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SUMMARY

EDITORIAL

Gabriele Cornelli
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A new volume of PLATO has seen the light, after the generous dedication by the two Assistant Editors, Luca Pitteloud and Renato Matoso, as well the precious help received by the members of the Board. I would very much like to thank all the referees and revisers and the International Plato Society, which holds the Journal as one of its editorial projects. PLATO 18 arrives just in time to be introduced to the imminent *XII Symposium Platonicum*, to be held in Paris this July, on Plato's Parmenides.

The volume starts with **C. Buckels** arguing vigorously against the standard interpretation of Plato's sensible particulars as images of Forms, proposing instead a different approach: Platonic particulars would not be Form images but aggregates of Form images. **A. Lefka** articulates her paper on the symbol of the 'sacred tree' in Plato's Phaedrus (229 a 8-c 5), sharply contributing to shed some new light on the role that the *planeai* tree of Ilissos and the oak of Dodona could play in Plato's reception of religious traditions within his philosophy.

PLATO Journal 18 proudly hosts a ***Dossier*** on The Problem of the Intermediates, edited by **S. Stone** and **N. Baima**. All six articles were originally presented at a conference on the possibility of intermediates in Plato's dialogues, hosted by the two editors at Florida Atlantic University Honors College, in March 2018. The reader would probably better check N. Baima's Introduction to the Dossier at p. 41 for further details on the articulated scope of the dossier and of each one of the six papers. I will limit myself to enumerate the outstanding list of the six Authors here enrolled: **L. Gerson, S. Stone, O. Renaut, E. Katz, N. D. Smith and A. German**.

Finally, this volume ends with two fairly incisive ***Reviews***: the first by **A. Preus** on the recent translation and commentary of the first two books of Plato's Laws by S. S. Meyer, a dialogue that generally got much less attention than most other works of Plato; in the second review, **A. Lanoue** goes through the monumental *Il disordine ordinato, la filosofia dialettica di Platone*, by M. Migliori, concluding that the book stands as one of the more important specialized works of this Century.

Cambridge, December 2018

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PAPERS

Triangles, Tropes, and τὰ τοιαῦτα: A Platonic Trope Theory

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ABSTRACT

A standard interpretation of Plato's metaphysics holds that sensible particulars are images of Forms. Such particulars are fairly independent, like Aristotelian substances. I argue that this is incorrect: Platonic particulars are not Form images but *aggregates of* Form images, which are property-instances (tropes). *Timaeus* 49e-50a focuses on "this-suches" (*toiauta*) and even goes so far as to claim that they compose other things. I argue that Form images are this-suches, which are tropes. I also examine the geometrical account, showing that the geometrical constituents of the elements are also Form images. Thus everything in the sensible world is composed of tropes.

Keywords : Particulars; Tropes; Plato; Timaeus; Substance; Metaphysics; Greek Philosophy

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1. INTRODUCTION

In the *Timaeus*, Plato offers an account of the world whereby macroscopic physical objects are composed of microscopic three--dimensional objects, which are, in turn, composed of two-dimensional objects. Most, if not all, properties of macroscopic objects are explained by properties of microscopic objects, which are in turn explained by the configuration of two-dimensional objects. We seem to have a completely reductionist, naturalist account of the world; why, then, is it accompanied by supernatural entities such as Platonic Forms? While I will explain why Forms are crucial for the account of particulars in the *Timaeus*, I will be focusing not on Forms, but on sensible particulars, the three-dimensional objects we bump into on a day-to-day basis, as well as their constituents. I will argue that Plato does not take these particulars as basic constituents of the physical world, but that the ultimate constituents of Timaeus' sensible particulars are what metaphysicians call tropes, or property-instances; Timaeus calls them τὰ τοιαῦτα, "this-suches." My argument follows:

1. Each thing that comes to be is τὸ τοιοῦτον (this-such).
2. All and only things that come to be are images of Forms.
3. Therefore, τὰ τοιαῦτα (this-suches) are images of Forms.
4. Triangles are τὰ τοιαῦτα or are constructed from τὰ τοιαῦτα.
5. All bodies are constructed from triangles.
6. Therefore, all bodies are constructed from τὰ τοιαῦτα (images of Forms).

The second part of the paper will explain and defend the first syllogism, the third part will explain and defend the second syllogism (which may be understood as laying out a consequence of the first syllogism), and the fourth part will consider objections. As will become clear in the paper, I take Timaeus' metaphysics of particulars to be a version of a trope theory, and so I take τὰ τοιαῦτα to be tropes, but I will defend this claim in the fourth part; I will also consider the traditional account of particulars in the *Timaeus* whereby Form images are bodies (i.e., physical objects) rather than tropes.

Let me begin by giving an initial characterization of a Platonic trope theory. Tropes are often used to avoid commitment to universals; the universal or Form Whiteness, for example, could be the set of all whiteness tropes. Most trope theories, therefore, are nominalist theories. Timaeus is not, of course, a trope nominalist; his tropes coexist with transcendent universals, Forms.[1] In his terms, a trope is a "this-such" (τὸ τοιοῦτον) or Form image — a trope-theoretic interpretation of Timaeus' ontology is thus not anachronistic, since he himself introduces tropes, as I will show, albeit under the name of "this-suches" (τὰ τοιαῦτα).[2] When one feels hot, one does not feel heat in general but a particular heat, *this-heat*: a heat trope. Thus the heat in a given fire is not a repeatable entity or "immanent universal," but a particular entity, distinct from each other instance of heat. This is what I mean by a trope: a particular, non-repeatable instance of a property.

While trope theorists generally take tropes to be fundamental entities out of which universals may be constructed, Timaeus' tropes are dependent upon transcendent universals, as "Form image" implies. So a heat trope is an image of Heat, and there can be many distinct images of the same Form of Heat, each image coming to be and then perishing as something becomes and then ceases to be hot. I take Forms

to be immutable, non-spatiotemporal entities that are universals insofar as they explain commonality in resembling things. Heat explains the commonality in two hot things precisely by having an image of itself — numerically distinct but qualitatively identical — in each hot thing; i.e., two hot things resemble each other because each contains a heat trope.

A trope-bundle theorist would say that sensible particulars are wholly constituted by tropes. Fire is a bundle of heat, color, etc. While I do not here defend a Platonic trope-bundle theory, my arguments naturally lead to such an interpretation. My trope-theoretic interpretation of the *Timaeus* differs from traditional interpretations in that it takes tropes rather than sensible particulars as images of Forms. Instead of holding that sensible particulars have their properties by participating in Forms, a trope-theoretic interpretation holds that sensible particulars have properties by having tropes as constituents. Thus Forms and their images — in contemporary terms, transcendent universals and tropes — play the central role in Plato's explanation of the sensible world, rather than sensible particulars playing the starring role.

2. τὰ τοιαῦτα

2.1. EACH THING THAT COMES TO BE IS τὰ τοιαῦτα

Timaeus introduces τὰ τοιαῦτα at 49d5, in the midst of a very controversial passage.[3] At the heart of the controversy is whether we should take Timaeus to say, "fire is τὸ τοιοῦτον ("this such" or "this sort of thing"), rather than τοῦτο ("this" or "that")", or, "τὸ τοιοῦτον, not τοῦτο, is fire." The debate is thus over which terms are subjects and which are predicates. The context is a puzzle about the elements, which seem to be too unstable to admit of being called any one thing, since they could, at any moment, change into different elements. Should we say, when pointing at a bonfire, for example, 'fire is this sort of thing' rather than 'fire is this thing', or should we say 'this sort of thing is fire' instead of 'this thing is fire'?

However one wishes to settle this dispute, we can focus on "this-such" and identify two main interpretations of τὸ τοιοῦτον in the passage. The first, dubbed the 'traditional translation' by its adherents, claims that τὰ τοιαῦτα are "temporary characteristics" rather than "self-subsistent" things (Zeyl 2000 lviii, n. 18). The second, which Zeyl calls the 'alternative translation,' takes τὰ τοιαῦτα to be "distinct and self-identical characteristics" or "recurrent, stable, and determinate characters" (following Cherniss 1954). I propose, for now, to follow a middle ground, calling them "characteristics;" we will leave aside whether they are "temporary" or "recurrent, stable, and determinate." We are left with quite a bit of agreement. On the one hand, these characteristics are temporary in at least one sense: they may be at a certain place for only a short time, and that place may be occupied by a different characteristic at any time. Thus the fiery characteristic may be replaced by a watery characteristic at any moment. On the other hand, these characteristics are stable and determinate in at least one sense: for as long as each exists—which may be only an instant—it is *that* characteristic and not some other. It may be identified as belonging to a certain *kind*. So the fiery characteristic is fiery for as long as it exists, even if is replaced by a watery characteristic in but a moment.

On either translation, Timaeus generalizes his conclusions to "everything that comes to be" (49e7). Thus every generated entity is a characteristic, not a 'thing;' the characteristic

may be replaced at any time by another characteristic, but it remains what it is as long as it is. If we generalize this claim, it applies to any characteristic, e.g., that of being a garbage truck, not just to elements. And there is no reason to think it does not apply completely generally, since Timaeus gives "hot" and "white" as further examples. Even if we think that the properties of being hot and being white are suggested from our discussion of fire, they are widely applicable to macroscopic objects, and we are given no reason to restrict their use to describing elements. In fact, Timaeus cannot be restricting his argument to elements, since he extends it to "anything you can point to," and it is not, strictly speaking, possible to point to an element, since they are microscopic particles (we can point to some fire or water, but these are macroscopic bodies composed of appropriate elements). Thus we should regard Timaeus' proscription as perfectly general, as he insists several times: do not call anything that comes to be τοῦτο, but each thing that comes to be is τὸ τοιοῦτον.[4]

2.2. ALL AND ONLY THINGS THAT COME TO BE ARE IMAGES OF FORMS

Timaeus gives two accounts of the universe's generation, which I take to be complementary in at least the minimal sense that the second does not annul the first.[5] We have focused on the second thus far. In his first account, Timaeus distinguishes between Being and Becoming. He does not specify the members of Becoming — which would, it seems, include everything in the changeable, sensible world — but he begins with an informative example: the universe, taken as a whole, is in the class of Becoming. In addition, he offers a characterization of this exemplum of Becoming, namely that it is an image (τόνδε τὸν κόσμον εἰκόνα τινὸς εἶναι, 29b1-2), viz., an image of an eternal, changeless model (παράδειγμα, 29a2-b2). So the demiurge, a divine craftsman, looks to Being in order to make the universe, which is an image of the Living Being that contains all the intelligible living beings as parts *just as* the universe contains us and all the other visible creatures (30c2-d1). I take the "intelligible living beings" to be Forms of animal species, e.g., the Form of Human Being, the Form of Goat, etc. The Living Being that contains all the others would be, then, the Form of Living Being, i.e., the transcendent universal that explains what all living beings have in common.[6] Thus we have reason to identify Being with Forms, an identification that is confirmed, e.g., at 51d3-52a4. The parts of the universe on which Timaeus focuses, then, are the living parts (including heavenly bodies, which are created gods), and these are all images of animal Forms. In fact, later in the *Timaeus* Becoming is explicitly identified with the class of Form images (48e4-49a1), so that each thing in Becoming is an image of a Form. It is not clear, at this point, what it means to be an "image" of a Form, but this will become clearer when we identify images of Forms with τὰ τοιαῦτα.

Timaeus' second account marks a significant change in our ontology: instead of two kinds, Being and Becoming, we now have a third, the Receptacle. I will presuppose as little about the Receptacle as possible, since it is a controversial subject.[7] What I will emphasize is that everything that comes to be — everything in the class of Becoming — is an image of a Form.[8] It is controversial to say that Becoming is unchanged between the first and second accounts, as some think that the first account's Becoming is separated into the Receptacle and Becoming of the second account.[9] But if we bracket the Receptacle, we can apply the

later rule — that everything that comes to be is an image of a Form — to the first account, especially since Timaeus' first and primary exemplum of Becoming, the universe itself, is explicitly an image of a Form. Thus Form images are the things that come to be, and things that come to be are Form images.

2.3. THEREFORE, τὰ τοιαῦτα (THIS-SUCHES) ARE IMAGES OF FORMS

Earlier we found Timaeus extending his conclusions about fire to "everything that comes to be." Thus each thing that comes to be is τὸ τοιοῦτον. It is not a *thing* — at least not as we usually conceive 'things,' as physical objects with many characteristics — but a *characteristic*. Now we have seen that Form images exhaust the category of Becoming; Form images are those things that come to be. Thus Form images are τὰ τοιαῦτα. This makes perfect sense, at least if we think of Forms such as Goodness, Justice, and Beauty. Being good, being just, and being beautiful are characteristics, not things; they characterize things. So an image of Goodness should be the characteristic of being good that some particular thing has. An image of Justice is the just character of a particular person or action. And the image of Beauty a beautiful painting possesses is the characteristic of its being beautiful.

But what about other Forms? One of the Forms explicitly discussed in the dialogue is Fire, which Timaeus says must exist over and above all sensible fires (51b7-52a4). But fire is not, one might think, a characteristic. Fire is a *thing*, at least for the ancient Greeks; it is, after all, an element. Timaeus, however, explicitly denies that fire is a thing at 49d5, telling us that fire is τὸ τοιοῦτον (or that τὸ τοιοῦτον is fire). We should think of fire as fieriness; Fire Itself, mentioned at 51b8, would certainly be understood best as Fieriness, not as a great fire in heaven. It is distinct from each particular fire, but it explains why each particular fire is fire; we should understand this to mean that Fieriness explains why each particular fire, each with the characteristic of being fiery, is fiery, rather than being some other quality. There are many fiery things: each fieriness, that is, each particular characteristic of being fiery, is a paticular image of Fieriness itself, just as each just character is a particular image of Justice itself.

A word about the Receptacle: while Timaeus denies that anything that comes to be is a *this*, he turns around to argue that there is a *this* that can be stably designated, although it is not essentially characterized, i.e., in itself it has no properties, or at least no properties that correspond to Forms. The Receptacle evidently has the stability that particulars lack, so that it can be designated reliably, even though entities are constantly coming to be in it and perishing from it. So when we attempt to designate a bit of flame with a demonstrative "this," we actually designate the bit of the Receptacle in which the bit of flame appears. When we say "that is fire," speaking normally, what we really do is pick out a location in the Receptacle and assert that it is fiery, i.e., that there is an image of Fieriness in that region of the Receptacle.[10]

A proper treatment of the Receptacle, whether it is space, substratum, both, or neither, would take us too far afield, but let us return to the traditional and alternative interpretations. Partisans of the traditional interpretation point out that, according to the alternative, we are using our normal, everyday terms incorrectly.[11] We are wrong when we point to a bonfire and name it "fire," since we should only use "fire" to name the characteristic common to it and every other bonfire. This accusation is, of course,

true; in fact, it seems that the main point of the passage is that we use our everyday terms in a loose and derivative manner. Strictly speaking, we apply terms incorrectly. Although its partisans do not appear to recognize it, the traditional translation actually presupposes a corresponding error, since we only correctly name a bonfire "fire" if we are using the name adjectivally, not designating the bonfire as a self-subsisting thing but only as a temporary characteristic of that space. But our everyday use of the term "fire" is intended to pick out a real, independent thing, not a property: we think there really is a *thing* there, even if it is a thing I can pass my hand through. For example, when I get burned by some fire, I think that there must be a *thing* there that burned me. Since fire may be a strange example of a *thing* to our modern ears, let us instead take a hunk of earth. According to the traditional translation, earth is a temporary characteristic of a part of the Receptacle, not a self-subsisting thing. Calling a hunk of rock "earth," then, is correct only if we are applying the name not to a *this* but to a characteristic. The alternative translation insists that the name "earth" picks out the characteristic common to this hunk and each other hunk of earth, rather than picking out the physical thing.

The two translations, then, have equivalent conclusions: our normal terms pick out temporary characteristics, not self-subsisting things. The difference is that the traditional interpretation allows us to speak of what we see as fire, while qualifying the nature of fire so that it is not the kind of thing to which we think we are referring, while the alternative prohibits us from calling what we see fire, if we are to speak correctly, since the nature of fire is far different from what we suppose it is. According to both translations, fire is a characteristic, characterizing a bit of the Receptacle. The Receptacle stands on its own, but fire is parasitic.

Despite their equivalence, the traditional translation is used to support an interpretation whereby particulars in the *Timaeus* are self-subsistent substances.[12] According to Zeyl, such substances endure over time as the subjects and substrata of various characteristics such as fire.[13] Such a reading relies heavily on an interpretation of the Receptacle as a substratum and cannot be based simply on the translation we have examined. In other words, the traditional translation is not sufficient for a substance-interpretation of particulars; what we have, on either translation, are *characteristics*, not *things*, coming to be. These characteristics, or τὰ τοιαῦτα, are images of Forms, and they exhaust Becoming. Taking Forms to exhaust Being, then, we would be left with three ontological categories: Forms, Forms images (τὰ τοιαῦτα), and the Receptacle.

