthos* of the *Timaeus*, a certain understanding of the Craftsman’s reason becomes clear. The reasoning of the divine mind is ultimately responsible for the causal structure of the world being what it is; indeed, the *eikos muthos* is a reconstruction of the reasoning that went into the determining of such causal structures as we can reasonably think exist. Plato is engaged, I argue, in theoretical reduction: physical *aitiai* (*sunaitiai*, strictly speaking) are reduced to reasons. If we look carefully at the relation between agent, goal, form, and materials in the *Phaedo*, Plato’s conceptualization of the relations involved in that account remain, in all essentials, the same in the *Timaeus*. Intelligence, and the Forms to which Intelligence looked, had a joint upshot: the causal structure that underwrites such order as we find. They are Plato’s true reasons for that which comes-to-be, is, and passes away.

The last stage in my argument involves taking up again the reconstructionist interpretation of sensible particulars in the *Timaeus*, touched on in my discussion of Silverman's work in Chapter 3. In Chapter 5, I further elaborate this reading, drawing on the work of E. N. Lee, and on textual and philosophical arguments of my own. The reconstructionist reading of *Timaeus* 49c-50b, originated by Harold Cherniss, supports, I contend, my argument for the basic continuity of Plato's metaphysics of causation from the *Phaedo* to the *Timaeus*.

I offer thorough assessments of two rigorous arguments for the traditionalist reading – the view that in the *Timaeus* Plato legitimates talk of phenomenal particulars – those put forward by Mary Louise Gill and Donald Zeyl. In the course of assessing these arguments, I argue that phenomenal particulars can only play the role that they do play in Plato's metaphysical/epistemological system by instantiating characters that the mind then connects; such regularities as we encounter in phenomenal experience Plato believes to be of this nature. Such order as we can discern is between characters, and the character that a particular images does not belong to the particular itself. My reading of the gold analogy bears out this interpretation of the status of sensible particulars in Plato's late-period thought.<sup>cvi</sup>

Gill argues that *Timaeus* 49c7-50a4 concerns “correct and incorrect ways of specifying a transient phenomenon like fire.”<sup>cvi</sup> This is the traditional reading, and as she notes, the choice of this reading “reflects a decision about the status Plato grants to physical phenomena.”<sup>cvi</sup> On the traditional reading Plato “legitimates talk about such objects,” while on the alternative reading of Cherniss, Lee, and Silverman, *inter alia*, “he proscribes it.”<sup>cix</sup>

The sense in which, according to Gill, Plato holds that language gets a grip on the world is that such words for phenomena as “fire” refer to a certain kind of set of material *archai* –

namely, the triangles. These material simples are present in the precosmic chaos. Although they move, they do not alter their nature. Thus, they are not subject to radical Heraclitean flux.<sup>cx</sup>

They existed before the Demiurge set about crafting the cosmos. The Demiurge found them in the precosmic chaos and used them to give regular stereometric form to earth, water, air, and fire, with respect to which there were in the precosmic chaos only traces. So when we use “fire” to refer to an instance of the phenomenal natural kind, our language gets a grip on something firm and stable, the *archai* that are always such as they are.

Gill’s proposed reading implies that a particular has the character of a Form in virtue of being composed of the right microphysical constituents. This interpretation is closely connected to the sense in which, according to Gill, the *Timaeon* account of nature is *eikos*. Characterizing *Timaeus* 48b 3-c 2, before Timaeus has introduced “the principles of these things” [earth, water, air, and fire] i.e. the ultimate material simples, the triangles, his attitude toward the possibility of giving an account of these four natural kinds, according to Gill, is that it would be “too difficult according to the present method of inquiry...so the account will be merely likely.”<sup>cx</sup>

Once Timaeus has given the account of the four kinds in terms of their *archai*, we now have, on Gill’s interpretation, Plato’s account of how we can speak truly of phenomena, of how “language can get a grip on [the physical world].”<sup>cxii</sup> At this point, Gill writes, “we ought to reconsider the force of Plato’s repeated claims in the *Timaeus* that he is telling a merely likely story.”<sup>cxiii</sup>

Gill’s assumptions that the natural philosophy of the *Timaeus* is *eikos* before Plato has struck upon the right explanation of phenomena in terms of their microphysical constituents and structure, and that once he has come up with such an account Plato no longer sincerely believes

that his account is “merely likely,” are emblematic of the school of interpretation that I have discussed above in connection with Burnyeat. The assumption, characteristic of a tendency that I have discussed above and will discuss in more depth in the chapters that follow, is that the *muthos* is *eikos* because it is inferior, in the sense of being a merely provisional account of the microphysical structure of phenomena, one that is merely probable and that is to be surpassed as we come to know more about the world; the *muthos* is, for the moment, merely “our best extrapolation from what we already know of the world” (Burnyeat).

Lacking from such readings as Gill’s is the sense that being *eikos* is “an *aspiration* that Timaeus’s discourse will try to live up to” (Burnyeat’s emphasis). The natural philosophy of the dialogue is Plato’s attempt to sketch “a likeness of that which is permanent and stable and manifest to reason...a likeness of an eternal rational order...an exegesis of the rationality embodied by the Maker in the cosmos.”<sup>cxiv</sup> It is to this task that Plato aspires to give a *muthos* that is fitting and appropriate.

The causal relevance of Forms, on my reading of the relevant *Timaeus* passages, remains what it was in the context of the Forms-as-*aitiai* hypothesis. The Forms are true *aitiai* because the sensible particulars the Plato takes up in his natural philosophy are images.<sup>cxv</sup> As such, they bring about their effects in virtue of the entities of which they *are* images – not, ultimately, I argue, in virtue of their mechanistic properties.<sup>cxvi</sup> Contrary to the kind of reading that would see Plato as ascribing a relatively high epistemic status to the “likely story” that he tells about the mechanical properties of basic corpuscles, I read Plato as trying to account for why there should be regularities at all in the flux of phenomena. The speculative tale about the most fitting mechanistic arrangement – given the Craftsman’s teleologically organized ends – is for the sake of a broadly purposive picture of nature’s order. That picture is one in which Forms retain their



causal priority, which again does not require of them causal efficacy. Whatever the mechanistic picture turns out to be, Plato is convinced that it would be subsumed under the goals set by the task of imaging the realm of Forms. There is a strong anti-realist bent, I argue, to Plato's theorizing about matter. The best corpuscular theory is conceived, throughout, as whichever one will best serve the ends given by an Intelligence looking to Forms.

Again, in her defense of the traditionalist reading, Gill argues that words such as "fire" refer to sets of material simples. But I find that, even by many of the terms of her own exegesis of the relevant passages, a stronger case can be made that our utterances track characters, not sets of corpuscles (and I find that, on Plato's terms, the two are not identical). It's the relatively stable organization of microphysical constituents that enables us to recognize patterns in phenomenal experience; and this organization is ultimately to be traced to craft and models.

Zeyl supports the traditional reading of *Timaeus* 49a-50b by arguing that Plato develops there a new *logos* of our references to phenomena, one based on the distinction between identifying references and predicating references. On this interpretation, Plato is trying to explain what it is that persists through change. The passage uses *touto* and *to touton* in quasi-technical senses; and this development becomes the basis, in turn, for Aristotle's technical use of these terms in the *Categories* and in the *Metaphysics*. Our references to phenomena can refer, given a new proviso: that we understand them as logically adjectival. The Receptacle makes such references to phenomena possible, once we understand that, e.g., "fire" is a description, not an identification.

Zeyl defends this approach by arguing that "the general framework of the argument" of 49c7-50a4 "requires" that we follow the traditional reading in construing the passage's formula

*me X alla Y prosagoreuein Z* as “Do not call fire ‘this’, call fire ‘what is such’.”<sup>cxvii</sup>

Reconstructionists construe the formula as “Do not call this [i.e. phenomenal fire] ‘fire’, call what is such as this ‘fire’.” His reasoning that the general framework of the argument requires the traditional translation ends up hinging, as does Gill’s reasoning, on the premise that the alternative reading would require us to “introduce a fourth basic tem into the economy of Plato’s universe,” the distinct, self-identical, recurrent characters of the Cherniss-Lee-Silverman reading.<sup>cxviii</sup>

I concur with Zeyl that we must think carefully about the general framework of the argument, but I do not agree that it requires the traditional reading. In chapters four and five I defend Silverman’s approach to the ontology of the *Timaeus*, according to which body is basic, not reducible, but according to which body is not elemental, not primitive: body is analyzable. As Silverman puts the point, body (or matter) “is ineliminable from [Plato’s] ontology” but “all body is constructed, it is not ultimate.”<sup>cxix</sup> Though not reducible to them, body “is analyzable into the elements that figure in its construction.”<sup>cxx</sup> Where I find that the stable, recurrent characters imaged in particulars are the referents of our terms for phenomena, Zeyl finds that our terms for phenomena refer to phenomena so long as we bear in mind that they are logically adjectival; contrary to their grammatical appearance, they are actually ways of predicating regions of the Receptacle. Plato seeks to identify the stable factor in phenomena, in virtue of which our words for phenomena refer, and finds it in the Receptacle. The latter is, on Zeyl’s reading, the precursor of Aristotle’s concept of substance: an ultimate bearer of attributes. Zeyl’s view implies that a particular participates in a Form in virtue of the stable underpinning, the host, of the character of a Form provided by a region of the Receptacle at a time.

I try to make the case, however, that the stability that the Receptacle affords is not sufficient to ground the epistemic role that sensible particulars play in Plato's philosophy. There must be a transcendental source that grounds the characters that they instantiate, and this source cannot be the Receptacle. Further, it must be kept in mind that Plato and Aristotle have quite different conceptions of phenomena, and, as a consequence, they have quite different conceptions of the epistemic status of natural philosophy. It may well be, *contra* Zeyl, that Plato is not looking for the basic subject, an entity, that would enable reference to phenomena; it may be that he aims to account for why the succession of phenomenal attributes is what it is (or, more precisely, to lay the basis for such an account).

In particular, I take up Zeyl's reading of the gold analogy, and I argue that the proviso he purports to find – the proviso that so long as we understand our terms for phenomena as descriptions, not identifications, those terms refer – is in fact not the proviso that Plato has in mind. In fact, there is a more straightforward proviso involved in the passage: we must remember that sensible particulars are images. The safety, in the analogy, of "triangle" consists in the proviso that we understand that term as referring to an image of a triangle. I conclude by arguing that this construal of the passage better coheres with the teleological end of natural philosophizing, as Plato conceives of it.

## **II. Setting the Stage for the Forms-as-Aitiai Hypothesis: *Phaedo* 59a-95e**

## A.

In what follows, I argue that Plato's introduction of the Forms-as-*aitiai* hypothesis into the dialectic of the *Phaedo* is not, as has often been thought, an abrupt digression, clumsily broached for the sole purpose of getting on the table intellectual machinery that Plato needs for his argument for the immortality of the soul.<sup>cxxi</sup> On the contrary, much of the discussion leading up to *Phaedo* 96a sets the stage for the introduction of that hypothesis.<sup>cxxii</sup> Commentators have, in my view, given too little attention to the ways in which this stage setting is done.

The point that I hope to make is not merely a literary one. The manner in which Plato prepares the way for the hypothesis can tell us a good deal about how we are to understand it, and, indeed, about its implications for the whole of Plato's philosophy. In section II, I focus on the imagery and motifs that precede Plato's broaching of the topic of Forms and *aitiai*. In section III, I turn to the more specifically conceptual and philosophical issues that are involved in the discussion of *anamnesis*. I believe that there is a relation between the discussion of *anamnesis* at 73c ff., on the one hand, and the Forms-as-*aitiai* hypothesis, on the other hand. The nature of that relation, if indeed a substantive relation exists, has been little explored in the literature on the *Phaedo*. I believe this lacuna merits attention. To make this case will involve taking up some controversial points in the interpretation of Platonic *anamnesis*.

## B.

The principal way in which the early passages of the *Phaedo* set the stage for the introduction of the Forms-as-*aitiai* hypothesis lies in the early development of one of the dialogue's central themes: the instability of our judgments about phenomena. That this theme is of central importance to the dialogue is well-known and uncontroversial. I would further

suggest, and it should be scarcely more controversial, that there is an underlying structure to Plato's recurring reflections, in the *Phaedo*, on the relation between sensation and perception, on the one hand, and knowledge, on the other hand. Plato's arguments and examples suggest a scale of justification to our beliefs about phenomena: such beliefs are better justified to the extent that they can be detached from contributions to thought made by the senses.

Socrates tells Simmias, at 65c4-7, that "the soul reasons best...when it is *most* by itself, taking leave of the body and *as far as possible* having no contact or association with it;" Socrates believes that the task of the philosopher is to "turn away from the body...*as far as he can*;(64e4)" the true philosopher is one who "*more than other men*, frees the soul from association with the body as much as possible.(65a2-3)"(My emphasis) The terms that I have italicized, terms that Socrates repeats often in the course of his remarks, suggest a view according to which justification for our beliefs about phenomena is incremental.

These themes – the instability of our judgments about the phenomenal world, and the need to free inquiry from the distorting influences of sensation and perception – pose a problem for another item on Plato's agenda in the *Phaedo*: the development of a teleological account of the cosmos.<sup>cxxiii</sup> Presumably, to have any justification at all for the belief that the natural world is ordered to some good necessarily involves us in using our senses. We perceive structures and regularities, observe the good ends to which they tend, and draw inferences about the seeming purposive character of the cosmos. But given that knowledge is of what is eternal and immutable (i.e., the Forms), as Socrates and his interlocutors in the *Phaedo* readily agree (65d4 ff.), and given that sensation and perception are impediments to true inquiry, i.e. inquiry with the mind alone, what reason do we have to believe that the phenomenal realm is ordered to some good? Such evidence as we could gather from observation is tenuous and erratic, given its

perceptual origins. How could such beliefs, generated *a posteriori*, warrant any inferences about the divine Mind and the *telos* of the cosmos? If Plato is thinking ahead, at all, about the shape that his teleology will take (and the sketch of it that Socrates offers at 97c2 ff. suggests that he is), then the downgrading, in the *Phaedo*, of the epistemic status of the apparent causal connections that are grasped through regular succession of sense impressions poses a dilemma for Plato; because in the *Timaeus* he will go on to argue that we ought to study such apparent causes for the sake of understanding divine causes.(68e6 ff.) Yet, in the *Phaedo* it is the ephemeral, unreliable nature of such property connections that is emphasized. I argue that Plato introduces the Forms-as-*aitiai* hypothesis, at least in part, to reconcile these strands in the dialogue, strands that are in considerable tension with each other.

How does the Forms-as-*aitiai* hypothesis effect this reconciliation? I hope to show that Plato advances the hypothesis in order to establish, *inter alia*, two propositions about the concomitance of properties: (1) to the extent that a concomitance of properties is given in sensation or perception, we have little ground for thinking that the concomitance points to any good. Conversely, (2) in so far as concomitance of properties is discovered by mind, unhindered by the distorting influences of the body, we have justification for thinking that some measure of purposive structure underlies the flux of physical reality. The first proposition is a negative one, in the sense that it points to what Plato takes to be a limitation of the natural philosophy of his predecessors, the *physiologoi*. The second proposition is a positive one, in the sense that it provides a principled basis for the development of his mature, considered philosophy of nature in other dialogues, a basis that, *prima facie*, would seem to be at odds with his dualistic metaphysics. To prove this last point is, however, beyond the scope of the present paper. I limit

myself to trying to show that (1) and (2) comprise a substantial part of Plato's motivation for introducing the Forms-as-*aitiai* hypothesis in the way that he does.

It will be useful to distinguish two ways in which properties can be connected: through regular succession, and through compresence. Plato uses examples of both kinds in the *Phaedo*. Further, it will be useful to note that, necessarily, the regular succession of properties is given in experience. Compresence of properties, however, may be given in experience (what is on fire is always hot) or discovered *a priori* (what has the property of being a trio is always odd).

From early in the dialogue, Socrates and his interlocutors are preoccupied with what is, implicitly, the issue of the ways in which properties can be conjoined. The connectedness of certain pairs of properties is a motif that recurs throughout the dialogue, beginning even before we meet Socrates.

At 59a5 ff., Phaedo recounts for Echecrates the "strange feeling" (*atopon... pathos*) that he experienced during his final conversation with Socrates, "an unaccustomed mixture of pleasure and pain" (*tis aethes krasis apo te tes hedones sygkekramene homou kai apo tes lypes*). (59a5-6) Phaedo's recounting of this strange blend of properties marks the first move in the development of a theme of central importance to the dialogue: the passions and sensations tend to be sources of confusion.

The mingling of pleasure and pain recalled by Phaedo foreshadows Socrates's reflections on the instability of our knowledge of our affective states and sensations. The strange admixture of pleasure in his "misery" (*penthos*) made for an "astonishing" (*thaumasios*) experience, such that he was confused as to what he should or, indeed, what he did, feel. (59a1, 58e1)

That sensations and passions tend to confuse our judgment, and that the task of philosophy is, in large measure, to curb their influence on the soul are well-known themes of the *Phaedo*. At a subtler level of metaphysical speculation, Phaedo's first speech problematizes certain of our notions about the concomitance of properties. Plato presents us with an image of properties seeming to stand in a relation of compresence, but one that is strange, even astonishing. Presumably, Phaedo's perplexity at his own state stems from a common sense intuition to the effect that properties opposite to each other cannot simultaneously characterize the same thing. Yet, his experience provides an apparent counterexample.<sup>cxxiv</sup>

Plato does not resolve the matter in favor of either the ostensible principle or the apparent counterexample. Indeed, when Phaedo's story next comes to Socrates's opening words, during that final conversation, we find Socrates just having been released from his bonds and musing upon the strangeness of "that which men call pleasure." (60b5) By way of explaining his perplexity, Socrates seems to endorse Phaedo's intuition that the respective properties, pleasure and pain, are mutually exclusive. Grube, to my mind correctly, translates *me thelein paraignesthai toi anthropoi* as "a man cannot have both at the same time." (60b6)<sup>cxxv</sup>

What Socrates finds "astonishing" (*thaumasi[a]*) is that the two should be joined in regular succession. (60b4) Although, as he apparently sees it, one does not find the two properties jointly instantiated, yet "when one is present to a man, the other follows later" (*ho an to heteron paragenetai epakolouthei hysteron kai to heteron*). (60c4-5) Why the regular succession of pain and pleasure should be a particularly perplexing case of concomitance of properties Socrates does not say. But that he does find it enigmatic is clear. Rather than launching into an inquiry and tackling the question philosophically, he opts for a just-so story:



some god, wanting to reconcile these implacably opposed creatures, pain and pleasure, fused them at the head. Thus, when one is present to a man, the other inevitably, so it seems, follows.

Given that Socrates offers no indication as to why he finds this concomitance of properties especially puzzling, perhaps we are to glean the reason from the broader drift of his remarks. Socrates's wording at 60b4, "that which men call pleasure," may be meant to call into question, or at least suggest skepticism about, our ability to track anything definite in the flux of our affective lives.<sup>cxxvi</sup> Again, at 60b5, his wording may reflect such doubts when he speaks of "that which is thought to be its [i.e., pleasure's] opposite," pain (*pros to dokoun enantion einai*). The tone of his remarks here echoes a possibly skeptical point made by Phaedo in the passage discussed above. Phaedo tells Echecrates that the occasion of his final conversation with Socrates was particularly bewildering because, although the death of his friend Socrates was imminent, he felt no pity, such as would have seemed "natural" or "reasonable" in the circumstances (*hos eikos an doxeien einai*). (59a2)

As the text stands, on philological grounds alone, it is not clearly the case that we should take Socrates's remarks on pain and pleasure to be skeptical. But there is a philosophical reason for so construing them: pain/pleasure is the first problem case, and indeed an anticipatory one, for the principle, introduced at 70e1, that (C) "All things which come to be...come to be from their opposites if they have such."

That (C) is pivotal to the dialogue's argument for the immortality of the soul is well-known. So that Plato should introduce a problem case for (C) in advance is intriguing. I suggest (and I believe that my analysis of succeeding passages, bears out this point) that the introduction of this *prima facie* counterexample to (C) is a subtle dialectical move on Plato's part: that the

mingling of pain and pleasure should be “astonishing” and “strange” to Phaedo, and that their close connection should be “amazing” to Socrates, combined with the status of (C) in the dialogue, suggests that, because pain and pleasure seem such as to sometimes characterize the same thing at the same, and thus appear to run afoul of (C), our common sense concepts of them, according to which they are opposites, are metaphysically suspect. And given the broad themes of the *Phaedo*, such skepticism would not be out of place: these properties of certain of our sensations and affective states depend heavily for their character on corporeal, visceral elements of our being and the relatively low faculties of the human soul – precisely the impediments to knowledge impugned by Socrates throughout the dialogue.

If the ephemeral nature of the properties that characterize our mental states warrants skepticism about our ability to identify such properties, in any stable way, as the language of the above-cited passages could be taken to suggest, then *a fortiori* we ought to regard our beliefs about connections between such properties as tenuous. Perhaps this fact is all there is to Socrates’s view that the concomitance of pain and pleasure is especially puzzling. Indeed, even in asserting the regular succession, he hedges it with qualification, claiming only that when one of the properties is present, the other “*almost necessarily*” follows (*skedon ti anagkazesthai*). (60b7, my translation) As C. J. Rowe points out, Socrates is far from asserting a necessary connection; his just-so story of the two creatures joined at the head “is only describing what the relationship between the two things is *like*.”<sup>cxxvii</sup>

Yet, as I noted above (II, i), the instability of our judgments about phenomena is a prominent theme of the dialogue. Given the dialogue’s *general* downgrading of the epistemic status of beliefs that necessarily have some bodily contribution to their content, why would belief in the regular concomitance of pain and pleasure, in particular, come in for skeptical treatment?

One answer could be that such belief seems paradoxical; perhaps, as an empirical matter, even impossible.<sup>cxxviii</sup> But I don't think that this is the answer, because Socrates, in the *Gorgias*, offers the example of the simultaneous experience of pain and pleasure – drinking when thirsty – as a counterexample to the hedonist thesis about value advanced by Callicles.(496c-497e) The example is readily accepted, there, as an item of common sense.

I believe that the answer lies in the notion, discussed above (II, i), of a scale of justification: beliefs about phenomena are better-justified to the extent that they can be detached from bodily contributions to thought. In trying to grasp any potential object of knowledge, the inquirer who comes closest to it will be the one who “free[s] himself, as far as possible, from eyes and ears, and in a word, from the whole body.”(66a3-4) Again, as noted above, Socrates's language suggests that there are degrees of justification to our *a posteriori* beliefs.

The concomitance of properties is a topic that arises again at 70e1 ff., and the discussion here contrasts, in some intriguing ways, with the case of *pain / pleasure*. The contrast points, in particular, to what Plato has in mind by the notion of an intermediate stage of freeing the soul from association with the body. The discussion has now turned to the metaphysics of coming-to-be, and Socrates is explicating the principle that (C) “All things which come to be...come to be from their opposites if they have such.”(70e1-2) He offers as an example the conceptual truth that “when something comes to be larger it must necessarily become larger from having been smaller before.”(70e6-7) Other examples in the passage include “juster” / “more unjust” and “better” / “worse”.(70e1 ff.)

We now have to do with relational and evaluative concepts which are used to interpret experience. The conceptual entailments in question are necessary truths. The properties in

question, e.g. smallness and largeness, are not, like pain and pleasure, properties of our mental states. In this respect, they are more detached from bodily sources of judgment. Indeed, smallness and largeness may be applied to such non-experiential judgments as those having to do with mathematical entities. But when the relational and evaluative concepts under discussion are applied to experience, then, of course, their employment will be shaped by contributions made by the senses. Further, the Forms that correspond to these concepts will be instantiated in processes of coming-to-be; *ipso facto* they will be imperfectly instantiated.

So, on balance, the beliefs that we have about the concomitance of such properties as *smallness / largeness*, *better / worse*, and *more just / less just* attain a greater degree of independence from bodily contributions to judgment; and thus far our beliefs about them are better justified than are our beliefs about pain and pleasure. That *x* is larger, or that *x* is better, when *x* is an object of experience, is never a necessary truth. But “*if x has become larger, then it became larger from having been smaller*” does express a necessary truth. Our beliefs about the kinds of concomitance of properties under discussion at 70e1 ff. are higher on the scale of justification than are our beliefs about such conjunctions as *pain / pleasure*. Any process of becoming in which they are involved will, however, make their occurrence a case of regularity of succession; thus, far they share with *pain / pleasure* some vulnerability to the distortions of perception.

Beliefs about pain and pleasure lie at the bottom of the scale. This is what we should expect, given that pain and pleasure are to a great extent subjective properties. Their instantiations, as traits of our mental states, track little that is mind-independent.<sup>cxxix</sup> Given that pain and pleasure are in large measure mind-dependent, our ability to detach bodily contributions from our concepts of them is minimal.

Thus, to return to Socrates's astonishment at the two-headed being, *pain / pleasure* is a puzzling concomitance of properties because beliefs about these properties are at the low point on the scale, and thus it is surprising that they should exhibit any regularity at all. Socrates has asserted, early in the discussion, that "we do not see or hear anything accurately." (65b2) When we keep in mind that premise, we better understand why it should be "astonishing" to Socrates that the two properties stand in a relation of regular succession. Now, to be sure, pain (or pleasure) is not always, and specifically not in the case under discussion, a matter of seeing or hearing. But that fact makes their regular succession all the more surprising, because, as Socrates notes, "if those two physical senses [seeing and hearing] are not clear or precise, our other senses can hardly be accurate, as they are all inferior to these." (65b3-4)

It may be helpful, at this point, to note that what I have called the "scale" of justification implicit in the *Phaedo* seems a precursor, or at least a notion closely related to, the Line of *Republic VI*. The *Phaedo*'s scale is certainly intuitively close to the Line. At *Republic* 509d6, Socrates proposes that the range of objects of knowledge "is like a line divided into two unequal sections...that of the visible and that of the intelligible." Thought (*dianoia*) and understanding (*noesis*) have, as their objects, entities in the intelligible realm. In contrast, the visible realm is to do with, on the one hand, images, such as shadows and reflections, the objects of imagination (*eikasia*), and, on the other hand, their originals, the objects of belief (*pistis*), macroscopic bodies such as animals, plants, and manufactured things. (509e1-510a3)

Plato uses the Line to plot the relations between our different cognitive faculties and their respective kinds of objects. Keeping in mind the intuitive closeness of the Line, on the one hand, and the *Phaedo*'s implicit scale of justification, on the other hand, may shed some light on Socrates's amazement that there should be regular succession to such mental states as pain and

pleasure: these states are not, in general, properties of visual experience. Their regular succession involved is that of properties that are not even in the visible realm. They are, perhaps, “images” of a sort, in something like the way that Plato might allow auditory “images”, metaphorically speaking, as well. Pains and pleasures certainly share the ephemeral character of shadows and reflections. But the regular succession of such pleasures as the pleasure in Socrates’s leg, upon its release from the fetters, following on pain is a succession of properties that, apparently, would not make it on to even the lowest stage of the Republic’s model for the ascent to understanding. That there should be regularity at such a low, obscure level of experience as raw sensation is, perhaps in part, what Socrates finds so striking.

Supposing that I am correct about why *pain / pleasure* might be thought by Socrates to be a puzzling concomitance of properties, a weightier question remains: given the flux of phenomena, why should there be any scale? If *a posteriori* beliefs cannot rise to knowledge, not merely *de facto* but in principle, then why should some beliefs formed *a posteriori* be any better justified than others?

I believe that the answer to this question has to do with likeness; specifically, it has to do with the likeness of the phenomenal realm to the transcendental realm. In so far as mind, acting alone, discovers stable concomitance of properties, we have some justification for believing that, to some extent, stable concomitance of properties underlies the flux of the phenomenal world. At *Phaedo* 103c-104c, for example, when Socrates explains his conception of coming-to-be and ceasing-to-be, by juxtaposing three and the Odd, on the one hand, and fire and the Hot, on the other hand, he intimates that the isomorphic relations among thing, attribute, becoming, and ceasing are what they *in both cases* owing to a scheme for concomitance of properties that is given by the order of the Forms. “The hot is something other than fire,” yet “fire will never

venture to admit coldness and remain what it was,” Socrates contends; and “there is something else than the Odd which one must nevertheless also always call odd, as well as by its own name...the number three.”(103d2-e1; 104a2-5) The broad metaphysical underpinning for the relation between thing, attribute, becoming, and ceasing, Socrates says that he “want[s] to make clear” is this: “these do not admit that Form which is opposite to that which is in them; when it approaches them, they either perish or give way.”(104b4-8) This suggestion of a transcendental basis for the structure of phenomenal becoming, a structure that is broadly similar to the connections among those entities that we encounter with the mind alone (mathematical entities and properties), may well be meant by Plato to bolster our confidence in Socrates’s premise, advanced in the *Phaedo* only as a hypothesis, that such order as we find in the phenomenal realm points to the influence of an Intelligence that ordered the world for the best by looking to “those realities we are always talking about...the Beautiful, the Good...all that kind of reality.”(76d5-6)

Yet, given that, by Socrates’s own concession, mind never does act entirely independently of bodily influence, how do we ever gain the acquaintance with the transcendental realm that would be necessary to justify the (tacit) similarity hypothesis? This question points to the necessary role of *anamnesis*.

### C.

If the only variety of concomitance of properties that we ever encountered consisted in the concomitance of properties given in experience, then, by Plato’s lights, we would have no justification for inferring a purposive, law-like order underlying physical reality. So much is clear from the low epistemic value that, as we have seen, Plato, in the *Phaedo*, attributes to perception. Yet, just such a robust order is presupposed by the *Phaedo*’s limn of teleology. It

must, therefore, be the case that we have some kind of encounter with stable, orderly concomitance of properties. Such acquaintance could not consist in the (apparently) regular connection of properties given to us *a posteriori*. This encounter must take place in the realm of what we would call the *a priori*.

Many commentators have noted that Plato's recollection thesis seems to be specially concerned with the distinctive character of the *a priori*.<sup>cxxx</sup> The thesis – learning is remembering (*anamnesis*) – is advanced, first, in the *Meno*, in the context of Socrates's demonstration that an untutored slave boy can be led, by questioning alone, to produce, out of his own head, as it were, the solution to a geometrical problem; and this kind of inquiry Plato clearly regards as *a priori*. *Anamnesis* is taken up again, in the *Phaedo*, in a context in which, as Julius Moravcsik has observed, "it is made clear...that only *a priori* knowledge is regarded by Plato as genuine knowledge."<sup>cxxxi</sup>

It is of particular interest for my purposes in this paper that the *a priori* concepts that mind recollects seem to form, as Moravcsik puts it, "an interrelated field."<sup>cxxxii</sup> With the argument for the recollection thesis on the table, as well as the Forms hypothesis, Socrates takes up again, at *Phaedo* 103d ff., the matter of the different ways in which properties can be connected. That there will be such connections follows from a principle that seems, to Socrates, intuitively evident: "It is true" about some things with respect to which there is a Form that (P) "there is something else that is not the Form but has its character whenever it exists." (103e2-4)

"Is there something else," Socrates asks of Cebes, "than the Odd which one must nevertheless also always call odd, as well as by its own name?" (104a2-3) Socrates then offers the number three as his example. Given the Forms hypothesis, (P) is clearly instantiated in such



conceptual entailments. The array of *a priori* concepts on which Plato draws in his discussions of *anamnesis* are, as Moravcsik notes, such that “if one has brought one element to consciousness then this will bring with it the ability to bring to consciousness other members of the field as well.”<sup>cxviii</sup> Indeed, with respect to the present example, Socrates quickly extrapolates from the number three to “half of all the numbers.”(104b1)

In explaining the Forms-as-*aitiai* hypothesis, Plato mixes *a priori* and empirical cases. He has been much criticized for doing so.<sup>cxix</sup> If, however, the import of this hypothesis is non-causal, as Vlastos argued, and as I argue (see Chapter 3, below); and if the hypothesis is not to be taken as a methodological principle for natural science, but as a thesis about responsibility in a much broader, logico-metaphysical sense, as Sedley has argued; then another perspective on Plato’s introduction of the Forms-as-*aitiai* hypothesis is available to us.<sup>cxx</sup> Plato introduces the Forms-as-*aitiai* hypothesis in a context in which he has emphasized that the *a priori* concepts form an interrelated field; in a dialogue in which he lays the foundation for his work in teleology, and in which, oddly enough, he drives home the exclusive claim of pure reason to knowledge, Plato also prepares a way to justify inferences about nature’s order: the structure of the phenomenal realm is, he suggests, underwritten by a field of connections that are analogous to those that we know to exist, in the realm of Forms, from our successful *a priori* inquiries.

The claim that I am making about Plato’s mixing of experiential and *a priori* examples, in such passages as 103c-104c, discussed above – the claim that this mixing has a special import for both this dialogue’s early statement of Plato’s teleology and his later development of it – is, I believe, borne out by the text. We must remember that such mixing of experiential and *a priori* cases is not limited to Plato’s discussion of the Forms-as-*aitiai* hypothesis. Commentary on 95-105 generally does not note, I find, that the mingling of sensible and *a priori* concepts figures in

the dialogue's earliest discussions of character and becoming. The discussion at 71b ff., of Socrates's thesis that all becoming is becoming from opposites includes "increasing and decreasing...separation and combination...cooling and heating, and all such things, even if we do not have a name for the process." (71b 3-7)

It is against this background discussion of coming- and ceasing-to-be, a discussion that mixes quantitative, sensible, and basic metaphysical concepts that Socrates broaches discussion of such "realities" as "the Equal, the Greater and the Smaller...the Beautiful itself, the Good itself, the Just, the Pious." (75c 4-d 1) Aside from the relation between the processes increase/decrease and the Forms Greater/Smaller, the suggested relation between process and Form is not here pursued. Indeed, even in his full-blown inquiry into the relation between Formal and material accounts of character and becoming – the *Timaeus* – much about the relation between the two is left unexplained.<sup>cxxxvi</sup>

But that Plato aims at such a unified account, even at this early stage of the development of his teleology, can be gleaned by the parallels between these passages (71b ff.; 75c-d) Two theses are advanced here: *a*) all processes that lead to something's having a determinate character – even heating and cooling – are underwritten by some such formal process as Socrates has in mind by the common-sense metaphysical notion of opposites; *b*) there is, in principle, a Formal account for every determinate character a thing can come to have; some such account exists for "all those things which we mark with the seal 'what it is'." (75d 2)<sup>cxxxvii</sup>

Although Plato is reticent, at 71b-75d, about the suggested relation between process and Form, we have good reason to believe that he has some relation in mind. All of the processes mentioned above, in connection with 71b ff., parallel examples offered in the Anaxagorean

excursis and the discussion of the Forms-as-*aitiai* hypothesis. Many examples from 95 to 105 seem to echo this earlier passage. The process of “heating” (71b5) is intuitively close to the example of “fever” (105c4), the sophisticated *aitia* that, *ex hypothesi*, “coming into a body makes it sick.”(105c4-5) The process “combination” (71b5) is intuitively close to the candidate mechanistic *aitia* that “food adds flesh to flesh”(96d1), a possible sophisticated *aitia* that would figure in an account of why a body comes to participate in “Tallness” (102d6).

Woven throughout these discussions of such phenomenal patterns as heating, fever, sickness, fire, and hot, on the one hand, and cooling, snow, and cold, on the other hand, are *a priori* examples, and in particular mathematical examples, such as triad, three, Odd, and duo, two, Even, that come closer to Socrates’s oft-reiterated ideal of realities that we come to know by mind acting, so far as possible, alone. My suggestion, again, is that these parallels are meant by Plato to indicate that phenomenal regularities are underwritten by the same kinds of entailments involved with Form participation as, he believes, are plausible for the more purely conceptual entities and properties.

Why does Plato not come directly out and say as much? It is important to bear in mind that even in the mathematical cases Plato thinks there will unavoidably be a gap between the Formal account and the account in terms of the mathematical characters that are given to us in intuition. “You would be afraid,” Socrates observes “to say that ten is more than eight by two, and that this is the cause of the excess,” rather than the Form “Bigness.”(101b5-8) Given the scale of justification for our beliefs that I think is implicit in the dialogue (see IV, below), a scale pegged to the degree to which we can dissociate beliefs from perceptual sources, it should come as no surprise that if Plato thinks a gap exists between our account of mathematical truths and the truths to do with Forms that could, in principle, be said to underwrite them, then *a fortiori* there

will always be an epistemic gap between the only slightly justified beliefs that we have about regularities in phenomena and the kinds of Formal accounts that would underwrite them.

Given the Forms hypothesis, if (P) holds true for *a priori* concepts, and if there are Forms that correspond to certain of our empirical concepts, then there is no *prima facie* reason not to believe that (P) holds true for those Forms that correspond to empirical concepts. Indeed, simplicity would seem to require that we proceed from that premise. We know on the basis of successful *a priori* inquiry that there is a necessary connection between “threeness”, as it were, and oddness. Given Plato’s epistemology, we cannot know on the basis of the regular compresence, in experience, of fire and heat that there is a necessary connection between these properties. But that there *are* regular connections in experience, combined with the fact that necessary connections are turned up by *a priori* inquiry, points to the plausibility of the teleological hypothesis.

How does the fact of regular connections in experience, combined with that of necessary connections turned up by *a priori* inquiry, prepare the way for the teleological hypothesis? So far as these premises go, they would seem to yield only the inference that we have some justification for believing that regularities in experience, e.g. regularities of compresence such as fire-hot, are underwritten by Forms, in something like the way that more purely conceptual entailments such as three-odd are so underwritten.

The limn of Plato’s teleology at 97c ff. suggests a tight conceptual connection (one developed in the *Timaeus*) between necessity and good, to the effect that if there is necessity underlying certain of the patterns given in phenomena, such necessity is only truly explained in terms of the good that it brings about. A true teacher “about the cause of things,” Socrates tells

Cebes, “would tell me, first, whether the earth is flat or round, and then explain why it is so of necessity, saying which is better, and that it was better to be so.”(97e 1-3) The concept of necessity suggests a tightness of fit between states of affairs; but, as I have emphasized above, a theme of roughly the first third of the dialogue is the epistemic shakiness of our bridges to the phenomenal world, sensation and perception. Thus, it should not come as a surprise that even in this early, rough sketch of his teleology Plato should raise doubts about the prospect of finding necessary connections in the phenomena themselves. Hence, in the Anaxagorean excursus, Socrates casts suspicion on what Aristotle would call material *aitiai*. To try to find necessary connections in the phenomena themselves, e.g. in the ostensible material, mechanical *aitiai* – divorced from concepts of the necessary and the good – is misplaced. That “one man surrounds the earth with a vortex” to explain its location and “another makes the air support it like a wide lid,” Socrates finds to be labors lost; the proponents of such views are “people groping in the dark” for true explanations.(99b 5-6; 99b 3) A “real” cause Socrates distinguishes from “that without which a cause would not be able to act as a real cause.”(99b 2-3) Considerations to do with how the best is to be brought about – the material, mechanical means – are ancillary. Explanation does not come to a rationally satisfying point until such questions as the locations of celestial bodies are cashed out in terms of “the best place they could possibly be put.”(99c 2) Again, only considerations of what is best confer necessity. Socrates’s implicit critique of the *peri phuseo* tradition is that they do not “believe [the consideration that a state of affairs would be best] to have any divine force...they do not believe that the truly good and binding binds.”(99c 2-5) Without the binding force of the good to direct, such material *aitiai* as air may well bring about random, haphazard effects; but they will bring about nothing of necessity.

A closely-related thesis advanced in the passage by Socrates, as a conceptual truth, is that all explanation in terms of good is explanation by reference to the intentional. This premise is implicit in two claims which parallel each other. At 97c 2, Socrates lays down as a first principle of any philosophy of nature that he could endorse that “Mind directs and is the cause of everything.” A concomitant claim that he seems to offer as a conceptual truth is that *if* Mind were a universal cause, then “Mind would direct everything and arrange each thing in the way that was best.”(97c 4-5) This global claim about the metaphysics of causation is not pursued much further, as Socrates acknowledges that he never developed a natural philosophy of his own, nor did he come across one that answered to his criteria. But at 98c, he offers a mundane example of the ultimate explanatory force of reason, one that expresses in a microcosmic way the hopes that he had held for a global theory of causation in terms of Mind. “The reason that I am sitting here,” Socrates expounds on behalf of a mechanistic, materialistic philosopher of nature, “is because my body consists of bones and sinews...the bones and sinews are separated by joints...the sinews contract and relax...they surround the bones along with flesh and skin which hold them together...the relaxation and contraction of the sinews enable me to bend my limbs...”(98c 4-d 3) He then rebukes his stand-in Presocratic for getting lost among “a thousand other such things” while “neglect[ing] to mention the *true* cause” that “it seemed *best* to me to sit here.”(98d 6-e 1, my emphasis)

So, to recap, regularities among properties given in experience, e.g. regularities of succession or compresence, would not, given everything said in the dialogue about the status of empirical claims, suffice to warrant teleological speculation. A teleological natural philosophy – broadly, the view that connections among natural properties or states are what they are because they bring about some good – would only be warranted if we had *some other basis* for believing

that the regularities are underwritten by some kind of necessity. We come to discover such necessity in *a priori* reasoning. But so far as that goes, necessity is, then, something encountered by mind acting alone. If we are to believe that such structures of necessity as mind discovers underwrite certain causal structures in nature, Plato seems to infer, this fact can only be accounted for by the direction of Mind.

Our beliefs about the empirical connections are, by Plato's lights, not on a par with our beliefs about those connections that we discover by pure reason. But (i) the similarity of sensible instances, e.g. an instance of equal sticks, to those Forms that correspond to *a priori* concepts, e.g. the Equal itself, combined with (ii) the hypothesized existence of Forms that correspond to certain of our empirical concepts, combined with (iii) the simplicity criterion, require that we infer: (iv) necessary connections exist between those properties that are given to us in experience. Given the exclusively bodily nature of the sources of our beliefs about, say, fire and heat, our justification for beliefs about particular connections of that kind is low. But the similarity of the realm of Forms to the immanent realm, established by mind working, so far as possible, free from the distractions of the body, in the *a priori* cases, warrants the teleological hypothesis that purposive, divinely-conceived order underlies the order of phenomena. Such an inference about phenomena Plato certainly would never base on experience.

Plato's mixing of *a priori* and empirical examples, during the explication of the Forms-as-*aitiai* hypothesis, has struck many commentators as odd, because the *a priori* examples seem out of place in a discussion of *aitiai* understood as causes. If we follow the kind of logico-metaphysical reading of the Forms-as-*aitiai* hypothesis argued for by Vlastos, Plato's mixing of *a priori* and empirical examples at *Phaedo* 95-105 will still seem odd at first glance. It comes, after all, in a dialogue in which, as I have discussed above, i) the struggle of reason to liberate

itself from the distorting influence of the senses, ii) the sole claim to knowledge of the *a priori*, and iii) *anamnesis* as the explanation for all true learning (presented here in the *Phaedo*, as it was in the *Meno*, as a phenomenon restricted in scope to *a priori* inquiry) are central themes.

But what comes between the development of these three themes, on the one hand, and the introduction of the Forms-as-*aitiai* hypothesis, on the other hand, is the teleological thesis. When Socrates affirms as a first principle, at 97c2, that “Mind directs and is the cause of everything,” Plato has put in place the regulative ideal that will orient his teleological speculation in other dialogues. While Plato will make clear that such speculation, based, as it must be to some degree, on observation, is of a much lower epistemic order than *a priori* inquiry, he must prepare the way if such speculation is even to get off the ground. To do so here in the *Phaedo* is a tall order, given the broader Pythagorean and anti-*phyiologoi* themes of the dialogue. Yet, if Plato can broach the possibility that certain non-analytic connections exist between our empirical concepts, in virtue of i) the fact that we know them to exist between such concepts as “square”, “side”, and “diagonal”, and ii) the likely uniformity, in this respect, of the realm of Forms that correspond to our concepts, both *a priori* and empirical, then the way is clear for a rationally coherent, anti-mechanistic teleological speculation.

#### **D.**

It will be useful to summarize the *Phaedo*’s recurring discussions of concomitance of properties, and to indicate more concisely the main marks of the scale of justification that I find to be implicit in the progression of examples:

A) *pain / pleasure* (58d9-59a9): i) mind-dependent; ii) regularity of succession



B) *larger / smaller; stronger / weaker; swifter / slower; more just / less just*

(70e1-71b9): i) connected to some process of becoming; ii) mind-independent conceptual truths; iii) regularity of succession

C) *fire / hot, snow / cold, three / odd, two / even* (103d2-104b3): i) mind-independent; ii) regularity of compresence

Regularities of succession are necessarily temporal phenomena. Such connections between properties as we find in regular successions, by their very nature, cannot resemble connections between Forms as closely as connections that are not temporal. (A) and (B) both involve conjunctions of properties that are bound up with regularities of succession. The concepts involved in (B) are, however, concepts that track states of affairs that are not mind-dependent. Thus, our beliefs about them are, to that extent, better justified than are our beliefs about the properties in (A). (C) involves conjunctions of properties that are regularly found together. Such connections between properties are not temporal; to that extent, they resemble connections between Forms more faithfully than do those connections that are bound up with processes of becoming.

Yet, there is the intriguing cleavage within (C) between those regularities of compresence that are necessarily spatial – *fire / hot, snow / cold* – and those that are neither temporal nor spatial. When an entity that instantiates “threeness” is present to the mind, necessarily an entity that instantiates oddness is present to the mind. The same holds, of course, if the entity in question is an object of experience that instantiates “threeness”, e.g. a trio of sticks. In neither case could the conceptual entailment fail because of facts about any particular spatial phenomenon. But not so with the conjunction of properties *fire / hot*. Given this salient difference, why should Plato have thrown these two kinds of examples into the mix in the same

breath? By the criteria that I have laid out, the conjunction *three / odd* is a significantly higher on the scale than is the conjunction *fire / hot*. I will suggest one possibility that I cannot pursue further in this already-long paper: properties given in regularities of compresence deserve a status significantly higher than those given in regularities of succession because space existed prior to the Demiurge's crafting of the cosmos; time, as Vlastos argued, did not.<sup>xxxviii</sup>

Temporality, for Plato, is much more bound up with the nature of phenomena. Space has the venerable status of having existed before the creation of the cosmos, and, as such, is not as purely bound up with phenomena; its existence does not depend on events.

#### *E.*

I have argued that several passages in *Phaedo* 59a-95e prepare the way for the introduction of the Forms-as-*aitiai* hypothesis. They do so by taking up the metaphysical topic of the ways in which properties can be conjoined, and the epistemological topic of the degrees of confidence that we should have in beliefs about such connections. I claim that the instability of our epistemic position, with respect to beliefs about phenomena, which is so emphatic a theme of the dialogue, has the potential to scotch Plato's teleological thesis; and, further, that anamnesis, and the portal that it provides to stable conjunctions of properties, serves to justify the teleological thesis by indicating an underlying order to phenomena, but an order which we can only glean by analogical thinking. The analogy, again, is that between the realm of Forms and the phenomenal realm. But the necessary bodily contributions to our beliefs about phenomena are such that we can never have anything like the degree of justification for beliefs about connections of that kind as we have for our beliefs about connections discovered *a priori*.

A potential objection to my interpretation of these passages might be an argument, most notably developed by Dominic Scott, that Plato did not advance the recollection thesis as an explanation for our grasp of common *a priori* concepts. Scott argues that “anamnesis”, in fact, “is concerned only with the attainment of hard philosophical knowledge, which most of us never reach.”<sup>cxxxix</sup> Whereas my reading posits a special relation between certain phenomena (i.e., the ones that trigger the recollection of *a priori* concepts) and the ascent to knowledge, Scott argues that all experience is on a par for Plato. Empirical contributions are all, without further qualification, equally deceptive and equally irrelevant to inquiry. He insists that Plato holds to a “rigid separation between the empirical and the rational.”<sup>cxl</sup> He offers the analogy of Demaratus’s wax tablet: the Spartan spy wrote a decoy message on the wax; the real message for the Greeks he carved into the wood underneath the wax. So, as Scott reads Plato, all empirical notions, without discrimination, must be scraped off the mind before genuine, *a priori* inquiry can begin.

One move available to me would be to concede Scott’s thesis that anamnesis has only to do with the heights of knowledge, attained exclusively by the philosophical elite. But if i) that is correct, and ii) the close connection between the recollection and teleological theses, for which I have argued above, exists, then it seems likely that Plato would conceive teleology as another preserve of the handful of inquirers who achieve genuine knowledge. But clearly he does not. Plato takes the teleological view of the cosmos to be a common sense metaphysical intuition. Indeed, he takes his elaboration of teleology to be a defense of the common sense perspective, as against the sophisticated materialist theories of the *physiologoi* and atomists.<sup>cxli</sup> If teleological intuitions are common, and if they are prompted in us by *both* the observation of concomitance

of properties in experience *and* the encounter *a priori* with stable conjunctions of properties, then it seems likely that Plato believes anamnesis to be common as well.

My skepticism toward Scott's argument has less to do, however, with whether anamnesis comes to the many or the few, as much as with the "rigid separation" between the *a priori* and the empirical on which he insists. Understood in a certain way, of course, the separation between the two *is* rigid; as I have emphasized, beliefs about phenomena cannot rise to knowledge, not merely in fact but in principle. But Scott's notion of the rigid separation leads him to reject any interpretation of the *Phaedo* according to which "human understanding is the product of an interaction between the information that our senses give us... and universal notions."<sup>cxlii</sup> Since I have argued for such a view, above, I wish to reply further to Scott's argument.

Scott provides us with a close, careful analysis of the salient passages of the *Meno* and the *Phaedo*, and he shows that we cannot easily read off from them a straightforward theory of innate knowledge, one from which some readers have been too quick to draw a straight line through Descartes to Kant.

I will reply briefly to some of Scott's textual points, but my argument against his interpretation of anamnesis is, properly, the whole of my discussion leading up to Section IV, and the result that my reading obtains, as summarized in section IV: there are degrees to which one's beliefs about phenomena can approach to the truth because i) we are told repeatedly in the *Phaedo* that there are degrees to which one detaches one's beliefs from perception and ii) we are told that the apparent order of the phenomenal realm – best exemplified in the concomitance of

properties – points toward, and stimulates our thinking about, the true, underlying order that we know, from *a priori* investigation and a plausible inference, to underlie phenomena.

Were it really the case, as Scott contends, that Plato thinks all sense experience “should be scraped off” the mind, as it were, indiscriminately, then there would be no conceptual space in the *Phaedo* for the teleological thesis. The further pursuit of teleological speculation will require, and in the *Phaedo* Plato tells us in so many words, that the appearance of order in phenomena – as seen in concomitance of properties – prompts the soul to contemplation of divine order. Thus, it cannot be, at least for this stimulative purpose, that all phenomena should be roped off from inquiry, without distinction. Presumably, for this stimulative purpose, not just any sense experience would do, just as, in the *Meno*, not just any diagram would have served to trigger the recollection that went into the slave-boy’s grasping the true relation between square, side, diagonal, and area. A diagram of a circle and its radius would not have served this purpose. Similarly, the conjunction *pain / pleasure* would not serve as well, in guiding speculation about divine order, as would the conjunction *smaller / larger*. The latter conjunction of properties, when instantiated (of course the judgment that it *is* instantiated, when this judgment is of phenomena, is always vulnerable to the distortions of perception), is a mind-independent state of affairs.

Further, when it comes to speculation upon teleological order, the conjunction *pain / pleasure* would not serve as well as the conjunction *fire / hot*. The latter concomitance consists of properties with which Mind worked in crafting the cosmos. Because fire and hotness are phenomena, our judgments about them lack the stability of entailments between *a priori* concepts. But as empirical concepts go, they figure in judgments about which we can have somewhat greater confidence than we would with respect to judgments about purely subjective

properties. Fire in particular, both as a natural kind and as a property of space, has a certain theoretical importance for Plato; the constitutive role that is attributed to it in Greek natural philosophy leading up to and contemporary with Plato, he never challenges. Indeed, its treatment in the *Timaeus* will be well within that tradition. Further, as a compresence, the conjunction *fire / hot* warrants beliefs that have a greater measure of objectivity than beliefs lower on the scale, in virtue of the fact that it does not depend on (necessarily experiential) succession.

Scott denies that “Plato’s interest” in anamnesis “lies in the fact that we have all formed general concepts which are essential for our ordinary and everyday judgments.”<sup>exliii</sup> So when looking, for example, at *Phaedo* 74a9-b3, Scott gives much weight to the exclusivity of the “we” of Socrates’s discourse, and emphasizes that Socrates means his circle of interlocutors, his fellow philosophers who share his belief in the Forms theory. I agree with Scott on this point of interpretation; as a generalization, his point about the range of “we”, in this and related passages, is correct.

Yet, there are good reasons to believe that the sense of “we” is, in some instances, in this passage and closely related ones, less strict. No shift is indicated, it is true. But consider the following: “We say that there is something that is equal [*ison*]. I do not mean a stick equal to a stick or a stone to a stone, or anything of the kind, but something else beyond all these, the Equal itself [*auto to ison*].”(74a9-12). Now, Scott is quite correct that here “the contrast is between...the equality of the form and the equality of the sticks and stones.”<sup>exliv</sup> Yet, the first occurrence of *ison*, without the definite article, can refer to the “something else beyond” in more than one way. The something “that there is...that is equal” can be taken to imply an identity statement (i.e., (i) the something equal that exists is the Equal) or a predicative statement (i.e.,

(ii) the Equal itself is something equal). If we take (i) to be Plato's meaning, the ordinary concept "equal" would have to refer to the Form, the Equal. The concept "equal" which the non-philosopher uses would refer to an entity of which he, not having heard of the Forms theory, is unaware. This seems to be Scott's reading, and he points out that "Socrates dismisses [such statements as 'this stick is equal to that one'] as irrelevant to his argument."<sup>cxlv</sup> This point may be overstated, as the philosopher's recollection of the Form, the Equal, is said to be triggered by the sensible instance of apparent equality. But even if we concede Scott's point, the irrelevance to Socrates's argument of the sensible instance of equality is not yet the irrelevance of the ordinary concept "equality". The ordinary, non-philosopher's concept "equality" has not been shown to be irrelevant to Socrates's argument. Although the ordinary concept is not the focus of Socrates's argument, it is a third element in play. Presumably, we are not to attribute to Plato the premise that the non-philosopher lacks the notion of equality *simpliciter*; Plato nowhere attributes to the man-on-the street a radical empiricism, such that there *are* only equal stones, equal sticks, and so forth.

Scott is correct that in *Phaedo* 74a9-b3 the mundane concept "equal" is not Socrates's focus; the Form is. Yet, (a) if formation of the ordinary concept is stimulated, as well, by exposure to sensible instances of apparent equality, and (b) the concept is distinct from the sensible instances, even for the non-philosopher, then the ordinary concept, too, falls within the domain of anamnesis. Possession of the distinction between equality and instances of equality is a piece of mundane *a priori* knowledge. To have this distinction is not yet to stipulate the Forms thesis, i.e., that this distinction commits one to belief in Equality itself, an eternal, immutable, simple existent, in virtue of which we have the notion of equality. When Socrates contends that "before we began to see or hear or otherwise perceive, we must have possessed knowledge of the

Equal itself if we were about to refer our sense perceptions of equal objects to it,” his point is surely in line with (a).(75b5-7) The process whereby one “refers” one’s sense perception of equal objects to the Form, Equality, must be mediated by the ordinary concept “equality”. For it is the property that the equal sticks and equal stones have in common, equality, that is being referred to the eternal standard, Equality. Were the referring of equal sticks to the Form, Equality, unmediated by the ordinary concept, there would be no way to distinguish such a case from a case of the sticks being referred to the Form of any other property that they might possess (any property for which there *is* a Form, of course). How would this referring not pick out instead the Large, or the Small, or the Beautiful? The notion of “equality”, as distinct from other properties the sticks may have, has to be latched on to by the referring mind before the sensible instance can be referred to the Form *in this respect*.

To clarify, the process that I think Plato has in mind would go as follows: *a)* *S* notices two stones; *b)* it occurs to *S* that, with respect to certain sensible properties, e.g. perhaps extension, there is an agreement. This noticing that the two instances of the sensible quality agree is not, however, itself the noticing of a sensible quality. Noticing that, with respect to extension, the stones are equal already involves the employment of a concept that, Plato clearly believes, could not itself have arisen from perception. And to account for the origin of such concepts is clearly one of Plato’s aims in introducing the *anamnesis* doctrine. This sense of the doctrine is the sense in which all men recollect. But there is also a strict sense of *anamnesis* in play in the dialogue (for my discussion of the loose and strict senses of “recollection” in the dialogue see (iv), below). The more precise sense of “recollection” involves thinking about, e.g., the essential nature of equality and recognizing, *inter alia* that it is not limited to agreement of extension, or, for that matter, of magnitude, or weight, or intensity. The nature of equality is not



essentially bound to any of these types of its manifestations. Coming to grips with what, then, equality *is*, Plato clearly believes, requires that we inquire into Equality. Because only philosophers do so, *anamnesis* in the precise sense, is attained by few.

For the purposes of this chapter, let me be clear, my point needs to hold only for the common sense concept of equality, what Gallop calls the “mere...concept of equality that will suffice for normal human purposes.”<sup>cxlvi</sup> The point that I am making swings free of the question to do with a possible third metaphysical entity, the mathematical object equality, which Aristotle attributed to Plato’s view, as an “intermediate” entity between the Form, Equality and (imperfectly) equal sensibles (*Metaphysics*, 997b 1).<sup>cxlvii</sup>

I take it that, philosophically, we need the mediation of the ordinary concept, not only for the reason that I have given above (the distinction between equal objects and the abstract property is a mundane item of pre-philosophical *a priori* common sense), but because this concept of common sense is, itself, distinct from “the ability to give a philosophical analysis of it” (Gallop); the highly refined concept that results from the philosopher’s inquiry into the Form, Equality, is the item of “knowledge”, in Plato’s strict sense of the term.<sup>cxlviii</sup>

If (ii), above, is the sense in which 74a9-12 is to be understood, then much the same issue arises. Before even the philosopher can assert that the Equal is equal, she must have the mundane concept in order to assert the existence of its transcendental paradigm.

The issue that I am raising, the status of the common sense *concept* of equality, with respect to recollection, has not been explicitly tackled in the commentaries, though positions on the issue are implicit in the much-discussed matter of the relation of knowledge to recollection in the passage (72e-77a). Most scholars would agree that “knowledge” is being used in two senses,

strict and loose (Ackrill speaks of an “unloaded” sense and a “rich” sense).<sup>cxlix</sup> Hackforth, among others, argued that “recollection” is being used, in the passage, in two senses, again strict and imprecise. What I seek to make clear is a point that is simply a consequence of these well-established approaches: there is a concept of equality that we all have that, in one sense, *is* the concept that we recollect and, in another sense *is not* the concept that we recollect. The concept of equality in this latter sense is the concept I have meant by the “common sense” concept.

The approach that I am proposing follows Hackforth’s very closely, in certain respects. An objection to it would run as follows: we must have the concept of equality to judge that sensible equals imperfectly approximate ideal equality; if knowledge of equality is, as Scott contends, the result of philosophical inquiry into the Form, Equality, then *anamnesis* is only experienced by the philosophical elite (this is Scott’s view, discussed above) and sensible experience plays no role in *anamnesis*; or, Plato’s argument is hopelessly question-begging, presuming what it purports to show, namely, that the experience of roughly-equal sensibles did not itself suggest to us the concept of ideal equality.<sup>cl</sup>

As Hackforth points out, there is a full sense and an imprecise sense of “anamnesis” in play at 74b-c. The stirring up of true opinions is only “a first step towards the knowledge of reality...the prelude to the process of dialectic.”<sup>cli</sup> My point is that, in one sense, the concept of equality that we have at this stage is not the same as the concept that results from *anamnesis*, because at this stage the concept is necessarily attached to sensible experience. But as Hackforth observes, “recollection in its fullest sense is a long and gradual process which includes both the prelude to dialectic and dialectic itself.”<sup>clii</sup> In this loose sense of recollection, the concept of equality *is* the same concept as the concept that we recollect. The concept involved in the

prelude to recollection is so tightly connected to the one involved in “recollection” in the strict sense that the distinction is a difficult one to make.

Allow me to suggest an analogy. Recent empirical work on the Molyneux<sup>cliii</sup> Question tends to bear out the empiricist contention, going back to Locke, that there are no cross-modal concepts of shape. The newly sighted fail to match seen with felt. Is there a sense in which the tactile concept of a sphere is the “same” concept as the visual concept of a sphere? Many of us have the intuition that they are, in a sense, the same concept: they are concepts of the same object, and the mode of presentation makes no essential difference to the concept that we form. The blind subject using tactile perception and the sighted subject are forming, in their respective channels, the concept of a sphere.

On the other hand, the blind subject does not have the visual concept of a sphere, while the sighted subject does have this concept. So they cannot be the same concept. Depending on the context of explanation, we may wish to stress the ways in which the respective concepts are bound up with the perceptual impressions from which they are formed. And they can be so distinguished.

I believe that, similarly, Plato has shifting emphases of explanation in the passage. What Hackforth’s emphasis on “recollection” in an imprecise sense vs. “recollection” in its fullest sense helps us to see is that the concept of equality involved in the prologue to *anamnesis* (in the strict sense) is also remembered; yet, at the same time we can distinguish it from the concept of equality that results from *anamnesis* (in the strict sense): the common sense concept is bound up with sensible experience, the concept that results from *anamnesis*, in the strict sense, is detached

from sensible experience (to the highest degree that humans can achieve such detachment, at least). The latter concept is arrived at by rational insight.