3. TRIANGLES

We have identified all things that come to be with images of Forms and hence with τὰ τοιαῦτα. But there is another account of the generation of macroscopic objects in the *Timaeus*, namely, that sensible particulars are composed of more fundamental particles—what I will call elemental triangles. In this section of the paper I will show that these triangles are τὰ τοιαῦτα or are themselves composed of τὰ τοιαῦτα, so that our account of sensible particulars stands. Before we discuss these triangles, though, we need to address the context of the passage, where Timaeus tells us that the demiurge brings an unorganized universe, full of formless "vestiges" of elements in discordant motion, into a whole organized by form and number. There are two readings of

this text, a literal, which takes the divine creation in time at face-value, and a non-literal, which takes the cosmos to be eternal and, thus, reads this passage as a myth.[14] At stake is the status of the elements in the pre-cosmic state: did "vestiges" of elements actually exist, and thus must be accounted for, or are they simply a relic of the mythic form of Timaeus' discourse? I believe my account is neutral between these two readings, but I owe partisans of the literal reading an explanation of how my account is compatible with pre-cosmic vestiges, so I will return to this point after discussing the construction of elements.

Elements are, Timaeus tells us, bodies (σώματα, 53c4-5). Thus, he infers, they are composed of triangles, since bodies have depth, things with depth have planar surfaces, and planes may be broken into triangles. Each elemental body of fire, for example, is a four-sided pyramid with faces composed of six 30-60-90 triangles, and these triangles, when dissolved from their current structure, may join with others to form molecules of water or air. Each elemental body is defined by its number and form, i.e., a certain number of such-and-such triangles organized into such-and-such a shape. So wherever triangles are combined into a tetrahedral pyramid, there is fire. These elemental triangles come to be in the Receptacle, thereby forming parts of the geometrical figures that compose elemental bodies, and elemental bodies, i.e., fire, earth, air, and water, in turn, form ordinary, sensible particulars.

Although he has not said it here, Timaeus must be speaking of the sensible, generated elements — sensible fire, sensible water, etc. — because he tells us earlier that bodily things are sensible and thus also generated (28b7-c2). So we should not immediately conclude that the Form of Fire is composed of elemental triangles, since it is not a body. The Form of Fire does, however, seem to be structural, since fire is instantiated whenever there is an instance of a given structure — i.e., whenever elemental triangles are arranged in a certain way. Thus we preserve the prior reference to fire as this-such, i.e., such a structure as this, one that includes a certain color, heat, and other properties. These properties taken by themselves, scattered across the Receptacle, do not constitute a fire, but they do so when they are arranged correctly, i.e., when there is a structure that includes these this-suches.

Looking ahead, Timaeus explains fire's sensible properties by reference to properties of its geometrical constituents; fire is hot because of the small, sharp nature of its body's angles (61d5-62a5). Fire's nature is not, then, qualitative, e.g., to be hot, since its heat is explained by reference to its geometrical structure. Heat is a necessary property of fire; it is included as a necessary consequence of fire's structure, as we see when Timaeus describes the smallness, sharpness, and lightness of fire (55e7-56b2). If fire's other qualities can be explained likewise, and there is no reason to think they cannot, then fire is simply a structure that necessarily includes certain properties. Thus, elements' natures are their geometrical structures.[15] The Form of Fire is structural.[16] Notice that we need not say that *all* tetrahedral pyramids are fires, since fire need only be one of the infinite possible kinds of tetrahedral pyramids; in addition, we need not worry that a macroscopic tetrahedral pyramid might burst into flames, if it had the right proportions, since fire is a structure *of elemental triangles*, not a structure of just any triangles.[17] It might help to think of the Fieriness as a universal with twenty-four slots (four faces of six triangles each), each slot being filled by the Form of the appropriate triangle;[18] when fire is instantiated, the twenty-four triangles are also instantiated,

since the fire trope relates the triangle tropes, which, in turn, relate angle tropes, etc.

I can now return to the literal reading of the demiurge's organization of the pre-cosmic vestiges. Let us assume that the vestiges had *some* structure, although imperfect, so that we may continue to assign the nature of the elements to their geometrical structures.[19] Fieriness is structural, and there are imperfect instances of this structure in the Receptacle even before the demiurge sets to work. Each instance of fire would, in these pre-cosmic conditions, be inexactly formed, perhaps with irregular constituents or no constituents at all, such that it would be prohibited from transforming into the other elements in the way that fire can after its geometrical construction. At the time of creation, the demiurge assigns a number to each structure, i.e., he looks to Fieriness and imitates its geometrical structure in the Receptacle, crafting fiery bodies out of a certain number of elemental triangles, which are in turn formed in the Receptacle. Since this structure has been imposed on the bodily elements, they now have a certain regularity and stability: each molecule of fire is a pyramid with regular faces composed of triangles, and these triangles, when dissolved from their current structure, may join with others to form molecules of water or air. In other words, there are now rules for an orderly transition from one element to another, and each elemental body is defined by its number and form. Thus my interpretation of the elements can be reconciled with either a literal or a non-literal reading of the dialogue's creation story.

My account of the elements and their construction raises several concerns. First of all, one might wonder about the consequences of my account for the interpretation of the Receptacle as material or nonmaterial. But my account thus far of elemental triangles and bodies does not lock us into a particular interpretation of the Receptacle, since we have nowhere assumed that the triangles are bodily or material. In fact, the triangles cannot be bodily, since bodies have depth (53c5-6) and plane figures have no depth. It is also difficult to hold that they are material, since they are, again, only two-dimensional.[20] For the same reason, it is difficult to assign any 'containing' ability to the triangles, in order that they may hold in 'stuff' that then makes particulars material: a plane can offer no kind of resistance, let alone contain something.[21] The triangles do, however, compose elemental bodies which, in turn, compose material particulars, so there is some temptation to call them material. "Material" will, however, mean something peculiar. Contemporary science has acclimated us to the idea that the most basic constituents of reality—fundamental particles—are very different from the objects we see and with which we interact. Just so, Plato's two-dimensional triangles are material in a stretched sense,[22] in the same way that non-extended simples might be said to be material in a theory that takes them as basic constituents of material objects.

Second, we seem to have left Form images behind. How do we reconcile them with elemental triangles? There are two main possibilities: first, that triangles are composed of this-suches, even though they are not bodies, and second, that triangles are, themselves, simple images of Triangularity, i.e., images with no further components. While the latter suggestion would be fully compatible with the interpretation presented above, I do not think it correct, since elemental triangles have multiple properties. Timaeus recognizes this when he describes his reasoning in selecting the 'best' triangles: triangles are right-angled, trilateral, shaped, etc. If there is a Form for

each of these properties, elemental triangles must be composed of Form images.

One may object, however, that I am assuming that triangles and their properties are Form images, but Timaeus never explicitly calls them such. Let us recall our treatment of fire. When we say colloquially, "this is fire" (or, "fire is this"), what we should really say, if we were speaking perspicuously, is that *this* is a part (region) of the Receptacle in which has come to be *this-fieriness*. We can generalize this rule to other parts of the *Timaeus*, even though Timaeus speaks in a more colloquial manner in other places. When he speaks of triangles, it might seem that they abide in a way that fire does not. But we could no more pick out "this triangle" or "this pyramid" than we could "this fire." In the case of "this fire," we pick out a portion of the Receptacle and a Form image, viz., an image of Fieriness. Similarly, when we say "this triangle," we are speaking loosely, picking out a portion of the Receptacle and an image of Triangularity. There is no more reason to think that *this-triangle* abides than to think that *this-fire* abides. If fire flees the use of "this," then so should triangles. Thus, an image of Triangularity is a this-such on the same ontological level as an image of Fieriness or Heat.

In fact, the passage immediately following the "much misread" passage about fire tells us, explicitly, that a triangle is a this-such. At 50a5--b5, when Timaeus tells us not to call a golden triangle "triangle" but "gold," he goes on to say that we should be content if the triangle (or any other figure molded in gold) accepts the designation of τὸ τοιοῦτον. Since the meaning of "triangle" has not changed between 50a and 53c, we should continue to see triangles as this-suches, instances of Triangularity, which partially constitute elemental triangles.

We have another reason to consider elemental triangles as derivative objects composed of Form images. *Being hot* is τὸ τοιοῦτον (50a2). Since τὰ τοιαῦτα are Form images, heat is a Form image. Fire is, of course, hot, and Timaeus explains this fact by appealing to its geometrical construction. Fire is a four-sided pyramid with acute angles. These small, sharp angles cut flesh, and that is what we call heat (61d5-62a5). And so heat, an image of Heat, is a property of the elemental body of fire. Since everything made out of hot etc. are τὰ τοιαῦτα (50a3-4), and τὰ τοιαῦτα are images of Forms, pyramids must also be images of Forms. There is no reason to think that the elemental triangles composing those pyramids — triangles which are also made out of their properties — are any different. So elemental triangles are Form images or composed thereof, and the mechanistic explanation of heat is compatible with bodies being composed of Form images.

One may press the worry about triangles and Form images, however, and formulate a 'third wave' or 'greatest difficulty' for my interpretation of the elemental triangles: such triangles, it seems, abide and persist in a way that τὰ τοιαῦτα do not, and thus elemental triangles are not subject to the worry about elements that leads Timaeus to formulate the this/this-such distinction. In fact, one might say, elemental triangles are the *solution* to this worry: they must persist to underlie the geometrical account of elemental transformation.

My account might lead us to think, in contrast, that triangles are as unstable as any other this-such. They could, at any moment, change into anything else. Indeed, we might even be tempted to say that elemental triangles are new at every moment, i.e., that each triangle in the universe undergoes so-called immaculate replacement, being replaced by a seemingly identical triangle each instant, so that, technically, "nothing is ever the same" (*Phaedo* 78e3-4). Although this is a tempting

way to explain Plato's persistent calls for flux in the sensible world, there are reasons to doubt that elemental triangles are as unstable as the elements they underlie. First, it is not obvious what triangles would change into unless they undergo immaculate replacement, and then we are seemingly positing immaculate replacement just to ensure that things are "never the same," which is circular. Second, it seems that triangles must persist so that the elements can change into each other. It is clear that the same triangles that compose a body of fire can go on to compose a body of air (56e2-7).

Third, Timaeus' discussion of aging (81b5--e5) seems to require that elemental triangles persist. He tells us that in newly constructed living things, elemental triangles are "fresh" and "straight from the stocks" (νέα μὲν οὖν σύστασις τοῦ παντὸς ζῴου, καινὰ τὰ τρίγωνα οἷον ἐκ δρυόχων ἔτι ἔχουσα τῶν γενῶν, 81b5--7). They are firmly locked together and so they easily overcome and cut up the "older" (παλαιότερα) incoming triangles from food. But when a triangle's "base" weakens (literally, its "root," ἡ ῥίζα τῶν τριγώνων χαλᾷ, 81c6-7), the living thing's triangles can be overcome by entering triangles, and it enters old age. Death comes when the soul is released, which happens when the interlocking bonds of the marrow's triangles no longer hold together (τῶν περὶ τὸν μυελὸν τριγώνων οἱ συναρμοσθέντες μηκέτι ἀντέχωσιν δεσμοὶ τῷ πόνῳ διιστάμενοι, 81d5--6). Marrow, which anchors soul to body, is made of specimens of the elements with the most precise triangles (73b5-8).

While the information about aging and death might lead us to believe that elemental triangles are themselves destroyed, this is a doubtful reading of the passage. Instead, it seems that the bonds between triangles — either those which hold triangles together into elements, or those that hold them together to compose marrow, or both — are destroyed. This is also how we should read the claim about triangles' bases, namely, that these refer to how triangles are put together to form the faces of regular solids. When their bases weaken, triangles are more likely to come apart from each other, destroying marrow and releasing soul from body. Triangles themselves re-form with other triangles to compose different elements, although I do not deny that triangles could, in principle, be destroyed; they are, after all, parts of Becoming. Timaeus also seems to refer to the same triangles throughout his description of aging, rather than immaculately replaced duplicates.[23] Thus triangles seem to persist for some time, since they can be "fresh" and newly constructed or "older" and more weakly bonded together.

While it may be that some tension is unavoidable, as Timaeus himself admits (29c4-7), in such an ambitious account of the universe, we can allow some groups of τὰ τοιαῦτα to be more stable than others; in fact, we have independent reason for allowing such a possibility, for the heavenly bodies have come to be and yet appear to be indestructible. Timaeus posits τὰ τοιαῦτα to distinguish Form images and the Receptacle, since Form images have a precarious ontological stability, due to their complete dependence on Forms and Receptacle, and the Receptacle is not dependent on Form images for its existence and stability. Even if elemental triangles or heavenly bodies have a stability that other particulars lack, they are still composed of images, dependent upon originals (e.g., Triangularity) and a medium, and so flee the designation of 'this' or 'that.' They are still destructible, derivative, and impermanent. In these respects, they are no more entities in their own right than elements or other particulars, for they are constructed of more basic entities — τὰ τοιαῦτα correspond-

ing to their properties—and these more basic entities are fully dependent upon Forms and the Receptacle.

4. TROPES

Timaeus' τὰ τοιαῦτα are, I have been contending, tropes, which metaphysicians still call this-suches.[24] Consider that, for any property *Fness* corresponding to predicate *F*, we can always call an instance of *Fness F*. An instance of fieriness is always fiery—a fiery trope is fiery—whenever it exists. But predicates cannot be applied in a stable, permanent way to any concrete subject that has come to be, since any thing or stuff could be characterized by a different predicate, as Timaeus shows at 49d4--6. Predicates can only be applied to tropes and then derivatively to aggregates of tropes, i.e., the things "composed of hot and white and the opposites." We can concisely demarcate Plato's ontological division between Forms and Form images as the division between properties (universals) and instances (tropes).[25]

4.1. IMAGES OF FORMS ARE NOT IMMANENT UNIVERSALS

One may object that τὰ τοιαῦτα are not tropes but immanent universals (or 'immanent forms').[26] *Timaeus* 49e4-7, which gives a more complete formula for τὸ τοιοῦτον ("this-such coming around always in similar fashion in each case and all together"), seems to raise a difficulty for taking Form images as tropes, since τὰ τοιαῦτα here seem more like immanent universals; it seems that one and the same 'sort of thing' recurs in multiple instantiations. This recurrence would fit well with immanent universals, which are one and the same in all of their instantiations. For example, if white were an immanent universal, there would be only one white, although it would be in many places at the same time. Whiteness would 'recur' every time there is a white thing, but it would be the same whiteness — numerically one and the same — that is 'in' each white thing. In contrast, there are many white tropes, each distinct from the other, but each is equally white. For a trope theorist, Whiteness recurs in white things in the sense that each white thing has a numerically distinct white trope 'in' it. So if Form images are immanent universals, then an image of Justice would be one and the same in all instances of Justice, 'recurring' in each instance. But if Form images are trope-like, then there are many images of Justice, each one distinct and fleeting.

A trope-theoretic reading can respond to this difficulty by emphasizing that the Form, not the image, recurs; the same Form is imaged, so a characteristic "comes around always in similar fashion" because a single Form is imaged in many locations, not because there is a single, multiply-located image.[27] Whiteness recurs in every instance of white because there is an image of one and the same Form in every instance, even though each image is numerically distinct from every other image.

The trope-theoretic reading is, in general, preferable to the immanent universal reading, since Forms would be redundant if there were immanent universals. Immanent universals would do all the work for a theory of universals in a way that tropes do not, since, according to a trope-theoretic interpretation of Plato, Forms still serve as unitary, eternal properties and objects of knowledge. With immanent universals, however, there is already a property that is immutable and can serve as an object for knowledge, so we have no need of Forms in addition. Since the *Timaeus* clearly makes use

of separate Forms—for instance, Timaeus argues that Fieriness is distinct from sensible fires (51b7-c5) — and, moreover, Forms are justified precisely because they are objects of knowledge (51d3-52a4), the trope-theoretic interpretation of τὰ τοιαῦτα is preferable.[28]

So, if we dismiss an immanent universal interpretation of τὰ τοιαῦτα, which treats them as repeatable, multiply-located entities, we are left with a trope theoretic interpretation, which treats each Form image as a distinct, non-repeatable entity located in one spatial region. To be clear, taking Form images to be tropes amounts to no more than this, i.e., saying that they are non-repeatable instances of properties that are each located in exactly one spatial region at a time. As long as Form images are instances of properties, then we have an exhaustive division between interpretations that take them to be each located at one spatial region (tropes) and those that allow them to be multiply-located in space (immanent universals), as well as reason to prefer the trope-theoretic interpretation.

4.2. IMAGES OF FORMS ARE NOT BODIES

If Form images are instances of properties, then they are tropes. But, despite my argument that all Form images are τὰ τοιαῦτα and τὰ τοιαῦτα are Forms images, one might find in Timaeus' first account of the universe a counterexample to taking them as property-instances. There, it seems, Timaeus discusses *things*, or bodies, not properties, as images of Forms. For example, the universe is an image of the intelligible Living Being. But the universe is not a property; it is a *thing with* properties. So can we say it is τὸ τοιοῦτον without discarding Timaeus' first account?