Textually, the evidence for my view that Plato has in mind both the common sense concept of equality and the concept that results from *anamnesis* in the strict sense is the loosening of the sense of “we” at 74a9-b3, discussed above. When Socrates asks of Simmias, “we maintain, do we not, that there is such a thing as equality?”, the “we” of his question is better understood as an appeal to general opinion, not a reference to the philosophical elite who inquire into Forms. The strongest textual evidence for this reading, I think, is Socrates’s clarification of his question, which follows at 74b6-7: “You do regard it [equality] as something other than those things [sensible equals, such as equal logs and stones].” Again, with the distinction between sensible objects equal to each other, on the one hand, and equality itself, on the other hand, we are still in the domain of common sense. I think that, at this juncture in Plato’s argument, we must follow Bostock’s suggestion that “what Plato is talking about is the *meaning* of the word “equal”.<sup>cliv</sup> Even the man on the street who never gives any thought to equality itself understands that the meaning of “equal” (*ison*) is not essentially bound to the example of equal logs or stones. But this knowledge of how to use “equal” for everyday purposes is not the same as the knowledge that comes of *philosophical* definition. The latter is the fruit of inquiry into the Forms, which leads to *anamnesis* in the strict sense. As Hackforth points out, “It is no doubt Plato’s doctrine that knowledge, in the full sense, of the Equal can only be attained through a dialectic which connects that concept with others, such as Triangle, Square, and Cube;” yet, Hackforth continues, “we do in fact suppose ourselves to understand the full meaning of Equality without any such dialectic, and it is fair to say that we do so as soon as we have made the judgment of deficiency of which Plato speaks.”<sup>clv</sup>

This objection that I have offered to Scott's reading of *Phaedo* 74a9-b3, which, again, I have made in order to suggest that the sense of "we" in the *Phaedo*'s discussions of anamnesis is occasionally loosened without notice, is of less fundamental importance to interpretation of the passage than David Gallop's related objection. Any interpretation of the *Phaedo*'s anamnesis passage that would "limit the scope" of recollection "to the souls of philosophers," Gallop writes, would face two serious textual obstacles: "No such limitation is indicated in the Recollection Argument itself," and "76c4 says that even those who cannot give an account of the Forms are reminded of them. This suggests that Recollection is not a philosopher's privilege, but, as in the *Meno*, is possible for human beings generally."<sup>clvi</sup>

Scott, I should note, would not concede Gallop's premise that anamnesis *is* attributed to human beings generally in the *Meno*. But with respect to the discussion of anamnesis there, too, I would object to Scott's reading on grounds similar to those that I have raised in connection with the *Phaedo*. Scott contends that "anamnesis" in the *Meno* "is only invoked to explain the movement from opinion towards knowledge of *a priori* truths. It is not used to explain how the slave boy acquired the beliefs and concepts necessary to make sense of what Socrates was talking about when the examination began."<sup>clvii</sup> But it seems to me that Scott never squarely tackles the point, for which Vlastos and Moravcsik argue, that the slave boy's ability to make sense of what Socrates was talking about depended on other, perhaps more basic *a priori* truths. The point that I made above in connection with *Phaedo* 74a9-b3 (that the process of referring a sensible particular to a Form presupposes a grasp of the *a priori* distinction between the sensible particular and the property in respect of which it is being referred to the Form) is just a more specific variety of this general line of interpretation.

One example of a kind of “more basic *a priori* truth” (more basic than, e.g. the *a priori* truth that the slave boy recollects in the *Meno*, to do with the relation between a square’s area and its diagonal) is that involved in understanding a proposition. The paradox of learning, for which Plato initially proposes the *anamnesis* doctrine, arises because, as Moravcsik points out, “in a sense the learner knows what he seeks; i.e. he understands the proposition the truth value of which he attempts to determine.”<sup>clviii</sup> But saying this “leaves us,” as Moravcsik observes, “with the unanalyzed notion of understanding a sentence...since the grasping of meanings of sentences entails knowledge of certain *a priori* propositions.”<sup>clix</sup>

Moravcsik’s point meshes well with Bostock’s proposal, which I have defended above, that at 74a9-b3 the meaning of the word “equality” is meant. As I have argued above, understanding the distinction between the abstract relational property, equality, and the sensible instances of equality is necessary for understanding the meaning of the word. *In this sense*, one has to understand equality before one can inquire into it.

If, as I have argued, one must grasp certain common sense concepts that, Plato believes, do not themselves arise from experience (and, thus, for Plato, have to be in some sense remembered) before one can inquire into them, and come to fully understand them, i.e. remember them in the strict sense, this would explain why Plato’s examples of *anamnesis* all involve *a priori* propositions. As Moravcsik notes, the paradox of learning, as Plato understands it, only arises in connection with the learning of *a priori* truths.

The strongest textual evidence for the view that it is this dialectical development between the remembered common sense *a priori* concept (e.g. equality) and the (strictly-speaking) remembered concept of Equality that Plato has in mind is that, as Moravcsik points out “only

[this] kind of learning is called into question.”<sup>clx</sup> All of the examples of the paradox of learning, and all of Plato’s examples of *anamnesis* involve *a priori* inquiry. Plato never argues that we learn by *anamnesis* that, e.g. the cat is on the mat, or that it is Simmias standing before us. As Moravcsik writes, Plato only proposes *anamnesis* for “those cases in which we in a sense know what we are searching for.”<sup>clxi</sup> The recollection thesis is “no answer to a paradox that assumes that the object of inquiry is not known in any way whatsoever at the start of the investigation.”<sup>clxii</sup> The sense in which the answer to “What is equality?” is known is, plausibly, that we know the sense of the common sense concept.

My contention that Plato has in mind both the common sense concept, equality, and the concept of Equality that is discovered through inquiry into Forms helps to make sense of the fact that all of Plato’s examples of *anamnesis* involve *a priori* inquiry. Suppose, for a moment, that Plato takes there to be a Form of Cat. It would not follow that the question “Is the cat on the mat?” could be successfully answered by inquiry into Forms. It is only when we, in some sense, do and, in some sense, do not have a concept that the paradox of learning arises. And it is in reply to this paradox that Plato, first, in the *Meno*, proposes the *anamnesis* thesis.

The contention that *anamnesis* occurs only in the knowledge-stage of inquiry, when the philosopher is giving an account of the relevant Form, and not in the slave boy, is undermined also at 85c10-d1: Socrates, referring to the dialectical process that has led the slave boy to true belief, then says that if “one were to ask him many times the very same [sort of] questions in many ways...he would end up at last with knowledge of such matters no less exact than that possessed by any other person.”<sup>clxiii</sup>

It's clear that Plato has in mind a process of progressive refinement that begins with latent knowledge. True beliefs to do with certain geometrical propositions were "in" Meno's slave (85c4-5) from the outset of the discussion and dialectic "stirred them up." (84c7) Further, as I have emphasized through much of this chapter, there is considerable evidence that Plato's view in the *Phaedo*, and in the *Meno*, is that justification lies on a continuum.

Now, with respect to this last point, Meno's slave, on Plato's view, clearly does not have knowledge before his true beliefs are stirred by dialectic; nor, indeed, does Plato say that Meno's slave has knowledge when the dialectic comes to its resting point. At the other end of the spectrum, it clearly is Plato's view in the *Phaedo* that only those who inquire into Forms have knowledge, in any robust sense, if indeed anyone does. These facts are *prima facie* evidence for Scott's view that *anamnesis* only occurs at the stage of conscious, self-directed inquiry into Forms.

But in virtue of what can Plato have Socrates say that "the very same questions," repeated, will conduce to progressively more "exact" or accurate "knowledge"? (85c10-d1) In the case of this passage, it won't do to point out that Plato often speaks of "knowledge" in a loose sense and that *anamnesis* is not meant to cover mundane cases. In this passage it is a variety of knowledge that admits of progressive clarification that is, by Socrates's own words under discussion. Again, in virtue of what can the geometrical knowledge of Meno's slave become more exact? The answer cannot be that his knowledge will become more exact in virtue of the acquisition or clarification of certain empirical concepts. It is a variety of *a priori* inquiry under discussion; the concepts involved are those of mathematical objects. A plausible answer, it seems to me, is that his knowledge will become more exact in virtue of the refining of a concept that, in an important sense, he already has, innately, at the outset of the inquiry. The



common sense concept involved in this and other of Plato's examples is a non-experiential concept.

It seems dubious that we must deny, as Scott does, that the inquiry in which Meno's slave is engaged is connected to the highest stage of conceptual clarification, to Plato's mind, Form inquiry. In virtue of what could these two inquiries be stages of the same inquiry? In virtue of the same concept – in the relevant sense of “same” – seems a plausible answer. Though Plato does not delineate the common sense concept, square, from the concept, Square, Moravcsik's proposal that we acknowledge a loose sense of recollection – which includes the necessary prelude to Form-inquiry – as well as a strict sense of recollection – i.e., that which results from Form inquiry – goes far in helping to make sense of the passages in which Plato propounds the *anamnesis* doctrine.

Even with Moravcsik's proposal in hand, as well as the related arguments, both my own and those of others, that I've set out above, there is much that we would like to know about how recollection works. Often, Plato does not touch on the directly on the relevant issue, e.g. the relation between an ordinary concept, particular instantiations of that concept, and the Form to which the ordinary concept imperfectly relates. To refer back to my analogy with the Molyneux problem, I think that we are apt to get right the picture that Plato has in mind if we say that the common sense concept of, e.g. a square, is – in a sense – the concept of the Form, Square. The relevant sense is the sense involved in saying, by analogy, that the visual concept of a shape and the tactile concept of that same shape are the same concept. They are of the same shape. In another relevant sense, they are not the same concept – one is visual and the other is tactile.

A key respect in which the two situations are not analogous, of course, is that no mode of perception gives us a privileged source of truth about a shape. The concept of the Form *is*, by contrast, the true concept of anything (anything for which a Form exists, of course). For Plato, the most highly refined version of a concept – the version that issues from Form-inquiry – is normative. The reason for this fact, as I have tried to show in this chapter, is that the version of a concept that issues from Form-inquiry is the one that is detached “so far as possible” from perception.

This model of progressive refinement – from the concept of common sense to that which issues from Form-inquiry – would seem to make the best sense of the *anamnesis* doctrine. I think that Guthrie gets right what Plato meant in his summary of the relevant passages: “knowledge of the Form re-emerges into consciousness,” as Guthrie points out, by stages; “it is a process, and takes time, and many men never complete it...this was Plato’s consistent view.”<sup>clxiv</sup>

Scott places great weight on Plato’s oft-repeated contention that knowledge consists in being able to give an account, or proof, of one’s true belief; Scott further emphasizes that recollection is of the Forms, which are objects of knowledge. The slave boy does not advance to the stage of offering a proof, or an account of the relevant Form. Thus, Scott concludes, the slave boy does not recollect. But Vlastos makes a strong case for his claim that “Plato makes it clear that he thinks of the method of discovery (the first stage) and the method of proof (that of the second) to be in principle the same.”<sup>clxv</sup> Socrates’s above-quoted suggestion that the dialectical ascent is by degrees (that is to say, by more of the same kind of questioning and answering the slave boy will approach progressively closer to knowledge) seems to support this reading of the passage. Although the question-and-answer dynamic of account-giving is a more rigorous, more systematic stage of inquiry, to be sure, “there is no suggestion” from Plato, as

Vlastos points out, “that this would involve the slightest change of method.”<sup>clxvi</sup> Further, as Vlastos observes, the questioning of the slave boy is offered to Meno, by Socrates, in response to the former’s request for a demonstration that learning is recollection. If recollection only kicks in, as it were, at some stage of inquiry beyond the demonstration, then the demonstration would have been pointless.<sup>clxvii</sup>

The points of argument that I have taken, here, from Vlastos were made in a context in which he was arguing against any interpretation according to which anamnesis is to be understood as an empirical procedure (his argument is advanced against the reading of W. D. Ross, specifically). I have appropriated his points from this quite different argument because if they are correct, as I believe they are, they buttress my contention that recollection occurs in the formation of the ordinary concept (e.g., equality) the grasp of which is presupposed by inquiry into the essence of said concept (e.g., Equality), that is to say inquiry into the nature of the Form to which the concept, like sensible instances, imperfectly corresponds.

## ***F.***

Gallop calls Socrates’s claim that “sensing particular equals” could lead to knowledge of Equality “surprising, in view of his continual disparagement of the senses elsewhere...they are denounced as nothing but a hindrance.”<sup>clxviii</sup> Yet, how much more surprising is it that in the same dialogue in which perceptual experience is so denounced Socrates should also advance the teleological thesis? Not only can certain phenomena help to jog our memories of previously apprehended Forms, but they warrant the inference (when combined, as I have argued above, with insight gained from a fundamentally different kind of inquiry) that purposive order underlies phenomena. To be sure, Socrates disclaims any knowledge of natural philosophy, so

conceived. After having given up on natural philosophy, he recounts in his intellectual autobiography, he stuck to dialectic. Yet, he does not renounce the first principle upon which he contends a genuine philosophy of nature could be based.

In fact, *contra* Gallop, in the *Phaedo* Socrates does not consider the senses “only a hindrance,” though, admittedly, at times he does say as much. For he also says that our conception of, for example, equality “derives from...sense perception, and cannot come into our mind in any other way.”(75a4-6) Further, something in the nature of a perceptual experience, not its mere antecedent occurrence, triggers the process of recollection; for “our sense perceptions” themselves “make us realize that all we perceive through them is striving to reach” instantiation of the Forms.(76b1-2) As against Scott, it seems that it is the *interaction* between perception, on the one hand, and the *a priori* inquiry that perception prompts, on the other hand, that guides us; Socrates believes that it is by “the use of our senses *in connection with* [the Forms] that we recovered the knowledge we had before.”(75e3-4, my emphasis)

Perhaps the role of perceptual experience in anamnesis, then, is somewhat less surprising if, as I have tried to show, the discussion of anamnesis itself, as well as the scale of justification to our beliefs, implicit in the progression of examples from 59a to 95e, are meant to set the stage for the Forms-as-*aitiai* hypothesis. For Plato’s immediate purpose in the *Phaedo*, the Forms-as-*aitiai* hypothesis affords the basis upon which he can argue that some properties always, of necessity, bring certain other properties with them, and, thus, that the soul always brings, necessarily, life, and that the soul, therefore, cannot be compresent with death. For Plato’s longer-term purpose, the Forms-as-*aitiai* hypothesis is the first step in the development of his teleological philosophy of nature. It lays the foundation upon which he will be able to argue that things are what they are in virtue of the eternal, immutable paradigms to which Mind looked in

fashioning the cosmos. Belief in this teleological scenario, as a first principle, would not have occurred to us upon our simply reflecting that there is apparent order in the transitory realm of phenomena. But when we are set up for the Forms-as-*aitiai* hypothesis, the first stage in the development of Plato's teleology, with an explanation of how our reflections upon nature presuppose belief in a transcendental order in which necessary connections exist among properties, then we have reason for confidence that teleological speculation is rightly guided by belief in such connections.

### III. Vlastos on Forms and Causes: A Defense

#### A.

Since Gregory Vlastos published "Reasons and Causes in the *Phaedo*," in 1969, virtually every paper on the subject has begun with an obeisance to this work. Yet, despite its seminal status, the common procedure has been to invoke the paper and then to argue against it.<sup>clxix</sup> Given the work's prominence in the subsequent literature, it is, however, surprising that little real engagement with Vlastos's interpretation can be found.<sup>clxx</sup>

Vlastos argued that the *Phaedo*'s Forms-as-*aitiai* hypothesis should not be understood as the proposal that Forms are causes. The Greek word "*aitia*" included a much broader range of notions than our English word "cause", and from the fact that Plato calls the Forms *aitiai*, it does not follow that he meant them to be taken as causes, at least not in our ordinary sense of that term. I take it that the ordinary sense of "cause" is of some antecedent event that, given certain conditions, suffices to produce some further event. Of course, in the more refined use of "cause", in philosophy and science, it remains an open question whether the relata of causal connections are events. And even in ordinary usage, "cause" sometimes applies to non-events,

such as conditions or dispositions, that explain why *x* happens, or why *x* is the way that it is. But the crux of Vlastos's interpretation is the denial of causal efficacy to the Forms. They do not initiate changes, comings-to-be, or any other kind of event.

In Plato commentary, Vlastos was, of course, not the first to deny that the Forms have causal efficacy. He compares his interpretation to that of Paul Shorey, for example.<sup>clxxi</sup> But he distinguishes his own interpretation as the view that, while the Forms lack causal efficacy, they do have causal implications. Between Shorey, on the one hand, and other scholars, such as Eduard Zeller, who understood the Forms as efficient causes, on the other hand, Vlastos took himself to be staking a middle position.

In the subsequent literature, Vlastos's position has been routinely characterized, however, as extreme.<sup>clxxii</sup> What I will call Vlastos's "deflationary" interpretation of the Forms-as-*aitiai* hypothesis – the interpretation according to which Forms have no causal efficacy – has been characterized as one end of the interpretive spectrum. No distinction is made between an interpretation according to which the Forms have no causal relevance (which is not Vlastos's reading) and one according to which they lack causal efficacy, but are causally relevant.

Why the terms of debate have been defined in this way is unclear. But one influence seems to be a certain view of the relation between the *Phaedo* and the *Timaeus*. As James Lennox noted, a recurrent trend in Plato scholarship, going back, indeed, to ancient times, has been the attempt to unite the *Timaeus*'s teleological model of causation with the Forms-as-*aitiai* hypothesis of the *Phaedo*.<sup>clxxiii</sup>

This has been the trend of the last few decades. In numerous articles and monographs scholars have tried to incorporate some causal role of the Forms into the Demiurge's purposive

ordering of the world, or they have taken this connection as established, on the way to making some other point. But why this interpretive approach should have the consequence of a virtually universal rejection of Vlastos's deflationary account of the Forms-as-*aitiai* hypothesis is unclear.

In what follows, I will try to show that Vlastos's deflationary reading of the Forms-as-*aitiai* hypothesis does not rule out an interpretive unification of the *Phaedo*'s and the *Timaeus*'s respective accounts of causation. That *aitiai* should be causally relevant, although lacking causal efficacy, would be compatible with a certain conception of that interpretive project.<sup>clxxiv</sup>

## **B.**

At *Phaedo* 96a, Socrates tells his interlocutor, Cebes, that a defense of the thesis of the soul's immortality will require "a thorough investigation of the cause of generation and destruction." (96a1-2)<sup>clxxv</sup> In the intellectual autobiography that follows, Socrates recounts his early enthusiasm for natural science. He recalls that he had "thought it splendid to know the causes of everything, why it comes to be, why it perishes, and why it exists." (96a8-b1) But, in what was to be a crucial turning point in his intellectual development, he realized that for some states of affairs, such as ten being more than eight, no *aitia* of the kind given by the natural philosophers would work.

Upon hearing that Anaxagoras explained causation in terms of Mind, Socrates had thought, he recounts, that he had at last found a theory of causation that would explain why things come to be, or are the way that they are, in terms of why it is *best* for them to exist, or exist as they do. But upon his own examination he found that Anaxagoras too relied on material, mechanistic causes, and that a purposive, ordering mind played no real role in the Anaxagorean theory.

Socrates had concluded that the “old method of investigation” – the search for material and mechanistic causes – could not yield plausible accounts of why anything “comes to be, or perishes, or exists.”(97b6) Further, he had found no account of how a purposive mind orders the universe for the best. But he has since, he recounts, developed “as a second best . . . search for the *aitia*” a method of his own.(99d2) This method consists in proceeding upon the hypothesis that best explains “cause and everything else:” the Forms-as-*aitiai* hypothesis.(100a5) He now proceeds upon the hypothetical assumption that everything comes to be what it is “by sharing in the particular reality in which it shares.”(101c3) Beautiful particulars, good particulars, and great particulars come to be what they are by participating in “a Beautiful, itself by itself . . . a Good, and a Great.”(100b5-6)

### C.

When Socrates says that any particular,  $x$ , comes to have the character,  $F$ , that it does have by participating, or sharing in, the Form of  $F$ , Vlastos takes him to be citing a logical *aitia* as the reason that  $x$  is  $F$ . So, for example, the *aitia* for a particular square ( $x$ ) having the character ( $F$ ) of squareness is its participation in the Form of squareness. The import of this formula is not causal. The Form of squareness does not cause particular shapes to be squares (and much less does it cause particular shapes to come into existence). At least, the Form of squareness does not cause the spatio-temporal state of affairs ( $x$  being  $F$ ) in the same sense that the Athenian raid on Sardis caused the Persian invasion of Attica. The Form of Squareness is not an antecedent event that initiates a subsequent event, the coming-to-be  $F$  of  $x$ . Beyond the proposition that  $x$  is a square in virtue of participating in the Form of squareness, perhaps all that Plato would say in this case is that  $x$ 's having four equal sides and four equal angles is somehow connected to the fact of this participation.



Vlastos argues against the common reading (perhaps the most prominent example is Hackforth's) according to which the Form of beauty, say, causes beautiful particulars to be beautiful. Only by taking Socrates to mean that the Forms are logical *aitiai*, Vlastos contends, can we square the Forms-as-*aitiai* hypothesis with Plato's central and recurring claims that the Forms are immutable, eternal, and transcendent. For the Forms to initiate instances of the coming-to-be *F* of particulars would make no sense in light of Plato's central metaphysical beliefs. Because the Forms are eternal and transcendent, if any causal influence, in the efficient sense, emanated from them, such influence would have to be from all Forms to every given particular, simultaneously.<sup>clxxvi</sup>

This kind of answer to questions of the form "Why is *x F*?" Socrates calls the "safe" one.(105b5) To invoke the Form of *F* as the *aitia* for *x*'s being *F* is simply to apply the tautological schema that falls out of the Forms-as-*aitiai* hypothesis. A beautiful particular is beautiful because it participates in the Form of beauty, a good particular is good because it participates in the Form of goodness, an odd number is odd because it participates in the Form of oddness. But in addition to the safe answer to such questions, Socrates explains, there is also, sometimes, a "sophisticated" one.(105c3)

"If you should ask me," Socrates continues, "what, coming into a body, makes it hot, my reply would not be that safe and ignorant one, that it is heat, but our present argument provides a more sophisticated answer, namely, fire."(105c1ff.) He then offers the example of fever as a "sophisticated" or clever *aitia* of sickness in a man (rather than the safe *aitia*, the Form of sickness); and then, following these physical examples, he offers the mathematical example of a number's being one as the clever *aitia* of it's being odd (rather than the safe *aitia*, the Form of oddness).(105c3ff.)

The formula implicit in this passage - that  $x$  is  $F$  because it participates in the Form of  $G$  and participating in the Form of  $G$  is a sufficient condition for participating in the Form of  $F$  – ought also be understood, Vlastos believes, as the citing of a logical *aitia*. That a man is sick because of fever, or a stick hot because of fire, should not be taken as Plato picking out an efficient cause, any more than he would be in the case of picking out the fact that a number is one as the cause of its being odd.

Although, on Vlastos' reading, the Form of fire does not cause a particular hot  $x$  to be hot, the relation of entailment between participating in the Form of fire and participating in the Form of hotness is, according to Vlastos, causally relevant. By "causal relevance" he means, in part, that, in the case of Forms of natural kinds (such as those of fire and snow), "the invariance of the concomitance of the characteristic properties in each of them signifies a multitude of causal interconnections with other kinds of matter in the universe."<sup>clxxvii</sup> So Plato does not think "that the Form, Snow, chills selected regions of the universe," for example; but, Vlastos argues, "what he does assert [in saying that the Form of snow is the *aitia* of cold] is nevertheless tied firmly to the causal structure of the world – for example, to the fact that if we raise the temperature beyond a certain point snow must change to water. This 'must'," Vlastos believes, "is a causal one."<sup>clxxviii</sup>

We can better appreciate what Vlastos means by causal relevance if we bear in mind a distinction that has not in general been recognized, and which I believe Vlastos was correct to make: the distinction between citing the Form of  $F$  as the cause of  $x$ 's being  $G$ , on the one hand, and citing the entailment relation of participating in the Form of  $F$  in virtue of participating in the Form of  $G$  as the *justification* for a causal inference, on the other hand. As Vlastos reads him, Plato believes that in cases of invariant concomitance of properties, the justification for a causal

inference is not the regular concurrence of the properties, but the entailment relation of being *G* in virtue of participating in the Form of *F*, when participating in the Form of *F* is a sufficient condition for participating in the Form of *G*.

Perhaps this distinction has been overlooked because we post-Humean readers view the question of the metaphysics of causation the other way round. The regular concomitance of properties given in experience affords, Hume famously contended, no rational justification for inferring an underlying metaphysical necessity. In the metaphysical hypothesis advanced in the *Phaedo*, is not Plato doing just this? I do not think so, and my reason for thinking otherwise has to do with the sophistication of the “sophisticated” *aitia*. If Vlastos’s reading is correct, Plato believes that the Forms-as-*aitiai* hypothesis, and more specifically the hypothesized Form of *F* – Form of *G* entailment of the clever *aitia*, justifies us, in cases of regular concomitance of properties, in making causal inferences. The mathematical examples, for this reason, are crucial; Plato is beginning from the fact of entailment relations among such transcendental properties as oneness and oddness. The Forms-as-*aitiai* hypothesis is, in part, the hypothesis that such relations also hold among those transcendent entities that have sensible instances. As Vlastos emphasizes, Plato already saw the futility in the attempts of his mechanistic predecessors to establish necessity on the basis of regular succession.<sup>clxxix</sup> I believe that the reason the Platonic Socrates had for dubbing the second *aitia* “clever”, or “sophisticated”, is connected to this reversal of the order of explanation implicit in the hypothetical method of the dialogue.

I take this distinction to be an important and misunderstood aspect of Vlastos’s reading of the passage: hypothesized relations of entailment between instances of Form participation are the justification for causal inferences; they are not themselves causes. Vlastos’s deflationary interpretation, according to which the Forms are logical *aitiai*, illuminates Plato’s attempt to

achieve one of the central aims of the dialogue: to explain how we can have even plausible judgments (if not, strictly speaking, knowledge) about connections between perceptibles, given that knowledge is of intelligibles. A theme of roughly the first half of the *Phaedo* is the exclusive access to knowledge of pure reason, untroubled by the senses. But certain of the objects of pure reason – the Forms – have sensible instances. Further, there are regular connections between certain of these sensibles. But why should it be the case that even some of what is given in perception is orderly, given the theory of knowledge that Plato advances in the first half of the dialogue? Plato's proposed answer is the Forms-as-*aitiai* hypothesis. Law-like connections between immanent particulars, given, as those particulars are, to change and decay, must be underwritten by logical connections between immutable Forms.<sup>clxxx</sup> This is Plato's proposed explanation for how we can have even educated guesses about connections between particulars, and get such connections right as often as, it seems, we do.

#### **D.**

The notion that logico-metaphysical truths should have any relevance to the immanent causal order, though it goes against the grain of so much thinking about causation since Plato, is central to Plato's two-worlds theory. The value of Vlastos's conception of causal relevance is that it preserves the transcendence essential to the Forms, while shedding light on Plato's efforts to understand the relation between immutables, on the one hand, and their immanent instances, on the other hand.

One reason that scholars have had for rejecting Vlastos's deflationary interpretation of the Forms-as-*aitiai* hypothesis, according to which Forms are logical *aitiai*, is that in the *Timaeus* Forms play a role in the Demiurge's mediation between the transcendent and immanent realms.

Why this fact should have the consequence that the Forms should be causally efficacious is, however, unclear.

Gail Fine argues, for example, that Forms are teleological *aitiai* “which are causally efficacious, by being goals aimed at” by the Demiurge.<sup>clxxxix</sup> She employs a very broad conception of causal relevance, placing under that heading all “constituents of events.”<sup>clxxxii</sup> So, for example, the Demiurge, in creating the cosmos, imposes forms on matter. The perfect Form that he strives to embody in imperfect matter is a formal *aitia* of a particular kind of matter coming to have the structure that it does have; and in so far as the Demiurge aims to make a given kind of matter have that form, the Form is a teleological *aitia*. Thus, in the Demiurge’s act of creation, although the Demiurge as creator is the efficient cause, a Form *qua* formal and teleological *aitia*, is causally relevant by being a constituent of that act of creation. Or, as Fine also puts it, the Form is a cause, not in the same sense as the efficiently-causal Demiurge, but “in the broader sense of being the sort of factor one cites in explaining changes.”<sup>1</sup>

It is not clear what in these claims is supposed to conflict with Vlastos’s reading. But Fine criticizes Vlastos’s deflationary interpretation of the Forms-as-*aitiai* hypothesis on the ground that it would not allow formal *aitiai* to be causally relevant, although she does not explain why, on Vlastos’s view, they would not be.<sup>clxxxiv</sup> The comments in question in Vlastos’s paper seem only to indicate that formal *aitiai* ought not to be taken as causes. Having criticized Vlastos for saying that formal *aitiai* are not causes, Fine ends up defending only the weaker claim that they are causally relevant (in virtue of being constituents of events). Although Fine

indicates her sympathy for the view that any factor that is causally relevant (in virtue of being a constituent of an event) ought to be called a cause, she does not argue for this position.

Stephen Menn goes further than Fine in attributing causal efficacy to Forms. He argues that “it is only materialist prejudice to suppose that a form, in the sense of an eternal incorporeal substance, cannot be also an efficient cause.”<sup>2</sup> Menn’s reason, too, for making this argument has to do with the role of Forms in the activity of the Demiurge. A purpose of his monograph on Plato’s theology is to establish the identity of the Demiurge with the Form of *nous*. Because the divine *nous* of the *Philebus* (and to a lesser extent the *Phaedo* and *Laws*) is described by Plato as the source of order in the cosmos, and because Menn reads the creation myth of the *Timaeus* as a description of the activity of the Form of *nous*, Menn’s interpretation of Plato’s theology of *nous* requires that Forms can sometimes be efficient causes.

As a way of understanding efficient causation initiated by something eternal and unchanging, Menn offers the analogy of the role of the sun in seeing. Although “the sun is always shining” it is the “efficient cause of vision” only when we are “appropriately disposed to receive its light.”<sup>3</sup>

This analogy may well support a certain conception of how an eternal (as the Greeks thought) entity could be the cause of some effect; but it is difficult to see how this conception of efficient causation fits in with Plato’s understanding of transcendent Forms as *aitiai*. In the case of the simple *aitia* (*x* is *F* in virtue of participating in the Form of *F*), the examples of the *Phaedo* focus on the relation of objects or states-of-affairs to some Form that is the reason for their having some property (e.g., oddness, coldness, being sick). In the case of the sophisticated *aitia*

( $x$  is  $F$  in virtue of participating in the Form of  $G$ , where participating in the Form of  $G$  is a sufficient condition for participating in the Form of  $F$ ), the focus is on uniform conjunctions of properties with objects or kinds (e.g., oddness-one, hotness-fire). It is difficult to see how to fit events into either of these aspects of the Forms-as-*aitiai* hypothesis, and *a fortiori* it is difficult to fit the question of what causes an event to be an instance of seeing into either aspect of the hypothesis.

Further, the example of the sun's activity seems to be the kind of *aitia* that Socrates thought of as a mere necessary condition, or auxiliary cause. If the sun's activity is continuous, and a potentially seeing subject exists, the cause of the subject's coming to be appropriately disposed to receive light, i.e., the physiological process that converts light into visual sensation, might be described equally plausibly as the cause of seeing, as opposed to the sun *qua sunaitia*; the sun, in this analogy, might be considered what, in the *Phaedo*, Socrates calls "that without which the cause would not be able to act as a cause." (99b2)<sup>4</sup> It might well be on a par with the sinews and bones that are material *aitiai*, but not the true cause, of Socrates's remaining sitting.<sup>5</sup>

Perhaps more seriously for Menn's reading, even if we stipulate the premises of his interpretation of Plato's theology, the argument would only establish reason to think that the Form of *nous* acts to initiate change, i.e. acts as an efficient cause. This Form might well be a *sui generis* case, given the unique role that it ostensibly fulfills in Plato's theology. Even thus conceived, as a Form that acts, the Form of *nous* would still be looking to the other Forms as paradigms for its efficiently causal crafting, and it is in this sense that they would be *aitiai*. Thus,

Menn's argument for construing Forms as efficient causes yields too narrow a basis for rejecting the "logical" interpretation of the Forms-as-*aitiai* hypothesis.

Another reason that scholars have had for rejecting Vlastos's deflationary interpretation of the Forms-as-*aitiai* hypothesis is that they see the *Timaeus*'s account of teleological causation as, in some way or another, the fulfillment of Plato's initial attempt to give an account of causation, in the *Phaedo*. Although this general view is true of Fine's and Menn's work, others who have taken this approach have not reasoned that because the *Demiurge* uses Forms, Forms must be causes "in the broad sense" (Fine) or even themselves "efficient causes" (Menn). Rather, the view has been that because in the *Timaeus* we find an account of efficient causation, Plato's initial account of the *aitiai* of coming-to-be must have had as an aim some fixing of efficient causes; thus, it is reasoned, Vlastos's "logical" reading of the Forms-as-*aitiai* hypothesis, according to which Plato in the *Phaedo* is not putting Forms forth as causes, must be mistaken.

So, for example, Ian Mueller argues that the *Timaeus*'s account of teleological causation, in which Plato identifies the ultimate source of efficient causation with the cosmic maker, supplants the Forms-as-*aitiai* hypothesis, and Forms "lose much, if not all, of their causal efficacy."<sup>6</sup> Because the hypothesis is put forward, in the *Phaedo*, as part of an inquiry into the *aitiai* of coming-to-be, on the one hand, and because, in the *Timaeus*, Forms "play the role of paradigms [for the demiurge] for what comes to be," on the other hand, Mueller reasons that the Demiurge ultimately fulfills the role for which Plato introduced the Forms.<sup>7</sup>



Mueller rejects Vlastos's view, according to which "the kinds of explanation which Socrates ends up espousing in our passage [*Phaedo* 95e ff.] are not causal" but logical.<sup>8</sup> In the alternative reading that he proposes Mueller actually says, however, little about the passage. In support of the claim that Plato puts Forms forth as causes, in the *Phaedo*, he offers as indirect evidence the observation that Aristotle, in his discussion of *aitiai*, attributes causal efficacy to formal *aitiai*. In the respective passages "Plato and Aristotle" are "concerned with essentially the same issues;" Mueller sees "Aristotle's conception of natural explanation" as "indicative of Plato's account of natural explanation in the *Phaedo*."<sup>9</sup>

Approaching the *Phaedo* passage as analogous to *Physics* II 3-9, as Mueller does, illuminates the common aim, in both passages, of refuting the general notion of material causation handed down by the Presocratics. Beyond the fruitful points of analogy that Mueller does find in certain general purposes of the respective passages, though, I take it that there is a fundamental disanalogy which ought to steer any interpretation of the *Phaedo* passage: Plato's Forms are transcendent, not immanent. Plato emphasizes, from the outset, the non-spatial, non-temporal essence of the Forms; and their transcendent nature creates distinct problems for explaining any role that they might play in some *x*'s coming-to-be *F* – problems of which Plato seems acutely aware.

Mueller concedes that all of the vocabulary of the *Phaedo* passage is compatible with Vlastos's deflationary, "logical" reading. But he reads the passage in light of *Republic* 509b ff., the analogy between the sun and the Form of the Good; as with Menn, the vocabulary of this

passage is the principal evidence cited in support of the claim that in the *Phaedo* Forms are meant to be construed as causes.

In addition to the objection that I made to this point above, in connection with Menn's argument, let me, first, reiterate that in the passage in question Plato seems to characterize the sun as a *sunaitia*. "The sun," Plato writes "not only provides visible things with the power to be seen but also with coming to be, growth, and nourishment (509b 2-4)."<sup>10</sup> While we might concede Mueller's point that the verb here, "*parechein*", is *prima facie* evidence for thinking that Plato has in mind what we would call efficient causation, clearly the role of the sun in nutrition and growth is that of a necessary condition. Second, it may well be that, in the analogy, Plato understands the sun, *inter alia*, as a cause that initiates some kinds of coming-to-be *F* of an *x*; but it does not follow that this property (i.e., being an efficient cause) is one of the properties in respect of which the two things (the sun, the Form of the Good) are being compared. If Vlastos is correct, in the *Phaedo* passage (and perhaps the *Republic* passage, as well) Plato aims to show that when we do have knowledge of one sensible particular initiating the coming-to-be *F* of another (e.g., the sun, the stone's coming to be warm), that connection is underwritten by a metaphysical connection. It does not follow, of course, that the metaphysical connection is in every respect like its immanent analog. Plato's purpose in the analogy may well be to use some temporal, spatial phenomenon (one sensible particular initiating the coming-to-be *F* of another) as a way of understanding a non-temporal, non-spatial phenomenon, namely the Good's *making* intelligibles such that they can be known, though not the Good's initiating their coming to be known; this latter property (i.e., initiating some *x*'s coming-to-be *F*) might well be understood by Plato as a property with respect to which the analogs are dissimilar.

Like Mueller, Sean Kelsey believes that the *Phaedo* passage should be read in light of the “teleological conception of cause” developed in the *Timaeus*.<sup>11</sup> But where Mueller sees the *Timaeus*’s account of teleological causation as superseding Plato’s effort to explain efficient causation in the *Phaedo*, Kelsey argues that in the *Phaedo* passage Plato introduces a distinction between true causes and necessary conditions that is ultimately integrated into the teleology. In the *Timaeus* “it is the special mark of causes that they have their effects as objectives,” and, according to Kelsey’s interpretation, this feature of teleology “is evidence for how Socrates conceives of real causes in the *Phaedo*.”<sup>12</sup>

On this reading, the Forms-as-*aitai* hypothesis casts Forms as “causes whose object [is] to make” things be the way “they were meant” to be.<sup>13</sup> Plato in the *Phaedo* puts Forms forth as causes that act “in accordance with a certain preset and rationally intelligible plan.”<sup>14</sup> According to Kelsey, the Forms-as-*aitiai* hypothesis “says that certain phenomena . . . are the result of processes whose object was to produce them.”<sup>15</sup>

One problem with this reading, as I see it, is that it is by no means clear that Socrates’s search for true *aitiai*, in the *Phaedo*, has as its focus processes. Clearly that is not the case with certain of the *a priori* examples that Socrates considers. Looking back, in the intellectual biography, on his ultimate rejection of the natural philosophers’ narrow focus on material *aitiai*, he recalls critically his opinion “that when a large man stood by a small one he was taller by a head, and so a horse was taller than a horse.”(96e1-2) The question of what is *aitios* for the tall man *being* taller than the small one does not have to do with any process that had as its object the

tall man's being taller. Clearly, what Socrates came to reject was the notion, as C. J. Rowe put it, that "the head should be the *aitia* of the taller man's being taller."<sup>xcviii</sup> The length of the head, which in this case happens to be the length by which the tall man exceeds the small one, is of course also the length of infinitely many cross sections of the tall man's total length (height). That the *aitia* of the tall man's being taller than the small man should be a physical object that happens to correspond with the length by which he is taller seems to be the notion that Socrates is targeting in this example. Arbitrarily many segments of the tall man's body equivalent in length to the head are equally responsible for the height being what it is. The material *aitia* offered as an explanation in this case (the head) has no more claim to be responsible for the length by which the tall man exceeds the small man than any other material *aitia* that could be cited; it is this feature of the rejected explanation that is shared with Socrates's other examples of implausible explanations.

My take on the tallness example would suggest a related motivation behind the examples of addition and division. On the side of Kelsey's thesis, these are conceivably processes. But it does not seem that Socrates is rejecting addition as the *aitia* of twoness in the expectation that some other process will be found that satisfies his criteria for something's being a true *aitia*. Socrates rejects the very notion that a physical process could be *aitios* for something's having a property that we discover, as we would say, *a priori*. He no longer believes that when two things "come near to one another, this is the cause of their becoming two, the coming together and being placed closer to one another."<sup>(97a4)</sup> Socrates rejects the claim that the two added are responsible for the numerousness by which ten exceeds eight for a reason that we can infer from the example's similarity to the tallness example: any two units within ten are equally plausible candidates for our assignment of responsibility for ten's greater numerousness, relative to eight.

Again, the issue that Socrates raises does not have to do with a causal process, but with a broader concept of responsibility, one broad enough to include responsibility for properties that we discover *a priori*.<sup>16</sup>

In fairness to Kelsey, the intellectual autobiography is preceded by Socrates's claim that, in order to meet Cebes's criticism of the argument for the soul's immortality, they will have to make "a thorough investigation of the cause of generation and destruction." (96a1-2) This would seem fair grounds for taking the following section of the dialogue as having to do with causal processes. But it should be noted that immediately thereafter Socrates expands the metaphysical terrain to be covered, including therein "why [anything] comes to be, why it perishes, and why it *exists*." (96a8-b1, my emphasis) The broader sense of responsibility for existence that then comes into play clearly includes responsibility for formal, mathematical, and relational properties. The mixing of causal and *a priori* examples – the feature of the passage that has provoked the most perplexity among interpreters, both sympathetic and hostile – is not given due consideration in Kelsey's approach.

I do not doubt that the criteria of explanatory adequacy that Kelsey culls from the intellectual autobiography remain, as he contends, principles of Plato's teleology in the *Timaeus* and the *Statesman*. But it is not clear that the import of these criteria for the Forms-as-*aitiai* hypothesis is what he takes it to be. It must be kept in mind that the criteria are broached in the discussion that precedes the introduction of the Forms-as-*aitiai* hypothesis, the intellectual autobiography. This passage concludes with Socrates recounting that when his attempt to discover teleological *aitiai* failed, he made a "second sailing" in the search for *aitiai*. (99d2) While the criteria of explanatory adequacy that Socrates employs in the intellectual

autobiography do bear upon causal processes, that context is one in which Socrates seems principally concerned to refute the materialism of the *physiologoi* on their own terms. Bones and sinews do not suffice to explain his sitting in Athens; as hypothetical *aitiai* they do not survive the counterfactual observation that they would equally well explain his fleeing to Boeotia. But after the second sailing, and the introduction of the Forms-as-*aitiai* hypothesis, the focus seems to be some broader sense of metaphysical responsibility that can account for the kinds of *a priori* examples for which the natural philosophers had no explanations, as well as for causal processes. As it happens, none of the examples of processes that Kelsey offers come from Socrates's elaboration of the Forms-as-*aitiai* hypothesis.

The explanatory role that Plato means to attribute to Forms in the *Phaedo* may well anticipate their role in the teleology developed in other dialogues; but, to repeat a criticism that I have made of other commentators reviewed above, it is by no means clear why such a reading should entail that Forms be efficient causes. In addition to the role that Forms, so understood, play in his reading of the *Phaedo*, Kelsey defends the proposition that Forms are efficient causes by way of comparison with Aristotle: just as “*technai* and *psychai* are efficient causes” in Aristotle, we can plausibly construe Plato as putting forth Forms as efficient causes.<sup>17</sup>

It is by no means clear that a reading of the *Timaeus* which expands on the sense in which Forms are causally relevant in the *Phaedo* requires that Forms be efficient causes. Art or craft or soul may be an efficient *aitia*, but a Form is the *telos* to which they look in crafting. The intentionalistic language with which Kelsey describes Forms (e.g., they “have their effects as objectives;” they are “causes” that “make” sensible particulars “what they are meant to be”) would seem to posit that the Forms are additional intentional causes, supplementing the efficient

causing of the Demiurge.<sup>cci</sup> There are, it is true, auxiliary intentional beings acting as efficient causes in the *Timaeus*, the lesser divinities. But nothing in the *Timaeus* suggests that there is intentionality to the causal influence of the Forms.

Kelsey offers, in support of this reading according to which Forms are efficient causes, Timaeus's "comparing the Forms to fathers."<sup>18</sup> But the sense in which Forms are being compared to fathers at 50c7ff. may not be the efficiently causal sense. Fathers *qua* begetters are efficient *aitiai*, but much of the *Timaeus* has to do, of course, with the sense in which sensible particulars resemble their transcendental paradigms. The causal relevance of model to copy – i.e., the copy is what it is in part because the efficiently causal designer looked to the model that he did in producing it – may well be the sense of causal relevance that is meant by Plato in this passage.

If, on Kelsey's interpretation, Forms are, as they appear to be, causes of an intelligent nature, then the problem posed by Vlastos – How could eternal, immutable, transcendent entities initiate change? – would seem to be all the more acute. On Kelsey's reading, the Forms of the *Phaedo* "have the production of the effects they are causes of as their point or objective."<sup>cci</sup> Given the intentional character of Forms on this view, we might rephrase Vlastos's objection – i.e., having no spatial or temporal bounds, Forms would have to be exercising their causal influence simultaneously on all particulars – to seek clarification of the intentional language of Kelsey's reading: having no spatial or temporal bearing, Forms would have to be directing their causal influence simultaneously at all particulars.

It was in response to this fundamental problem of the Forms' selective exercise of their causal power – a problem for any view according to which they exert causal efficacy – that Menn offered the analogy of the Good's causal efficacy with that of the sun. Kelsey's dismissal of the Vlastos reading would seem to stand in need of a yet stronger argument for the capacity for selective attention of immutable, uniform, eternal entities.

In the case of Menn's analysis, the possibility of Formal causal efficacy was bolstered by an interpretation of Plato's theology according to which the Form of *Nous* plays the *sui generis* role of imposing form on material reality. But on such a view, the "point or objective" of a Form's causal impact, the role that a Form would play in the unfolding of design, would be the point or objective had by *Nous* (the Demiurge).

#### ***E.***

As I have shown above, two contentions have tended to go together in recent commentary on the *Phaedo*'s Forms-as-*aitiai* hypothesis: 1) the hypothesis ought to be read in light of the *Timaeus*'s teleological account of causation; 2) Vlastos's deflationary interpretation of the hypothesis ought to be rejected. Why these interpretive claims have been paired so insistently remains, however, unclear.

Whether adopting the first claim requires one to take on the second would seem to depend on how one circumscribes the role of the Demiurge's intelligent crafting in producing the order of the physical world. An examination of that controversial matter lies beyond the purview of this paper. Suffice it to say that none of the critics of Vlastos whom I have considered above have seemed to recognize this point. Yet, even if we concede the premise that the Forms-as-*aitiai* hypothesis, on the one hand, and the teleology of the *Timaeus*, on the other hand, are



simply different aspects of a single, ultimately unified account of causation, it by no means follows that this broad interpretation requires the Forms to be causes.

Lennox, for example, in his examination of the relation between teleology and Form-participation, argues that participation “is not something which occurs independently of an intelligent agent aiming to achieve some good,” and that, therefore, Form-participation, within the context of the *Timaeus*’s teleology, is “not worthy of independent identification as a cause.”<sup>cci</sup> On this view, and presumably on the views of the critics of Vlastos discussed above, Forms are means by which the divine intelligence brings about the good. What Lennox makes clear is that such a reading does not require Forms to be causes. The Demiurge uses matter to bring about the good as well, but one would not, on the basis of that fact, judge the role of matter in the teleology to be efficiently causal. Intelligence acts *through* form, just as it acts through matter.

One might object, at this point, that in the *Phaedo* Socrates introduces the Forms-as-*aitiai* hypothesis precisely to remedy the confusion of those who take necessary conditions (such as sinews and bones, for sitting) to be causes. Surely the Forms-as-*aitiai* hypothesis would not have been introduced by Plato if Forms were to be understood, in some ultimately unified account of causation, as mere means.

But the conditions “without which the cause would not be a cause,” of which Socrates speaks during the Anaxagorean excursus, are material conditions, and Socrates makes the distinction between such conditions, on the one hand, and true reasons, on the other hand, in the context of his critique of mechanistic accounts of causation. As means by which the Demiurge produces order, Forms are not metaphysically on a par with material constituents of the world.

In introducing the Forms-as-*aitiai* hypothesis, Socrates introduces into causal explanation an entity that bears necessity. A central theme of the *Timaeus*'s teleology is that the causal properties of matter would produce random effects, were it not for the ordering guidance of the Demiurge. Formal entailments among transcendental objects, on the other hand, convey regularity, in a way that is independent of the will of the Demiurge. By using independently existing transcendental objects, with their formal entailments, the Demiurge introduces a realm of self-sustaining regular succession into the world.

Yet, for all that, the Forms are means to that regularity. The intentional aspect of causation lies not with the Forms themselves, but in the ordering of the relation between the realm of necessity and the material realm. The Forms-as-*aitiai* hypothesis affords Socrates a metaphysical basis for the stability of what is given in experience. Conditions of entailment among instances of Form-participation can be cited as the genuine reasons for such regularities as we encounter. In this way, Socrates identifies a factor in explanation that is metaphysically *aitios*, in a way that mere material means could not be. At the same time, the efficiently causal force involved in producing such order as we find is ultimately an intentional force: the directing intelligence that works through Forms and uses them as the underlying metaphysical basis for such stability as the physical realm is to have.

Vlastos's deflationary account of the place of Forms in Plato's metaphysics of causation, according to which efficient causal influence is limited to purposive agents, makes good interpretive sense, if we heed *Timaeus*'s insistence that "we must distinguish two forms of cause, the necessary and the divine."(68e6-7)<sup>19</sup> Relative to the realm of necessary causation, our causal judgments can be justified only because there are (by the Forms hypothesis) eternal entities that

stabilize, in some measure, the becomings of the immanent order. Relative to the broader perspective of a unified metaphysics of causation, the intelligence of the Demiurge uses structures of necessary causation to order the material world for the best. Only the transcendental entities within those structures can provide the visible world with such stability as matter permits. The efficient causation at work in the cosmos, that causation that makes what is made, is the crafting mind of the Demiurge.

Such a fashioning of the cosmos, i.e. one in which the efficiently causal force at work is to be found in the ordering of the scheme of Form participation, rather than in initiatives of Forms themselves, is what we should expect, given Timaeus's imperative. The intentional element in causation Timaeus attributes only to the divine being; the realm of necessary causation consists of the narrower realm of transcendental objects, on the one hand, and the lawful conjunctions of properties in the material realm that are somehow girded by those transcendental objects. Reality is structured in this way because a purposive agent thought it best that it *should* be structured thus.

When we ask 'Why is  $x$   $F$ ?', the *aitios* factor in the explanation, from the point of view of explaining the structure of reality (which is Plato's characteristic concern in his discussions of causation) is the *reason* for its having a stable character, such that we can say that it is  $F$ : i.e., the Form, understood in Vlastos's deflationary sense. From the point of view of explaining why the structure is what it is, there is always the further matter, upon which Timaeus says we can only speculate, of why the causal factor that is *aitios* in the efficient sense – the designing intelligence of the divine mind – judged it best that  $x$  should be  $F$ . A unification of the two perspectives of explanation is more, rather than less, plausible given Vlastos's reading of the Forms-as-*atai* hypothesis. Such a unification would simply amount to the common-sense perspective that

causal explanations are, and ought to be, relativized to the purposes of explanation. If we are asking why  $x$  is  $F$ , we may have in mind the issue of what makes it possible for some four-sided figure to approximate the character of squareness: namely, a single, immutable, transcendental standard over the many related instances – the metaphysical *aition*. I take it that this answer is compatible with the idea that Forms fulfill a metaphysical role in which, to paraphrase Kelsey, they are reasons “according to plan.” But in asking why  $x$  is  $F$  we may have in mind the issue of the reason for the plan being such as to necessitate that  $x$  should be  $F$ . This reason can, on Plato’s view, as correctly recognized by Vlastos, only be an object had by a purposive agent. The purposive agent in question may of course be a transcendental entity; but nothing in Plato’s work indicates that this is true of Forms in general.

***F.***

While recent work on the *Phaedo* has tended to dismiss Vlastos’s reading of the Forms-as-*aitiai* hypothesis, some of the best work being done on causation in the *Timaeus* proceeds from premises in accord with that reading.

In “The Double Explanation in the *Timaeus*,” Steven K. Strange compares the accounts of causation in the two dialogues and finds that the causal relevance of Forms, in Vlastos’s sense, is “very close to what Plato in the *Timaeus* calls Necessity.”<sup>20</sup> As I have argued above, the causal relevance of Forms, on the *Phaedo* account, consists in the lawful connections, underwritten by Forms, between phenomenal properties. The apparently lawful conjunctions of certain phenomenal properties are what they are in virtue of the relations of logical entailment among certain Forms. As Strange puts it, “Both the *Phaedo* and the *Timaeus* versions of this sort

of causality involve . . . the fact that the world of Forms has a certain structure, that is, certain Forms import certain Forms and exclude others. Forms have causal implications, as Vlastos puts it.”<sup>21</sup> According to my reading of the *Phaedo* passage, regular compresence of properties, such as we seem to find between fire and heat, is rooted in logical necessities in the interrelations of Forms. That divine reason should make use of this kind of necessity in designing the phenomenal realm, and that this activity of mind is the efficiently causal power at work, is what we should expect if, as I have argued above, the efficiently causal power that the *Phaedo* envisions in the world lies in the activity of an intentional being. As Strange puts it, “the Reason of the *Timaeus* employs the very same sorts of causal implications [as those in the *Phaedo*] in constituting the cosmos.”<sup>22</sup>

Citing Vlastos, Alan Silverman, in “Timaeian Particulars,” also proceeds from the premise “that an αἰτία or an αἰτιον” [for Plato] “is to be treated as an explanatory factor or even explanation, rather than a cause.”<sup>23</sup> The focus of his paper is not the Forms-as-*aitiai* hypothesis, as such, but a problem in the metaphysics of causation internal to the *Timaeus*: how are we supposed to relate the dialogue’s two accounts? One account makes use of traditional Forms, e.g. Fire, and the other makes use of geometric Forms, e.g. Triangle, to explain, e.g., phenomenal fire. How the two accounts relate to each other, Plato does not make clear. Silverman makes, however, a powerful case for the proposition that they are complementary.

Should Silverman’s argument for the complementary nature of the two accounts be judged sound, this conclusion might be thought to count against the logical interpretation of the Forms-as-*aitiai* hypothesis. I noted above that the logical interpretation of the Forms-as-*aitiai*

hypothesis has often been thought implausible because Forms seem to play a causal role in the physical theory of the *Timaeus*. To reason thus is, however, to presuppose that that role must be an efficiently causal one. Yet, it is by no means clear that a correct understanding of the relation between the two accounts, the formal and the geometrical, requires such an understanding of Forms. Indeed, Vlastos's denial that the Forms-as-*aitiai* hypothesis entails causal agency of Forms is compatible with Silverman's magisterial elucidation of the relation between the two accounts.

Before I turn to Silverman's analysis, it should be noted, briefly, that Vlastos himself seems to have despaired of finding any such harmonization between the *Phaedo*'s Forms-as-*aitiai* hypothesis and the physical theory of the *Timaeus*. After all, he regards the "methodological sterility for natural science" of the hypothesis as a "glaring fault."<sup>ccv</sup> He finds that in the *Timaeus* "the *aitiai* of physical, chemical, and biological phenomena are not deduced from 'accounts of the essence' of Forms, but are derived synthetically from the structure of the atom."<sup>ccviii</sup> Like many commentators on the later dialogue, he finds the role of Forms there to be "curious"; he judges that "they are placed ceremoniously on their metaphysical pedestals, only to be left there and quietly ignored in the rest of the treatise where the workings of nature are explored."<sup>ccv</sup>

Silverman's analysis bears on these points concerning the relation between physical processes and Forms. But I will make a more general point first. Vlastos's judgment on this question seems vulnerable to the criticism that he himself makes of others, on Plato's behalf: Plato recognizes that "*aitia* has many different senses."<sup>ccv</sup> From the fact that he does not avail himself of philosophical lexicography and explicitly say this, as his pupil Aristotle would, it does not follow that he is unaware of the relevant distinctions. As Vlastos himself points out, "there

are other ways of exhibiting distinctions, and one way of doing so is to use them.”<sup>ccv</sup>

Specifically, when Plato turns, in the *Timaeus*, to speculation upon the physical processes that the Demiurge chose for bringing about instances of Form imitation, e.g. the interactions of geometrical simple bodies, we are being offered physical *aitiai*. But it is plausible that Plato took himself to have established that these physical processes are the mechanical means by which final *aitiai* were to be achieved; so, for example, the character of Fire, a final *aitia* (namely, the end to be achieved, here a certain character) is best instantiated by certain configurations of tetrahedra. This physical *aitia* is the one we speculate to be *aitios* in the sense of a material *aitia*, and the Demiurge chose it because he judged it the best material means of bringing about his goal, i.e., that some particulars should imitate the character of Fire. The character of Fire, i.e. the Form, Fire, is *aitios* for the particular instantiation being what it is, in the same sense that the model to which the sculptor looks is *aitios* for the sculpture being what it is. Obviously the model does not produce the sculpture, in the efficient sense, but we take, say, Myrrine, to be responsible, in one sense, for the sculpture of Myrrine being what it is, i.e., a sculpture of Myrrine, rather than, say, a sculpture of Dikaiopolis. If the sculptor had looked to Dikaiopolis as his model, the resulting sculpture would not be what it is, i.e., a parcel of matter that resembles Myrrine.

To be sure, Plato does not spell out, in the *Phaedo* or the *Timaeus*, these different senses of responsibility in anything like the concise fashion that I just have. Further, looking at the physical theory of the *Timaeus* from our own perspective, with our conception of science, the role of Forms may well seem superfluous. The motions and configurations of the geometrical simple bodies might be thought to be doing all the explanatory work. Given the effects of these physical processes, there seems no warrant for positing additional entities. Looked at in this

way, the Forms-as-*aitiai* hypothesis will, indeed, be judged methodologically sterile for natural science.

It is important to bear in mind, however, that Plato did not have our conception of science. Indeed, according to Vlastos, in his later work *Plato's Universe*, the ancient Greeks, including Aristotle, did not have our conception of science, though they did discover the concept that was a necessary condition for the discovery of science, that of the world as a *kosmos*.<sup>24</sup> The natural philosophy of the *Timaeus* does not proceed from physical processes, conceived as primitive, and try to establish the characters of sensible particulars as reducible, without qualification, to these processes. Indeed, natural science, in this sense, Plato would regard as in principle impossible. Sensible particulars are images in flux, are not anything essentially, and are not objects of knowledge; *a fortiori* the physical structures and processes from which their sensible characters emerge are not knowable. To speculate upon the workings of basic material processes only makes sense, so far as Plato is concerned, in the context of some Formal character to be achieved. The metaphysics and epistemology of Plato's natural philosophy are such that consideration of basic physical processes is merely speculation. The Formal interrelations that underwrite necessary connections are theorized at a higher order of explanation than are the geometrical simple bodies. To specify the precise nature of the latter, *Timaeus* tells us, is not possible; any preliminary specification, such as the triangles, will be a theoretical posit.<sup>25</sup> What is not conceived of as revisable in the theory is the proposition that eternal essences provide the element of necessity that the interactions of simple bodies imperfectly approximate.



The metaphysics of Plato's natural philosophy is such that the characters of sensible particulars are not simply supervenient upon basic physical processes, without qualification. It is more accurate to say that characters are intermediate between the Form-copies that enter the receptacle of becoming and the basic physical structures that condition space to receive them. Form-copies are images in space of something non-spatial, the logically determinate character of a Form. Thus, Plato's natural philosophy includes much that we would think of as purely metaphysical. For this reason, the criticism of the Forms-as-*aitiai* hypothesis as sterile for the methodology of science is accurate, but, perhaps, misplaced. The teleology of the *Timaeus* is constituted, in part, by a metaphysical thesis that Plato has discussed extensively by the time he comes, in that late dialogue, to speculation upon basic physical configurations. The fact that the latter are imagined in considerable detail, while relatively little is said about the eternal paradigms that they are to instantiate, should come as no surprise, given that this is the only dialogue in which Plato treats of theorized basic material constituents.

Further, is Vlastos correct when he contends that in the *Timaeus* Plato derives the *aitiai* of phenomena "synthetically from the structure of the atom"?<sup>26</sup> I have claimed, above, what Silverman argues for rigorously, and at length: a phenomenon is the joint upshot of some arrangement of geometrical simple bodies *and* some Formal character that the bodies are to image.

Silverman's thesis is that the two accounts that Plato gives, in the *Timaeus*, of the generation of particulars – the formal and geometrical accounts – are complementary. The formal account, which makes use of the receptacle of becoming, Forms, and form copies, on the one hand, and the geometrical account, which makes use of geometrical shapes, the Demiurge,

and (apparently) matter can be seen as working together to provide a unified explanation of phenomenal particulars, once we correctly understand the ontological status of particulars.<sup>ccxiv</sup>

An instance of phenomenal fire, for example, is not elemental; it is not even, as Timaeus puts it, a “syllable”.(48c1) It is not syllabic because it emerges from two constituents, one of which, in turn, is a syllable, i.e., something constituted of metaphysically elemental constituents. An instance of phenomenal fire is, according to Silverman’s reading, an apparent affection of a region of the receptacle of becoming.<sup>27</sup> The apparent affection instantiates some Formal property – here, for example, the fieriness of Fire – in some region of the receptacle. The latter, i.e., the region of the receptacle, is a syllable because it is, in turn, composed of two metaphysically primitive constituents: a) the receptacle and b) some geometrical simple body that provides the regionalization of the receptacle, i.e. the place, in which the property is to occur.

If Silverman (who is building, in turn, on Cheriniss’s “reconstructionist” reading of the dialogue) is correct, and phenomena are derived, in the *Timaeus*, from the geometrical *and* the formal accounts, then it is not the case, *contra* Vlastos, that they are derived from the structure of the atom. Whatever we make, however, of Vlastos’s remarks on the *Timaeus*, they don’t seem to be necessitated by his reading of the *Phaedo*’s Forms-as-*aitiai* hypothesis. For Vlastos’s logical reading of the hypothesis is congruent with Silverman’s approach to Timaeian metaphysics of causation. For Silverman argues that “what [phenomena] derive from their models, the Forms, is logical determinateness.”<sup>28</sup> Forms are *aitios* for their phenomenal instances in the sense that their non-spatial logically determinate characters are imaged in a different medium, the spatial receptacle. The geometrical account of phenomena is needed to provide for the transformation

of the spatially homogenous receptacle into “dimensional cross-sections...for the recurrent attributes to enter and exit.”<sup>29</sup>

Silverman’s highly useful discussion of the relation between the *Timaeus*’s two accounts of generation bears upon the relation of the Forms-as-*aitiai* hypothesis to Plato’s natural philosophy. The obstacle to interpretive unification of the metaphysics of causation in the *Phaedo* and the *Timaeus*, as Vlastos’s comments suggest, has long been thought to be the latter dialogue’s geometrical account. The formal account seems of a piece with the *Phaedo*’s Forms-as-*aitiai* hypothesis. The consequence of Silverman’s argument for my thesis is this: if the formal and geometrical accounts of causation, in the *Timaeus*, are complementary, then the Forms-as-*aitiai* hypothesis and the geometrical account are complementary.

## G.

I have tried to show that there is much to recommend Vlastos’s deflationary reading of the Forms-as-*aitiai* hypothesis. It construes Plato’s meaning in a plausible way, given his apparent intentions in the *Phaedo*. Let me note, again, that this is the only merit that Vlastos himself claimed for his reading. Further, I find that the deflationary reading of the Form-as-*aitiai* hypothesis does not necessarily conflict with Plato’s discussion of the metaphysics of causation in the *Timaeus* – an assumption that seems to have led many readers to reject Vlastos’s interpretation of the *Phaedo*’s treatment of the same topic. Taking Silverman’s reading of Timaeian causation as a case in point, sensible particulars are not to be understood as derived *a posteriori* from basic physical processes. Rather, they are to be understood as the joint upshot of Form copies and geometrized space. Such cases of regular succession of phenomenal properties

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as we encounter are underwritten by hypothesized entailments between Forms, or, more strictly, entailments attendant upon the instantiation of certain Forms. That there are entailments among Forms, we discover, as we would say *a priori*, from such examples as the *Phaedo*'s mathematical cases. We then hypothesize, on the basis of a non-experiential intuition, that the Forms for which there are sensible instances are also enmeshed in networks of inclusion and exclusion. This hypothesis helps to explain the existence of such order as we see imperfectly imaged, and it is compatible with certain kinds of speculation upon the physical mechanisms and processes that serve to effect this imaging.