In fact, the universe is no more an obstacle to a trope-theoretic interpretation of the *Timaeus* than is fire, since both are, in fact, bodies. Just as fire is an elemental body composed of its properties, so is the universe a body composed of its properties.[29] Let us review fieriness; it is a structural property, an arrangement of other properties, including heat—which turns out to be the acuteness of the fire molecule's angles. Notice that the fiery trope is structural; it does not *have* other properties, but it *structures* them. Whenever fire is instantiated, a certain arrangement is also instantiated, specifically, a tetrahedral pyramid of elemental triangles. This seems to an observer to be an object, i.e., a fire, and it is the apparent fire that we say is hot, not the fiery trope. The fiery trope is not itself hot, but always includes heat, which is hot.

Since the other elements are explained similarly, we should explain all substantive Forms similarly. Supposing there are Forms of living things, since the Living Being and 'other intelligible animals' play an important role as models (παραδείγματα) in creating the universe, these Forms should be understood as structures parallel to the elements. In fact, the Living Being seems simply to be a structure of animal Forms; the Form of any particular animal, such as Human Being (or Humanity), would, in turn, be an arrangement of various parts that make up human beings. These parts include physical parts such as hearts, which will in turn have parts, ending with elemental triangles and their constituent tropes; but human beings also include non-physical parts such as virtues and rationality. These latter components are Form images, too, and components in the structure of Humanity just as are the physical parts, since all are, in the final analysis, composed of tropes.[30]

5. CONCLUSION

I have argued that the second category in Plato's tripartite ontology, that of Becoming, is the category of Form images. Moreover, I argued, Form images are tropes, i.e., property-instances, rather than bodies or immanent universals, and particulars are composed of tropes. The elemental triangles introduced to constitute particulars turn out to be composed of tropes as well, so that tropes and things composed of tropes exhaust the category of Becoming. There is, then, no place for sensible, material particulars in Plato's fundamental ontology. Instead, such particulars are derivative entities, constructed from Form images which are, in turn, dependent on Forms and the Receptacle. While Aristotle distinguishes between kinds (substances), such as human beings and animals, and other properties, such as qualities, quantities, and relations, Plato does not: instances of humanity and triangularity are just as 'insubstantial' as instances of whiteness and heat. I have not, however, put forth the stronger thesis here that particulars are *only* composed of tropes, i.e., that they are bundles of tropes, since I have not directly addressed the status of the sole member of the third ontological category, the Receptacle. Given, however, that particulars can successfully be resolved into tropes, there seems little philosophical reason to take the Receptacle to be a substratum in which those tropes inhere. It is more parsimonious to take particulars as bundles of co-located tropes in the space of the Receptacle. Even if we do not fully accept such a bundle theory, however, the ontology of particulars in the *Timaeus* is not a substance ontology but a trope ontology.[31]

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NOTES

1 Ferber 1997 also addresses the question of why there are Forms in the *Timaeus*, giving an analysis of the brief argument for Forms at 51d3-52a7. See his 182-4, for an alternate account of particulars in the *Timaeus* as relational entities rather than substances.

2 There are many accounts of tropes, and I cannot here give a detailed comparison between Plato's tropes and contemporary trope s— this is work for another paper. There is some similarity, however, between Plato's trope ontology and Lowe's four-category ontology — one dissimilarity is that Plato's ontology contains only three categories, Forms (transcendent universals), tropes, and the Receptacle (substantival space). For a defense of taking the Receptacle to be substantival space, see Buckels 2016a. For contemporary accounts of tropes, see, e.g., Ehring 2011, Lowe 2006, Campbell 1990, Armstrong 1989, and Williams 1953.

3 All textual references are to Burnet's OCT *Timaeus* and translations are my own, unless otherwise indicated. Note that Plato uses "τοιοῦτον" in many different ways in the dialogues; I am not claiming that every use of "τοιοῦτον" is a reference to something that comes to be, only that Plato uses it thus in key passages of the *Timaeus*.

4 Miller 2003, 82, argues that the proscription generalizes only to 'all the elements,' not "everything that comes to be." This coheres with his reading of the entire passage as restricted to elements. Harte 2002, 252, n. 162, similarly doubts that the proscription generalizes to all things, since the initial problem "is closely tied to the role of earth, air, fire, and water, as candidate elements in the traditional sense." Broadie 2012, 202-3, also agrees. On this, Miller 2003, 81, writes that "Plato is not concerned with 'phenomenal fire' but with the element fire that we observe," distinguishing between the two so as to avoid the generalization from phenomenal fire to phenomena in general. But it is difficult to distinguish elemental and phenomenal fire, since, as Miller admits, we observe elemental fire, at least when aggregated: it is visible and, in fact, part of all visible things (31b5), so it seems likely that Timaeus generalizes his argument regarding fire—the visible element—to all visible particulars, which all contain fire as a part. Cf. 50a2-4, where the argument concerning elements is explicitly generalized to all properties; also cf. Prior 1985, 110; and Silverman 2002, 258: "the lesson applies to the whole of the physical cosmos." A more problematic point Miller makes is that Timaeus has not given us reason to think that the extension from

the elements to all sensible phenomena is legitimate (even if he in fact extends it), since the initial puzzle is only about the changing of one element into another. But the elements are the basis for all other sensible phenomena, so if the elements are so unstable that they might transform into each other at any moment, then the things composed of the elements seem to be vulnerable to the same change. Indeed, Timaeus only holds that it is *possible* for one element to cease to be and another to take its place at any time, and it seems true that any given physical object *x* may cease to be what it is at any instant and be replaced by a non-identical, even if extremely similar, *y*.

5 Timaeus 'restarts' his cosmogony after about twenty Stephanus pages, so there is a 'first' and a 'second' account of the creation of the universe. I take it that the two accounts are largely compatible, with the second building upon the first (for one thing, the Receptacle is added in the second, so we have a tripartite, rather than a dualistic, ontology), but this is not uncontroversial. Broadie 2012, 201-2, Johansen 2004, 117, Silverman 2002, 248-56, and Harte 2002, 213-226, also seem to take the two accounts as complementary, although, e.g., Silverman sees the first account as giving us "traditional forms" while the second gives us "geometrical forms," and he then joins these such that geometrical forms ground matter and place while traditional forms ground qualities.

6 Cf. Broadie 2012, Ch 3, esp. 70-74, who argues that the "Intelligible Animal" here (my "Living Being") is not a "thick intelligible," although she admits her argument is not decisive.

7 It is worth pointing out that Form images being τὰ τοιαῦτα, and τὰ τοιαῦτα being tropes, is compatible with either of the two major interpretations of the Receptacle, namely, that it is a substratum (in which case tropes would inhere in it) and that it is space (in which case tropes would be located in its regions). See also note 30.

8 Silverman 2002, *passim*, also recognizes the importance of Form images, which he calls Form copies. His Form copies differ from my Form images in several ways, some of which have to do with our readings of the *Phaedo*. With respect to the *Timaeus*, the biggest differences between our readings (which are both indebted to Cherniss 1954 & 1957) lie in our treatment of the Receptacle (see Buckels 2016a) and geometrical versus "traditional" Forms (see notes 15 & 19). More broadly, Silverman argues that Form copies cannot be destroyed, whereas my Form images come to be and perish; Silverman's Form copies are thus difficult to distinguish from Forms. While Silverman and I both argue that sensible particulars (i.e., physical objects) are entirely composed of Form copies (in my case, Form images), Silverman retains particulars as a distinct category of Plato's ontology, while I think they reduce entirely to Form images (see note 29).

9 Cf. Silverman 2002, 261-5, and Zeyl 2014, §6

10 Cf. Cherniss 1954, 128: "If at any time anywhere one tries to distinguish any phase of the phenomenal flux from any other by saying "this," one always in fact points to the permanent, unchanging, and characterless receptacle in which are constantly occurring transient and indeterminate manifestations of the determinate characteristics just mentioned ['the such and such, whatever the correct formula may be, that is always identical in each and all of its occurrences']."

11 Zeyl 2000, lviii-lix; cf. Silverman 2002, 258-60.

12 Cf. Silverman 2002, 260: "What is at stake between the reconstructionist [alternative interpretation] and the tradition is not so much these linguistic formulae [i.e., how to address particulars] but rather the account of the phenomena themselves."

13 Zeyl 2000, lxi. Cf. Mertz, 83*f*, on Plato's "concrete individuals."

14 Cf. Cornford 1937, 28-32, Prior 1985, 95.

15 Mohr 1985, 108-15, also argues for such a view. For discussion of how the triangles come together to form bodies, see, e.g., Cornford 1937, 210-30.

16 Silverman 2002, 282, writes that there is an "inexplicable coincidence of geometrical bodies occupying space and properties entering and exiting the place defined by those bodies." He thinks that there is no essential connection between a certain arrangement of geometrical form-copies (my Form images) and a certain grouping of "traditional" form-copies (hot, yellow, fire, etc.). Thus is it a coincidence that quantitative and qualitative form-copies always fit together, with the qualities entering and exiting the place of the quantities. But I think Silverman (esp. 249*f*) makes too much of distinguishing geometrical from traditional Forms; I argue that an image of Triangularity is just another τὸ τοιοῦτον. Thus, on my account, Fieriness is a certain species of Tetrahedral Pyramid. Harte 2002, 262-3 and n. 189, has a position similar to mine: "particles of earth, air, fire, and water, as constructed by the demiurge, imitate forms through their geometrical construction; they are structures of space, whose properties, perceptible and other, are parasitic upon their geometrical structure." Harte avoids Silverman's problem (the 'inexplicable coincidence' of geometrical Forms) but does not explain how geometrical constructions imitate elemental Forms, since she stops short of identifying Fire with a geometrical structure: Harte does not suggest "that the forms of fire and earth are themselves [the type] regular solids."

17 Cornford 1937, 190, denies that Fire is a certain structure, because we do not say, when we see fire, "there are some pyramids." Instead, Fire is a combination of certain qualities. The Form is the "meaning of the name 'Fire,'" and the "quality is the copy" of the Form. But we do not deny that water is H_2O — even that it is *essentially* H_2O — even though we do not, before our first chemistry lesson, say, "there is some H_2O." "Water" refers to a combination of certain qualities, but this does not prevent us from saying that it is essentially H_2O. Cf. White 1981, 331-4.

18 Cf. Lewis 1986 for discussion of structural universals and Gilmore 2013 for slots in universals.

19 Cornford 1937, 198-206, instead argues that the nature of fire is qualitative. For criticism of Cornford,

see Mohr 1985, 108-15. Johansen 2004, 126-7, seems to give a qualitative explanation, too.

20 Silverman 2002, 278-81, holds that matter or corporeality is an emergent property, a result of the arrangement of geometrical form-copies. If by this he means that corporeality, the property of being a body, is instantiated whenever triangular form-copies are arranged to form a solid, then this seems right. Cf. Silverman 2002, 255*f*, and Cornford 1937, 181.

21 The position I have in mind here is that the Receptacle acts as a kind of matter or stuff that is contained by the geometrical shapes rather than the view that there is some primitive matter in the Receptacle (and distinct from it), as found, e.g., in Gill 1971; cf. McCabe 1994, 180. I find this latter suggestion implausible, too, as well as unmotivated by the text; for fairly definitive criticism of Gill's view, see Silverman 2002, 267-73.

22 As an aside, holding that triangles compose the universe hardly seems weirder than holding that the strings of string theory, or any other posit of speculative physics, compose the universe!

23 Gregory 2000, 203-5, argues that the elemental triangles undergo no intrinsic change—the only triangles that can change are the triangular faces of the elements air, fire, and water. It is the faces, then, that are "new or "old," not the elemental triangles.

24 E.g., Schaffer 2001, 247, although Schaffer argues that tropes are better described as "here-suches." Cf. Ehring 2012, 76-91.

25 By universals, I mean that Forms are transcendent universals, i.e., non-spatiotemporal entities that explain the common features of particulars without being "in" or located with those particulars. The traditional relation of "participation" is replaced with a Form image "being an image of" a Form, which we may interpret as the relation between a trope and its transcendent universal. The transcendent universal explains resemblance among tropes, as each trope is an image (instance) of a Form (universal). Plato does not clearly commit himself to a range of Forms; here I assume a Form for every meaningful predicate, but I examine this assumption further in an unpublished manuscript.

26 See, e.g., Fine 1983 & 1986 for the view that Forms are immanent in particulars.

27 Cf. Mohr 2005, 87: "We can tell that what recurs is the same recurring image by referring it to the original of which it is an image."

28 Cf. Ferber 1997 about the justification of Forms here. The point about the same Form being imaged in each 'this-such' is strengthened if we take ὅμοιον in 49e4-7 (the "similar fashion" in "this-such coming around always in similar fashion in each case and all together") as modifying the "coming around" with Miller 2003, 81, rather than as modifying τὸ τοιοῦτον (49e5). If we take it with τὸ τοιοῦτον, we might be inclined toward the immanent universal interpretation; the resulting translation, following Zeyl 2000, would read: "'what is such,' coming around like it was, again and again." But if we take it adverbially with περιφερόμενον, then 'this--such' comes around in similar fashion each time: there need not be the same this-such each time, as the immanent universalist would have it, but a this-such need only come to be 'similarly' each time the appropriate circumstances arise. Even if we do take ὅμοιον with τὸ τοιοῦτον, however, tropes are salvageable, since we have an account of what it is for two tropes to be similar, namely that they are images of the same Form.

29 Cf. *Rep.* 476b4-6, where things are said, in passing, to be made out of sounds and colors and figures (τάς τε καλὰς φωνὰς ἀσπάζονται καὶ χρόας καὶ σχήματα καὶ πάντα τὰ ἐκ τῶν τοιούτων δημιουργούμενα). While I merely explain and defend a Platonic trope theory here, in an unpublished manuscript I explore and defend a Platonic trope bundle theory.

30 It is worthwhile to point out that, if the members of the class of Becoming are tropes, then the motivation for taking the Receptacle to be a substratum has been dealt a serious blow. Substances—particulars that are supposed to be composed of tropes and a substratum—feature nowhere in Plato's tripartite ontology if not in the category of Becoming. But they cannot be in this category, since one of their components—tropes—makes up this category, and another of their components—the Receptacle, taken as a substratum—makes up a different category. Thus substances would have to be a conglomeration of the two categories, Form-images and the Receptacle, whereas, in the text, Form-images are said to be the product or 'offspring' of Forms and the Receptacle (50d2-4). There is plenty of room for particulars in Plato's ontology, but only if they are wholly composed of tropes, as I argue in Buckels 2016a. The argument of this paper, together with the argument of that paper, go most of the way toward establishing Plato as a trope-bundle theorist.

31 I would like to thank Thomas Chance, Cody Gilmore, Peter Larsen, John Malcolm, Vasilis Politis, Allan Silverman, and Jan Szaif for valuable discussion of this paper and previous drafts, as well as audiences at the Eastern and Central Division Meetings of the American Philosophical Association, the London Ancient Science Conference, the University of California Davis, and Trinity College Dublin.

Le Platane de l'Ilissos et le chêne de Dodone: arbres sacrés dans le Phèdre de Platon*

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ABSTRACT

In Plato's Phaedrus (229 a 8-c 5) figures a plane tree growing by Ilissos; it hosts Socrates' and Phaedrus' discussion. Socrates refers later (275 b 5-c 2) to the oak of Zeus at Dodona. Our paper is articulated around certain capital aspects of the symbol of the 'sacred tree', detecting their presence in the dialogue, in view of sheding some new light on the role that the plane tree of Ilissos and the oak of Dodona could play in this philosophical text. We may thus distinguish better the elements that Plato borrows from the religious thought and his innovations.

Keywords : Phèdre, platane de l'Ilissos, chêne de Dodone, arbre sacré.

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INTRODUCTION

La quasi-totalité des dialogues de Platon a lieu dans un environnement urbain. On ne compte que deux exceptions: dans le Phèdre et les Lois les interlocuteurs évoluent au cœur de la nature de l'Attique et de la Crète, respectivement. L'attention de quelques chercheurs a déjà été attirée par ce fait insolite. Aussi, ont-ils tenté d'apporter des interprétations plausibles pour l'environnement de ces oeuvres philosophiques, en mettant surtout en évidence la dimension divine de la phusis[1].

Dans le Phèdre (229 a 8-c 5) figure aussi une longue description du magnifique platane – apparemment un sanctuaire des Nymphes et d'Achéloos –, qui pousse aux bords de l'Ilissos, sous l'ombre duquel Socrate et Phèdre trouvent refuge pour se protéger de la chaleur estivale. Les deux amis vont s'installer aux pieds de l'arbre, sur l'herbe douce, pour dialoguer toute la journée au son des cigales. Un peu plus tard (275 b 5-c 2), Socrate se réfère au chêne du sanctuaire de Zeus à Dodone, en mettant en exergue sa réputation d'être la première source de paroles mantiques pour les hommes.

La présence de ces deux arbres sacrés dans le texte platonicien nous a intriguée. Nous avons pensé qu'il serait approprié de l'explorer de manière plus approfondie[2]. Nous proposons d'articuler notre présentation autour de quelques aspects capitaux du symbole de l'‘arbre sacré', tels que notamment Mircea Éliade, mais aussi d'autres historiens des religions, les ont déjà définis[3], en mettant en évidence leur présence dans le dialogue, afin d'apporter éventuellement une nouvelle lumière au rôle que le platane de l'Ilissos et le chêne de Dodone sont appelés à jouer dans ce texte philosophique. Aussi pourrons-nous mieux distinguer les éléments que Platon emprunte de la pensée religieuse et ensuite saisir plus clairement ses propres innovations sur le sujet.