#### **IV. Plato's A Priori Teleology: Reasons in the *Timaeus***

##### **A.**

In what follows I argue for the essential continuity in Plato's thinking about the metaphysics of causation. From the middle period's *Phaedo*, in which the Forms-as-*aitiai* hypothesis is first proposed, to the late period's *Timaeus*, in which metaphysics of causation intertwines with theology, the hypothesis remains the same. My defense of this continuity thesis will be based on a reading of several key passages of the *Timaeus*.

The interpretation of the *Timaeus* that will emerge from my reading rests on the following premises, for which I do not argue: the creator is transcendent, is *Nous*, and is distinct from the world-soul; there was a beginning to the cosmos; the creation of the cosmos consisted in the imposition, by the divine mind, of goodness (in the form of proportionate order and structure, and of rational motion) on matter; literal aspects of the craftsman analogy, such as phases of production, belong to the purely mythical element of Timaeus cosmology.

Each of these propositions has been a source of interpretive controversy from Plato's time. In the present space I cannot do justice to the scholarly debate generated by each. It will have to suffice to indicate concisely, when possible, why I find these premises persuasive. But my purpose in specifying my interpretive template is to show how on a certain, and I believe quite plausible, interpretation of the *Timaeus*, Plato's middle-period thinking about causation can be seen as continuous with the metaphysics of science, and the theism, of his late period.

**B.**

Ancient Greek philosophers were not given to speculation upon the question "Why is there anything rather than nothing?" That something has always existed seemed to them axiomatic, and they took creation *ex nihilo* to be a conceptual impossibility. From the largely mythical (though rationalized) cosmology of Hesiod, to the philosophical cosmology of the Presocratics, the ancient Greek mind was intrigued, rather, by the question "Why is there order, rather than chaos?"

Plato, above all, took the handling of this question to be critical to his philosophical enterprise. On the one hand, Plato was not Parmenides: plurality and variability exist. They are not illusions but, rather, essential features of the realm of becoming. That this realm, and the things in it, have a lower degree of reality than the eternal, immutable entities of the transcendental realm does not mean that they do not exist. On the other hand, Plato is not Heraclitus: the apparent order of the material world is not absolutely illusory. Such order as it exhibits, even if we imperfectly apprehend it, prompts the rational soul (*via* the imperfect medium of perception) to its ascent toward the purely intelligible order. Given this critical role that material order plays in the completion of the rational soul's becoming, and given the

Demiurge's role in conceiving that order, its reality is not in doubt. Plato seeks to stake the middle ground between a metaphysics in which the material world is an illusion, reality being an immutable unity, and a metaphysics in which the material world is in such absolute flux as to preclude any degree of stability, inquiry into such order as it evinces being pointless.

What is *aitios* for there being structure, proportion, and harmony, amid the flux of the physical world?: the creator's reason. From 29e to 33d, Timaeus offers us a window on this divine reason. The view afforded to us includes the creator's ultimate motives and guiding principles. The "preeminent reason" for there being a cosmos at all, for example, is that the Demiurge "wanted everything to become as much like himself as was possible," which is to say that he wanted everything, so far as possible, to be good.(30a) The "supremely good" being "reasoned and concluded" that the best metaphysical state of affairs would include a realm of beings engaged in the process of becoming good, in addition to his own beginningless, supremely good being.(30a-b)

So there is order because the creator believed that it was "in every way better than disorder."(30a) In quick succession, Timaeus adds to this axiological principle a number of others that also guided the Demiurge's reasoning. For example, because "no unintelligent thing," could "be better than anything which does possess intelligence," the creator made the cosmos intelligent.(30b) Because nothing "incomplete could ever turn out beautiful," he modeled the cosmos on a Form.(30c) The "best" way to accomplish "unity", the creator reasoned, is through "proportion".(31b) Likeness to a complete model he judged "incalculably more excellent than unlikeness."(33b)

The set of basic truths that framed the creator's choices led him, in short, to conceive an ordered, beautiful, intelligent realm of becoming, oriented to the completion of potentially-good rational souls. It was through these first principles that the essential, necessary goodness of the divine mind found expression. A supremely good being necessarily would devise a cosmos "as excellent and supreme as its nature would allow." (30c) But the ultimate impetus toward the cosmogonic moment is to be found in the creator's essential nature: "Why did he who framed this whole universe of becoming frame it? Let us state the reason: He was good." (29e)

So from 29e to 33d Timaeus offers us an ultimate *aitia* for the coming-into-being of the cosmos - the goodness of the divine mind - and the basic truths that operated in the divine mind's conceptualization of that cosmos. These axiomatic truths are *aitiai* for the world-order's broadest metaphysical features. By reconstructing the creator's reasoning, Timaeus has identified what he takes to be the *a priori* truths that serve as *eikos* answers to two ultimate 'why' questions: 1) Why is there a cosmos? and 2) Why is the cosmos the way that it is?

### C.

By prefacing his speech with the qualification that it will be an *eikos muthos*, Timaeus makes a key methodological claim. How that claim is to be understood, however, has been a matter of long-standing debate.<sup>30</sup>

"*Eikos*" is typically translated, in this passage, as "likely" or "probable". (29d2)<sup>31</sup> As Johansen points out, this translation reflects the larger tendency to construe Timaeus's distinction "in probabilistic terms."<sup>32</sup> This approach tends to create the impression that the sense of *eikos*

here is that of an account's being "more or less likely in relation to some maximum of 100 per cent probability, as we might think that there is a 60 per cent chance that it will rain today."<sup>CCXXV</sup>

On such a reading, we might suppose Timaeus to be doing physical theory in something close to its modern sense, with further observation and collection of evidence leading to revisions in the theory that will bring its probability, by degrees, ever closer to the truth. That such a reading would be profoundly mistaken has been argued forcefully, however, by Cornford, Lloyd, and Vlastos, *inter alia*.<sup>33</sup> Vlastos, indeed, goes so far as to say that "Plato never uses the word *eikos* in this way."<sup>34</sup>

Even in cases in which "likely" or "probable" may be the best translation, the sense of *eikos* as "natural" is usually present in some measure. Further, use of the term in this latter sense figures prominently throughout Plato's works, at many critical junctures. For example, Phaedo, when recounting his last hours with Socrates, recalls the strange absence of the pity that he had expected to feel for his condemned companion. He explains to Echecrates that he had felt no pity, "*hos eikos an doxeien einai*" (59a2) i.e. "such as would have seemed natural" (Grube's translation).<sup>35</sup> When reading *eikos* as "likely" or "probable", we should bear the sense, "natural", (as well as "reasonable", "fair", "equitable") in mind.<sup>36</sup> What counts as natural is, of course, for Plato (as well as for Aristotle, though for quite different reasons) a normative matter (e.g. it is the nature of the soul that reason ought to govern); this sense of normativity is rarely far below the surface in Plato's use of *eikos*, even when we may see fit to render the term in its probabilistic sense.



For a better understanding of *eikos* in the context of *Timaeus* 29d, as Johansen persuasively argues, we should take it that the sense “is that of the law court.”<sup>37</sup> He points out that *eikos* figured prominently in Greek forensic rhetoric, in Lysias and Antiphon, for example, as a term for attributions of guilt that could be established “only with likelihood,” as contrasted with eyewitness testimony.<sup>38</sup> From Timaeus’s use of this ostensibly legal reference (and other indications that the term is being used in this sense, such as Timaeus’s addressing his hearers as “judges”), Johansen reasons that Timaeus is putting his speech forward as an account of the world’s coming-into-being that necessarily must fall short of certainty, but, for all that, may well be true. Just as a jury may reach the truth, in the matter of a defendant’s guilt or innocence, where no direct confirmation is available, so an account of the origin and nature of the cosmos, though it must make use of mythical elements, can convey something broadly true.

So far as Johansen’s point goes, I concur; but there is another facet of the legal metaphor worth considering, beyond Timaeus’s intention of saying that a *muthos*, though it does not admit of certainty, may be in all essentials true. Assigning culpability in a court of law is not only a matter of probabilistic reasoning, but a normative matter as well. We make such a determination when it is, as we say today, beyond a reasonable doubt. At what point an account of events meets the criterion of being reasonable, in this normative sense of justifying us in assigning responsibility, is not precisely quantifiable. The judgment involves the determination of whether, all-things-considered, we ought to attribute responsibility. This decision will in turn depend on whether the account of the events in question seems a natural (another sense of *eikos*) fit with such propositions as are well-established.

In contrast, the matter of how to render the *muthos* of *eikos muthos* has been comparably straightforward; but the sense that we are to make of Plato's use of the term, in this context, has generated more controversy than, perhaps, any other interpretive issue posed by the dialogue. It will have to suffice, in the present chapter, to credit David Sedley's perspicuous handling of the issue. I take it that the most fruitful way to approach the question of the explanatory status of Timaeus's myth is not to ask whether the *muthos* ought to be taken literally or metaphorically, but to recognize, as Sedley puts it, that there is a "good deal of room for varying degrees of deliteralization" among the myth's parts.<sup>39</sup>

How far should we push the deliteralization of the craftsman analogy, with its lesser gods who carry out the phases of production, the plans conceived by the Demiurge? I take it that a principled basis for interpreting a given part of the myth as literal or metaphorical is to try to determine which reading would better advance Plato's purposes in the dialogue, so far as we can know them. In view of the theme that I have highlighted – the ultimate responsibility of the divine mind's reasoning for the broad structure of the cosmos – I want to push relatively far in the direction of deliteralization of this aspect of Timaeus's myth. The Demiurge causes by deciding what the structures, proportions, and motions of matter are to be, i.e. by deciding which structures, proportions, and motions would be best. Given the metaphysical status of *Nous*, and of the Forms to which the divine mind turned for paradigms of creation, we have good reason to believe that the divinity imparted order by thought alone. None of the strictly metaphysical claims of the myth commit Plato to anything beyond this conception of the divine mind.

The problem for more literal readings of the myth, according to which, for example, there would be discrete phases of creation, lies with the metaphysical status of *Nous*. We were told at

the outset that the “preeminent reason for the origin of the world’s coming-to-be” was the Demiurge’s will that everything should be as much like himself as possible. (30a2-4) As a being logically and temporally prior to the existence of a realm of becoming, the Demiurge’s willing is external to the coming into being of regular succession, and, hence, time.<sup>40</sup> If the divine mind is outside of time, then all aspects of creation pertaining to the ordering of bodies and motions would be bound up with a non-temporal mental act.

How a being metaphysically on a par with the eternal, purely intelligible patterns of the transcendental realm (though distinct from them in having reason and will) would go about impressing something non-spatial and non-temporal on physical reality is, it would seem, beyond Plato. It is at this juncture in the creation story, that of providing the details of such a process, that he employs clearly fanciful elements. The theory of matter that comes later is a discourse upon the *result* of such a process. The segue from a discussion of transcendental reason and its immutable models, to a discussion of the geometrical simple bodies that were fashioned from chaos, could not but be papered over by imaginative, literary elements (including the intermediate story of the construction of the human body). To try to push this part of the myth in the direction of the literal would be to undermine the strict dualism that Plato stipulates at the outset of the myth and reaffirms midway through. It seems likely that Plato believes that the central mystery of the two-worlds theory, how the two realms interact, is inexplicable.

#### **D.**

The logical interpretation of the *Phaedo*’s Forms-as-*aitiai* hypothesis, on the one hand, and the interpretation of Timaeus’s *eikos muthos* as a reasonable, fitting account, on the other

hand, fit together in a way which underscores the basic continuity of Plato's metaphysics of causation. If we take the Forms-as-*aitiai* hypothesis to posit that Forms are responsible for the world's causal order only in the sense that forms (which is to say ratios, proportions, and geometrical structures) underlie such order, then we should expect Timaeus's speech to be a reasonable, fitting assignment of ultimate responsibility for that order. We, indeed, do find Timaeus's discourse to be a reasonable, fitting assignment of responsibility for nature's order to the divine mind, and to the eternal models – the Forms – that the divine mind chose, in each case, for bringing about the best possible arrangement of the material realm.

Readers have long tended to see Timaeus's distinction, at 46d, between primary and secondary causes as marking a fundamental change in Plato's thinking about causation. Sedley, for example, sees a key difference between Timaeus, on the one hand, and Socrates in the *Phaedo*, on the other hand, in that the latter "denies the appropriateness of 'cause'" to what, in the *Timaeus*, are called "auxiliary causes."<sup>41</sup> Similarly, Johansen emphasizes the fact that "Timaeus does what the *Phaedo* forbade: he calls the necessary processes *aitiai*."<sup>42</sup> Both authors offer readings of the passage that are representative of the broad tendency to assume (whether explicitly, as with Sedley, or implicitly, as with Johansen) that the Forms-as-*aitiai* hypothesis has no bearing on the passage. Sedley contends that "this doctrine does not reappear in the *Timaeus*," and Johansen oddly claims that "Socrates in the *Phaedo* could find no *aitiai*."<sup>43</sup>

Sedley and Johansen both take the apparent change in Plato's metaphysics of causation to stand in need of explanation. Given that, in the *Phaedo*, Socrates denies that such things as bones and sinews are *aitiai*, but Plato has Timaeus call them *sunaitiai*, "How," Johansen asks,

“do we explain the difference?”<sup>44</sup> The answer, for Johansen, Sedley, and many others lies in the need for a more nuanced view of causation to accommodate the teleology that Plato had devised by the time he undertook the later dialogue. According to Johansen, Plato develops, in the *Timaeus*, a distinction between *mere* necessary conditions and *instrumental* necessary conditions, in order to explain how the Demiurge persuaded Necessity; the *Phaedo*’s distinction between true *aitiai* and necessary conditions has been supplanted. According to Sedley, Plato has to “retract” the *Phaedo*’s classification of *aitiai* in order to provide for a “second kind of cause, constituted by the materials” with which the divine craftsman works, i.e. material *aitiai*.<sup>45</sup>

Yet, if we follow Vlastos’s reading of the *Phaedo*’s Forms-as-*aitiai* hypothesis, the apparent shift in Plato’s metaphysics of causation, between the two dialogues, will prove less significant than it might at first seem. *Contra* Sedley, the number of causes has not changed between the two dialogues, if in the *Phaedo* Plato was not treating of causes. If the hypothesis of the *Phaedo* is that a Form is a formal reason that explains what makes  $x$  *F*, that is to say the existence of a transcendental pattern explains why a particular can have a determinate character, then no taxonomy of causes in the Timaeian teleology could contradict anything said in the *Phaedo*.

If, further, we bear in mind the importance that Vlastos’s reading of the *Phaedo* attaches to causal relevance, as distinct from causal efficacy, then the ostensible divergence to be explained at *Timaeus* 46d is dispelled. When Sedley observes, for example, that Plato’s craft model of teleology requires him “to reclassify matter as a cause,” the point is misplaced: Sedley overlooks the shift in context between the respective passages. When Socrates denies, in the

*Phaedo*, that his bones and sinews are *aitios* for his sitting where and when he is, he is not denying that they are causally relevant. That he does not go on to specify that they *are* causally relevant has to do with the purposes of the intellectual autobiography: a statement of his conviction that ultimate responsibility lies in intelligence. Further, when Socrates turns from the intellectual autobiography to the Forms-as-*aitiai* hypothesis, the context, as he makes explicit, is his having given up the search for physical *aitiai*. Here again, an investigation of the auxiliary instruments with which intelligence exercises its causal efficacy would have been a diversion. Most importantly, *Phaedo* 95e-105c is, on Vlastos's reading, an inquiry into a class of entities that are causally relevant; nothing more, with respect to causation, is claimed for them. So when, in *Timaeus*, we come to an investigation of the physical auxiliaries with which divine teleology works, it amounts to no departure at all to be told that certain physical properties or processes are *sunaitiai*. In this latter context the different sense of *aitia* ("cause"), as compared with its sense in *Phaedo* 95e-105c ("reason", "thing responsible for") is pertinent. The discussion is now a discussion of the physical *aitiai* (which never bear ultimate responsibility) with which intelligence (which does bear ultimate responsibility) works.

Again, the apparent discontinuity in Plato's thinking to be explained only arises if one begins, as Sedley does, from the, in my view, false premise that in the *Phaedo* "Forms were recruited as an authentic kind of cause."<sup>46</sup> From this mistaken premise, Sedley constructs a false dichotomy: in the *Timaeus*, "Either Plato has thought better of it, or he deems Forms irrelevant to the kind of causation with which physics is concerned."<sup>47</sup> Already in the *Phaedo*, if we follow Vlastos's reading, Forms were causally relevant. From the fact that they are causally relevant, it does not follow that they are causes.

Johansen's subtler comparison of *aitiai* in the *Phaedo* and in the *Timaeus* hinges on the distinction he finds, in the latter dialogue, between *mere* necessary conditions and *instrumental* necessary conditions (the *sunaitiai*). Against commentators such as A. E. Taylor, Johansen argues that the *Phaedo*'s distinction between *aitiai* and necessary conditions is replaced, in the *Timaeus*, by the more complex scheme of *aitiai*, mere necessary conditions, and *sunaitiai* (which he renders as "instrumental necessary conditions" or "contributory causes").<sup>48</sup>

I concede Johansen's point that the *Timaeus* "presents a more nuanced picture than the *Phaedo* of the notion of a necessary condition."<sup>49</sup> But I do not concur that the Socrates of the *Phaedo* "could never see necessary conditions as *sunaitiai*."<sup>50</sup> Again, in the conversational context of the intellectual autobiography it would have been odd for Socrates to say that certain kinds of physically necessary conditions are *sunaitiai*. That context is one in which Socrates is making a distinction between a "true" *aitia* and "that without which the cause would not be a cause." (98d8; 99b2) Johansen's mere necessary condition and instrumental necessary condition, as he acknowledges, would both fit into the second category. Thus, for Socrates to make such a refinement in the context of making, and arguing for, the broader distinction would be out of place. Socrates's concern, in that broader context, is to establish the ultimate responsibility of Mind for the coming-to-be of a certain physical state of affairs. The point that Socrates makes in the context of the intellectual autobiography, that bones and sinews are not "true" *aitiai*, is echoed in the *derivative* sense in which he calls them *aitiai* in the *Timaeus*, i.e. *sunaitiai*.

Nor does the weight that Johansen gives to this distinction between instrumental necessary conditions and mere necessary conditions, ostensibly to be found in the *Timaeus*, seem merited by the example that he offers. He identifies the *aitia* for bones, to my mind correctly, as the *reason* for their creation: the protection of marrow. He then distinguishes between a property of bone that is, given the specified *aitia*, an instrumental necessary condition – its hardness – from properties of bone that are mere necessary conditions: brittleness and inflexibility. The brittleness and inflexibility of bone are not instrumental to the reason for bone; they are merely necessary properties given bone's hardness.

The contributory cause (or instrumental necessary condition) in this example, hardness, contrasts, according to Johansen, with the bones and sinews of *Phaedo* 98c-d. "No explanatory link" exists between bones and sinews, on the one hand, and Socrates's sitting in prison, on the other hand.<sup>51</sup> His bones and sinews might just as well have taken Socrates to Megara, if he had judged that course of action best. Such a link does exist, however, between hardness and marrow-protection. Thus, Johansen concludes, hardness, indexed as it is to marrow-protection, is a contributory cause – an instrumental, as opposed to mere, necessary condition.

I suspect that this analogy may be misconceived. The metaphysical status of hardness is not different in kind from that of its analog, bones and sinews. At *Phaedo* 98c-d, Socrates is arguing that if the *explanans* with which he is concerned – judging it best to sit in Athens – had been different, the instruments in question would have resulted in a different physical state of affairs. Indeed, this counterfactual truth is what *makes* the judgment, the *explanans*; substitute a different judgment into the schema – from judgment, to instruments, to end achieved – and a different end results. Therefore, bones and sinews are not responsible for the *explanandum*



(sitting in Athens). If Timaeus were speaking in the same explanatory context, i.e. identifying Mind as ultimately responsible for order as such (as opposed to identifying the kinds of auxiliaries with which Mind worked to produce particular kinds of order), he could, at 73e-74b, say the same of hardness, *qua* instrument of Mind. If the Demiurge had judged that some other good to be achieved trumped marrow-protection, then hardness could have been put to some other end. Thus, hardness is not ultimately responsible for the *explanandum* (marrow-protection). Nor, again, does Johansen claim that it *is* ultimately responsible for the *explanandum* (marrow-protection). Nor, again, does Johansen claim that it *is* ultimately responsible: hardness is *sunaitios* – co-responsible, as it were. But he has not identified a principled basis in Plato for making this distinction. As Sedley points out, “in both contexts the main cause is intelligence, the second item the matter it uses. The one difference is that Socrates in the *Phaedo*, unlike Timaeus, denies the appropriateness of ‘cause’ to the latter.”<sup>52</sup> Where I would disagree with Sedley is in thinking that this claim is what Socrates denies. The Socrates of the *Phaedo* denies that matter is ever a reason for anything being what it is.

I would concede, however, that Johansen has indeed explicated the “more nuanced picture...of the notion of a necessary condition” to be found in the *Timaeus*.<sup>53</sup> The difference between that notion, on the one hand, and the notion of a necessary condition in the *Phaedo*, on the other hand, is, however, one of degree. No doubt, causal relevance *is* a matter of degree. I take it that there is more plasticity to means of sitting than to means of marrow-protection. Hardness is more relevant to its respective *explanandum* than bones and sinews are to theirs.

That there should be such attention, in the *Timaeus*, to physical properties and processes that are more pertinent to certain determinate physical states than were the physical entities taken up for consideration in the *Phaedo*, comes as no surprise. In the *Timaeus*, Plato is engaged in natural philosophy. The *Phaedo*, in contrast, is metaphysics. Indeed, if we follow Robert Bolton, it is Plato's "discovery of metaphysics."<sup>54</sup> The theoretical sorting of the broad kinds of bearers of order, those auxiliaries with which *Nous* worked (the *sunaitiai*), is the very line of inquiry from which Plato breaks off, in the *Phaedo*. It is precisely at that caesura that Plato unveils the long-suggested and hinted-at, but now unambiguously-stated foundation of his metaphysics: the theory of Forms.

Further, Johansen's presentation of the analogy between the respective passages of the *Phaedo* and the *Timaeus* is misleading. Socrates offers bones and sinews as ostensible *sunaitiai* (though that term is not used) only as a first pass. He then offers a more refined picture based not on natural kinds but on physical properties and processes. He rejects materialist explanations for ordered physical states because those explanations would offer such *aitiai* for his sitting in Athens as the fact that "the bones are hard and separated by joints," that "the sinews are such as to contract and relax," that "they surround the bones along with flesh and skin which hold them together," and that "the relaxation and contraction of the sinews enable me to bend my limbs." (98c4-d3) If Plato had intended, in the *Phaedo*, to explore the physical dimensions of causation, these physical properties and processes, which are closer, in terms of causal relevance, to the *explanandum*, would have been his candidates for the *sunaitiai* with which Intelligence worked. But, again, the more important point is that Plato postpones this narrower kind of application of his metaphysical system, in order to put the foundation of that system in place.

**E.**

According to the reading of 29e through 33d presented above (**B**), it is the creator's reason that is ultimately responsible for the fact that there is order in the material realm. The nature of the divine mind, elaborated by Timaeus in terms of the basic axiological principles that conditioned that mind's creative activity, is ultimately *aitios* for the structure of the physical world. If, as I have further argued above (**C**), the *eikos muthos* should be understood as a reasonable discourse that aims to reconstruct the reasoning of the divine mind in creating the cosmos, then my reading has certain implications for the status of the physical theory of the *Timaeus*.

I take the most important implication to be that scientific explanations are reducible to explanations from agent causation. Plato is engaged, in the *Timaeus*, in theoretical reduction. Apparent physical *aitiai* of order, such as his predecessors had relied on, are reducible to the reasons that *Nous* had for structuring the material realm as it did.

Clearly, the question of the relation between agent causation, on the one hand, and the apparent causal structure of the world, on the other hand, had occupied Plato's thoughts since his writing of the *Phaedo*, at the latest. In the intellectual autobiography, Socrates recounts that it was in order to find an answer to this question, *inter alia*, that he had first turned to the physicists. "Do we think with our blood, or air, or fire?" he had asked. (96b4) The eventual disappointment felt by the Platonic Socrates at the materialist, mechanistic, reductionist answers offered by the *physiologoi* prompted his turning away from natural inquiry.

The second sailing in search of the reasons for coming-to-be, and the Forms-as-*aitiai* hypothesis that resulted, were motivated by a rejection of the claim that judgment could be

reduced to materialistic explanation. “The reason that I am sitting here,” Socrates alleges on behalf of the physicists, “is because my body consists of bones and sinews.” (98c4-5) The implausibility of this explanation, to Socrates’s mind, is not lessened by the sophisticated mechanistic notions employed by the *physiologoi*. That “the bones are hard and are separated by joints,” that “the bones are hard and are separated by joints,” that “the sinews are such as to contract and relax,” and that “the relaxation and contraction of the sinews enable me to bend my limbs” add nothing to a fundamentally misconceived explanation, as Socrates sees it, for the *explanandum* of his sitting where and when he is. (98c5-9) The physicists, to his mind, “neglect to mention true causes.” (98d8) In the present case, the true cause is a “reason”; the true *aitia* for his sitting is, as he puts it, that “it seemed best to me to sit here.” (98e1)

The judgment that one ought to  $\Phi$  because to do so is best, and the idea that this judgment is not reducible to the instruments for carrying it out, are the key notions in the above quoted lines from the *Phaedo*. They echo in Timaeus’s account of the Demiurge. I have cited, above, numerous statements by Timaeus that the basic reason for fundamental features of physical reality is that the Demiurge judged it “best” that the world should be thus-and-so. Plato’s account, in the *Timaeus*, of the cause of nature’s order is the *Phaedo*’s picture of agent causation writ large. Just as ultimate responsibility for Socrates’s sitting where and when he does lies in Socrates’s reason, so ultimate responsibility for nature’s order lies in the reason of the divine mind. In the former case, the judgment cannot be reduced to such means of carrying it out as sinews and bones, just as, in the latter case, the judgments of the best ordering of the physical world cannot be reduced to such means of carrying them out as earth, air, fire, and water.

Of course, the Socrates of the *Phaedo* had been disappointed in his search for an account of how the kinds of coming-to-be that we see in this world could be traced to Mind. This failure

had motivated the second search for the reasons for coming-to-be, and the consequent adoption of the Forms-as-*aitiai* hypothesis. Though the Socrates of the intellectual autobiography had never found an account of how Mind ordered the world for the best, he had found, if we follow Vlastos's reading of the Forms-as-*aitiai* hypothesis, a tentative explanation for the very possibility of order in this realm of flux: that anything can come-to-be thus and so, with sufficient stability for us to rightly speak in such a manner, owes to the existence of eternal, immutable *eidei*. The existence of a transcendental Form is the reason that  $x$  can come to be  $F$ .

If we follow Vlastos's reading of the Forms-as-*aitiai* hypothesis, then the account that we come to find, in the *Timaeus*, of the role that Forms play in teleological causation is what we would expect: the eternal paradigm of  $F$  to which the Demiurge looked, when imposing order on the pre-cosmic flux, is a reason that explains why  $x$  is  $F$  here and now; but the efficient cause of coming-to-be  $F$  as such, i.e. the broadest metaphysical cause for there being the phenomenon of things coming-to-be something relatively stable at all, is the divine creative act. Plato's innovation, *contra* the cosmological tradition of philosophy leading up to him, was to separate intelligence, active in the form of agent causation, from matter. The thrust of Socrates's above-cited remarks in the *Phaedo* aims at this metaphysical distinction; extrapolated to the level of the cosmos, this same line of thought conveys Plato's belief that the material means for bringing about the best is never the true cause of natural order; the true cause is always, ultimately *Nous*.

Only the activity of *Nous* could be efficiently responsible for natural order, for a reason that is basic to *Timaeus*'s story: the divine mind invented the causal structure of the material realm in which order comes to be. In much the same sense that the divine mind created time, as Vlastos persuasively argued, it also invented causation, in the sense that bears upon the causal

structure of the phenomenal realm.<sup>55</sup> Prior to the divine creative act there was no such phenomenon as orderly coming-to-be, and this metaphysical state is more basic than that of ordered connections between events, or between properties. As Johansen points out, “there is nothing in the pre-cosmos with sufficient reality to possess causal efficacy,” (aside from the Demiurge himself, I take Johansen to mean).<sup>56</sup>

The impetus for the change from pre-cosmos to cosmos lay in Mind. Means of causal connection such as geometrical simple bodies interact as they do because of the reasons had, at the conception of those bodies, by *Nous*. The intelligible patterns on which geometrical simple bodies were modeled were always there, so to speak. But the transition from chaos to order, conceived on the basis of intelligible patterns, arose from a mental act. That, at bottom, I believe, is Plato’s view.

## V. Sensible Particulars and Teleology

### A.

The issue of how we should construe the ontology of the *Timaeus*, an issue much controverted in recent decades, bears upon our understanding of Plato's metaphysics in some critical ways. In what follows I will focus more specifically on the matter of sensible particulars and on metaphysics of causation. I would like to explore some respects in which the position that one takes on the status of sensible particulars bears upon our understanding of Platonic teleology.

The debate over Timaeian particulars has stemmed, most recently, from Cherniss's revisionist translation of 49c7-50b5, the dialogue's central discussion of Forms, particulars, and the Receptacle of becoming.<sup>57</sup> The choice between the "traditional" reading, on the one hand, and the "alternative" or "reconstructionist" reading, on the other hand, reflects, as Mary Louise Gill put it, "a decision about the status Plato grants to physical phenomena."<sup>58</sup> As she explains, "on the traditional reading he legitimates talk about [phenomenal particulars]" and "on the alternative he proscribes it: the proper objects of our discourse about the physical world are entities of a quite different sort."<sup>59</sup> Because I have argued, above, for an interpretation of Plato's metaphysics of causation, his teleology, according to which the metaphysical status of phenomena is relatively low, it will behoove me to suggest some ways in which the reconstructionist reading of Timaeian ontology supports that interpretation. Conversely, it will be fruitful to consider how a certain understanding of Platonic teleology makes the reconstructionist reading appealing. Although it is beyond the purview of this paper to make a comprehensive

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argument for the reconstructionist reading, I will note some of the respects in which the rival readings of the *Timaeus* either do or do not seem to fit with the broad features of Platonic teleology.

**B.**

The two competing readings of Timaeian ontology, traditionalist (*T*) and reconstructionist (*R*), are, very broadly, as follows:

(*T*) The ontology laid out by Timaeus consists of Forms, sensible particulars, and the medium of becoming, the Receptacle.

(*R*) The ontology laid out by Timaeus consists of Forms, characters, sensible particulars, and the Receptacle.

Much of the debate has focused on the correct translation of 49a6-50a4, a passage crucially important for determining Plato's later ontology, but also a gnarled passage, beset with obscurities and ambiguities. Suffice it to say, I do not propose to contribute anything, here, to the philological debates associated with the passage; I simply intend to show what one of the readings, (*R*), would contribute to a certain understanding of Plato's teleology.

When, for example, Timaeus says, at 50a, (possibly referring back to the expressions "this" and "that" of 49e) "*to de hopoionoun ti thermon e leukon he kai hotioun ton enantion...meden ekeino au touton kalein*" we could follow a (*T*) translation, such as Zeyl's, and take Timaeus to be telling us that "a thing that is some such [as hot or white] should be called none of these things [i.e. 'this' or 'that'];" or we could follow an (*R*) translation, such as



Cherniss's, and take Timaeus to be telling us that "what is some such or other [e.g. hot or white] [it is safest] not to call it (sc. the Receptacle) any of these."<sup>60</sup>

On a certain understanding of the (T) translation, we would be taking Timaeus to be telling us not to call, e.g. an instance of phenomenal fire (something hot) "this", the use of the indexical suggesting that we have latched on to a self-subsistent object. The Forms and the Receptacle have the requisite stability for us to refer to them with "this" or "that". But phenomena are regions of the Receptacle characterized, in a fleeting way, by this or that quality, and the latter is provided by the Form. "Fire", on this reading, would refer not to any instance of phenomenal fire, but to the kind of parcel of the Receptacle that one sees when a parcel is characterized by that Form. The sensible itself is a compound of the property, let us call it "fiery-ness", provided by the Form and the matter provided by the homogenous Receptacle. As a sensible instance of fire, it becomes and passes away; that region of the Receptacle will later be characterized by some other nature. So, on this reading, the reference of "fire", when applied to a sensible instance, would be elliptical for the kind of sensible that is appearing, no instance itself exemplifying the kind in any stable way.

On a certain understanding of the (R) translation, we would be taking Timaeus to be telling us that we should not even call a certain kind of modification of the Receptacle "fire", because this suggests that the nature of fire, Fire, is something sensible. In fact the character of fire, the recurring, invariant nature that determines what the image of the Form, Fire, will be in this or that sensible instance is what the mind tracks in regularities of succession and compresence. This character is *not* a compound of quality and matter. The Receptacle is only a medium for images. The kind of modification of the Receptacle that we are given in

phenomenal fire is not a modification of stuff. It is an image imprinted on a region of the medium.

What turns on the respective readings? The varied motivations of the commentators in each respective camp are difficult to summarize. But one point that Zeyl makes is particularly pertinent to my purposes: (T) readers tend to see the Receptacle as a substratum, one that, perhaps, anticipates Aristotle's notion of prime matter.<sup>ccli</sup> More generally, I find, proponents of the (T) reading of Timaeian ontology (as well as proponents of the efficiently-causal interpretation of the Forms, as I show above, in Chapter 3) tend to see Plato's teleology as relatively close to Aristotle's; I see Plato's teleology as less close to Aristotle's, and as having much in common with the phenomenalist teleologies of Berkeley and Leibniz. I believe that the (R) reading of Timaeian ontology supports such an interpretation.

My own position on Timaeian ontology, which I will elaborate below, is as follows: 1) the character that a sensible images does not belong to the sensible itself, and the gold analogy can be seen to bear this point out; 2) our utterances track characters, not sets of microphysical bodies, and the two are not identical; 3) the character that our utterance (such as, for example, the name of a natural kind) tracks is the organization, or pattern, that recurs in a certain kind of set of microphysical bodies (the corpuscles, or atoms, or simples), and this organization, or pattern, is traceable to craft and models; 4) the Receptacle is not a basic subject (though of course it is basic) that, in virtue of providing the Receptacle is not a basic subject (though of course it is basic) that, in virtue of providing the matter for qualities, enables reference; it is better understood as the medium in which characters occur.

I believe that my version of (R) provides a better understanding of what is going on in the *Timaeus*, regarding sensible particulars and their role, because I believe that, despite the obscurities in the presentation of his ontology, Plato is still committed the following thesis:

(S) No sensible is anything, without qualification.

(S) is a consistent theme throughout Plato's works. It is also in tension with the principles of the version of teleology that he develops in the *Timaeus*, a view according to which the appearance of order in phenomena warrants an inference to Mind. If there is to be an encounter with order in the flux of phenomena, then, given (S), that encounter is best understood as the recognition of characters that recur in certain kinds of phenomena. Given (S), it is the relatively stable organization of certain sets of microphysical constituents (whatever they turn out to be) that enables us to recognize patterns; that organization must be at least sufficiently stable to allow us to recognize phenomena at different times as being of the same kind. But sensibles lack sufficient stability to prompt this recognition on their own. Characters are a plausible candidate for the necessary intermediary between perception, on the one hand, and the ascent of reason toward contemplation of the Forms, an ascent that perception sometimes triggers.

My own take on (R), the reading of Timaeian ontology developed, most importantly, by Cherniss, Lee, and Silverman, is that it can help to shed light on an intriguing tension in Plato's thought: his fascination with the surprising fact that there should be order within flux. Given (S), it is hard to see how we could encounter order in phenomena; the sensibles bearing that order are themselves not anything stable. How could they *a)* evince order, much less *b)* prompt reason's efforts to discern Forms, as well as *c)* give rise to the hypothesis that the order is a result of divine craft? I believe that Lee and Silverman, in particular, developed a reading that hews to

Plato's consistent line that statements about phenomena do not rise to the status of knowledge; and at the same time Lee and Silverman made points about the organization of phenomena that may help us to understand how, on Plato's view, *a*, *b*, and *c* can be the case. (R) can help us to better understand some of the points of contrast between natural teleology, which places forms in nature's objects, as their inner principles, and Platonic teleology; (R) can help us to better understand how Plato sought to reconcile his teleological commitments with his metaphysics.

### **C.**

The steps of my argument are as follows: 1) *contra* Gill *a*) Plato's threefold ontological division at 48e2-49a6 is not decisive, because we are told at 48b5-c1 that the elements, (his stock example of phenomena) are not elemental, and not even syllabic; *b*) the character of, e.g., Fire, is not identical with a set of material *archai* at a time, because such configurations of microphysical constituents are within the scope of the gold analogy, hence *c*) said character is identical with the recurring pattern that determines images of a kind at successive times; 2) *contra* Zeyl, Plato's aim at 49a6-50b5 is not to determine what it is in a sensible particular that persists through change; the "proviso" that Timaeus has in mind at 50c is not that "fire", e.g., is logically adjectival, describing a part of the Receptacle; it is more plausible that the proviso is simply the straightforward one in the context: sensible particulars are images, and we must bear this in mind when speaking of them.

### **D.**

The alternative approach that I am suggesting to the *Timaeus* passage – one that is, broadly, that of the reconstructionists – would see Plato's aim as, in some respects, like the aim that Berkeley has in mind when he is engaged in natural philosophy. Despite the obvious

difference that the phenomenal world is not, for Plato, something mind-dependent, there is a strong resemblance in the respective ways that the end of natural philosophy is conceived. Just as Berkeley seeks out teleological answers that would explain why the regular succession of ideas is what it is, rather than seeking a substrate of properties that would explain this regularity, Plato may be focused primarily on a teleological account that would explain why the succession of characters at a region of the Receptacle is what it is, rather than on an account of the true nature of the substances that, on the hypotheses of rival views, these characters are.<sup>61</sup>

### ***E.***

We are told at *Timaeus* 47b7-c4 that “the eyes are framed for astronomy...the ears are framed for the movements of harmony.” We never receive such a teleological explanation for why a part of the Receptacle, say *place-1*, images Fire at *time-1* and Water at *time-2*. But there is every reason to suppose that, to Plato’s mind, the mechanistic account of the basic (though not elemental) natural kinds is for the sake of a teleological account that could, in principle, be given in a completed Platonic teleology. To interpret otherwise the passages in the *Timaeus* that take up speculation upon which kinds of mechanistic means would be fitting, given the aims had in mind by the Demiurge, would be to introduce a radical discontinuity into the dialogue.

Which reading of Timaeon ontology, then, best serves Plato’s all-things-considered aim? I take it that he is principally concerned to lay the groundwork for a teleological explanation that would account for the kinds of regular succession that we find. This explanation, whatever it is, would not be given in terms of any physical mechanism. The tetrahedron is the theoretical posit that would best – most fittingly, given the Demiurge’s teleologically-organized aims – serve as

the mechanistic means for imaging the character of Fire. At least, this hypothesis is Plato's considered speculative effort, and such speculation he regards as a worthy endeavor.

It must be remembered, however, that such hypothesizing is speculation about images – objects that *in principle* cannot be objects of knowledge. Plato's aim, in laying out his natural philosophy, is not to determine whether the fire we see could really be tetrahedra. His aim is, rather, to suggest some “how” and “why” answers about the natural world, when he can, and to stop at “how” answers when he cannot suggest the latter as well. The status of these “how” answers – answers to do with how the Demiurge, say, for example, could best use stereometric forms to image Forms – is much like their status in Leibniz. Inquiry into mechanism is worthy because it is inquiry into how divine intelligence may have brought about the best possible arrangement of the phenomenal world. But for Leibniz, too, the answers to “how” questions, answers that result from inquiry into mechanism, always are to be subsumed, ultimately, by teleological explanations. *A posteriori* truths are *a priori* truths imperfectly understood by finite creatures.

It is clear that for Plato phenomenal images have a role to play in the ascent to knowledge. That this role should even be possible for them is puzzling, given that the material world is in flux. It is edifying to, on occasion, tell a “likely story” (*eikos mythos*) about how the Craftsman was able to outfit the cosmos this way. Such speculation is, after all, reflection upon the workings of divine Reason. But to think that we could, even in principle, come to find answers by piercing deeper into the realm of sensibles (albeit, only by theorizing) is misplaced. Just as, for Leibniz, the infinite divisibility of matter was the insuperable obstacle to such theories ever rising to true understanding, for Plato the flux of the material world makes such an

effort in principle impossible. But theorizing of this kind prompts the soul to search out truth in other domains.

**F.**

The marks of my interpretation of Platonic teleology are: i) the phenomenal realm must be sufficiently orderly that sensibles image Forms faithfully enough to play the epistemic role of triggering recollection of the Forms; that is to say (*contra*, e.g., Scott) the world cannot be in such radical Heraclitean flux that all instances of apparent order are illusory, because some such instances point beyond the phenomenal realm by stimulating our consciousness of necessary connections that exist in the transcendental realm;<sup>62</sup> yet ii) (*contra*, e.g., Mueller, Kung) the phenomenal realm is not so orderly that we should regard the natural philosophy of the *Timaeus* as epistemically on a par with the strictly metaphysical parts of the discourse;<sup>63</sup> because natural philosophy treats of a realm of images, Plato regards it as highly speculative, his own system having only elegance to recommend it; natural philosophy cannot be “science” as we understand the term, because it does not deal with objects of knowledge; and iii) Forms are *aitiai* in the sense that they are *reasons*, i.e., reasons why some phenomenal particulars instantiate the characters that they do; sensible *x* images the nature that it does because the Craftsman looked to the Form that *is* that nature as the model for his organization of the cosmos.

The alternative reading of Timaeian ontology that has been developed in recent decades supports my interpretation of Platonic teleology. *Contra* traditionalists such as Gill, the strictly metaphysical parts of the *Timaeus* do not legitimate talk about phenomenal particulars. Rather, they explain how it is that the phenomenal realm can exhibit such order as it does, *despite* the

fact that phenomenal individuals are in flux and, thus, *are* not anything without qualification. Phenomena reveal order, despite this structural obstacle, in virtue of “the invariant recurring character,” as E. N. Lee has put it, that is a Form’s image in sensible particulars.<sup>64</sup>

I have argued, above, that, for Plato, the *telos* of the connections that we find in phenomena is to point the soul toward contemplation of the necessary connections that exist among those entities that we grasp with the mind alone, the Forms. But the regular concomitance of fire and heat, for example, that is given to us in experience is an unvarying recurrence of characters: the fiery-ness of Fire and the hotness of the Hot, as it were. Regularities of concomitance that are to turn the soul toward necessary connections discovered *a priori* cannot be connections among phenomenal individuals themselves, because, as Lee puts it, “strictly speaking [a phenomenal particular] does not have a ‘nature’ of its own at all.”<sup>65</sup>

In the flux of sensible particulars, nothing is sufficiently stable to prompt our intuitions of necessary connection. If neither *x* nor *y* is anything essentially, anything without qualification, but only approximately something, in that it images a true, immutable, eternal nature, then *a fortiori* a connection between *x* and *y* is not something sufficiently definite to awaken our intuitions of necessary connection. In our ephemeral experience of an instance of phenomenal fire, there is, no doubt, much that is peculiar to that instance and quickly fades from memory. It is the recurring character of Fire itself, imaged by sensible particulars, that remains the same from one instance to the next and that prompts the intuition of a necessary connection with the character of the Hot itself. As an image of a Form, phenomenal fire reflects a true nature; but



“such definiteness of character as an image exhibits belongs” as Lee points out, “not to the image itself, but to that which it signifies.”<sup>66</sup>

I take it that if sensible particulars are to play the epistemic role that Plato attributes to them, recurring invariant characters are necessary to the ontology of the *Timaeus*. If the order given in experience is sufficiently robust to stir recollection of innate knowledge, it cannot be in virtue of sensible particulars themselves. Further, I take it that the gold analogy supports this reading.

The gold analogy is, in part, Plato’s attempt to explicate his claim (48b7-c2) that the four traditional elements of Presocratic natural philosophy are, in fact, not elemental; and it is also an attempt to explain the nature of the relation between phenomenal individuals and the medium of becoming in which they occur, the “Receptacle of all becoming”(49a6). The relevance of the analogy to the present discussion is that it indicates the extent to which sensible particulars are in flux.

“We need to keep in mind,” Timaeus asserts, “three types of things: that which comes to be, that in which it comes to be, and that after which the thing coming to be is modeled.”(49c9-d2) That in which things come to be he compares, by way of analogy, to gold. To explicate the ontological status of the Receptacle of becoming, and that of particulars, he asks his listeners to “suppose you were molding” the gold “into every shape there is, going on non-stop remolding one shape into the next.”(50a5-6) He then observes that “if someone were to point at one of them and ask you ‘What is it?’, your safest answer would be... ‘gold’, but never ‘triangle’ or any of the other shapes that come to be in the gold.”(50a5-b3) To say of the gold, at a given

moment, that it *is* one of these shapes would not be safe “because they change even while you’re making the statement.”(50b3-4)

Given that the shapes are in continuous transformation, they would, presumably, lack even such stability as is necessary to prompt our recognition of them *qua* fleeting images of this or that kind of shape, were there not in the immanent realm some stable nature. The receptacle fulfills this metaphysical necessity. It is “well prepared for [the] role” of hosting sensible particulars because it is itself “totally devoid of any characteristics.”(50d7, e5) Its own, stable, nature “is to be available” for impressions.(50c2) Faced with continuously transforming shapes in gold, our only safe answer to “What is it?” would be “gold”, and, by way of analogy, faced with sensible particulars in flux our only safe answer would be “medium of becoming.”

If the element of stability that is metaphysically necessary to Timaeus’s ontology is provided, in part, by the Receptacle, still some source of character, the robust metaphysical content that the Receptacle is to have, is needed. This source is to be found in the transcendental realm: the Forms. The ontological story cannot simply end with a medium of becoming and individuals, because individuals are in flux to such an extent as to have no character of their own. In such a cosmos, there would be nothing for potential knowers to know; the overarching *telos* of the universe, to Plato’s mind, (i.e., that potential knowers should have the opportunity to come to know and, consequently, should have something *to* know, and thus have the opportunity to purify their souls) would be without the metaphysical means of its fulfillment. But, in fact, “the things that enter and leave [the Receptacle] are imitations of those things that always are, imprinted after their likeness, in a marvelous way that is hard to describe.”(50c7)

The cautionary language of 50c7 concerning the “marvelous way” in which Forms are imitated in the medium of becoming, Plato’s acknowledgement that it is “hard to describe,” is followed by Timaeus’ instruction that “this is something we shall pursue at another time.”(50c7-8) This big promissory note leaves ample room for the reader’s speculation, and it seems reasonable that the speculation could extend to refinement of the ontology that Plato has on the table. Traditionalists are quick to point to the next line: “For the moment, we need to keep in mind three types of things.”(50c8-9) But by Timaeus’ own words, the reiteration of his ontology is momentary, and is only a segue to extended discussion of the Receptacle.

If Forms are, as I have put it above, sources of character, and a phenomenal individual has no proper character, and, further, the medium in which the individual appears is characterless, then, necessarily, characters are a component of Plato’s mature ontology, given the epistemic role that phenomena fulfill in his metaphysical/epistemological system. Throughout Plato’s writing (most determinately in the theory of anamnesis, but no less so when that theory is in abeyance) sensible particulars direct the understanding toward true natures. But that particulars are images, here in the *Timaeus*, as throughout Plato’s works, is reaffirmed at 50c7. Images, as dependent entities, bring about their effects not of themselves, but in virtue of those entities of which they are images. Because a Form itself cannot be given in sensible experience, a particular – where and when it images a Form – brings about the effect of prompting understanding. But because particulars are in flux, this *where* and *when* cannot but be in flux.

Thus, the character of *F* (where *F* is a given Form), imaged momentarily in phenomena, is a distinct facet of Plato’s metaphysical arrangement in the *Timaeus*. If the medium of sensible particulars in which these characters (the nature of Fire, say) appear (over and above the characterless medium in which the sensibles occur, the Receptacle) is in flux, then it is surprising

that there should be regularities. I take it that it is this consequence, surprising given Plato's metaphysical premises, for which Plato is trying to provide a kind of account. Taken on Plato's own terms, it seems necessary to extend the gold analogy by observing that the shapes are in turn a kind of medium (over and above the medium in which they become) reflecting, in a fleeting way, the character of triangle (or "triangularity" we might say) and other shapes. For it is clear that the shape-in-gold itself never *is* anything, in any robust sense, other than gold. That this meta-medium, as it were, of ephemeral shape images should exhibit invariant recurring characters, even if only momentarily, is, again, surprising.

The *Timaeus* is the one dialogue in which Plato lays out the kind of philosophy of nature that is fitting, given his metaphysical premises and given this surprising consequence that varieties of order do appear in phenomena. What seems naturally fitting, to Plato's mind, in the corpuscular theory that he lays out is that the insensible bodies from which sensible particulars are composed should be constructed from parts that are modeled on objects of pure thought, the triangles, entities that we come to understand *a priori*.

**G.**

Gill makes a forceful defense of the traditional reading. The heart of her case against the revisionists, as I read it, is that the "[reconstructionist] theory requires the second class in Plato's threefold division to be a class, not of phenomena, like fire, but of determinate characteristics."<sup>67</sup> The problem with this requirement is that "just prior to the division (at 48e2-49a6) and right after it, Plato talks of fire and things like fire" and she finds it implausible that "we are meant to suppose that in between he talks about items of a different sort," because Plato "gives no

indication of a shift of subject.”<sup>68</sup> Gill, quite reasonably, finds it “puzzling” that “items which are meant to do so much work simply escape the net of Plato’s classification.”<sup>69</sup>

As Gill shows so clearly, the onus in this matter is on the reconstructionists. But I do not believe that these considerations are decisive. The “undesirable shifts” in subject that she finds entailed by the reconstructionist reading are offset, I think, when we keep in mind something that Plato puts just as bluntly as he puts his reiteration of the threefold ontology: his unequivocal premise, stipulated at 48b5-c1, that the elements are not only not elemental, but not even syllabic. The elements are composites; and as the gold analogy makes clear, the elements are Plato’s example of phenomena generally. Indeed, the complexity of Plato’s second category goes further than that: phenomenal individuals, other than instances of bare fire, water, earth, and air, (which, in any case, are ephemeral) are themselves composed of fire *et al.*

So Plato’s words in advance of the summary of his ontology caution us, in effect, that the status of the second item will require further clarification. The statement of that ontology seems, on its face, plain; but, again, its reiteration at 50c8-9 is immediately preceded by Timaeus’s express evasion (50c7-8) of the subject of how the likenesses of the things that always are come to be imprinted on the Receptacle. This amounts to a tacit acknowledgement that a likeness is not simply identical with (A) the occurrence of a phenomenal particular. A likeness may be identical, however, with (B) the occurrence of a phenomenal particular *as* an instantiation of an eternal character – which is not the same thing, because the two states of affairs, (A) and (B), may not be temporally coextensive.

Gill preserves the ontologically basic status of phenomenal particulars by arguing that “fire”, “water”, *et al*, refer to the “principles” of these stuffs “which the deity finds already present in the receptacle” and uses in their construction.<sup>70</sup> On her reading, these principles are “the matter of physical objects;” and she judges that “what gives permanence to physical objects, such that language can get a grip on them is, after all, their matter.”<sup>71</sup>

I suspect, however, that Plato would disagree with this claim. It is precisely the matter that’s in flux, e.g. air of one grade, aether, turning into air of another grade, mist. The equilateral triangles of which tetrahedra, octahedra, and icosahedra are composed are, in turn, composed of half-equilaterals, the right-angled scalene triangle. The number of the latter that make up an equilateral triangle determines what grade of matter this plane will be used to compose. The small equilaterals that are required to make aether, for example, require fewer scalenes than the large equilaterals that are needed to make mist.<sup>72</sup>

So when Gill argues that “fire” refers to a set of tetrahedra, we must bear in mind that the triangles that are the faces of a tetrahedron are in flux, splitting up into half-equilaterals that combine and recombine to produce the many grades of matter that derive from the basic types. We must also keep in mind the gold analogy. I see no reason to suppose that the set of right-angled scalenes that make up a tetrahedron (or the set of right-angled isosceles triangles that make up the squares that serve as the planes of cubes of earth) is not being shuffled and reshuffled in a way that lands the set within the scope of the gold analogy. “Air” at a given moment may refer to a set of right-angled scalenes that make up, perhaps, fifty percent large octahedra and fifty percent small octahedra. The character of elemental air is what such

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utterances attempt to track. The *organization* of triangles (the *archai* of Plato's physical theory) according to a scheme that regularly instantiates, e.g., elemental fire is what gives sufficient stability to language to refer to *something* real. I do not go so far as to say that this stability is such as to enable language to get a grip in the world. It must be kept in mind that even the *archai* of the physical theory are chosen for the sake of images, i.e. as the best mechanistic basis for bringing about images of the right kind, e.g. an image of the nature of Fire. As a matter of principle, language refers to the natures that these images image.<sup>cclxv</sup>

It is the relatively stable organization of physical objects in the cosmos that enables language to refer to genuine existents. This recurring organization is the character that a phenomenon images by means of (*ex hypothesi*) tetrahedra *et al.* We are able, on successive occasions, to refer to fire because the tetrahedra that are perpetually transforming into icosahedra and octohedra sometimes do, surprisingly enough, image the character of Fire, in a momentary yet recurring way.

Gill's interpretation depends on treating the triangles that the Demiurge finds in the pre-cosmic chaos as basic units of matter. These principles, on her view, satisfy the need for such stability as is necessary for reference to phenomena to succeed. Unlike a composite, a triangle is "altogether and always such as the Form which is its cause."<sup>73</sup> The triangles circumvent the threat of such radical flux as would cause reference to fail. They satisfy the criterion of *Theatetus* 182c9-11, according to which we could refer to phenomenal individuals if they *only* moved, without altering their character.<sup>74</sup>

But even working strictly within the realm of Necessity, with which Plato's physical theory deals, and holding in abeyance concerns about the metaphysical status of objects within that realm, there is still the question whether she is right to treat the triangles as material *archai*. That they move through space, in the course of their combinations and recombinations, is certainly a consideration in support of this reading. But they are, after all, two-dimensional; they may be conceived by Plato as regions of the receptacle that compose bodies simply by coming together to set their bounds. They may do so in virtue of place, rather than in virtue of extension.

Further, however, if Gill is right that the triangles should be understood as material, then it cannot be the case that having movement is the only respect in which they differ from their respective Forms. Even were it motionless, a material triangle would have place, and, thus, in principle could not be altogether such as its non-spatial (formal) cause.

More significantly, even were we to stipulate that the triangles are material, we must, ultimately, remember that they are, by Gill's own words, "images".<sup>75</sup> As such, in principle they cannot have the kind of permanence that she attributes to them. Either they are, to return to Lee's distinction, dependent images, in which case permanence is ruled out by their being images *in* a medium (the Receptacle) which, because it is a physical medium, is not such as to guarantee their fidelity to the transcendental paradigms of which they are images; or they are independent images, in which case they are severed from the kind of ongoing relation to the Forms that would be necessary to sustain their being always such as their models.

Judgments about elemental particulars, on Plato's view, are not wholly misplaced because, as Gill puts it, "However long or brief the duration of a particular arrangement, the



arrangement is a property of a set of simples.”<sup>cclxxi</sup> My disagreement with Gill has to do with the further contention that the name, e.g. “fire”, refers “to a set of simples of which that arrangement was once a property.”<sup>76</sup> I believe that the name refers to the arrangement itself, i.e. the property itself. For the reasons set out above, I think that this reading fits better with the metaphysical premises of the passage, and makes better sense of Plato’s aims. The arrangement is not identical with the simples. It is the temporary *arrangement* of the simples that instantiates *F*. That imperfect, approximate instantiation of *F* is the character of *F* imaged *in* an arrangement of material simples.

I take it that this alternative reading that I am proposing is entailed by much of what Gill says in her explication of 52d2-53b5. She acknowledges that in the precosmic situation “the four elements do possess certain traces of themselves because random compounds of simples will sometimes produce a likeness of them.”<sup>cclxxii</sup> That just is to say that the random compounds of simples will sometimes produce the character of, for example, fire. But as Gill then adds, with respect to this precosmic chaos Plato believes that “there was nothing worthy to be called by the names we now use, for instance, ‘fire’, ‘water’, and the rest.”<sup>77</sup> The triangles were, however, present. That is to say, the material *archai* that Gill takes to be the real referents of “fire”, “water”, and the rest were present in the precosmos, but reference, at that stage, would have failed. So far as I can see, to say that the triangles were present but reference with such terms as “fire” would have failed because their chance organization lacked the stability that the Demiurge would later impose by means of proportion, just is to say that the stabilization of the relevant configurations of triangles amounted to their achieving the character of fire, at least to such a degree as to enable reference.

## *H.*

Gill's view is that "fire" refers to a set of material simples. She acknowledges, however, that Plato "is not himself committed to the ultimacy of the two sorts of triangles which he treats as *archai*."<sup>78</sup> Our statements about the world are not meaningless; they have a chance of being true in virtue of a mysterious something-we-know-not-what: a certain kind of set of material simples. "The important point" for Plato, according to Gill, "is not *what* turns out to be basic but that there be ultimate simples" in virtue of which "language can get a grip on [the world]."<sup>79</sup>

I concur with what we might call, drawing from contemporary debates in philosophy of science, this kind of "antirealist" interpretation that Gill gives of Plato's natural philosophy. Indeed, it seems to me that we should go somewhat further and say that Plato, in principle, cannot be committed to the ultimacy of the material simples that he posits, because nothing material could, by his terms, be an object of knowledge, regardless of whether it were a phenomenal individual or an unobservable (something theoretically posited to explain features of phenomenal experience).

Given, however, that Plato engages in natural philosophizing without making an ontological commitment to the material *archai* that figure in his theory, and given that he believes that reference is not vacuous (again, another point on which I agree with Gill), it seems to me all the more likely that our speaking about nature is warranted in virtue of characters, not in virtue of anything material.

Gill's view that "fire" refers to a set of material simples would be an odd view for Plato to hold, given the epistemic role that phenomenal individuals play in his philosophy. When I

notice a law-like regularity of compresence, such as that a particular which participates in Fire-itself always participates in the Hot, I am noticing that two distinct characters of phenomenal experience are regularly conjoined. This feature of experience awakens intuitions of true necessary connections, e.g. that between three-ness and oddness. Given this epistemic role that the phenomenal individual plays – that of prompting the ascent to knowledge of true necessary connections – it is critical to Plato’s project that our terms refer to the stable element within the flux of phenomenal experience. This stable element cannot be the microphysical constitution of a natural kind (*a fortiori* it cannot be the microphysical constitution of a phenomenal individual that is composed of a mixture of natural kinds, which is the case in all instances other than, say, bare fire), since that is something that *in principle* cannot be known.<sup>80</sup> Plato is consistent, throughout his excursions into natural philosophy, that speculation upon the insensible structure of natural kinds is worthwhile only as a kind of reflection upon the likely mechanistic story, i.e. the one that would be most fitting given the Demiurge’s teleologically-organized aims. The theoretical posits that figure in that story – tetrahedra and the rest – cannot be objects of knowledge; thus they cannot play the epistemic role that sensible particulars play in Plato’s account of the teleologically ordered ends of phenomenal experience.

The proponent of traditionalism finds it implausible that Plato is saying that “fire”, say, really refers to a Form (to oversimplify the reconstructionist view somewhat). But a reading like Gill’s (or Kung’s) would have “fire” really refer to a certain set of insensibles. The error theory to which Plato would be committed would be one that would defeat the very purpose of philosophical inquiry, as he conceives it. If “fire” really refers to a Form, when we mistakenly think that it refers to a certain kind of substance, we are at least on the path to understanding that

the sensible image images something about which we are trying to talk. If “fire” really refers to a certain insensible constitution, when we think it refers to a certain kind of substance given in experience, then theorizing about microphysical structure ought to be Plato’s aim with respect to sensible particulars generally. Again, we have already been told that the so-called *stoicheia* are not, in fact, elemental; there is nothing ontologically privileged about them. So this kind of theorizing ought to be the real focus of philosophy, at least whenever it touches on the metaphysical status of sensibles. Plato ought to conceive of particulars generally as having an essential nature that is to be grasped by ever more sophisticated theoretical construction of their microphysical constitutions. Philosophy, so conceived, would not take as its paradeigmatic objects of knowledge transcendental, immutable, eternal natures.

But it is the law-like regularity of compresence fire-hot that awakens our intuitions of necessary connection. Thus, there must be *some* sense in which we understand what we are talking about when we discourse upon this law-like conjunction. The sense in which we do understand what we are talking about is that we are talking about certain characters. Were we, unbeknownst to ourselves, talking about the regular compresence of certain properties of tetrahedra with certain other properties of tetrahedra, our discourse never could serve to start us on the path to understanding that – because no *x* is ever *F* without qualification – what is truly fire, is Fire. This broad theme is, by way of contrast, a pervasive theme of Plato’s work.<sup>cclxxv</sup>

## ***I.***

In a defense of the traditionalist reading that is comparable in rigor to Gill’s, Donald Zeyl takes Plato to be “developing” a strategy” for “referring to phenomena by their usual names, with one very crucial proviso.”<sup>cclxx</sup> The old kind of *logos*, which Plato is rejecting, construed such

references as “fire” as identifying references; according to Zeyl, Plato is developing a new *logos* according to which such references should be understood as predicating references, more specifically as references to attributes of the Receptacle. Once this proviso is understood, we are justified in continuing to refer to phenomena by such words as “fire”.

The problem that Zeyl sees as motivating Plato’s discussion of sensible particulars at *Timaeus* 49a-50b can be summarized as follows: when we describe something at one time as water, and at a later time as air – say, for example, the water in a pond and the air into which it has evaporated – what is the something that persists through the change, such that we are talking about the same thing, rather than the destruction of one thing and the coming into being of something else?<sup>ccclxxv</sup> To put it somewhat more concisely, Zeyl’s understanding of the problem that is motivating Plato’s discussion would seem to be: if, at  $t_1$ ,  $x$  is water and, at  $t_2$ ,  $x$  is air, what is it that persists through the change, i.e. what is  $x$ ?