A. ASPECTS DE LA NOTION D'‘ARBRE SACRÉ' REPRIS DANS LE PHÈDRE

Mircea Éliade souligne que 'c'est en vertu de sa puissance, autrement dit c'est parce qu'il manifeste une réalité extra-humaine – qui se présente à l'homme dans une certaine forme, qui porte fruit et se régénère périodiquement – qu'un arbre devient sacré'[4]. 'Un arbre ou une plante n'est jamais sacré en tant qu'arbre ou en tant que plante. Ils le deviennent par leur participation à une réalité transcendante, ils le deviennent parce qu'ils signifient cette réalité transcendante. Par sa consécration l'espèce végétale concrète, "profane", est transubstantiée, selon la dialectique du sacré; un fragment (un arbre, une plante) vaut le tout (le Cosmos, la Vie), un objet profane devient une hiérophanie'. 'Les forces végétales sont une épiphanie de la vie cosmique'[5].

Ce chercheur distingue sept orientations essentielles, mais non exclusives et souvent coexistantes, dans la symbolique de l'‘arbre sacré'[6], dont trois apparaissent clairement, nous semble-t-il, dans le Phèdre, à savoir:

I. L'‘arbre cosmique', lié à la théophanie.
II. L'‘arbre de vie', attaché à la 'fécondité inépuisable', à la 'réalité absolue' et à l'immortalité et
III. L'‘arbre de la connaissance', moyen de communication entre le monde souterrain, la terre et le ciel, notamment en tant qu'‘axe du monde' (axis mundi).

Nous allons approfondir dans la suite chacun de ces aspects et comment il se présente dans le texte platonicien.

I. ***Arbre cosmique – théophanie***

L'essence divine du Cosmos est une puissance créatrice éternellement active. Dans la terre, dans les eaux et dans les diverses formes de la végétation cette puissance se manifeste de façon périodique, suivant le cycle des saisons. Un arbre peut représenter, dès lors, par excellence l'ensemble du Cosmos et de ses forces créatives divines, en devenant un 'arbre cosmique' et en sanctifiant l'espace où il se dresse.

Aussi, l'épiphanie d'une divinité dans un arbre, le plus souvent d'une divinité féminine de fécondité mais aussi d'autres 'divinités de la végétation', est courante dans les croyances religieuses de plusieurs peuples[7].

Souvent on trouve l''arbre sacré' associé à l'eau et à la floraison, ainsi qu'à la terre ou à une pierre. Cette liaison 's'explique par l'idée centrale de la création inépuisable, dont le symbole est l'Arbre cosmique et que l'on identifie avec la Grande Déesse'[8].

'L'Arbre cosmique est souvent représenté sous la forme d'une essence particulièrement majestueuse'; il est caractérisé par des dimensions imposantes, une longévité remarquable ou une beauté particulière[9]. Pour les différents peuples, d'autres espèces ont paru appropriées pour jouer ce rôle: le chêne pour les Celtes, les Grecs et les Romains, le tilleul pour les Germains, l'olivier pour les Méditerranéens, le mélèze et le bouleau pour les tribus de la Sibérie…

M. Éliade souligne que même si des arbres sacrés pouvaient être considérés comme des manifestations théophaniques, et donc liés également à des rites religieux, comme le chêne de Zeus à Dodone, ou le laurier d'Apollon à Delphes, en Grèce il n'y avait que deux arbres qui étaient devenus des objets de culte proprement dits: le platane d'Hélène à Sparte et le pin du Cithéron où on croyait que Penthée avait grimpé afin d'espionner les Ménades[10].

Comme on peut le constater, les deux arbres cités dans le Phèdre, le platane et le chêne, font partie de ces espèces privilégiées qui étaient considérées comme des manifestations de l'essence divine du Cosmos.

Si l'on se penche sur l'introduction du Phèdre, on retrouve plusieurs éléments de ceux mentionnés plus haut concernant l''arbre du monde'.

Un doux matin d'été, Socrate rencontre le jeune Phèdre, en route pour se promener hors la ville. Le jeune Athénien sort de chez Lysias, le célèbre orateur, et Socrate n'a aucune peine à comprendre qu'il s'en va étudier tranquillement le texte d'un discours de Lysias qu'il tient caché dans sa tunique. Afin d'en partager le contenu, les deux amis se dirigent ensemble vers un pré à l'herbe douce, au bord des eaux fraîches, 'purs et limpides' de l'Ilissos, où pousse un 'très haut platane' ombrageux. Il se trouve à proximité de l'endroit où, selon le mythe, le vent Borée avait enlevé Orithyie[11], et où se dresse actuellement un autel en l'honneur de cette divinité de la nature, en route pour le sanctuaire d'Agra (229 a 1-230 c 5). La mention de ce mythe et des lieux de culte indique immédiatement que l'espace où se déroulera le dialogue est par excellence propice à la théophanie et dès lors sacré.

En outre, Platon prend soin de décrire avec minutie la beauté extraordinaire du cadre, notamment de l'arbre qui se dresse à son centre et sa liaison multiple avec le divin, en commençant par une invocation à Héra, la reine du ciel, épouse du dieu suprême, protectrice du mariage et de l'enfantement:

> Socrate: Par Héra[12], le bel endroit pour y faire halte! Oui, ce platane étend largement ses branches et il est élevé. Ce gattilier[13], lui aussi, est élevé est son ombre est merveilleuse; et, comme il est en pleine floraison, il ne peut embaumer ce

> lieu davantage. Bien plus, une source on ne peut plus charmante coule sous le platane, et son eau est bien fraîche[14] […]. Elle est consacrée à des Nymphes[15] et à Achéloos[16], si l'on en juge par ces figurines et par ces statues. Vois, s'il te plaît, comme le bon air qu'on a ici est agréable et vraiment plaisant. C'est le chant mélodieux de l'été, qui répond au chœur des cigales. Mais la chose la plus exquise de toutes, c'est l'herbe: la douceur naturelle de la pente permet, en s'y étendant, d'avoir la tête parfaitement à l'aise[17].

Un peu plus loin, Phèdre essaie par tous les moyens d'obliger Socrate à prononcer un discours meilleur que celui de Lysias: il demande au philosophe par quel dieu il voudrait qu'il prête sermon et finalement opte pour 'ce platane-ci', en lui attribuant manifestement une identité sacrée (235 d 4-e 1).

Le dialogue se déroulera à l'ombre de cet arbre extraordinaire qu'on peut qualifier désormais de 'cosmique'[18], au coeur d'une nature verdoyante, où diverses divinités s'introduisent dans la réalité sensible[19]. Parmi celles-ci, les Nymphes vont posséder plus tard Socrate quand il prononcera son premier discours, demandé avec autant d'insistance par Phèdre, en invoquant les Muses[20], protectrices de la créativité artistique (237 a 7-b 1; voir aussi: 238 c 5-d 7, 241 e 1-241 a 2, 278 b 6-d 1). Le dieu agraire Pan[21] s'ajoutera aux 'divinités du lieu' (263 d 5-e 2, 279 b 8-c 3) et le philosophe insistera à plusieurs reprises sur la sacralité de cet endroit à la beauté ensorceleuse.

II. *Arbre de vie – fertilité – immortalité*

Le platane de l'Ilissos présente également les caractéristiques d'un 'arbre de vie', tels que M. Éliade les définit: le lien entre les divinités de la fertilité et l'arbre qui 'représente l'Univers en régénération incessante' veut dire 'que ce lieu est un "centre du monde", que là jaillit la source de la Vie, de jeunesse et d'immortalité'[22]. Les éléments aquatiques, floraux, animaliers augmentent la symbolique de la vie qui se renouvelle éternellement dans la nature. D'habitude dans les mythes de peuples divers, l''arbre de vie' se situe dans un endroit inaccessible (par exemple, au bout de la terre, au pays des ténèbres, au sommet d'un mont très élevé). Souvent à ses pieds coule une 'source de l'immortalité' et il y a un gardien monstrueux (par exemple un serpent ou un dragon) qui empêche les héros à la recherche de la vie et de la jeunesse éternelles d'y accéder, soit par la force soit par la ruse[23].

Dans le texte du Phèdre nous avons constaté que les divinités mentionnées plus haut en même temps que la description du platane qui occupe le centre de ce lieu 'hors des murs de la cité' sont liées à la fertilité, physique ou intellectuelle. Le sujet du dialogue sera la meilleure manière de vivre l'état amoureux, ainsi que de pratiquer l'art de la parole, surtout celle inspirée par le désir. Aussi, c'est le dieu Éros[24] en personne qui occupera la place d'honneur parmi les divinités du dialogue (242 b 8 sq.), une puissance vitale par excellence, assurant la continuation, et donc une sorte d'immortalité, de toutes les espèces vivantes mortelles.

Nous aimerions noter également la présence d'un genre particulier de 'gardiens' cachés dans le feuillage du platane sacré, qui auraient pu empêcher les interlocuteurs, nos deux héros philosophiques, de continuer leur quête de la vérité. Il s'agit des cigales, assimilés aux Sirènes[25], divinités chthoniennes à corps d'oiseau et à tête de femme, qui faisaient, par le charme irrésistible de leur chant, dévier les marins de leur trajectoire en les amenant à leur perte.

Mais les cigales sont en réalité bienveillantes, car elles étaient jadis des serviteurs des Muses, tellement passionnées par leurs activités artistiques qu'elles ont oublié tout le reste jusqu'à en mourir. Les Muses leur ont accordé alors leur forme actuelle et une vie consacrée uniquement au chant, en les chargeant de leur dire après leur mort lesquels des hommes actuels les vénèrent avec persévérance, en se montrant indifférents aux conditions extérieures[26]. Le chant qui provoquait traditionnellement l'oubli de soi est ici opposé à l'oubli des distractions du monde matériel, en faveur de la concentration à l'exercice de la dialectique – l'art du logos qui conduit à la connaissance. Socrate et Phèdre vont traverser victorieusement l'épreuve et continuer leur dialogue, placé sous les auspices des aînées, et donc des plus respectables des Muses, Calliope et Uranie[27], malgré la paresse nonchalante à laquelle les invitent la chaleur du midi et le chant charmeur des cigales[28].

III. *Arbre de la connaissance – axis mundi*

'Parce que ses racines plongent dans le sol et que ses branches s'élèvent dans le ciel, l'arbre est universellement considéré comme un symbole des rapports qui s'établissent entre la terre et le ciel. Il possède en ce sens un caractère central, à tel point que l' "Arbre du monde" est un synonyme de l' "Axe du monde" […] Figure axiale, il est tout naturellement le chemin ascensionnel par lequel transitent ceux qui passent du visible à l'invisible'[29]. L'arbre 'exprime la réalité absolue dans son aspect de norme, de point fixe, soutien du Cosmos. C'est le point d'appui par excellence. Par suite, la communication avec le ciel ne peut se faire qu'autour de lui ou même par son entremise'[30].

De surcroît, selon certains penseurs, la notion d'arbre, qui réunit en lui les quatre éléments et se trouve successivement dans des états contraires pendant les différentes saisons de l'année, peut inclure un 'schème de réciprocité'. 'Cette idée de réciprocité conduit à celle de l'union entre le continu et le discontinu, l'unité et la dualité, le glissement symbolique de l'Arbre de vie à l'Arbre de la Connaissance, cet arbre de la Science du Bien et du Mal, qui est pourtant distingué du premier'[31].

Dans le Phèdre, l'objectif des deux interlocuteurs est d'arriver à définir progressivement et dialectiquement la vérité sur l'état amoureux (la 'folie' – μανία – inspirée par Éros) ainsi que sur la meilleure manière de produire des discours beaux qui reflètent la vérité[32]. Le platane sous lequel se déroule l'ensemble de cette discussion peut être considéré, à notre avis, comme un symbole de l''arbre de la connaissance', puisque c'est auprès de lui que Socrate et Phèdre vont quitter le monde des apparences trompeuses et 'monter' jusqu'au 'monde supra-céleste des Idées' afin de saisir la manière dont l'amour peut redonner à notre âme ses ailes, c'est-à-dire sa science et son bonheur immortels.

Au cours de ce dialogue, quand Phèdre se montre susceptible concernant le mythe sur l'invention de l'écriture, cité par Socrate, le philosophe se réfère soudain au chêne sacré de l'oracle de Dodone en ces termes:

> En tout cas, mon cher, les prêtres du temple de Zeus à Dodone ont soutenu que les premières paroles divinatoires étaient sorties d'un chêne. Ainsi, les gens de ce temps-là, eux qui n'étaient pas des 'savants' comme vous autres les modernes, se contentaient, en raison de leur simplicité d'esprit, de prêter l'oreille au chêne et à la pierre, pourvu qu'ils disent la vérité. Mais pour toi, ce qui sans doute importe, c'est savoir qui parle et de

> quel pays il vient; cela ne te suffit pas, en effet, d'examiner s'il en est ainsi ou autrement[33].

Selon les croyances de divers peuples, 'le chêne est investi du privilège de la divinité suprême du ciel, sans doute parce qu'il attire la foudre et qu'il symbolise la majesté. […] Il indique particulièrement solidité, puissance, longévité, hauteur, au sens spirituel autant que matériel. […] Il est en tout temps synonyme de force. […] Le chêne est la figure par excellence de l'arbre ou de l'axe du monde, tant chez les Celtes qu'en Grèce, à Dodone…'[34]. Il assure également la communication entre le ciel et la terre, en symbolisant à la fois la sagesse et la force.

Le chêne de Dodone devient le premier moyen de transmission de 'paroles divinatoires' aux hommes qui étaient prêts à les croire. La croyance courante, mentionnée par Hérodote, considérait en effet l'oracle de Dodone comme le premier lieu où la mantique fut exercée en Grèce[35]. Le chêne (φηγός ou δρῦς) de Zeus Naïos revêt dès lors par excellence le rôle d'un 'arbre de la connaissance', d'une science de la vérité accordée par le dieu suprême. Cependant, pour pouvoir profiter de ce don divin, il faut être attentif au contenu essentiel d'une parole, indépendamment de sa forme et de sa provenance, et ne pas se laisser tromper par les apparences que prend souvent un discours vraisemblable mais faux, comme par exemple celui du célèbre rhéteur Lysias. Grâce à l'examen dialectique, une méthode à la fois rationnelle et inspirée, Socrate pourra amener son jeune interlocuteur à découvrir finalement la vérité. Cette science reste toujours sous l'égide de Zeus, qui, de surcroît, est présenté dans ce dialogue comme le modèle et le guide des philosophes-gouverneurs (250 b 7, 252 c 3-4, 252 e 1-253 b 1).

Socrate se réfère à un autre moment du dialogue également aux prêtresses de Dodone, qui sont devenues des bienfaitrices inestimables pour des nombreux individus et des cités grecques, grâce aux oracles qu'elles émettaient sous l'emprise d'une 'folie mantique' d'origine divine, comme c'est le cas aussi de la Pythie à Delphes (244 a 8-b 3). Notons que dans ce passage Platon nous offre le seul témoignage concernant l'exercice d'une 'prophétie inspirée'[36] à Dodone. Les données diverses mais lacunaires laissent l'espace encore ouvert aux discussions parmi les chercheurs sur les modalités précises de la divination dans le temple de Zeus Naïos (que le dieu suprême partageait avec l'Océanide Dioné[37], surnommée également Naïa). Celle-ci pouvait prendre plusieurs formes, mais semble être fondée davantage sur l'interprétation de signes, notamment de sons émis par le chêne sacré et les colombes (leur vol pourrait également être pris en considération)[38]. Se pourrait-il que le philosophe s'écarte de la réalité cultuelle parce qu'il souhaite s'approprier ici le prestige de l'oracle de Dodone, en l'ajoutant à celui d'Apollon à Delphes, pour mieux soutenir sa propre théorie des quatre genres de possession divine (μανία) salutaires pour l'homme (la divinatoire, l'art des rites d'initiation, la poétique et l'érotique), exposée dans la suite de ce passage en vue de justifier l'image positive d'Éros, telle que Platon souhaite la présenter[39]? Pour l'instant, faute de preuves solides, nous ne pouvons pas l'affirmer, mais nous pensons que cette hypothèse n'est pas à exclure, étant donné la liberté habituelle avec laquelle le philosophe transforme les données de la tradition religieuse en les adaptant à sa propre pensée[40].

B. ORIGINALITÉ DE LA NOTION D'‘ARBRE SACRÉ' REVUE PAR PLATON

Dans la philosophie de Platon, l'ontologie et l'épistémologie, l'Être et la Vérité sont inextricablement liés. L'ensemble du monde sensible, aussi beau soit-il, n'est qu'un pâle reflet du monde intelligible, qui est le seul réel. Les Idées éternelles et stables sont la nature (φύσις) de l'univers. Platon emprunte aussi pour les décrire la symbolique du monde végétal, de manière insolite: les Idées sont dépeintes dans le Phèdre comme si elles 'poussaient' à l'instar d'arbres ou de plantes divines, d'une beauté indescriptible, dans la 'prairie' (λειμών) ou la 'plaine' supra-céleste 'de la Vérité' (τὸ ἀληθείας πεδίον) (248 b 6-c 1). Notons que dans la République, quand il est question de la divinité qui a 'planté' les Idées, celle-ci est nommée 'le Phyturge' (Φυτουργός), le 'divin planteur'[41], pour distinguer clairement ces étants, qui s'identifient à la vraie nature, de ceux qui composent le monde sensible, façonné à l'image des premiers de manière artisanale par la divinité en tant que 'Démiurge' (Δημιουργός).

Les héros du Phèdre sont des 'amoureux de la sagesse', des philosophes à la recherche non pas de l'immortalité de leurs corps, mais de la connaissance de l'essence du monde et de la vérité, identifiée aux Idées. Nos âmes, qui pour Platon sont déjà immortelles par nature, ont contemplé les Idées jadis, en suivant le 'cortège céleste' périodique des dieux[42], et en ont eu la connaissance qui nourrissait leurs 'ailes', avant de tomber dans un corps mortel – et ensuite dans d'autres, qu'on peut revêtir après le décès de celui-ci –, à l'instar de la puissance cosmique éternelle de la vie qui se renouvelle successivement dans diverses formes mortelles (246 a 3- 249 d 2). Les âmes cherchent à retrouver leurs ailes, en prenant donc conscience de leur immortalité et de leur nature divine, grâce à l'intervention d'Éros[43], qui leur inspire le désir des Idées via le désir d'une personne humaine qui les imite (250 d sq.).

Sous l'égide d'un arbre qui réunit à la fois les caractéristiques d'un 'arbre cosmique', d'un 'arbre de vie' et d'un 'arbre de la connaissance', dans ce cadre naturel aux dimensions à la fois sacrés, érotiques et intellectuelles, Socrate et Phèdre passeront du statut des âmes ignorantes, assimilées au début à des monstres des enfers, comme Typhon[44] (230 a 3-5), à celui des âmes ailées, à l'image des dieux, notamment de Zeus[45] (qui aide aussi depuis l'aube des temps les mortels à accéder à la vérité grâce à son arbre sacré de Dodone). De ce 'centre du monde' aux bords de l'Ilissos, ils peuvent remonter jusqu'au cœur de la nature de l'univers, située cette fois-ci, de manière insolite, au-delà du ciel et contemplée seulement par l'intellect, notre νοῦς.

Vers la fin du dialogue, Socrate se sert d'une métaphore provenant encore du monde végétal: il compare la culture du logos oral vrai et fertile dans l'âme par la philosophie au travail long et pénible de l'agriculteur qui cueille au bout de huit mois le fruit de ses labeurs, contrairement à ceux qui s'amusent à planter des éphémères et stériles 'jardins d'Adonis', verdoyants dans huit jours et fanés aussitôt[46]. Ces derniers sont assimilés aux rhéteurs dont l'art de la parole se concentre sur les apparences futiles (276 b 1-8). La parole dialectique enracinée dans l'âme et dans les habitudes quotidiennes peut apporter l'immortalité et la félicité autant qu'il soit possible à l'homme (276 e 5-277 4).

Avant de quitter l'espace hiérophanique défini par le platane sacré, Socrate acceptera que les deux interlocuteurs ont pu finalement atteindre la vérité, et donc l'immortalité et le bonheur, grâce à l'inspiration des Nymphes et des Muses. Ils sont désormais chargés à transmettre leur savoir philosophique aux rhéteurs

qu'ils affectionnent respectivement, Lysias et Isocrate. C'est ainsi qu'ils se mettront en route pour la cité, après avoir adressé une prière à Pan et les autres dieux qui les ont guidés dans leur quête (278 b 7-279 c 8).

La connaissance de la véritable nature divine du monde comporte dès lors la connaissance dialectique de soi, ainsi que la meilleure manière de vivre autant la vie terrestre, limitée dans notre corps mortel, que celle de notre âme pour l'éternité. Un tel savoir est forcément fertile et se propage à d'autres êtres, grâce à la puissance de l'amour. Nous aimerions avancer ici l'idée que, comme les arbres, les hommes en tant que parties de la nature peuvent représenter le tout: un microcosme à l'image du macrocosme.

D'ailleurs, dans le Timée, où Platon expose sa théogonie, sa cosmogonie et son anthropogonie, l'homme est assimilé à «une plante céleste» (φυτὸν οὐκ ἔγγειον ἀλλὰ οὐράνιον) dont les racines poussent dans le ciel, grâce à son âme divine, et les branches s'étendent vers la terre[47]. Le philosophe emprunte alors l'image d'un 'arbre cosmique', que les traditions religieuses représentent souvent renversé, puisqu'il manifeste et répand dans le monde terrestre la puissance créatrice divine provenant du ciel[48].

CONCLUSIONS

Suite à ces considérations, nous pensons pouvoir avancer que Platon dans le Phèdre, mais aussi dans d'autres dialogues, s'inspire des éléments attachés à la symbolique de l' 'arbre sacré' peut-être davantage que ce qu'il paraît à première vue. Il met subtilement en valeur leur importance pour la manifestation du divin dans le monde, pour l'expression des forces vitales de l'univers, pour la quête de l'immortalité et de la vérité.

Cependant, en tant que philosophe, il sait adapter et même transformer ces données afin de mieux soutenir ses propres théories, qui placent la réalité, l'essence éternelle de la phusis du monde et de l'homme, ainsi que la vérité, dans une 'plaine sacrée' contemplée uniquement par l'intellect. Aussi transcende-t-il définitivement le kosmos sensible, où s'arrêtaient la vision des croyances religieuses de son temps, résolument immanentes[49].

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NOTES

* Nous aimerions dédier cet article à notre sœur, Ευφροσύνη Λεύκα-Pironet, dont la présence aimante dans notre vie est toujours une véritable bénédiction.

1 Voir: Motte 1963, 460-476; Lefka 2001, 127--144.

2 La présente étude est fondée sur le texte de la communication que nous avons effectuée dans le cadre du XVe colloque du CIERGA (Université d'Ioannina, 1-4 octobre 2015), consacré au sujet: Le Monde végétal dans les représentations et les pratiques religieuses des anciens Grecs. Nous félicitons ici encore une fois les organisateurs de ce colloque, notamment les Professeurs A. Gartziou--Tatti et A. Zografou, et nous les remercions de nous avoir permis de participer à cette intéressante rencontre scientifique.

3 Voir Éliade 1983, 229-280; Chevalier et Gheerbrant 1982 a, 62-68. Notons ici que nous avons opté d'utiliser l'analyse de M. Éliade comme grille de lecture du texte platonicien parce que nous pensons qu'elle est particulièrement pertinente dans ce cas précis, sans pour autant souscrire à l'ensemble des positions théoriques et méthodologiques, encore moins politiques, sociales et philosophiques de cet auteur, dont de nombreuses failles ont été déjà mises en évidence par des chercheurs contemporains (voir, par exemple, D. Dubuisson 1993, 217-303). Pour la symbolique des arbres, mais aussi des plantes et des fleurs en général voir, par exemple: Hirsh 1987; Brosse 2001; Mazoyer, Pérez Rey, Lebrun, Malbran--Labat 2003. Pour le rôle de l'arbre et de la flore plus par-

ticulièrement dans la culture gréco-romaine de l'antiquité voir, par exemple: Baumann 1993; Meyer 2013, 107-145; Ducourthial 2014.

4 Voir Éliade 1983, 232.

5 Voir Éliade 1983, 274.

6 Voir Éliade 1983, 230-231.

7 'Entre les articulations de l'ensemble Arbre--Cosmos-Divinité il y a symétrie, association, fusion': Éliade 1983, 239-240.

8 Voir Éliade 1983, 241.

9 Voir Chevalier et Gheerbrant, 1982 a, 63.

10 Voir Éliade, 1983, 240.

11 Pour ce mythe local de l'Attique, qui fait des Athéniens la famille par alliance du Vent du Nord, et qui introduit dans le dialogue des connotations érotiques, voir Brulé 1987, 36 sq.

12 Comme les philosophes et les gens cultivés d'Athènes, Socrate utilisait souvent le juron 'par Héra'. Dans le Phèdre celui-ci peut être considéré comme dû en même temps à la beauté majestueuse de l'arbre--sanctuaire, à l'examen des idées fausses que l'on peut avoir sur soi-même, aux habitudes de Socrate ou à son envie de manifester de manière ironique son admiration exagérée pour la trouvaille de son jeune interlocuteur (voir: Calder 1983, 33-42; Lefka 2003 a, 63-65; Sommerstein 2008, 326-31). Nous pouvons actuellement y ajouter que Héra est une déesse de la fertilité et donc sa mention semble naturelle quand il est question d'un 'arbre sacré'. Brisson 1995, 197, n. 48, insiste surtout sur le fait que ce juron pourrait être une expression d'admiration feinte particulière à Socrate et rappelle que certaines traditions attribuaient à Héra la maternité de Typhon, monstre terrible dont Socrate avait fait état plus haut. En fait, l'une des éventualités envisagées par le philosophe concernant la qualité de son âme était que celle-ci pouvait ressembler à Typhon. Nous y reviendrons dans la deuxième partie du présent travail.

13 Cette plante s'intègre également dans la symbolique de la fécondité et se trouve lié à Héra: voir Brisson 1995, 197, n. 49.

14 Sur l'interprétation de la présence de la source voir aussi A. Vassiliu 2014, 51-82.

15 Ce sanctuaire aux bords de l'Ilissos était bien réel. Les Nymphes incarnent la fécondité constamment renouvelée des composants vivants de la phusis, habitant dans les arbres, les sources, les fleuves, la mer. Ces divinités sont des êtres ambigus, 'démoniques'; selon la tradition, elles peuvent 'posséder' les hommes et leur inspirer autant la folie que la guérison: voir Connor 1988, 155-189. Pour le lien privilégié des Nymphes avec la fécondité physique et intellectuelle grâce à leurs capacités de 'possession' de l'âme humaine, voir A. Motte 1963, 88-89.

16 Achéloos était le plus grand fleuve de la Grèce et une divinité, père des Nymphes, selon certaines traditions de l'Attique (voir: Isler 1996 a, 72-73 et Isler 1996 b, 169-172; Hilpert-Greger 1996, 71-74).

17 Plat., Phèdre 230 b 2-c 5: Νὴ τὴν Ἥραν, καλή γε ἡ καταγωγή. ἥ τε γὰρ πλάτανος αὕτη μάλ' ἀμφιλαφής τε και ὑψηλή, τοῦ τε ἄγνου τὸ ὕψος καὶ τὸ σύσκιον πάγκαλον, καὶ ὡς ἀκμὴν ἔχει τῆς ἄνθης, ὡς ἂν εὐωδέστατον παρέχοι τὸν τόπον• ἥ τε αὖ πηγὴ χαριεστάτη ὑπὸ τῆς πλατάνου ῥεῖ μάλα ψυχροῦ ὕδατος, ὥστε γε τῷ ποδὶ τεκμήρασθαι. Νυμφῶν τέ τινων καὶ Ἀχελῴου ἱερὸν ἀπὸ τῶν κορῶν τε καὶ ἀγαλμάτων ἔοικεν εἶναι. εἰ δ' αὖ βούλει, τὸ εὔπνουν τοῦ τόπου ὡς ἀγαπητὸν καὶ σφόδρα ἡδύ• θερινόν τε καὶ λιγυρόν ὑπηχεῖ τῷ τῶν τεττίγων χορῷ. πάντων δὲ κομψότατον τὸ τῆς πόας, ὅτι ἐν ἠρέμα προσάντει ἱκανὴ πέφυκε κατακλινέντι τὴν κεφαλὴν παγκάλως ἔχειν (la traduction des passages cités de ce dialogue est de L. Brisson 1995).

18 Nous sommes reconnaissante à A. Motte d'avoir renforcé cette interprétation par un argument supplémentaire au cours de la discussion qui a suivi la communication dont cet article est issu: le mythe à la fois 'protologique' et 'eschatologique' que Socrate introduit dans la suite du dialogue (246 a 6 sq.) offre une vision de l'ensemble de l'univers platonicien, composé du monde sensible et du monde intelligible des Idées, que le 'cortège céleste' des dieux et des âmes humaines, avant leur première incarnation, vont contempler périodiquement, pour acquérir la connaissance de la vérité.

19 Voir aussi Bodéüs 1992, 246-248.

20 Pour le rôle des Muses chez les philosophes voir: Boyancé 1972 et Wersinger 1999, 61-81.

21 Pan, dieu aux pieds de bouc des bois et des pâturages, qui aime la musique et la danse en compagnie des Nymphes, est fils d'Hermès – l'inventeur de la parole écrite. Platon le considère dès lors comme le 'frère' et le symbole du logos double. À la fin du dialogue Socrate adresse la 'prière du philosophe' à Pan: voir aussi Motte 1980, 173-204.

22 Voir Éliade 1983, 246.

23 Voir: Éliade 1983, 247-248, ainsi que Bodson 1978 et 1989, 525-548.

24 Pour la nature et les fonctions d'Éros dans l'œuvre de Platon, voir par exemple: Robin 1908; Godel 1955; Gould 1963; Cacoulos 1973, 81-99; Vlastos 1973, 3-42; Mattéi 1990, 55-77 et 1996, 283-306; Somville 1990, 131-134; Impara 1992, 300-304; Osborne 1994; Ménissier 1996; Rhodes 2003; Suárez de la Torre 2003, 423-440; Lefka 2013, 343-426; Lefka 2016, 192-197.

25 Les Sirènes figurent dans Hom., Odyssée, xii, comme des divinités maléfiques.

26 Plat., Phèdre 258 e 6- 259 d 8.

27 Le nom de Calliope peut avoir une double signification: 'celle aux beaux yeux' ou 'celle aux belles paroles': voir aussi Walde 1999, 199. La vue étant métaphoriquement le sens qui permet de connaître (par la contemplation des Idées) ce que les belles paroles du philosophe doivent exprimer, nous ne sommes pas étonnés de ce choix novateur. En même temps, Calliope est attachée la poésie épique. Platon remet en question l'oeuvre éducative de celle-ci et souhaite la remplacer par l'exercice de la philosophie. Quant à Uranie, qui est traditionnellement protectrice de l'astronomie (voir aussi Wüst 1961, 931-942), sa connotation céleste justifie son lien avec la philosophie, qui ramène l'âme auprès du

divin. Cette référence joue un rôle équivalent à celui des invocations au début des discours précédents. Socrate fait état maintenant tout particulièrement de ces deux Muses 'philosophiques'. La forme dialectique remplace dans la suite les compositions oratoires, mais elle n'est pas moins 'inspirée'.

28 Pour la mention des Sirènes à côté des cigales 'personnifiées' et des Muses, liée à des degrés différents d'initiation, voir Assaël 2003, 131-151; A. Motte 1995, 33-48, interprète également le Phèdre sous la lumière de l'initiation aux Mystères. Voir aussi le commentaire intéressant de Gonzalez 2011, 93-110: d'après cet auteur, le mythe des cigales représente bien l'inspiration divine de la philosophie comme un cadeau et un danger à la fois. Le philosophe ne peut honorer les Muses qu'en résistant en même temps à leur chant, car il doit rester un être inspiré et conscient à la fois, contrairement aux poètes (dont la possession enlève la raison), et, nous aimerions ajouter, aux rhéteurs aussi (capables d'un raisonnement lucide mais manquant d'inspiration divine).

29 Chevalier et Gheerbrant 1982 a, 62.

30 Éliade, 1983, 255.

31 Éliade, 1983, 64.

32 Voir aussi Brisson 1992, 61-76.

33 Plat., Phèdre 275 b 5-c 2: Οἱ δέ γ', ὦ φίλε, ἐν τῷ τοῦ Διὸς τοῦ Δωδωναίου ἱερῷ δρυὸς λόγους ἔφησαν μαντικοὺς πρώτους γενέσθαι, τοῖς μὲν οὖν τότε, ἅτε οὐκ οὖσι σοφοῖς ὥσπερ ὑμεῖς οἱ νέοι, ἀπέχρη δρυὸς καί πέτρας ἀκούειν ὑπ'εὐηθείας, εἰ μόνον ἀληθῆ λέγοιεν• σοὶ δ' ἴσως διαφέρει τίς ὁ λέγων καὶ ποδαπός. οὐ γὰρ ἐκεῖνο μόνον σκοπεῖς, εἴτε οὕτως, εἴτε ἄλλως ἔχει;

34 Chevalier et Gheerbrant 1982 b, 221. Pour le lien particulier de Zeus avec le chêne voir: Cook 1903, 174-178, 268-278, 403-421; Cook 1904, 75-89 et Cook 1965, II, 677.

35 Selon Hérodote (II, 52, 54-57), qui adopte une interprétation pragmatique des mythes autour du sujet, l'oracle de Dodone fut fondé en même temps que l'oracle de Zeus Ammon en Libye en tant que μαντεῖον filial de celui de Thèbes, grâce à des prêtresses qui sont arrivées de l'Égypte (représentées symboliquement par des colombes noires, ou, plus précisément, une sorte de pigeons voyageurs perchés dans un chêne): voir aussi Crahay 1956, 94-95.