The old kind of *logos*, that of Presocratic natural philosophy, tried to get some purchase on this question by positing one or more stuffs as *stoicheia*, as elements. But neither Empedocles’s view, according to which four stuffs are basic (earth, water, air, and fire), nor a view like that of Anaximenes, in which one stuff is basic (air), affords a *pistos kai bebaios logos*, an account which trustworthy and stable. Empedocles cannot explain what it is that persists through the change of water into air, because these kinds are both basic. And given the cyclical nature of the four familiar kinds, Anaximenes cannot muster sufficient reason for picking his candidate as basic, rather than one of the others.<sup>81</sup>

Plato's proviso, according to Zeyl, affords a trustworthy and stable account of how to think about such questions. Given that on Plato's view the elements are not, in fact, elemental, a fundamentally new kind of *logos* is needed. That *logos* is one in which the distinction is made between what is ontologically (as well as logically) a subject – “a thing” that is “an entity in its own right” – and what is ontologically (as well as logically) a predicate.<sup>82</sup> Plato's proviso lays down the condition under which phenomenal terms can refer: “when we refer to a given phenomenon by the term ‘fire’, we must not think that we are referring to what is *touto*, but rather to what is *to iouton*.”<sup>cclxxx</sup> We must not think that by the use of “fire” we refer to something that is a “this”, because this notion entails that we are talking about “a permanent subject which, while possibly undergoing various modifications, yet retains its identity.”<sup>cclxxi</sup> Rather, we are referring to “what is such.” *To iouton* “describes its referent as being an attribute of something else.”<sup>83</sup>

As Zeyl reads *Timaeus* 49a-50b, Plato is introducing “a quasi-technical sense” of the expressions *touto* and *to iouton*.<sup>84</sup> This way of picking out the distinction between ontological subjects and properties, respectively, “is the direct ancestor of Aristotle's admittedly technical use of such locutions,” and prepares the way for the development of that distinction in Aristotle's metaphysics.<sup>85</sup> The Receptacle is the permanent subject, the entity, which makes it possible for the terms for sensible particulars (the ostensible elements serving as stock examples) to refer. Plato's proviso amounts to a tacit understanding that when we use such terms “they are to be construed as logically (though not grammatically) adjectival.”<sup>86</sup> Once we understand this

proviso, we see that Plato has a trustworthy and stable account of how our nominal references can refer to phenomena: such references are “adjectival descriptions of some basic, permanent subject worthy of that status...this subject is the Receptacle, for only it can be designated as *touto*.”<sup>87</sup>

## **J.**

At first glance, there might seem to be slim difference between Zeyl’s view and that of the reconstructionists. The former’s view is that such nominal references as “fire” and “water” are elliptical ways of describing a region of the Receptacle; and the reconstructionist view is that such terms refer to invariant recurring characters that are instantiated in regions of the Receptacle.

There is, however, as I see it, an important difference between the two views. The stability provided by the presence of the Receptacle throughout a change of something *F* into something *G* is not enough to ground the epistemic role played by sensible particulars in Plato’s philosophy. Zeyl’s reading is an attempt to provide an account of why one kind of recurring modification of the Receptacle is regularly correlated with another. But this account would do so without tying these recurring modifications to anything that could be the transcendental source in virtue of which the mind can connect them. The Receptacle, as such, is not given in phenomenal experience. Yet, what is given in phenomenal experience must be such as to prompt the soul to recollect the ideas of certain necessary connections. The recurring invariant character that a modification of the Receptacle instantiates is the stable content in experience.

According to Zeyl, Plato's point is that "every phenomenal thing is something that recurrently turns up similar to what it has been on a prior occasion and to what it will be again on some later occasion as it passes through the cosmic cycle again and again."<sup>88</sup> But are such phenomena as we pick out with terms like "fire" *things*, according to Plato?<sup>89</sup> It seems rather that Zeyl's argument leads, not to this conclusion, but to the conclusion drawn by the reconstructionist: to put it in terms of Silverman's locution, phenomena are modifications of the Receptacle and, thus, such terms as "fire" do not refer to things at all, but to the instantiation at a time of a certain character in a region of the Receptacle.

While it is fruitful to consider the *Timaeus* passage as an ancestor of Aristotle's concept of substance, and to consider Plato's discussion in the light of Aristotle's further development of ideas limned therein, we must, at the same time, be mindful of the quite different conceptions of phenomena that are involved. Profoundly different conceptions of phenomena will entail quite different conceptions of the epistemological status of natural philosophy. A region of the receptacle is, after all, just a place; and a place is not a "this such." My point, here, is not, I hope, the obvious one that Plato and Aristotle have quite different metaphysical views, but that reading the *Timaeus* passage in the light of its descendant discussions of predication in Aristotle could lead us, if we are not careful, into a misunderstanding of what is driving Plato at this stage in his thinking. By looking too far ahead, to the *Categories* and *Metaphysics*, and their analyses of the inherence of properties in substances, we risk losing sight of a distinct moment in the history of philosophy, a moment that constitutes Plato's most important accomplishment in this passage: what Cornford saw as the first rigorous separation of qualities from *material substance*



as such, a crucial departure from pre-Socratic natural philosophy.<sup>90</sup> It was, arguably, this clearing of conceptual space that then prepared the way for Aristotle's innovations in metaphysics and natural philosophy; the relation between the *Timaeus* passage and those later discussions may be less direct than Zeyl would have it.

#### **K.**

As mentioned above (i), Zeyl approaches the passage as if Plato's focus were on the issue of what subject persists through the change when something *F* becomes something *G*. According to Zeyl, Plato's answer to this question is the Receptacle.

It may be the case, however, that Plato's aim in *Timaeus* 49a-50b is not to identify a permanent subject for attributes, such that there can be some entity, some independent being, that persists through changes. The aim may be, rather, to sketch an account of why the succession of attributes in phenomena is what it is. This question admits of the teleological kind of answer that is characteristic of the natural philosophy presented in the *Timaeus* generally.<sup>91</sup> By contrast, it seems unlikely that Plato seeks to explain the regularities in phenomenal experience by appeal to the stable substrate of properties. In itself, the Receptacle is a homogenous, characterless substrate that, as a theoretical posit, explains how there can be phenomena at all. It gets us no closer to an explanation for why a region of the Receptacle that is fiery at *time-1* should be watery at *time-2*.

#### **L.**

Zeyl's substantival approach to the *Timaeus* passage is reflected in his take on the gold analogy.<sup>92</sup> He believes that the analogy serves as an illustration of how to employ the ostensible proviso. "It is precisely because we refer to what is *to iouton* when we point to the triangular lump of gold and call it 'triangle' that the answer is viable at all."<sup>93</sup> That is to say, he takes Plato's point to be that it is safe to take our terms as referring to sensible particulars, so long as we bear in mind that such references are logically adjectival; they are descriptions, not identifications.

Recall that Timaeus asks us to suppose that we are "molding gold into every shape there is, going on non-stop remolding one shape into the next." (50a 5-7) If someone were to point at what you were molding and ask you what it is, "your safest answer by far, with respect to truth," Timaeus contends, "would be to say, 'gold', but never 'triangle' or any of the other shapes that come to be in the gold." (50b 1-3) As Zeyl points out, Plato does allow, however that "that answer, too, should be satisfactory, as long as the shapes are willing to accept 'what is such' as someone's designation." (50b 4-6) This answer does indeed have "a degree of safety." (50b 6)

The sense in which "triangle" has a degree of safety may be tied, however, to a proviso that is arguably more straightforward. Just a few lines further down, after a few lines that recapitulate the characterless nature of the Receptacle (50b7-c3), Plato reaffirms that the natures that enter the Receptacle are "representations" (*mimemata*) of the Forms, "imprinted after their likeness." (50c6)<sup>94</sup> The more straightforward proviso (in this context, i.e. the proviso in light of which "triangle" may be "safe") may simply be that we must bear in mind that we are dealing with images. Plato's point may well be that "this is a triangle" is safe to say, in the context of the

gold analogy, so long as we bear in mind that we are talking about an image of a triangle, not something that is itself a triangle.

That Zeyl's understanding of Plato's motivation in this passage is quite different from the one that I am suggesting is clear from his discussion. Zeyl takes Plato's point to be that "triangle" is safe to say so long as we remember that this answer is logically adjectival. With that proviso in mind, it would be fine to refer to the perpetually transforming shapes by their shape names. As Zeyl puts it "To be told that the gold triangle at which he is pointing is 'gold' and then to be told that the gold square at which he subsequently points is also 'gold' is not likely to satisfy the questioner, who asked the 'what is it?' question expecting a different answer in each case."<sup>95</sup> Once we understand, however, that this kind of answer is a descriptive, rather than an identifying, reference, we may, according to Zeyl, safely proceed to give answers of this kind.

As I construe Plato's point in the analogy, the questioner who expects a different answer in each case would have a misplaced confidence in our judgments about sensible particulars; he would not adequately grasp their ephemeral, fleeting nature. There would be a degree of safety in the attempted reference "triangle", only in the sense that it is correct to call an image of a triangle by that name. The sense in which it is "safe" to do so is something like the sense that we have in mind when we start a child off in this way; we do not first sit a child down with the definitions in Euclid's *Elements* and logically construct the object of pure thought.

As I read it, Plato's point in the analogy is that there *is no* stable sense in which the lump of gold is either a triangle or a square.<sup>clxxxiii</sup> Zeyl takes Plato to be saying, however, that our

attempted references to sensible particulars are attempted references to something like Aristotle's substances; they are only, in fact, however, elliptical references to substances. We take a gold triangle to be a substance because we think that the triangular shape is a property, and the parcel of gold is a substance in which this property inheres; we are wrong in one respect, but right in another. We *are* referring to a substance, but the substrate is the Receptacle – which is not given in phenomenal experience – and this substrate is modified “goldly-triangularly” (as we philosophers, who understand what is really going on, might say).

On my reading of the analogy, our attempted references to sensible particulars are not elliptical; they fail. We take ourselves to be referring to something like Aristotelian substances, but we are actually tracking certain recurring characters imaged in phenomena. We philosophers may go on speaking in the conventional way, in something like the sense that we still speak of the sun rising, but we understand that the stable element in phenomena is not a thing at all.

***M.***

I have argued above (especially in Chapter 2 and in this chapter) that the main role of sensibles in Plato's metaphysics is their epistemic role of prompting recollection. I have also held that Plato's consistent view, with respect to sensibles, is:

(S) No sensible is anything, without qualification.

I would do well to address now one worry, in particular, that such an interpretation does, I think, raise: is it plausible that, in a world, of flux, ephemeral images should trigger recollection? The two claims would seem to be in tension.

It is precisely because we must take Plato's talk of flux seriously that I am convinced there must be some stable, intermediate entity between the fleeting image and the Form of recollection; the need for such an intermediate entity is a good reason for thinking that the characters of the reconstructionist reading are necessary to Plato's metaphysical/epistemological picture. Plato's claim, so far as I can find, is not that in the first instance the perception of, for example, roughly equal sticks prompts recollection of Equality. Indeed, given that the sticks are never equal without certain qualifications (for a time, viewed from a certain perspective, *inter alia*) we should not expect the connection between perception and *anamnesis* to be immediate. Meno's slave boy, similarly, does not apprehend everything that falls out of the nature of Square (for example, the relation between diagonal and area) on first seeing a square, or, indeed, after what were, no doubt, numerous such instances leading up to his meeting with Socrates.

Yet, from what Plato does say about the connection between perception and *anamnesis*, we can plausibly infer that in perceptual experiences of a kind, something in the nature of perceptions of that kind, a certain recurring, invariant content, gels, in the mind, with repetition. This recurring, invariant character, the formula, as it were, that determines the broad shape of a certain kind of perceptual experience, may be the extra something that, when it has left its trace on the mind, as a sort of template, prompts recollection of the Form on a particular occasion of sensible experience.

N.

Given that I have committed to both (S) and the thesis that sensibles play an essential epistemic role, as principles for the interpretation of Plato, a still more profound tension in what Plato is saying should be addressed again. It is the question with which I began this dissertation:

why does Plato even have a natural philosophy, much less a teleological one? Why should we be justified in inferring the work of Intelligence, or indeed inferring anything, from the apparent order in phenomena, if the sensibles given in phenomena are *in principle* not even possible objects of knowledge? To put the point more precisely: given that sensibles are in flux, what would be the use to us of answers to “how” and “why” questions?

On the basis of my readings of the relevant *Phaedo* and the *Timaeus* passages, presented above, I take it, as the most plausible inference, that when Timaeus tells us that the use to us of such answers as we may venture to “how” questions is providential and didactic, this claim is Plato’s considered view. The tension involved in his holding this view is on a par with tensions involved in the phenomenalist teleologies of Berkeley and Leibniz. In this respect, the way that teleology is conceived is quite similar among the three: such answers as we may venture to “how” questions are ultimately to be subsumed under our answers to “why” questions.

Timaeus lays down, from the outset of his excursion into natural philosophy, the premise that “this world is an image of something,” and the related premise that “accounts of what is a likeness” are for the sake of “accounts of what is stable and fixed and transparent to the understanding;” we are to inquire into the nature of the “image” for the sake of such light as inquiry of that kind can shed, however indirectly, on the nature of the “model”.(29b1-c2) “Inquiry into the nature of the universe” is composed of many ancillary questions, the targets of which are obscure; and yet “these pursuits have given us philosophy, a gift from the gods to the mortal race.”(47b1-2) Observation of the orbits of the celestial bodies, for example, Timaeus tells us, is edifying because it prompts recognition of “the orbits of intelligence;” and once we grasp the intelligible orbits of which the celestial orbits are images, we then “apply them to the revolutions of our understanding.”(47b9-c1)

On such an understanding of natural philosophy, can attending to sensibles disclose to us anything about the workings of a creator? It depends on how we approach this question. If one thinks of inquiry into phenomena as bestowing a progressively deeper understanding of operative forces at work in the world, then the answer is negative. Inquiry into phenomena can disclose to us the workings of Intelligence only in an elliptical way. It can prompt us to reflect on such teleological questions as why Mind directed that the motions of the celestial bodies should be used to convey to us the character of Circle, or why aggregations of tetrahedra were chosen to image the nature of Fire. As in Berkeley's teleology, it is axiomatic with Plato that the regularities of succession and compresence are what they are for providential goals, and these latter are the fundamental level of explanation. Inquiry into how such regularities are brought about is for the sake of a keener appreciation of providential design and its benefit to us.

Bearing in mind, as we must, that Plato does not have in hand Aristotle's four-fold analysis of causation, it is Plato's consistent view that what we may usefully call efficient causation is always to be subsumed under final causation. Nonetheless, it is, according to the *Timaeus*, edifying that we should speculate upon the question of how a supremely good craftsman *would* order a mechanistically-driven world.

I do not purport to have established that Plato has shown that "how" questions, so understood, can be coherently articulated. But his attempt to do so within the framework of teleology is not without important parallels in the history of philosophy. The strain involved in what Plato is saying about putative efficient causes, in his dialogues that bear on natural philosophy, is, in particular, much like that involved in what Leibniz says about efficient causation, given the place of that concept in his intellectualist-phenomenalist teleology. Just as Plato seems to say that certain natural effects of phenomenal fire are what they are in virtue of

the shape of that element's corpuscles, so Leibniz endorses the concept of efficient/mechanistic causation (and, indeed, was himself a distinguished researcher into questions ostensibly involving such causes). Yet, it is hard to know what to make of such affirmations, given his oft-reiterated commitment to such premises as that there is nothing extended outside of perception, and that substances do not interact (all apparent interaction is merely apparent). Though Leibniz affirms efficient causation, it is hard to see what such causation would really come to, given the framework principles of his teleology.

But to concede that, in and of itself, attending to sensible particulars can tell us little about the workings of Mind is not to say that it cannot tell us anything. Once one enters into the framework of Platonic teleology, the elliptical nature of such answers to "how" questions as we might venture can be seen as fruitful. Again, a parallel with the framework of Leibniz's intellectualist-phenomenalist teleology may be helpful. In the latter, one inquires into "how" questions knowing that how a substance's nature will unfold is already fully determined at the moment of its inception. Apparent interactions with other substances, which would seem explanatory, are in fact merely apparent. No other substance contributes any causal influence to the unfolding of another substance's fixed, fully-determined nature.<sup>ccxcix</sup> But answers to do with why the unfolding of that substantial nature is what it is (including questions to do with why bodies pass through the succession of apparent interactions that they do), answers to do with final causation, are what they are for providential, intentionally-determined reasons.

The sense in which answers to "how" questions are elliptical is quite different in the case of Platonic teleology, in many respects. Perhaps most importantly, prior to the crafting of the *cosmos* there are two transcendental realities: Mind, and the realm of Forms. The creative task for *Nous* was how to best image in a temporal, material realm that realm of intelligibles.



Speculative inquiry into “how” questions is for the sake of better appreciating the “why” questions to do with the Craftsman’s particular choices in fashioning a moving image of eternity. In something like the way that we may view a painting inspired by a piece of music, or listen to a piece of music inspired by a landscape, we try, in the framework of Platonic teleology, to recognize the traces of certain entities; but these entities exist in an entirely different realm from the realm in which they are imaged.

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## Notes to Chapter One

<sup>i</sup> M. F. Burnyeat, “*Eikos Muthos*,” in *Plato’s Myths*, ed. Catalin Partenie (Cambridge: Cambridge University Press) 2011, pp.167-186

<sup>ii</sup> The premise that the *Timaeus* is a late dialogue was challenged by G. E. L. Owen, in his paper “The Place of the *Timaeus* in Plato’s Dialogues” *Classical Quarterly* (1953). It is beyond the purview of this dissertation to take up that debate. Suffice it to say that most Plato scholars continue to regard the *Timaeus* as a late dialogue.

<sup>iii</sup> G. E. R. Lloyd, “Plato as Natural Scientist,” *The Journal of Hellenic Studies*, Vol. 88, (1968) p.81

<sup>iv</sup> Burnyeat, p.186

<sup>v</sup> *Ibid.*, p.180

<sup>vi</sup> See Burnyeat; for translations of *eikos muthos* see A. E. Taylor, *A Commentary on Plato’s Timaeus* (Oxford: Clarendon Press) 1928, pp.59-61; R. G. Bury, *Plato: Timaeus* (Cambridge: Harvard University Press) 1929, p.53; Francis M. Cornford, *Plato’s Cosmology: The Timaeus of Plato* (Indianapolis: Hackett) 1937, p.30; Donald J. Zeyl, *Plato: Timaeus* (Indianapolis: Hackett) 2000, p.15

<sup>vii</sup> Burnyeat, p.167

<sup>viii</sup> *Ibid.* p.169

<sup>ix</sup> *Ibid.* p.169

<sup>x</sup> *Ibid.* p.169

<sup>xi</sup> *Ibid.* p.173

<sup>xii</sup> *Ibid.* p.173

<sup>xiii</sup> *Ibid.* p.173

<sup>xiv</sup> *Ibid.* p.173

<sup>xv</sup> Taylor, p.59

<sup>xvi</sup> *Ibid.* p.59

<sup>xvii</sup> *Ibid.* p.60

<sup>xviii</sup> Burnyeat, p.186

<sup>xix</sup> Joan Kung, “Tetrahedra, Motion, and Virtue,” *Nous* p. 25; James G. Lennox, “Plato’s Unnatural Teleology,” p. 196; Ian Mueller, “Platonism and the Study of Nature; *Phaedo* 95 e ff.,” in *Method in Ancient Philosophy* ed. Jyl Gentzler (New York: Oxford University Press) 1998, p. 88

<sup>xx</sup> See W. K. C. Guthrie, *A History of Greek Philosophy, Volume V: The Later Plato and the Academy* (Cambridge: Cambridge University Press) 1978, p.243

<sup>xxi</sup> Regarding reference failure, my discussion of the issue, in Chapter Five, focuses on the *Timaeus*. Another key passage for discussion of this issue in the late Plato occurs in the first part of *Theatetus*. At 182c ff., Socrates and Theodorus are entertaining the radical flux thesis of the neo-Heracliteans, according to which “all things move and flow.” (182c4) Not only are sensible particulars themselves in flux, but “not even [quality] (*poiotes*) abides.” (182d1) It is not even the case “that what flows white, but rather it is in the process of change, so that there is flux of this very thing also, the whiteness, and it is passing over into another color.” (182d1-4) Given this fact about phenomena, Socrates wonders “Is it possible to give any name to a color which will properly apply to it?” (182d5)

The issue in play in this passage is whether our attempts to refer to sensible things or qualities can be thought to succeed, given that sensibles themselves and even their qualities undergo continuous change. My discussion of reference in Chapter Five has to do with a different issue: in speaking of sensibles are we really speaking of entities of a quite different sort, i.e. the Forms? As I discuss below, reconstructionists such as Hackforth and Lee take the view that this is indeed the case. But their reasons, especially as developed by Lee, have to do with the principled distinction between inquiry into images – and all phenomena, *Timaeus* emphasizes, are images – and inquiry into true existents, i.e. the entities *of which* the images *are* images.

So the discussion in Chapter Five swings free of the issue of Plato's stance toward the radical flux thesis entertained by Socrates and Theodorus in the first part of *Theatetus*. Suffice it to say, here, that I concur with Guthrie's reading of the *Theatetus*, according to which Plato is not arguing that our attempts to talk about, e.g. qualities, fail because sensibles are in radical flux. In addition to the points in Guthrie's argument for this interpretation, I would add that almost immediately after the above-cited passage, Socrates takes up the question of whether we see white and black *with or through* our eyes.(184b6-7) The question would be moot if Plato were endorsing the view that we cannot talk about white and black *in any sense at all*, as the neo-Heraclitean position would entail. The reconstructionist view, as I develop it in Chapter Five, is that there is an elliptical sense in which we do talk about entities and qualities, but attempts to refer to them actually refer to the only things that have the requisite stability to serve as intelligible objects of discussion, the Forms. See Guthrie, pp.79-82; see also Burnyeat, *The Theatetus of Plato* (Indianapolis: Hackett) 1990, pp.42-52

A related issue, which I do touch on in Chapter Five, is the question of how the participation doctrine affects the issue of reference, but I do not pursue it in depth because in the *Timaeus*, as Guthrie points out, "There is a notable absence of the term *methexis*, a trouble-making metaphor even if Plato only meant it as a variation for *mimesis*, and one which took a severe beating in the *Parmenides*." (Guthrie, p.255) I believe that by the time of Plato's writing the *Timaeus*, he has thought better of his variation for "representation", and that the dialogue is *inter alia* an extended meditation on the metaphysics of the image. "The subject matter" of the *Timaeus*, as Burnyeat puts it, is "a likeness of that which is permanent and stable and manifest to reason...a likeness of an eternal rational order." (Burnyeat, "*Eikos Muthos*" 179) The point that I press in Chapter Five is that because, on Plato's view, nature is an image, inquiry into *it*, as such, cannot rise to a science; but because it is an image of a permanent, stable, rational order, there is *something* about which we are obliquely talking in speaking of nature. My argument in Chapter Five, further, is that the referent of such talk is not the material simples that are used to image the character of a Form, because on Plato's account the material simples are themselves beset by the same instability that precludes macroscopic entities from being objects of knowledge.

xxii Mary Louise Gill, "Matter and Flux in Plato's *Timaeus*," *Phronesis*, Vol. XXXII/1 (1987) p.36

xxiii Gill, p.36

xxiv Lloyd, p.92

xxv Burnyeat, p.187

xxvi *Ibid.*, p.187

xxvii Taylor, p.18

xxviii *Ibid.*, p.32

xxix *Ibid.*, p.33

xxx *Ibid.*, p.33

xxxi *Ibid.*, p.33

xxxii *Ibid.*, p.33

xxxiii *Ibid.*, p.33

xxxiv Cornford, p.vi

xxxv *Ibid.*, p.vi

xxxvi *Ibid.*, p.vii

xxxvii *Ibid.*, p.157

xxxviii *Ibid.*, p.174

xxxix *Ibid.*, p.175

xl Thomas Keller Johansen, *Plato's Natural Philosophy: A Study of the Timaeus-Critias*, (Cambridge: Cambridge University Press) 2004, p. 2

xli Cornford, p. 162

xlii Guthrie, p.255

xliii *Ibid.*, p.273

xliv *Ibid.*, p.273

xlv Burnyeat, p.179

xlvi *Ibid.*, p.170

xlvii *Ibid.*, p.179

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- xlvi *Ibid.*, p.179
- xlix *Ibid.*, p.179
- <sup>1</sup> *Ibid.*, p.169
- <sup>li</sup> Stephen Menn, "Socrates's First Objections to the Physicists," *Oxford Studies in Ancient Philosophy* Vol. 38, Summer 2010, p.61
- <sup>lii</sup> R. J. Hankinson, *Cause and Explanation in Ancient Greek Thought* (Oxford: Clarendon Press) 1998, p.114
- <sup>liii</sup> *Ibid.*, p.114
- <sup>liv</sup> *Ibid.*, p.114
- <sup>lv</sup> Zeyl, p.xxxiv
- <sup>lvi</sup> Gill, p.53
- <sup>lvii</sup> Gill, p.51
- <sup>lviii</sup> Margaret Wilson, cited in Edwin McCann "Locke's Philosophy of Body," in *The Cambridge Companion to Locke*, (Cambridge: Cambridge University Press) 1994, p.67
- <sup>lix</sup> John Locke, *An Essay Concerning Human Understanding* in *The Longman Standard History of Modern Philosophy*, ed. Daniel Kolak and Garrett Thomson (New York: Pearson-Longman) 2006, p.263
- <sup>lx</sup> Locke, p.268
- <sup>lxi</sup> See James G. Lennox, "Robert Boyle's Defense of Teleological Inference in Experimental Science," *Isis* Volume 74, Number 1, March 1983, pp.38-52; L. Carlin, "The Importance of Teleology to Boyle's Natural Philosophy," *British Journal for the History of Philosophy* Volume 19, Issue 4 pp.665-682
- <sup>lxii</sup> McCann, p.67
- <sup>lxiii</sup> *Ibid.*, p.67
- <sup>lxiv</sup> *Ibid.*, p.67
- <sup>lxv</sup> Michael Frede, "The Original Notion of Cause," in *Doubt and Dogmatism: Studies in Hellenistic Epistemology*, Malcolm Schofield, Myles Burnyeat, Jonathan Barnes, eds. (New York: Oxford University Press) 1980, p.217
- <sup>lxvi</sup> Hankinson, p.85
- <sup>lxvii</sup> Frede, 217
- <sup>lxviii</sup> Julia Annas, "Aristotle on Inefficient Causes," *Philosophical Quarterly* 32, October 1982, p.318
- <sup>lxix</sup> Burnyeat, p.186
- <sup>lxx</sup> *Ibid.*, p.186
- <sup>lxxi</sup> See Allan Silverman, "Timaeus Particulars," *Classical Quarterly* 42 (i) 87-113 (1992)
- <sup>lxxii</sup> Kung, p.25
- <sup>lxxiii</sup> *Ibid.*, p.17
- <sup>lxxiv</sup> *Ibid.*, p.17
- <sup>lxxv</sup> *Ibid.*, p.17
- <sup>lxxvi</sup> *Ibid.*, p.24
- <sup>lxxvii</sup> *Ibid.*, p.24
- <sup>lxxviii</sup> Silverman, p.88
- <sup>lxxix</sup> E. N. Lee, "The Image in Plato's *Timaeus*," *Monist* 50 341-368 (1966) p.359
- <sup>lxxx</sup> *Ibid.*, p.359
- <sup>lxxxi</sup> Silverman, p.88
- <sup>lxxxii</sup> *Ibid.*, p.89
- <sup>lxxxiii</sup> Zeyl, p.lxi
- <sup>lxxxiv</sup> Laurence Carlin, "Leibniz and Berkeley on Teleological Intelligibility," *History of Philosophy Quarterly* Vol. 23, Number 2, April 2006, p.155
- <sup>lxxxv</sup> Carlin, pp.155-156
- <sup>lxxxvi</sup> I do not know of any view in the literature that would deny that there is an anthropocentric element to Plato's teleology. I am not arguing against a rival view in *Timaeus* commentary, on this point. What I am suggesting is that there is a renewed interest, in the literature, on this element and its significance. I have been inspired, in this regard, by Johansen's approach. As he puts the point, Timaeus is recommending to his listeners "an ethically informed cosmology," that traces back to Socrates's sketch of teleology in the *Phaedo*. Timaeus teleology is "anthropocentric" to an extent "because the primary task of cosmology is to demonstrate the goodness and

beauty of the whole cosmos...the foresight that lies behind the universe takes into account in a special way the ethical requirements of living beings such as us...there is therefore a sense in which the cosmos fulfills its purpose when we use cosmology to become better persons.” (Johansen, p.3) Indeed, the ethical facet to Timaeian teleology that Johansen emphasizes in his study is what we should expect, given the point that Burnyeat has made so forcefully: Plato is presenting a “*peri phuseos* which is simultaneously a myth: a religious story as well as a scientifico-mathematical one...Timaeus’s cosmogony will be a theogony too.” (Burnyeat, p.169) A part of the religious meaning of Timaeian teleology is, as Johansen has emphasized, the ethical function of the cosmos. What I wish to add to the discussion of this point is the similarity, in certain respects, of the teleology that results to certain strands of teleological thought in the early modern period.

<sup>lxxxvii</sup> Carlin, p.161

<sup>lxxxviii</sup> Leibniz, quoted in Carlin, p.161

<sup>lxxxix</sup> Whitehead, quoted in Lloyd, p.78

<sup>xc</sup> Whitehead, quoted in Lloyd, p.78

<sup>xcj</sup> Lloyd, p.85

<sup>xcii</sup> Thus, the study of nature, as I understand Plato, corresponds to stage two of the Line presented at *Republic* 509d 6-513e 3. Bodies and their motions (e.g. the celestial bodies) are objects of belief (*pistis*). Natural philosophy is, however, to Plato’s mind, a distinctive way of thinking about the many objects of belief and their natural kinds: one reflects on them as a stepping stone to the objects of thought (*dianoia*). The paths of the celestial bodies, for example, trace a certain figure; and the visible figure (or in this case, the figure suggested to the mind by a certain visual experience) is, in turn, the stepping stone to an object of understanding (*noesis*), the figure itself. Again, the sensible properties of, for example, water suggest to the inquiring mind a stereometric kind, the icosahedron, the Craftsman may have used to bring them about. The mathematical – in this case the theoretical posit of stereometry, the regular solid – as object of thought, again, directs the mind toward an object of understanding – the mathematical entity itself, of which all illustrations or (*ex hypothesi*) water corpuscles would be (imperfect) instances.

<sup>xciii</sup> Burnyeat, p.169

<sup>xciv</sup> Gregory Vlastos, “Reasons and Causes in the *Phaedo*,” *Philosophical Review* 78, (1969) p.320

<sup>xcv</sup> *Ibid.* p. 320

<sup>xcvi</sup> By “efficiently-causal power of intentional agency in arranging materials,” I have in mind the emphasis that Aristotle gives to the sculptor *sculpting* as the efficient cause of the sculpture. Purposive activity arranges the bronze in such a way as to realize an intended form, for the sake of some end, e.g. for the sake of imaging in bronze the antecedently-conceived form of, e.g., Apollo. See *Physics* 195b 1-4.