36 Platon, de manière originale, insiste sur la distinction entre la mantique qu'on peut appeler «intuitive», inspirée par la divinité, et la mantique dite «inductive», issue d'une technique d'interprétation de divers signes divins: voir aussi A. Motte 2013, 9-23.

37 Cette divinité dont le nom est la forme féminine de celui de Zeus, était présentée comme la mère d'Aphrodite, selon Homère, Iliade, V, 370-430; une généalogie à laquelle Platon fait référence dans le Banquet 180 d 8-e 1: voir aussi Bloch 1997, 624.

38 Nous savons en tout cas que le chêne sacré, ainsi que les colombes noires, appelées πελειάδες ou πέλειαι, comme les prêtresses, jouaient un rôle prépondérant pour la transmission des oracles. Des chaudrons d'airain découverts sur le site de Dodone pouvaient également être utilisés. Mis à part les prêtresses, des prêtres, comme les Σελλοί attestés depuis Homère (Iliade, XVI, 233-235), qui marchaient pieds nus et se couchaient par terre, se trouvaient aussi au temple de Zeus. Les lamelles de plomb découvertes progressivement sur le site de Dodone, contenant des questions des consultants et des réponses de l'oracle, arrivent à un nombre extraordinaire et sont actuellement encore soumis à l'étude de spécialistes. Nous nous alignons dès lors pour l'instant aux conclusions prudentes de Gartziou-Tatti 1990, 175-184. Voir aussi: Evangelidis, Dakaris 1959, 1-194; Dakaris 1960, 4-40; Dakaris, Vokotopoulou, Christidis 2013; Rachet 1962, 86-99; Pötscher 1966, 113-147; Parke 1967, 1-163; Bodson 1978, 101 sq.; Tzouvara-Souli 2004, 515-547; Lhôte 2006; Dieterle 2007; Georgoudi 2012, 55-90 (nous saisissons ici l'occasion de remercier S. Georgoudi de la discussion intéressante qui a suivi notre communication et de l'envoi de son article riche en informations).

39 Voir Plat., Phèdre 244 a 3-245 c 4 et 265 a 9-b 5. Pour les quatre 'maniai divines' voir aussi: Brisson 1974, 220-248; Ballériaux 1990, 35-43; Dixsaut 1998, 9-32; Harris 2006, 387-406.

40 Voir Lefka 2003 b, 125-132.

41 Plat., République X, 597 d 5; voir aussi: Brisson 2002, 31-48; Karfík 2007, 129-150.

42 Voir aussi Belfiore 2006, 185-217.

43 Voir aussi: Cacoulos 1973, 81-99; Pender 2011, 327-348; Couloubaritsis 1995, 33-65.

44 Typhon, fils de Gaia et de Tartare, avait cent têtes de serpent sortant de ses épaules (pour d'autres traditions, il était un fils qu'Héra avait engendré par parthénogénèse). Foudroyé par Zeus pendant la Titanomachie, ce monstre orgueilleux fut finalement jeté dans le Tartare et de son corps enflammé naissent encore les vents néfastes qui soufflent sur la mer et la terre, selon Hésiode, Théogonie, 820-835; 859-880. Voir aussi: Brisson 1995, 196-197, n. 47 et Käppel 2010, 59-60.

45 Voir aussi Dyson 1982, 307-311.

46 On plantait des graines dans des tessons ou des paniers et huit jours plus tard on les jetait à la mer ou dans une fontaine, pendant la fête des Adonies, dédiée à la mort prématurée du beau jeune homme aimé par Aphrodite et par Perséphone, qui avait lieu vers la fin juillet, pratiquement au même moment de l'année où le dialogue du Phèdre était censé avoir lieu. Voir aussi: Detienne 1972; Schmidt 2013, 167-177 et Brisson 1995, 60-61 et 233, n. 451 et 452.

47 Plat., Timée 90 a 2 –b 1.

48 Voir Éliade 1983, 2236-239.

49 Pour une analyse détaillée de la présence d'éléments religieux dans le texte philosophique du Phèdre, voir aussi Lefka 2013, 343-426.

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DOSSIER

The Problem of Intermediates, an Introduction

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In March 2018, Sophia Stone and I hosted a conference on the possibility of intermediates in Plato's dialogues at Florida Atlantic University Harriet L. Wilkes Honors College. The six papers that follow this introduction were originally presented at the conference and were revised for inclusion in this volume. In our work, we aimed to preserve the "presentation feel" of the papers and thus they might not have the same degree of notes found in regular journal articles. Although taking this approach does come with some scholarly costs, we believe it is more important and fruitful to preserve the "dialectical aspect" of the papers — we are Platonists, after all.

The problem of intermediates is an expansive philosophical and interpretative issue. A proper study of it requires not only understanding the Platonic corpus but interpretations of it by Plato's students and followers as well. The problem begins — to somewhat of a surprise — with Aristotle. In *Metaphysics* A, Aristotle asserts that

> ...besides sensible things and Forms he [Plato] says there are the objects of mathematics, which occupy an intermediate position, differing from sensible things in being eternal and unchangeable, from Forms in that there are many alike, while the Form itself is in each case unique. (987b14-17; see also B.997b12-24 and M.1076b39-1077a9)

Despite Aristotle's testimony, no place in Plato's corpus do we find an explicit endorsement of intermediate objects. Scholars, thus, face a choice: they can either accept the testimony and mine the corpus for places where Plato might implicitly endorse such a thesis or they can argue that Aristotle was confused and that Plato doesn't think intermediate objects exist.

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For most of history, students of Plato have opted for the former approach. Perhaps the most common place scholars have identified the intermediate objects described by Aristotle is in the Divided Line of the *Republic*. As we know, the line represents a parallel progression in both ontology and epistemology. Socrates carves up the line into four segments, with each corresponding to a unique affection in the soul (*pathēma en tē psuchē*): *noēsis* (knowledge) for the highest condition, *dianoia* (thought) for the second, *pistis* (belief) for the third, and *eikasia* (imagination) for the lowest (6.511d; cf. 7.533d-534a). Some scholars have argued that based on a principle defended in Book 5, each of these affections in the soul must be set over a different object. For in Book 5, Socrates distinguishes knowledge (*epistēmē*), belief (*doxa*), and ignorance (*agnoia*) by arguing that different cognitive *dunameis* (faculties/capacities/powers) are set over different objects (477a-478c). If this principle is accurate and if "affections in the soul" are *dunameis*, then it must be the case that *dianoia* is set over a different object from *noēsis*. Now because *pistis* (belief) corresponds to sensible objects and *noēsis* (knowledge) corresponds to Forms, *dianoia* must correspond to something in between sensible particulars and Forms. When we add to this that *dianoia* deals with the intelligible (*noēton*) and not the visible (*horaton*), and is explained by reference to mathematics (6.510b-e), it begins to look plausible that *dianoia* is set over the mathematical intermediate objects described by Aristotle.

Starting from this position, in, "What are the Objects of *Dianoia*?" Lloyd Gerson seeks to explain the distinctiveness of *dianoia*, both in terms of cognition and ontology. Gerson argues that it is only in relation to the Form of the Good that an explanation can be found. Following the tradition of Platonism, Gerson argues that we must understand the Form of the Good as the One — the only unqualifiedly incomposite. Although everything is related to the One, it relates to nothing since this would make the One complex and thus no longer simple. The objects of *dianoia* are the relational aspects or expressions of Being cognized independently of the Good.

However, since the late 19th century scholars have begun to challenge the legitimacy of Aristotle's testimony. Several details of the divided line raise problems for the "old interpretation"; I'll focus on three. First, the divided line is the perfect place for Socrates to discuss intermediate objects, yet he never does; this makes it doubtful that he actually had these objects in mind. Second, when relating *dianoia* to the methodology of mathematicians, Socrates says that although the mathematician uses visible images and makes claims about them, they pursue their inquiry for "the square itself" (6.510d). This makes it sound like *dianoia* and *noēsis* deal with the same object. Third, provided that Plato actually accepts a principle that different *dunameis* (faculties/capacities/powers) are set over different objects, it doesn't follow that *dianoia* is set over a different object because it is not described as a *dunamis* but an "affection in the soul" (*pathēma en tē psuchē*). It is true that different "faculties" correspond to different "affections," but we cannot infer a difference in faculty from a difference in "affection." Pain and pleasure are different affects, but they can correspond to the same faculty and object.

Indeed, in, "Unclarity and the Intermediates in Plato's Discussions of Clarity in the *Republic*," Nicholas Smith argues that reconciling Socrates' discussion of ontology and epistemology in Book 5 with the account of the divided line is more problematic than scholars have thought. A large source of these problems stems from Socrates appearing to alter his description of the line in Book 7 (533e-534a) from his

initial account in Book 6 (509e-511e). Rather than clarifying the details of the Line, positing intermediate objects in the third segment only obfuscates things. Such an interpretation can neither make sense of the philosophical and proportional entailments of the line nor can it account for what Socrates says in Book 5 about Forms. In Book 5, we learn that *epistēmē* is set over "what is" (477b-478d) and "what is" is a perfect exemplar of whatever it is. The problem with mathematical intermediates is that they too are supposed to be perfect exemplars; thus, they qualify as "what is" by the standards of Book 5. In other words, there doesn't seem to be enough room for intermediates based on what Plato says in Books 5-7.

If this negative interpretation is correct, two questions arise. First, if *dianoia* is always oriented towards Forms and not intermediates, what is it about the mathematical inflection of *dianoia* that prevents a clear apprehension of Forms? Second, if there is no evidence of intermediates in Plato's corpus, what explains Aristotle's testimony? Andy German's, "From Intermediates through Eidetic Numbers: Plato on the Limits of Counting," makes progress on both fronts. German argues that the opacity of *dianoia* results from its inability to grasp the inter-relation of Forms. In developing his argument, German draws on Jacob Klein's analysis of eidetic numbers in the *Sophist*. For Klein, the unsatisfactory attempt in the *Sophist* to understand the inter-relation of formal kinds on analogy to numbers reveals exactly how d*ianoia* cannot grasp the foundations of its own activity. German concludes his paper by explaining how Plato and Aristotle are speaking about the same thing, but not saying the same thing about it.

Emily Katz explores Aristotle's testimony from the other side of the coin in, "The Mixed Mathematical Intermediates." Katz seeks to explain why Aristotle thought it was necessary that Platonists accept intermediates and what this can tell us about Aristotle's own commitments. Many scholars find Aristotle's criticism of Platonism's ontology as merely polemical (see especially, *Metaphysics* B.2.997b12-24 and M.2.1076b39-1077a9). Aristotle reasons that Platonists must be committed to (1) arithmetical and geometrical intermediates, and if this is so, then they must be committed to (2) intermediate sensible things, and if this is so, they must be committed to (3) intermediates of all sensible objects. Many feel that Aristotle is piling absurdities on Platonists; Katz, however, disagrees. Katz argues that Aristotle's criticism is sincere because we find evidence of him voicing similar concerns elsewhere. This casts doubt on any interpretation of Aristotle's philosophy of mathematics that makes him fall prey to the objections he raises against Platonists.

Sophia Stone's paper, "*Monas* and *Psuchē* in the *Phaedo*," shifts focus to the *Phaedo*. Stone explores the various meanings of key mathematical concepts used by Socrates in the dialogues. She argues that a proper understanding of these mathematical concepts not only makes the final proof more plausible, but also demonstrates how there is room in Plato's ontology for the intermediate objects Aristotle attributes to him. The key idea is that *monas* (unit) and *psuchē* (soul) share a dual role: they can both exist embodied in sensible particulars and apart from them. This dual role is due to their ontological status of being in between Forms and sensible particulars.

In his, "*Thumos* and *Doxa* as Intermediates in the *Republic*," Olivier Renaut reminds us that Plato's discussion of intermediates isn't only applicable to metaphysics — after all, Plato is very much a philosopher of intermediates. Across varying subjects, ranging from ethics to cosmology — and everything in between — Plato

seeks to bridge and explain the gap between two poles. Renaut aims to explain the relationship between the psychological intermediate, *thumos* (spirit), and the epistemic intermediate, *doxa* (belief), in the *Republic*. Renaut directs our attention to three connections: (1) the objects of *thumos* are always *doxai*, (2) *thumos* gives power to *doxa* to overcome the appetite, and (3) *thumos* gives *doxa* relative stability. In terms of education, these intermediates are mediations that not only give meaning to the positive pole but also help direct us to it.

This volume is not intended to be the final word on Plato's intermediates, much more work still needs to be done. I hope that this volume not only advances the study of this issue, but also redirects focus on it. I thank all the contributors to this volume and participants at the conference, the *Plato Journal* for the opportunity to present this work, and Sophia Stone for her help with editing the papers and organizing the conference.

What are the Objects of *Dianoia*?

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ABSTRACT

In this paper, I examine the problem of the so-called Mathematical Objects within the context of the Divided Line. I argue that Plato believes that there are such objects but their distinctness and the mode of cognition relative to them can only be understood in relation to the superordinate, unhypothetical first principle of all, the Idea of the Good. The objects of mathematics or διάνοια are, unlike the objects of intellection or νόησις, cognized independently of the Good.

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Aristotle's testimony that Plato introduced "mathematicals" (τὰ μαθηματικά) in between (μεταζύ) Forms (τὰ εἴδη) and sensibles (τὰ αἰσθητά) raises a host of problems, the various solutions to which are no doubt familiar to everyone here.[1] I suppose that any effort to move the discussion forward has to start with some indisputable claims made by Plato especially in the Divided Line passage. I shall begin simply by listing the claims that seem to me to be indisputable or nearly so and then move on quickly to highly disputed territory. Here are the claims that in my opinion should shape our reflections on the putative status of mathematicals:

1. In the Divided Line, Plato makes a hard distinction between the intelligible world and the sensible world, between that which is available only to thought and that which, though available to thought, is so only on the basis of sense-perception.[2]
2. There are a number of correlations or improper proportionalities in the Divided Line: just as (A) the mode of cognition for the top section (ἐπιστήμη) is to (B) the mode of cognition for the bottom section (δόξα), so in the top section, (A1) the mode of cognition in the first part of the top section (νόησις) is to (A2) the mode of cognition in the second part (διάνοια), as in the bottom section, (B1) the mode of cognition of the first part (πίστις) is to (B2) the mode of cognition of the second part (εἰκασία).[3]
3. The distinction between each of the objects of the four modes of cognition is as irreducible as are the distinctions among the four modes of cognition themselves. The distinctions among the objects are to be made according to the criteria of clarity (σαφηνεία) and truth (ἀλήθεια). The first of these criteria suggests the possibility of continuous gradation; on first glance the second does not. Nevertheless, if truth here is "ontological" truth and not "semantic truth," then gradation may well parallel that of clarity. I understand ontological truth as a relational property of Being, the property of being intelligible or transparent to our intellects. So, objects of cognition can be more or less clear and more or less true, that is, more or less intelligible to us. That means that there is a gradation of intelligiblity according to the criterion, roughly, of transparency to an intellect alone. The sensible world is less intelligible than the invisible world because the former is enmeshed in that which is unintelligible or opaque to an intellect (as opposed to the senses).

According to the description of διάνοια and its objects along with Aristotle's testimony, we might conclude that διάνοια has as its objects mathematicals, whereas νόησις has as its objects the paradigms of these: instead of multiple triangles, Triangularity; instead of multiple numbers, Form-Numbers.[4] When the mathematician says, "let there be a triangle," or "take a prime number," using sensible images of these, he is striving to achieve cognitive success regarding Triangularity or Number. Since such success does not turn διάνοια into νόησις, we need to ask first why this is so.

At A1, in order to have νόησις, one must "ascend" to the Good and then "descend" through Forms, presumably back to the Form we started with. Why, if the mathematician

provides a proof of a theorem in geometry, is this not enough? That is, why should the ascent and descent be so significant that it leads Plato to distinguish two modes of cognition, one not making the ascent and descent and one making it?[5] Why is there more clarity and truth in νόησις than in διάνοια?

In order to be able to answer these questions, let us make concrete the mathematical posits. Assume there is a Form of Three and a Form of Four. Supposedly, the Idea of the Good somehow makes these knowable. Since the Forms are not composed of units, they are not addable. It is not the case that the Form of Three and the Form of Four when added are the Form of Seven. Nevertheless, when the mathematician adds the numbers three and four, he gets seven. And it is something about the Form of Three and the Form of Four and the Form of Seven that guarantees that this is an eternal and necessary truth. Stated otherwise, what is needed is a metaphysical explanation of mathematical necessity. This explanation would tell us why a mathematician when doing mathematics does not invent mathematical truths but discovers them.

So, the Form of Three and the Form of Four are to be eternally related such that three plus four is seven is an eternal necessary truth. According to the text, it is the Idea of the Good that enables us to see this relation, and appreciate that it is other than the relation of addition, given that Form-Numbers are not addable. It is, I think, nonsense to maintain that it is the goodness of the Idea of the Good that enables us to see this relation, that once we see that there is an Idea of the Good, we can then see that Three and Four are eternally related such that they guarantee that when we add three and four we get seven. It may well be that in some sense it is good that this is so. But it is unintelligible (to me anyway) that knowing that this is so is necessary for knowing the Forms for one very good reason. If "good" is a property of a Form, we cannot know that the Form is good unless and until we know what that Form is. This is of course the principle laid down in *Euthyphro*.[6] So, if we have to "ascend" to the Good in order to know what a Form is, the claim being made is not that we need to be able to see that the Form is good or, stated otherwise, that it is good that the Form be what it is. It is not the predicative nature of goodness that is at issue, so to speak, but the metaphysical principle, the Good.

The opacity of the claim that the Good is the source of the knowability of Forms and that, in addition, the Forms cannot be known without "ascending" to the Good evidently defeats the ingenuity of those scholars who try to understand what is going on here while staying within the confines of *Republic*.[7] By contrast, the entire Platonic tradition up to the beginning of the 19th century was in accord in taking as evident that we needed to have recourse to Aristotle's testimony about Plato's philosophy and the testimony of the indirect tradition in order to make any progress.[8] Aristotle and the indirect tradition of Platonism do not suppose that it is the Good as such that explains the relatedness of Three and Four; rather, it is because the Good is the One that we can see how the first principle of all unifies the Forms and thus explains the eternal relatedness of Three and Four and *all* the rest of the Forms.

The One is certainly not the number one. Nor is it a unit. The most perspicuous way of describing it is as a uniquely absolutely simple explanatory principle. That is, it is unqualifiedly incomposite. There can be no more than one unqualifiedly incomposite "things"; in addition, there can be no less than one unqualifiedly incomposite "thing". This is evident by inspection (though also derivable from the second hypothesis of the second part of *Par-*

menides). If there were, counterfactually, two absolutely simple first principles, they would have to differ in at least one property. But if either of the relata has a property, it is not simple. So, there cannot be more than one. There must be at least one absolutely simple explanatory principle because without this, we could never arrive at an adequate or sufficient explanation for anything (the τι ἱκανόν) of *Phaedo*. We would, *ex hypothesi,* be left with something complex, something whose very complexity is left unexplained. The relevant complexity at issue for Plato is that of the existence of something with a specific nature. The complexity is owing to the fact that there is a real distinction between the existence and the essence of such a thing. The existence of something or other is not self-explaining. Knowing what, say, F-ness is, does not explain the existence of something whose nature is F-ness. A clear example of this point is found in *Philebus* (15B) where the question of the existence of "monads" like Man, Ox, Beautiful, Good is raised. Implicit in this question is a distinction between *what* the object of the question is and *whether or not* it exists.

How, then, does the Good-as-One give us the answer to our questions? In fact, for a multitude of reasons, the use of the term "thing" for the One is a mistake. Not the least of these is that if the One is a thing, then it can have a real relation to other "things". But if this were so, then the One as relatum would be really distinct from the property that it has in relation to other things. But an absolutely simple first principle cannot be complex in any way. So, while things may be really related to it, it cannot be really related to these things. This logical point will be crucial to understanding the central role of the first principle of all in all types of cognition, including διάνοια.

The One is the principle of everything because it is virtually everything, analogous to the way that white light is virtually all the colors of the spectrum or the way in which a function is virtually its domain and range. It is one thing to grasp a function in its universality. It is quite another thing to grasp a manifestation or application of that function *as such*. And it is yet another thing to grasp the manifestation without knowing that it is a manifestation of that function. This last cognitive achievement is what children do in basic arithmetic before they learn algebra. It is also, by the way, what computers do when they apply the function as a rule without grasping the function in its universality.

The One is virtually all Being not just in the above sense, but in its absolute simplicity. What this means, roughly, is that all Being is virtually one in the principle of Being just as blue and yellow are virtually one in their principle, white light, or $9 = 3^2$ is virtually $x = y^2$ in its principle. So, all the Forms are virtually one. But they are virtually one *only* in their principle. This means that Three and Four are not really or essentially one; they are distinct Forms. They are distinct for an intellect, which is able to see also that they are virtually one. Since the One is uniquely simple, it follows that everything else is complex including, each Form. Yes, the Form is a one-over-many, but this relative unity is not absolute oneness, as we learn, again, from the second hypothesis of the second part of *Parmenides*.

So, when you think that three plus four is seven, you can either not see that the Form of Three and the Form of Four are virtually identical with the Form of Seven or you can see that this is so. If you don't see that this is so, you are only doing mathematics. If you *do* see that this is so, you are doing dialectic or philosophy. That is, you can see that the Forms of Three and Four are virtually identical with the Form of Seven in their principle while being

distinct in their Being. You can see that Being is a one-many because the principle of Being is unqualifiedly or absolutely One. The Form of Living Animal in *Timaeus* (30C-D) which "contains" all the Forms of living things, is virtually all of these. This means, among other things, that all the Forms of living things are internally related analogous to the way that all the integers are internally related. Five cannot be what it is if it is not internally related to Four and Six. But since Forms are not addable, the internal relatedness is not expressible as one Form having one more or one less unit. Rather, the internal relatedness is, again, as the second part of *Parmenides* suggests, that of ordinality or succession.[9] A somewhat more complex internal relatedness is found in the Periodic Table of the elements.

Before we explore further what this means for the Divided Line and for cognition generally, it will be useful to consider the unintelligibility of any alternative explanation that does not adduce the One. Thus, without the principle that unifies the Forms, the Form of Three and the Form of Four (while not addable and while explaining the addability of three and four) are eternally and necessarily related. That is, they are internally related. But the idea of an immaterial internal relation is opaque, to say the least, unless that relation is the relation of identity. Of course, one will object that if it were as simple as that — that is, if Three and Four were identical — then so would Three and Five, and when we add three and four, we could just as well say eight as we could say seven. But the identity relation is in fact that of *relative* identity not formal identity. Only the One is unqualifiedly self-identical; everything else is composite and so everything else has the identity of a composite, which is part of what I mean by relative identity. So, the relative self-identity of Three and the relative self-identity of Four are to be understood as expressions of the relative self-identity of Seven and the relative identity of Three and Four, on the one hand, and Seven, on the other, are expressions of Being. What it means for Being to be relatively self-identical is, among many other things, that one expression of that is the relative identity of three and four with seven and another is the relative identity of three and five with eight. The claim that the necessary truths of mathematics are expressions of Being is not vacuous because Being is not the first principle of all, but the internal complexity of Being requires that we postulate such a principle. This is hardly vacuous.

The term "expression" which I have just introduced takes us closer to understanding διάνοια and its objects. The term is intentionally ambiguous between (a) a manifestation of Being; (b) a proposition used to represent (a); and (c) the assertion by someone of (b). Incidentally, supposing that ἐπιστήμη for Plato has expressions of type (b) as objects is clearly mistaken. The objects of ἐπιστήμη, as the central books of *Republic* tells us, are Forms and expressions of type (b) by means of (a) are, variously, expressions of this ἐπιστήμη, which is a πάθος in the soul not a relationship — intentional or otherwise — between a soul and a proposition.

The proposition 3 + 4 = 7 is an expression of type (b); the asserting of that proposition is an example of an expression of type (c). The internal relations among Forms logically requires their reductive unity by a first principle which stands above or over Being. The "equal-sign" in the proposition indicates the reductive unity of (a). That is, the numbers 3 and 4, on the one hand, and 7, on the other, are two ways of manifesting or expressing Being, that is, type (a). And a proposition (b) asserted by someone in an expression of type (c) states, roughly, that

two "things" are in reality (read: as they are found in Being) actually one.

The idea of thinking that two (or more) things are in reality one is familiar to us in the Fregean example in which the Morning Star is the Evening Star. Long before Frege, however, Aristotle distinguished between there being two λόγοι, but one "thing" in reality.[10] Thus, teaching and learning are different in λόγος but one in εἶναι. Indeed, Aristotle's entire theory of demonstrative knowledge supposes that species and genera of individual substances can be shown to be really relatively identical with their commensurately universal properties by means of the so-called middle term, the definition of the subject. Thus, that to which "human being" refers and that to which "risible" refers are identical, even though the λόγος of human being and the λόγος of risible are distinct. More generally, our ability to identify anything entails our ability to re-identify it. This is so simply because the ability is not time-bound as is that which we identify. Your ability to identify a smell is the identical ability used when re-identifying it. But that which we identify and then re-identify is one thing expressed as two (or more). So, when I say that S at t_1 is identical with S at t_2, I am asserting that one "thing," "S," is identical with two "things," "S-at-t_1" and "S-at-t_2". When I say that $e=mc^2$, I assert that "e" and "mc^2" are two "things" that are in reality one.

On the Divided Line, the objects of διάνοια are, basically, the propositions of mathematics, including definitions, axioms, and theorems. To shift from an arithmetic to a geometric example, the mathematician shows that a tangent touches a circle at only one point, using the definitions of tangent, circle, line, and point. The necessary truth expressed in the demonstration is a necessary truth about Being, the articulatable array of intelligible Forms that are unified by the One. According to the way Socrates describes the Line, διάνοια differs from νόησις because one who has the former does not see that a mathematical proposition is necessarily true because of its truth-maker, the One. The One in the guise of Good, as we learn explicitly, provides truth to the Forms and makes them knowable.[11] The truth it provides is ontological truth, the property possessed by Being itself of being transparent to an intellect. The semantic necessary truth of mathematical propositions is an expression of that. The knowability of Forms is, presumably, what makes it possible for the Demiurge to know Being, and for us somehow to know Being as well, specifically when we intellectually see that which unifies all intelligible being. In διάνοια we do not have knowledge. We can see the necessary truth of a mathematical proposition, but seeing that 3 + 4 = 7 is not seeing that the Form of Three and the Form of Four are relatively identical with the Form of Seven. This difference is the truth underlying Aristotle's claim that Plato posited mathematicals. When we add, we are not cognizing Forms since Forms are not addable. We are adding representations or manifestations of Forms. When we add (correctly) 3 and 4 and see that they are necessarily equal to 7, we do something that depends on their relative identity, but we do not cognize this. A contemporary philosopher of mathematics who happens to be a Platonist will say that 3 + 4 = 7 is an eternal and necessary truth, but will deny that this truth needs a truth-maker. She will deny that 3 and 4, on the one hand, and 7 on the other are identical in any way. The assertion of the brute facts of mathematics is no doubt why many philosophers of mathematics are disinclined to be Platonists because Plato insists that this is not the end of the story. Indeed, it is only the beginning of the story if you aim to understand reality comprehensively.

All cognition for Plato is a unificatory process. Cognition is strictly parallel to the unificatory process of reduction of Forms to Numbers and Numbers to the principles of One and Indefinite Dyad and, conversely, the derivation of all plurality from the One. I should add that, for Plato, moral progress is a unificatory process, too, and moral regress a process of dis-unification or dispersal. So, the virtuous person is one who becomes one out of many and the vicious person is one who is dis-unified by self-identification with a multitude of adventitious appetites. Our moral progress, as we learn in *Symposium*, *Republic*, and elsewhere, is primarily identification with our intellects. Thus, the unificatory process of cognition is continuous with the unificatory process of Platonic salvation. "Assimilation to god," or more accurately the process of making one the same as god requires moral virtue but is only achievable by philosophy, exactly as that is portrayed in the central books of *Republic*. The knowledge that is the mode of cognition of philosophers alone — given that the objects of this mode of cognition are recognized as existing only by philosophers — consists in seeing Being as a one-many. And this seeing is just becoming that one-many, that is, achieving cognitive identity with Being.

We may approach the metaphysical and epistemological vision developed in the Divided Line in another way. As we know from *Parmenides* (132B2ff), Plato makes a sharp distinction between a Form, which is intelligible (νοητόν) and a "concept" (νόημα). The concept is the Form as conceived by us. In διάνοια, the mathematician trades in concepts, for example, the concept of a plane figure or the concept of an odd number. These are λόγοι of the Forms. As Plato says in *Sophist*, διάνοια is just λόγος in the soul, that is, talking to oneself (263E3-5). When the διάνοια comes to a completion, so to speak, there is assertion (φάσις) and denial (κατάφασις) (E12). So, there is propositional content in διάνοια. Plato adds, by the way, that the name for this completion, whether it be an assertion or a denial is δόξα, a clear development of the scope of this term from *Republic*. Nevertheless, δόξα, even with this expansion of meaning, and ἐπιστήμη, are still sharply distinguished by their objects (cf. 533C8-D9).

The fact that one who has or pursues διάνοια is bound to use images seems to be one crucial point in the differentiation of διάνοια and ἐπιστήμη. The question that arises with regard to these images concerns their relation to the Forms themselves. How, for example, is the image of the circle used by the mathematician related to Circularity? This is of course a large and portentous topic, but here I want to distinguish between the instrumental use of the image and the content of the thinking. We won't get very far if we concentrate on a supposed two-term relation between, say, a picture of a circle and the Form of Circularity. We need, rather, a three-term relation which includes both the picture and the Form, but also includes the manner of cognition, that is, the manner of cognizing the νόημα. To think about circularity using the picture is to think the Form of Circularity universally. A Form itself is not a universal; nor is it a particular. The identical Form is present particularly in its instances and universally when it is cognized by us. In itself, it is neither universal nor particular. To cognize a Form universally is always to cognize it by means of an image of some sort. Perhaps paradoxically, thinking of Forms universally necessarily involves images, thus preventing our unqualified cognitive identity with these Forms. Trading in images, one cannot attain to ἐπιστήμη. The necessity and eternality that the mathematician sees in the truths of mathematics cannot be cogni-

tion of the internal relatedness of the Forms themselves. Saying that it is impossible that 3 + 4 equals anything but 7, is not seeing the relative identity of both sides of the equation. Rather, it is seeing an image of that internal relatedness. Cognizing universally is actually an impediment to the highest type of cognition. The Demiurge certainly does not have images of Forms; rather, he is cognizing the Forms themselves. He is cognitively identical with the Forms themselves. The Middle Platonic and then later, Christian, idea that the Forms are νόηματα in the mind of God misses this point. Aristotle is prepared to call ἐπιστήμη just this διάνοια, yet reserving a higher mode of cognition for the Unmoved Mover, namely, νόησις.

Of course, there are mathematicals, one sort of image of Forms. But there also seem to be non-mathematical or qualitative images of Forms. For example, to think that crimson is darker than pink is to think a necessary and eternal truth. Is the truth-maker for this truth an internal relation between Form-Numbers? It would seem so if the *only* way that the Demiurge puts intelligibility into the cosmos is by the use of shapes and numbers (εἴδεσί τε καὶ ἀριθμοῖς) (*Tim.* 53B1-5; cf. *Phil.* 24E7-25B2). The idea here is that intelligibility is mathematical in the sense of structural — whether dynamic or static — whereas the quasi-intelligible three-dimensional sensible world is compromised by spatiality or materiality, a principle of non-intelligibility manifested by the Receptacle. Owing to this principle, sensibles have scattered being (σκεδαστὴ οὐσία). The mathematical ordering of intelligible Being — what Descartes sought in a *mathesis universalis* — is imaged by a world that looks exactly like the one we live in. But the διάνοια that mathematicians engage in would not be possible if that mathematical ordering were not itself an image or expression of the first principle of all.

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NOTES

1 The fundamental divide is whether there are distinct objects of διάνοια, the so-called mathematical or whether these are Forms. Holding the former view are Adam (1920, 2nd edition 1963); Burnyeat (2000); Denyer (2007), among many others; holding the latter view with variations are Ross (1951); Murphy (1951); Smith (1996), among many others.

2 *Rep.* 507B9-10.

3 *Rep.* 509D6ff.

4 See *Meta.* A 6, 987b14-20, M 2, 1077a14ff.

5 See *Rep.* 511B2-D5 where νόησις and διάνοια are clearly distinguished by the fact that the first "attains" the Good whereas the second does not.

6 See *Eu*. 9C-11A.

7 For a lemmatized list of various interpretations of the Good and their principal supporters see Fronterotta (2001): 137-8, n.38.

8 See for a concise and comprehensive examination of the relevant indirect tradition Richard (2005), building on the seminal work of Krämer (1958, 2nd edition 1967), Gaiser (1963, 2nd edition 1968) and Szlezák (1988, 2nd edition 1992).

9 See *Parm*. 142C-145A.

10 See e.g, A 2, 185b32-34.

11 See *Rep*. 508E1-4 with 508A9-B7, 509B6, 17C2-3.

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Μονάς and ψυχή in the *Phaedo*

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ABSTRACT

The paper analyzes the final proof with Greek mathematics and the possibility of intermediates in the *Phaedo*. The final proof in Plato's *Phaedo* depends on a claim at 105c6, that μονάς, 'unit', generates περιττός 'odd' in number. So, ψυχή 'soul' generates ζωή 'life' in a body, at 105c10-11. Yet commentators disagree how to understand these mathematical terms and their relation to the soul in Plato's arguments. The Greek mathematicians understood odd numbers in one of two ways: either that which is not divisible into two equal parts, or that which differs from an even number by a unit. (Euclid VII.7) Plato uses the second way in the final proof. This paper argues that a proper understanding of these mathematical terms within Greek mathematics shows that the argument for the final proof is better than previously thought. Such an interpretation of the final proof lends credence to Platonic intermediates.