Even where material *aitiai*, e.g. the tetrahedra, have a role in explanation, this role is what it is because of the choice of stereometric Form made by Reason, in this case the Craftsman’s choice of tetrahedra as the best stereometric form for capturing the character of fire (which character is given by Fire). In the pre-cosmic chaos, traces of elemental bodies existed, and the Craftsman – looking to the Form, Fire – had to choose the stereometric form it was to have, imposing regularity on those traces. Choosing, however, is an intentional activity. As Strange emphasizes, thought (*dianoia*) in the *Laws* and the *Phaedrus* “is the primary sort of efficient causality.” He further suggests, and I wish to press more emphatically, that the Demiurge is the self-motion of soul writ large, at the level of cosmos. Steven K. Strange, “The Double Explanation in the *Timaeus*,” *Ancient Philosophy* 5, (1985) p.31

<sup>xcvii</sup> Vlastos, p.320

<sup>xcviii</sup> *Ibid.* p.320

<sup>xcix</sup> *Ibid.* p.320

<sup>c</sup> *Ibid.* p.320

<sup>ci</sup> *Ibid.* p.320

<sup>cii</sup> Gail Fine, “Forms and Causes: Plato and Aristotle,” in *Plato on Knowledge and Forms: Selected Essays* (Oxford: Clarendon Press) 2003, p.354

<sup>ciii</sup> Fine, p.354

<sup>civ</sup> Vlastos, p.323

<sup>cv</sup> *Ibid.*, p.325

<sup>cvi</sup> I suspect that there may not be a straightforward answer to the question whether, in Plato's metaphysics and natural philosophy, a particular "has" the character that it images. In a sense it does, in another sense it does not. Consider a drawing of a cube on a sheet of paper. Does this particular have the character of a cube? Yes, in the sense that it suggests to the mind the stereometric form that it does. One immediately sees it as a cube, rather than as a sphere or a pyramid. In virtue of what do I see this image on paper as the image of a cube, rather than as the image of a sphere or the image of a pyramid? Well, in virtue of its having the character of a cube, i.e. of suggesting to the mind the extension of a cube rather than the extension of a sphere or the extension of a pyramid. In another sense, this image on paper does not have the character of a cube; it is a two dimensional image; it has only size and shape, not extension. A part of the essential character of a cube is that it is an extended thing. *Qua* particular the image on paper does not have the character of a cube. *Qua* image it does have the character of a cube. Phenomena have this two-fold nature in Plato, especially in the *Timaeus*. I take it that this two-fold nature of material constituents of characters is one of the ideas that Plato is trying to get across in the gold analogy (50a4-b5). Does the parcel of gold that momentarily instantiates a shape have the character of that shape? In a sense yes, because it images that shape; but the parcel of gold does not *qua* gold have the character of that shape. The shape could have been imaged in some other material equally well. Consider, again, your image in a mirror. Does the image in the mirror "have" your character? I take it that there is no simple answer to this question.

While the example above is my own, such a "*qua*-view" of the relation between phenomenon and character has been suggested to me by K. W. Mills's "Some Aspects of Plato's Theory of Forms, *Timaeus* 49c ff.," *Phronesis* 13 (1968) 45-70. If pressed, though, I would say, concurring with Lee, that in all metaphysical rigor, when a particular images the character of a Form, strictly speaking the character belongs to the Form, not the phenomenal particular.

<sup>cvi</sup> Gill, p.36

<sup>cvi</sup> *Ibid.* p.36

<sup>cix</sup> *Ibid.* p.36

<sup>cx</sup> As Gill points out, *Theatetus* 182c1-183b5 "describes a radical Heraclitean position according to which all things change both in place and character." (p.34) *Timaeus* 49a6-c7 is broadly, on Gill's view, Plato's answer to the problem of how language can refer to a continuously changing natural world. The triangles change only in place, not in character.

<sup>cx</sup> *Ibid.* p.39

<sup>cxii</sup> *Ibid.* p.51

<sup>cxiii</sup> *Ibid.* p.53

<sup>cxiv</sup> Burnyeat, p.179

<sup>cxv</sup> That particulars are not but images is necessitated by a number of points of *Timaeus* interpretation (in, most importantly, Cherniss, Allen, Lee, and Silverman) that I endorse in chapters four and five: phenomenal characters only have meaning in virtue of reference to Forms (Cherniss pp.57-60); a phenomenon is "relational" in nature, "wholly dependent upon what is other than itself – the original and the reflecting medium" (Allen p.154); phenomenal particulars are "insubstantial images," i.e. images that depend on their models for their continued existence, like reflections in a mirror, not "substantial images," like the sculpture that can go on existing after its model has ceased to exist – the phenomenal particular "is not an entity related to a Form; it is the product of a relation, perhaps just the holding of a relation between something else and the Form" (Lee pp.360-365); strictly speaking "there are no phenomenal particulars, as ordinarily conceived;" in all metaphysical rigor, particulars are "property instances" of the Forms (Silverman, p.88).

At the most immediate, textual level, the benefit of the thesis that particulars are not but images is the possibility that it opens up for showing – as has been brought out most clearly in Silverman – that the two accounts of the generation of phenomenal particulars at *Timaeus* 47e-53c – the formal and the geometrical – are complementary. More broadly, the thesis opens up possibilities for showing, as I try to show in chapters two through five, that: there is a basic continuity to Plato's metaphysics of causation from the *Phaedo*'s Forms-as-*aitiai* hypothesis to the natural philosophy of the *Timaeus*; Plato's thinking about the epistemic status of natural philosophy (*contra* readings advanced by Gill, Annas, Kung, and Mueller, *inter alia*) does not undergo an abrupt reversal in the *Timaeus* that would put it sharply at odds with so much else in his *opera*; there are similarities

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between Plato's teleology and the teleologies of certain early-modern philosophers, similarities that it would be fruitful to explore, or to explore in more depth than has been done heretofore.

<sup>cxvi</sup> I say "ultimately" because I am not denying that Plato attributes certain effects to particulars, in virtue of their mechanistic properties. It seems to me that there is a tension in saying that the regularities in the concomitance and succession of phenomenal properties are determined by laws that have the force of logical necessity, on the one hand, *and* saying, on the other hand, that particulars bring about effects in virtue of their mechanistic properties; but I am not saying that Plato is aware of this tension, if such there be. I find this tension, as well, in Leibniz's attempt to hold on to mechanistic causation and, at the same time, to subsume it to final causation. In the latter case, Leibniz is acutely aware of the tension. I am not arguing that the tension is insurmountable, only that *prima facie* there is something metaphysically suspect about saying that concomitance and succession of natural properties are determined by laws that have the force of logical necessity, *and* saying that particulars bring about effects in virtue of their mechanistic properties. The latter would seem to be superfluous, if a supremely rational Craftsman has already laid down the laws; there already is a fact of the matter about what the concomitance and succession of properties will be, before any body impinges on any other.

Quite aside from these very broad metaphysical considerations, the point that I am trying to make about Plato's natural philosophy is principally an epistemological one: I believe that Plato retains his skepticism about our ability to know how bodies bring about their effects, even in the midst of drawing out the details of his speculative, teleological natural philosophy. Rational intelligibility is his ultimate criterion. To Plato's mind, as Burnyeat put the point, "the more *appropriate* or *reasonable* the account of some phenomenon, the greater the probability of its being true." (my emphasis, Burnyeat p.186) It is, however, arguably the case that, as Nicholas White has put the point, "there is no such divide," in Plato, as the modern one between epistemology and metaphysics: "His views about what there is are largely controlled by ideas about how knowledge can be accounted for, and his thinking about what knowledge is takes its character from convictions about what there is that is knowable." See, Nicholas P. White, "Plato's Metaphysical Epistemology," *The Cambridge Companion to Plato* (Cambridge: Cambridge University Press) 1992, pp.277-310. So, although the point that I am trying to make about Plato's natural philosophy is principally an epistemological one, it is surely one with metaphysical implications, not all of which Plato himself may have recognized. While not wanting to deny any inherent causality at the phenomenal level, he may have made such causality metaphysically more tenuous than he himself would have acknowledged it to be.

<sup>cxvii</sup> Zeyl, p.131

<sup>cxviii</sup> *Ibid.* p.134

<sup>cxix</sup> Silverman, p.87

<sup>cxx</sup> *Ibid.* p.87

## Notes to Chapter Two

<sup>cxxi</sup> See, e.g., Annas (1982), pp.312-313, 318; also the remarks of I. M. Crombie, quoted in Vlastos (1969), p.292

<sup>cxxii</sup> Translations, unless otherwise indicated, are from Grube.

<sup>cxxiii</sup> Of course, that account is not given in to us in the *Phaedo*. But that we are given a sketch of some of its basic premises, at least, seems clear. Thomas Johansen is only the most recent to affirm that, "the *Phaedo* set the terms for the kind of teleological cosmology that would find its fulfillment in the *Timaeus*." Johansen, p.2

<sup>cxxiv</sup> Relational properties, which the dialogue takes up at 96d7 ff., will provide a, perhaps, more serious kind of counterexample to the intuition.

<sup>cxxv</sup> Though, as I discuss below, in the *Gorgias* Socrates asserts that pain and pleasure *can* be present to the same man at the same time (496c-497e)

<sup>cxxvi</sup> Again, at 64d2, "so-called pleasures" suggests skepticism about our ability to identify the property that would answer to our concept.

<sup>cxxvii</sup> Rowe, p.119

<sup>cxxviii</sup> This possible answer has been suggested to me by Voula Tsouna. I hasten to add that my counterevidence is far from decisive. It may, of course, simply be the case that, at the time of the composition of the *Gorgias*, Plato saw nothing problematic about the example, but came to see it as a paradox by the time he wrote the *Phaedo*. I concur with Tsouna that there is a common-sense intuition that such cases are paradoxical.

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<sup>cxix</sup> At least they track comparably little that is mind-independent. To take a Cartesian example, the pain is not in the blade that presses against one's flesh. Perhaps the pain does track, however, a dispositional property, the blade's capacity to produce, in certain circumstances, a certain kind of pain sensation. Given that I am arguing that extrication of concepts from bodily influences is a matter of degree, I will not worry about this kind of qualification. I take it that pain tracks less that is mind-independent than does the sensation of warmth; and the sensation of warmth, in turn, tracks less that is mind-independent than does the concept of oddness. This last point, of course, will not be accepted by those who believe that mathematical properties are invented rather than discovered.

<sup>xxx</sup> Cf. Moravcsik, Vlastos (1965). I will follow Moravcsik here in holding that Plato distinguishes between the empirical and the *a priori*, "though never exactly in such terms or terms coextensive with these." p.56

<sup>xxxi</sup> Moravcsik, p.56

<sup>xxxii</sup> *Ibid.* p.60

<sup>xxxiii</sup> *Ibid.* p.60

<sup>xxxiv</sup> See, e.g., Annas p.325; C.C.W. Taylor p.46

<sup>xxxv</sup> Sedley, "Platonic Causes"

<sup>xxxvi</sup> Hence the controversy over the question of how to relate the two accounts. See, for example, my discussion, in Chapter 4, below, of the relation, in the *Timaeus*, between what Silverman calls the "formal" and "geometrical" accounts of the generation of sensible particulars.

<sup>xxxvii</sup> I follow Rowe, here, in taking *ho esti* to refer to such characters as beautiful, equal, good. See his discussion of Plato's use of *ho esti* as a technical term in the passage, pp.174-175.

<sup>xxxviii</sup> See Vlastos (1939), especially pp.387-388

<sup>xxxix</sup> Scott, p.346

<sup>cxl</sup> *Ibid.* p.349

<sup>cxli</sup> See Vlastos (1975) pp.20-25, 97

<sup>cxlii</sup> Scott, p.348

<sup>cxliii</sup> *Ibid.*, p.354

<sup>cxliv</sup> *Ibid.*, p.354

<sup>cxlv</sup> *Ibid.*, p.354

<sup>cxlvi</sup> Gallop, p.120

<sup>cxlvii</sup> See discussion in Guthrie, p.343

<sup>cxlviii</sup> Gallop, p.120

<sup>cxlix</sup> Ackrill, p.29

<sup>cl</sup> This objection is characteristic of the long tradition of criticism of nativism. See the discussion in Ackrill, p.23

<sup>cli</sup> Hackforth, p.75

<sup>clii</sup> Hackforth, p.75

<sup>cliii</sup> See, for example, Held, pp.551-553

<sup>cliv</sup> Bostock, p.69

<sup>clv</sup> Hackforth, p.75

<sup>clvi</sup> Gallop, p.120

<sup>clvii</sup> Scott, p.351

<sup>clviii</sup> Moravcsik, p.55

<sup>clix</sup> *Ibid.*, p.55

<sup>clx</sup> *Ibid.*, p.54

<sup>clxi</sup> *Ibid.*, p.57

<sup>clxii</sup> *Ibid.*, p.57

<sup>clxiii</sup> Quoted in Vlastos (1965), p.152

<sup>clxiv</sup> Guthrie, p.345

<sup>clxv</sup> *Ibid.*, p.153

<sup>clxvi</sup> *Ibid.*, p.152

<sup>clxvii</sup> *Ibid.*, p.154

<sup>clxviii</sup> Gallop, p.121



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## Notes to Chapter Three

<sup>clxix</sup> An exception to the general trend is Burge, 1971. Burge comes to substantially the same position as Vlastos.

<sup>clxx</sup> An exception to this generalization would be the fruitful use made of Vlastos's interpretation in Strange, 1987, which I discuss below (Cf. section VI). Strange's paper is, however, principally a work on the *Timaeus*, not an extended engagement with Vlastos's reading of *Phaedo* 95e-105c.

<sup>clxxi</sup> Vlastos 1969, 292

<sup>clxxii</sup> See, for example, Fine 2003, 357

<sup>clxxiii</sup> Lennox 1985, 204

<sup>clxxiv</sup> I take it that the compatibility of Vlastos's logical interpretation of the Forms-as-*aitiai* hypothesis with Timaeian metaphysics of causation is implicit in Alan Silverman's approach in 1992; Silverman does not address the issue in detail, but Cf. n. 32, 99. At any rate, I will argue below (VI) that Silverman's approach to *Timaeus* 47e-53c is consonant with Vlastos's interpretation of the Forms-as-*aitiai* hypothesis. Again, as with Strange's paper, Silverman's paper is principally a work on the *Timaeus*.

<sup>clxxv</sup> All translations are from G. M. A. Grube 1997. Untranslated terms are from the Cambridge University Press edition of the text, edited by C. J. Rowe, 1993

<sup>clxxvi</sup> Vlastos, 304

<sup>clxxvii</sup> *Ibid* 320

<sup>clxxviii</sup> *Ibid* 320

<sup>clxxix</sup> *Ibid* 322; David Sedley also makes a case for a reading of the *Phaedo* according to which Plato is "circumventing the danger, highlighted by Hume" of trying to found causation on "mere situational correlations." (1998, 124) I am not persuaded, however, by his broader argument for the proposition that Forms are causes.

<sup>clxxx</sup> My interpretation is in this respect similar to Sean Kelsey's, discussed below, although I do not agree with Kelsey that Plato posits Forms as efficient causes. Kelsey too offers a reading according to which Plato is offering reasons for thinking that we have some normative justification for believing that there are causal connections between certain properties of sensible particulars, despite the fact that "things in the sensible world are not what we take them to be in calling them equal and beautiful and so on." (Kelsey 2004, 36)

<sup>clxxxi</sup> Fine, 396

<sup>clxxxii</sup> *Ibid* 354

<sup>clxxxiii</sup> *Ibid* 356

<sup>clxxxiv</sup> *Ibid* 355

<sup>clxxxv</sup> Menn 1995, 46

<sup>clxxxvi</sup> *Ibid* 56

<sup>clxxxvii</sup> Of course, what I have called the relevant "physiological process" might also be called, by the Socrates of the *Phaedo*, a mere *sunaitia*. Yet, in the teleology toward which the *Phaedo* points, I take it that the efficient cause is the physical process chosen by the Demiurge to have as its normative end the production of seeing. In the *Timaeus* this is the physiological process by which the sun's fire is converted into visual sensation. Of course, the "true" or ultimate *aitia* of seeing in that dialogue is the *telos* for which we were given sight: the end of beholding the celestial motions so that we could acquire the concept of number.

<sup>clxxxviii</sup> It is also worth noting that the sun, *qua* cause of seeing, would violate the causal principle defended by Socrates earlier in the dialogue that if *x* is the cause of *F*, then it can never be the cause of anything un-*F*: the sun is also a cause of blindness. None of my criticisms of this analogy, though, weaken it beyond the point where it could cogently support the point for which Menn deploys it, i.e., to show that something eternal and incorporeal could,

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under the right circumstances, be an efficient cause. My criticism of the analogy lies with what I take to be its non-applicability to the kinds of relations that Plato offers as examples of Forms being *aitiai*.

clxxxix Mueller 1998, 88

cx c *Ibid* 88

cxci *Ibid* 67

cxcii *Ibid* 76

cxci *“Republic”* trans. G. M. A. Grube, rev. C. D. C. Reeve, in Cooper

cxci Kelsey, 29

cxci *Ibid* 28, 30

cxci *Ibid* 23

cxci *Ibid* 23

cxci *Ibid* 31

cxci Rowe, 232

cc Kelsey assumes that the proposed *aitia* in this case, addition, is rejected by Socrates because it violates the principle that *x* (addition) cannot be the cause of *F* (two-ness) if the opposite of *x* (division) also causes *F*. Or, at least, he does not discuss the possibility that the proposed *aitia* is rejected because it is a physical process. This assumption is common in the literature. See, for example, Gareth B. Matthews and Thomas A Blackson 1989, 582. I take it that both of the criticisms that Socrates offers of the proposed *aitia* in this case are sufficient for ruling it out. It is for this kind of reason, in part, that I accept Vlastos’s thesis, criticized by Matthews and Blackson, and by Julia Annas, that Plato in the *Phaedo* is, among other things, exhibiting different senses of “*aitia*” (Cf. Matthews and Blackson, 586; Annas 1982, 325)

cci Kelsey, 40

ccii *Ibid* 28, 36

cciii *Ibid* 40

cciv *Ibid* 30

ccv Lennox, 213

ccvi “*Timaeus*” trans. Donald J. Zeyl, in Cooper

ccvii Strange, 32

ccviii *Ibid* 32

ccix *Ibid* 33; Strange would not concur, however, with my view that, more broadly, the *Phaedo* and *Timaeus* accounts of causation are fundamentally compatible, Cf. p. 27. My point here is narrower; it is simply that Strange’s account of causation in the *Timaeus* is consistent with Vlastos’s logical interpretation of the Forms-as-*aitiai* hypothesis.

ccx Silverman, 99

ccxi Vlastos, 322

ccxii *Ibid* 324

ccxiii *Ibid* 324

ccxiv *Ibid* 325

ccxv *Ibid* 325

ccxvi Vlastos 1975, xxiv

ccxvii We may well think, of course, that such a theoretical posit will stand or fall according to such criteria as predictability and fruitfulness, how well it does by these criteria being determined by observation, and that Plato’s physical theorizing in the *Timaeus* ought to be more attuned to such empirical considerations. But Vlastos himself argues, in Chapter Three of *Plato’s Universe* that no empirical data available to the ancient Greeks could have yielded any basis for choosing among the physical theories of Plato, Democritus, or Aristotle (though he does judge that Plato’s theory does better than its rivals by the simplicity criterion). From the fact that the empirical data did not suffice to determine among rival theories, it does not follow, of course, that Plato could not have shown at least openness to the possibility that further observation might have yielded such a result. To this extent, perhaps Vlastos’s criticism of the theory for its sterility is not without merit. But for Plato to have been open to this possibility, he would have to have had the concept of rigorous, systematic observation that we associate with the

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scientific method. By Vlastos's own account, the ancient Greeks never developed such an understanding of natural inquiry.

<sup>ccxviii</sup> Vlastos 1969, 324

<sup>ccxix</sup> Silverman, 87

<sup>ccxx</sup> *Ibid* 95

<sup>ccxxi</sup> *Ibid* 94

<sup>ccxxii</sup> *Ibid* 94

## Notes to Chapter Four

<sup>ccxxiii</sup> See W.K.C. Guthrie, *A History of Greek Philosophy, V: The Later Plato and the Academy* (Cambridge: Cambridge University Press) 1978, pp.25-251; David Sedley, *Creationism and its Critics in Antiquity* (Berkeley: University of California Press) 2007, 99-101

<sup>ccxxiv</sup> See, for example, Benjamin Jowett, *Plato's Timaeus* (New York: Liberal Arts Press) 1949, p.13; Francis MacDonald Cornford, *Plato's Cosmology* (New York: The Library of the Liberal Arts) 1937, p.23, "likely".

<sup>ccxxv</sup> Thomas Kjeller Johansen, *Plato's Natural Philosophy: A Study of the Timaeus-Critias* (Cambridge: Cambridge University Press) 2004, p.53

<sup>ccxxvi</sup> *Ibid.* p.53

<sup>ccxxvii</sup> Cornford, pp.29-30; G.E.R. Lloyd, "Plato as Natural Scientist," *Journal of Hellenic Studies*, Vol. 88 (1968) p.81

<sup>ccxxviii</sup> Gregory Vlastos, *Plato's Universe* (Seattle: University of Washington Press) 1975, p.93

<sup>ccxxix</sup> G.M.A. Grube, *Five Dialogues: Euthyphro, Apology, Crito, Meno, Phaedo* (Indianapolis: Hackett) p.94

<sup>ccxxx</sup> Henry George Liddell, Robert Scott eds. *A Greek-English Lexicon* (Oxford: Clarendon) 1961 p.484

<sup>ccxxxi</sup> Johansen, p.52

<sup>ccxxxii</sup> *Ibid.* p.52

<sup>ccxxxiii</sup> Sedley, p.100

<sup>ccxxxiv</sup> Here I follow Vlastos's argument in "The Disorderly Motion in the 'Timaeus'" in *Studies in Plato's Metaphysics* ed. R.E. Allen (London: Routledge and Kegan) p.387

<sup>ccxxxv</sup> Sedley, p.115

<sup>ccxxxvi</sup> Johansen, p.104

<sup>ccxxxvii</sup> Sedley, p.115; Johansen, p.104

<sup>ccxxxviii</sup> Johansen, p.104

<sup>ccxxxix</sup> Sedley, p.115

<sup>ccxl</sup> *Ibid.* p.115

<sup>ccxli</sup> *Ibid.* p.115

<sup>ccxlii</sup> Johansen, p.104

<sup>ccxlili</sup> *Ibid.* p.105

<sup>ccxliv</sup> *Ibid.* p.104

<sup>ccxlv</sup> *Ibid.* p.105

<sup>ccxlvi</sup> Sedley, p.115

<sup>ccxlvii</sup> Johansen, p.105

<sup>ccxlviii</sup> Robert Bolton, "Plato's Discovery of Metaphysics," in *Method in Ancient Philosophy*, ed. Jyl Gentzler (New York: Oxford University Press) 1998, p.91

<sup>ccxlix</sup> Vlastos, "The Disorderly Motion in the *Timaeus*," p.387

<sup>cccl</sup> Johansen, p.97

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## Notes to Chapter Five

- <sup>ccli</sup> H. F. Cherniss, "A Much Misread Passage of the *Timaeus* (*Timaeus* 49c7-50b5)," *American Journal of Philology*, Vol. 75, No. 2 (1954), pp. 113-130
- <sup>cclii</sup> Mary Louise Gill, "Matter and Flux in Plato's *Timaeus*," *Phronesis* (XXXII/1) 1987, p.36
- <sup>ccliii</sup> Gill, p.36
- <sup>ccliv</sup> See Zeyl's side-by-side comparison of the translations in *Timaeus*, Donald J. Zeyl, ed. and trans. (Hackett: Indianapolis) 2000, p.lvii
- <sup>cclv</sup> Zeyl, lxii
- <sup>cclvi</sup> See Laurence Carlin, "Leibniz and Berkeley on Teleological Intelligibility," *History of Philosophy Quarterly* (Vol. 23: 2) April 2006, p. 158
- <sup>cclvii</sup> Dominic Scott, "Platonic Anamnesis Revisited," *Classical Quarterly* (vol.37/2), pp.346-366
- <sup>cclviii</sup> Ian Mueller, "Platonism and the Study of Nature: *Phaedo* 95e ff.," in *Method in Ancient Philosophy*, ed. Jyl Gentzler (New York: Oxford University Press) 1998; Joan Kung, "Tetrahedra, Motion, and Virtue," *Nous*
- <sup>cclix</sup> E. N. Lee, "On the Metaphysics of the Image in Plato's *Timaeus*," *Monist* (50) 1966, p. 358
- <sup>cclx</sup> Lee, p. 359
- <sup>cclxi</sup> Lee, p. 359
- <sup>cclxii</sup> Gill, p.40. I take it that this critique of the revisionists on grounds of internal coherence of the passage, and coherence of the passage with the rest of the dialogue, is the weightiest of the objections that Gill advances. Other arguments comprising her interpretation hang on a certain reading of *Theatetus* 182c1-183b5, on a certain understanding of the relation of that passage to *Timaeus* 49c7-50a4, and on the view that the whole of the *Timaeus* passage treats of the pre-cosmos, all of which are controversial.
- <sup>cclxiii</sup> Gill, p.40
- <sup>cclxiv</sup> Gill, p.42
- <sup>cclxv</sup> Gill, p.47
- <sup>cclxv</sup> Gill, p.47
- <sup>cclxvi</sup> See *Timaeus* 58D, and Vlastos (1975) 72
- <sup>cclxvii</sup> My reply to Joan Kung's question – "Could the fire that we see be tetrahedra?" – would be that nothing that we see is anything without qualification. See Kung, p. 17
- <sup>cclxviii</sup> Gill, p.51
- <sup>cclxix</sup> Gill, p.51
- <sup>cclxx</sup> Gill, p.52
- <sup>cclxxi</sup> Gill, p.51
- <sup>cclxxii</sup> Gill, p.51
- <sup>cclxxiii</sup> Gill, p.52
- <sup>cclxxiv</sup> Gill, p.52
- <sup>cclxxv</sup> Gill, p.51
- <sup>cclxxvi</sup> Gill, p.51
- <sup>cclxxvii</sup> The stable element in phenomenal experience cannot be the microphysical constitution of the natural kind, again, for epistemological reasons; i.e. *qua* object of experience the microphysical constitution of a natural kind

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cannot be stable, because it isn't given in experience. In principle, of course, this point leaves the metaphysical question open; for Plato, though, *ex hypothesi* this insensible structure is not stable, because nothing in phenomena is.

<sup>cclxxviii</sup> It would be useful, in this connection, to consider how likely it is that Plato is wedded to a thesis of causal specificity when it comes to any microphysical structure or, indeed, any physical structure. Kung seems to think that he is (see p. 22 ). But are not characters in principle plastic? When Socrates uses squares to prompt Meno's servant into an understanding of the relation between a square's diagonal and its area, he uses a square drawn in the dirt with a stick; no doubt, Plato would think that a square in a wax or clay tablet could have prompted the same intuition. If the characters of fire and hotness are *de facto* realized in specific corpuscular structures, it would not follow that Plato's prioritization of causal responsibility needs, on that account, to be revised. One might object that I am moving, here, from an *a priori* example to natural kinds. Presumably, the essences of natural kinds cannot be grasped through *a priori* reasoning. But I am not sure that Plato would draw the categorical line in this way. Recall, the constituents of the four basic natural kinds are, for Plato, *ex hypothesi*, triangles, i.e. images of an object of pure thought.

<sup>cclxxix</sup> Donald J. Zeyl, "Plato and Talk of a World in Flux: *Timaeus* 49a6-50b5," *Harvard Studies in Classical Philology* (Vol. 79) 1975, p.128

<sup>cclxxx</sup> Zeyl, pp.128-129

<sup>cclxxxi</sup> Zeyl, p. 129

<sup>cclxxxii</sup> Zeyl, p. 146

<sup>cclxxxiii</sup> Zeyl, p. 146

<sup>cclxxxiv</sup> Zeyl, p. 146

<sup>cclxxxv</sup> Zeyl, p. 146

<sup>cclxxxvi</sup> Zeyl, p. 147

<sup>cclxxxvii</sup> Zeyl, p. 147

<sup>cclxxxviii</sup> Zeyl, p. 147

<sup>cclxxxix</sup> Zeyl, p. 147

<sup>ccxc</sup> Zeyl, p.139

<sup>ccxci</sup> My point here is not bound up with the reconstructionist interpretation. It is a broad premise with which, e.g. Cornford, a traditionalist, would agree. In this respect Zeyl's interpretation departs from the traditionalist reading. He holds onto the traditionalist view according to which Plato legitimates talk of sensible particulars, by diverging from the traditionalist view with respect to the ontological nature of such "things" as sensibles. See Francis M. Cornford, *Plato's Cosmology: The Timaeus of Plato* (Indianapolis: Hackett) 1937 p. 178

<sup>ccxcii</sup> Cornford, p. 181

<sup>ccxciii</sup> We never get a teleological explanation of this kind in the *Timaeus* – i.e. an explanation for why a region of the Receptacle that instantiates fire at *t*-1 should instantiate water at *t*-2. It seems clear, however, that the likely mechanistic story that we get for the elements is to be understood as ultimately subsumable under such an explanation, in a completed Platonic natural philosophy.

<sup>ccxciv</sup> I concur with Zeyl's premise that the gold analogy, which begins at 50a, is critically important to understanding what Plato is saying at 49d-e. The analogy follows the controversial passage immediately and is offered as an illustration of its sense. By way of contrast with Zeyl's approach, another critic of Cherniss, Norman Gulley criticizes Cherniss's interpretation of 49d-e, arguing that Cherniss's distinction between the invariant recurring characters and the transient phenomena as such finds no reflection in the *Timaeus* "outside this one difficult passage [49d-e]." Gulley makes, however, no mention of the gold analogy. As I read the analogy, it is meant as an illustration of what Plato is saying at 49d-e; if I am correct, then Cherniss's distinction *is* reflected elsewhere than 49d-e – indeed it is reflected in what immediately follows. See Norman Gulley, "The Interpretation of Plato, *Timaeus* 49d-e" *The American Journal of Philology*, Vol. 81, No.1 (Jan., 1960) p. 63

<sup>ccxcv</sup> Zeyl, p. 145

<sup>ccxcvi</sup> My translation. "Imitations" or "copies", it could be argued, would be the more straightforward translation, but see Henry George Liddell and Robert Scott, "A Greek English Lexicon" (Oxford: Clarendon) 1940 for examples of "representation" as the sense that Plato gives this term. "Copy" or "imitation" would be ambiguous between the sense in which an imitation – for example the shadow of chair – may not be a substance, and the sense – for

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example, an imitation Rolex watch – in which an imitation may be a substance in its own right. But the copies with which we have to do at *Timaeus* 50c6 are “imprinted” on a medium for reflecting “models” (50d1).

<sup>ccxcvii</sup> Zeyl, p. 146

<sup>ccxcviii</sup> Presumably Gulley understood the analogy in the same way as Zeyl, and perhaps for that reason did not think that it required comment in connection with 49d-e. Gulley (citing Cherniss) found it implausible that “the ‘images’ of the Forms, ‘are not the same as the transient phenomena’.” As I read the analogy, Plato’s point is precisely that this or that phase of flux in the gold is not identical with the image (character) of Triangle or Square, though that image is an image *in* gold. Gulley, p.63

<sup>ccxcix</sup> “No created substance exercises on another a metaphysical action or influx...from the notion of any given thing all its future states already follow. What we call ‘causes’ are, in metaphysical rigour, merely concomitant requisites.” Gottfried Leibniz, *Primary Truths in The Longman Standard History of Modern Philosophy*, eds. Daniel Kolak and Garrett Thomson (New York: Pearson-Longman) 2006, p.151

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