Keywords: soul, number, the Odd, the Even, unit, immortality, *Phaedo*, intermediates

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At the end of 'Equals and Intermediates in Plato', John Rist concludes that the attempts to show Plato held a doctrine of intermediates in the dialogues should be suspect, yet admits that in some passages, 'Plato appears to discuss a plurality of non-sensible μονάδες.'[1] While it may prove problematic to uncover a 'doctrine' of intermediates in the dialogues, it is equally problematic to understand his arguments without attention to Plato's use of mathematical concepts. I explore Rist's suggestion by analyzing three passages in the *Phaedo,* that non-sensible units may indicate intermediates, mathematical objects between Forms and sensible objects[2].

The Greek conception of ἀριθμός, 'number' as a limited multitude (Euclid VII.2) is crucial for understanding Plato's use of sensible and non-sensible multitudes in the argument for the final proof of the immortality of the soul.[3] The final proof relies on an analogy between the presence of life in the soul determining the soul's immortality and the presence of μονάς in an ἀριθμός determining three's being odd. The analogy, as I understand it, is this: just as μονάς is a sign that a number is odd, ψυχή is a sign that a body is alive. The Greek mathematicians understood odd numbers in one of two ways: either that which is not divisible into two equal parts, or that which differs from an even number by a unit. (Euclid VII.7) Plato in the *Phaedo* at 105c6 is clearly using the latter definition. We should apply this second definition to the analogy in the final proof: the left over monad in odd ἀριθμοί is analogous to the life bearing soul that makes a composite body and soul alive.

In Greek mathematics, one of the limits in an ἀριθμός is how it can be divided, whether that division is equal or unequal, these divisions were called ἄρτιος 'even' and περιττός 'odd,' respectively. This is why Plato understood the unit 'left over' from an equal division of multitudes to entail necessarily that the multitude is "odd." (Euclid VII.7) We can see why Plato would use Greek mathematical notions to argue for the immortality of the soul. Just as there is nothing intrinsic that makes a body alive, there is nothing intrinsic to a number — only to an even one — that makes it have an equal collection of units. Yet there is a necessary connection with a soul's participation in the Form Life, which makes the soul 'alive', just as there is a necessary connection with a unit's participation in the Form Odd, which makes the unit 'odd'. This is how the 'safe' hypothesis at 100b5-8 and the 'safer' hypothesis, the 'subtler' answers at 105b8-c2 come together. The subtler answer tracks why the soul makes a body alive, and the original safe answer tracks why the Form Life makes the soul alive.[4] Analogously, the subtler answer tracks why the unit makes an ἀριθμός odd, and the original safe answer (presumably) tracks why the Form Odd makes the unit odd. What my analysis shows is that Plato's argument for the immortality of the soul depends on the Greek mathematical understanding of number, and moreover, if I am right, makes room for what Aristotle called τὰ μαθηματικά, and attributed them to Plato, who supposedly held these objects to be τὰ μεταχύ, between Forms and sensible particulars.[5]

I first discuss the passage at 103e9 to 104b4, where Socrates demonstrates an expansion of his initial hypothesis given at 100d4-7. The initial hypothesis is that all *F* things are *F* by virtue of participating in the *F*. In the expansion, Socrates claims that there is something else that is not the *F,* but nevertheless is called *F* by virtue of its character. (103e2-5) Socrates demonstrates the claim with numbers, separating the odd

from the even. Yet the two series of number do not completely line up. In the Greek, the odd numbers are in the feminine singular while the even numbers are in the neuter plural. I examine these two series of number, and argue that the differences between these two demonstrate essential and non-essential characteristics, aligning with two ways of being for number. These differences are important for understanding the analogy in the final proof, that three is odd as soul is alive, and their two ways of being, itself by itself and with extended objects. Then I examine the passage in the *Phaedo* at 105c6, where Socrates discusses the subtler answers, and present interpretations from other commentators to show that how the term μονάς is understood makes the difference for evaluation of the final proof. I provide my own translations, however I encourage the reader to compare several different translations. Here I discuss μονάς, ἀριθμός, περιττός and ἄρτιος within the context of the passage, and then go on to examine the logic of the final proof. I argue that Plato seamlessly changes from a collection of three things (τὰ τρία) to the character of being three (ἡ τρίας), that these *arithmoi* are collections of things in the first case and a collection of Form characters, or 'units' in the second case. Scholars tend to take ἡ τρίας as a Form, and posit Form numbers for Plato. However, this is a mistake. If three is an *arithmos,* it cannot be a Form. There are no Form numbers, when numbers are understood to be a limited multitude.[6]

FIRST PASSAGE

In the first passage under discussion, Socrates distinguishes the Forms Odd and Even from their instantiations. The first line of numbers is odd 'by nature', the second line of numbers is even but Socrates leaves out the 'by nature' qualification.[7] The other distinction he makes that few commentators point out is that the odd line of numbers is in the feminine singular whereas the even line of numbers is in the neuter plural. This is from 103e9 to 104b4:

> [T1] Ἆρα μόνον τῶν ὄντων — τοῦτο γὰρ ἐρωτῶ — ἢ καὶ ἄλλο τι ὃ ἔστι μὲν οὐχ ὅπερ τὸ περιττόν, ὅμως δὲ δεῖ αὐτὸ μετὰ τοῦ ἑαυτοῦ ὀνόματος καὶ τοῦτο καλεῖν ἀεὶ διὰ τὸ οὕτω πεφυκέναι ὥστε τοῦ περιττοῦ μηδέποτε ἀπολείπεσθαι; λέγω δὲ αὐτὸ εἶναι οἷον καὶ ἡ τριὰς πέπονθε καὶ ἄλλα πολλά. σκόπει δὲ περὶ τῆς τριάδος. ἆρα οὐ δοκεῖ σοι τῷ τε αὑτῆς ὀνόματι ἀεὶ προσαγορευτέα εἶναι καὶ τῷ τοῦ περιττοῦ, ὄντος οὐχ ὅπερ τῆς τριάδος; ἀλλ' ὅμως οὕτως πέφυκε καὶ ἡ τριὰς καὶ ἡ πεμπτὰς καὶ ὁ ἥμισυς τοῦ ἀριθμοῦ ἅπας, ὥστε οὐκ ὢν ὅπερ τὸ περιττὸν ἀεὶ ἕκαστος αὐτῶν ἐστι περιττός· καὶ αὖ τὰ δύο καὶ τὰ τέτταρα καὶ ἅπας ὁ ἕτερος αὖ στίχος τοῦ ἀριθμοῦ οὐκ ὢν ὅπερ τὸ ἄρτιον ὅμως ἕκαστος αὐτῶν ἄρτιός ἐστιν ἀεί· συγχωρεῖς ἢ οὔ;
>
> Is it the case then that there are only these beings — for this is the question you must answer — or rather is there something else which is not the Odd, but all the same it is necessarily with its own name and this always is called odd on account of its nature, with the result that it is never separate from the odd? I mean the triad to be in this way and the many others. Consider the triad. Does it seem to you to always be with its own name and to be odd, not just being

> three? And so it is this way by nature too the triad and the quintet and the whole half of the multitude, with the result that none are the Odd, but each of them is always odd; and again the twos and the fours and the whole other line of number, none is the Even, nevertheless each of them always is even. Are you in agreement, or not?

There is much disagreement in the literature with respect to these two lines of number. Some take it for granted that Socrates is talking about the same line of number, as if he were simply talking about the cardinal or natural number system: 0, 1, 2, 3, 4, 5, etc. That assumption, however, doesn't acknowledge the differences that Socrates makes not just with the odd and even numbers, but the number in kind. Also, our cardinal numbers begin with 0, which at the time of Plato the Greeks didn't have.[8] Many assumed in the *Phaedo* that ἡ τρίας (104a4, 104a8, 104e5, 104e8), τρία (104c3), τρισίν (104d6) and τὰ τρία (104c1, 104e1, 104e3, 106a1, 106b5, 106c5) are the same in that they all mean 'three' and are just simply, 'three'.[9] While it is true that these terms all designate 'three,' it is quite possible that when Plato writes ἡ τρίας, he either means the Form three or a triad (an ontological difference to be sure), accessible to the mind, and that when he writes τὰ τρία he means a trio of bodied particulars, what we see in the sensible world.[10] In fact, these two kinds of number line up with other passages in Plato's dialogues, *Republic* VI 510e5-511a2, VII 525a7-c6, *Theaetetus,* 198c1-2, *Philebus* 56d4-57a4, where number comes in kinds and for different purposes. So when the Greek text in the *Phaedo* at 104a-106c5 switches in gender and number for the number three, for example, we should not assume, as many have, that these numbers share the same ontological status.[11] Instead, we need to ask what these changes mean for the argument that contains them.

I suggest that the passage under consideration, 103d9-104b7, uses not one but two different lines of number, if we were to take the differences in number and gender seriously. The objects Socrates discusses, what we call odd, τὸ περιττόν, are not the Form, yet he points out that we always call them odd on account of their nature, διὰ τὸ οὕτω πεφυκέναι, because the odd never leaves them. Such is the nature of the triad, quintet, and the half of the whole multitude; ἡ τριὰς, ἡ πεμπτὰς καὶ ὁ ἥμισυς τοῦ ἀριθμοῦ ἅπας, 104a7-b1. As mentioned before, this half is in the feminine singular. Ronna Burger points out that this line of number is odd by nature and the 'by nature' designation is explicitly made for the odd numbers, whereas when Socrates discusses the other line of number, the even, τὸ ἄρτιον, the "by nature" designation is explicitly left out.[12] Admittedly, there is much we don't know about these two lines of number. The odd numbers he lists here may not be inclusive of every number, or they may be. The same is true for the even numbers he lists. What we do know, though, is that the odd numbers he lists are odd 'by nature' and that these are designated in the feminine singular. In contrast, the even numbers that he lists are not even by nature, or at least he doesn't say that they are, and these even numbers are designated in the neuter plural. Burger has argued that the reason the even numbers are not by nature even is because being even is simply that which is capable of being divided into two equal parts, and this is common to not just numbers but also infinitely divisible magnitudes.[13] What her account entails then is that only discrete and countable numbers

containing units can be odd. Burger assumes that Socrates is talking about the same number line and doesn't account for the differences in number (i.e. singular and plural) of the two lines. Moreover, Burger's account leaves out the first disjunct of Euclid's definition of odd in Book VII.7, that in contrast to an even number, the odd can also be that which is not divisible into two equal parts. What is more probable and what I offer here is that the 'by nature' designation for περιττός in the first line of ἀριθμός means to establish a necessary relation with an object and its essential characteristic, and that the leaving out 'by nature' may mean an accidental relation, not necessary to the objects themselves.[14]

If this is right, then Socrates is not distinguishing the nature of odd and the even, two aspects of *arithmos*, rather, Socrates is distinguishing the nature of two kinds of number: whether they are themselves by themselves or whether they are connected to a composite, to a body. These τὰ τρία are odd not by nature, in contrast to the cases of ἡ τριὰς, ἡ πεμπτὰς καὶ ὁ ἥμισυς τοῦ ἀριθμοῦ ἅπας, at 104a7-b1, which are odd by nature. We call three objects odd, as with the neuter plural even numbers listed at 104b2-3, but these composite objects are not their number by nature, but by the number they happen to have. I take Burger's point that the first line of number at 104a7-8 is odd by nature, but not because of the nature of odd numbers, but because of the nature of abstract numbers, numbers 'themselves by themselves,' separate from their sensible objects. My view leaves open the possibility, in contrast to Burger's interpretation, that even numbers are also even by nature if they are even in the abstract. Magnitudes and counted objects, which are necessarily composite, are not odd or even by their nature. In other words, when you have a solid or when you have a bundle of objects, you only discover an odd or an even number when you further limit the multitudes into those which can be equally divided and those that cannot.

SECOND PASSAGE

Socrates prepares for the analogy of μονάς and ψυχή in our second passage at 105b8-c6. Note that this passage is where Socrates transitions from the safe hypothesis to the more subtle hypothesis posited here.[15] This subtler hypothesis claims that there is something else in addition to the *F* that generates characteristics in objects:[16]

> [**T2**] εἰ γὰρ ἔροιό με ᾧ ἂν τί ἐν τῷ σώματι ἐγγένηται θερμὸν ἔσται, οὐ τὴν ἀσφαλῆ σοι ἐρῶ ἀπόκρισιν ἐκείνην τὴν ἀμαθῆ, ὅτι ᾧ ἂν θερμότης, ἀλλὰ κομψοτέραν ἐκ τῶν νῦν, ὅτι ᾧ ἂν πῦρ· οὐ δὲ ἂν ἔρῃ ᾧ ἂν σώματι τί ἐγγένηται νοσήσει, οὐκ ἐρῶ ὅτι ᾧ ἂν νόσος, ἀλλ' ᾧ ἂν πυρετός· οὐδ' ᾧ ἂν ἀριθμῷ τί ἐγγένηται περιττὸς ἔσται, οὐκ ἐρῶ ᾧ ἂν περιττότης, ἀλλ' ᾧ ἂν μονάς, καὶ τἆλλα οὕτως. ἀλλ' ὅρα εἰ ἤδη ἱκανῶς οἶσθ' ὅτι βούλομαι.
>
> So, if you were to ask me by whichever thing in a body would generate heat, I would not give the safe answer that is unlearned, that would be heat, but a more sophisticated answer from those now, fire; nor if you were to ask me by whichever thing in a body generates illness, I would not answer illness, but rather fever; nor if you were to ask me by whichever thing would generate odd in an *arithmos*, I would not answer that of oddness, but a unit, and the others, too, in this way. But see whether you already grasp sufficiently what I want you to know.

In T2, Socrates gives three examples that generate characteristics in things, and these go beyond the safe hypothesis given at 100c-101c.[17] The first two examples should be distinguished from the third, as the first two are about affects in bodies, and the third is about affect in an *arithmos*, which may or may not be bodied. Moreover, when Socrates makes the final steps in his last proof for the immortality of the soul, he doesn't use fire, fever or even heat, for that matter, but the Forms Odd and Even and the numbers three and two. (105c9-e9) In any case, the first two examples use fire and fever to generate heat and illness in bodies, and note that bodies are extended objects.[18] The third example is about the generation of an affect in an ἀριθμός, which need not be an extended object. While the point seems obvious, it would be beneficial to try to understand Plato's choice of *arithmos* here within the context of Greek mathematics.

Arithmos is what we tend to translate as 'number', but the concept of Greek number is much different from our own, the proper definition is a limited multitude. (Euclid VII.2) Plato's use here is that the μονάς generates περιττός, the "odd" in a multitude. Recall from before that the definition we get from Euclid for περιττός comes in a disjunction, the 'odd' is that which cannot be divisible in two equal parts, [or] that which differs from an even number by a unit. (Euclid VII.7) Note that the first disjunct includes magnitudes or extended objects such as lines, planes and bodies, as well as discrete units but the second disjunct could only apply to discrete comparable units. It is important for us to realize that *arithmos* can be any collection of units, or a collection of sensible things depending on the context, but what *arithmos* cannot be is a Form.[19] Why *arithmos* cannot be a Form is that, by definition, *arithmos* is a 'many' and so cannot be 'one'. While μονάς is said to be 'one' and follows the first definition in Euclid VII, *monas* is that by which each thing is called 'one', different interpretations have led to different understandings of T2, which lead to more or less negative evaluations of the final proof. Part of the interpretive issue in T2 is how commentators have understood μονάς within the context of the passage.

In Greek, μονάς could be understood as 'unity,' 'oneness,' 'one,' or a 'unit.' Often these terms are used interchangeably. I defend here the 'unit' in T2. I'll briefly go through the first three possibilities before I give my own account. Μονάς understood as 'unity,' implies that the whole is a singularity, a 'one' without parts (*Philebus* 15b1-8, *Parmenides* 137c6-d3), in other words, the totality of one. Yet 'unity' in our parlance, implies parts, just like a whole implies parts. Not only does unity without parts sound like a contradiction, it does not get us any closer to understanding Plato's choice of μονάς in T2. 'Oneness,' is that aspect of being 'one', which can also be another word for τὸ ἕν, the Form One. But it is not simply one that is under consideration here, but the unit and its relation to a multitude. 'One' for the Greeks is that beginning from which we count, but it is not something to be counted (*Laws* 818c4-6). While we think of 'one' as the first natural number, it cannot be stated too often that 'one' is not an ἀριθμός for Plato, as it is not a multitude.[20] Ἀριθμός, which is a plurality, is that which is τὰ μεταχὺ, 'between' one and the unlimited. (*Philebus* 16c10-e2) The reason why we should take μονάς to mean 'unit' at 105c6 is due to the necessary connection that the single unit has to περιττός after a plurality of units have been divided into two parts. When the two parts are equal to each other, the whole ἀριθμός is said to be ἄρτιος, 'even'. (*Laws* 895e1-8; Euclid

VII.6) When the two unequal parts differ by a single unit, the whole ἀριθμός is said to be περιττός. (Euclid VII. 7)

Remember that any multitude can be a kind of ἀριθμός, and can be divided equally or unequally. We already saw two kinds of *arithmos* in our T1 passage, distinguishing abstract odd *arithmos* from embodied even *arithmos*. Likewise, there are unit, plane, and solid *arithmoi*. In the *Euthyphro,* Plato uses for example an isosceles *arithmos,* what we call an 'isosceles triangle'. Plato says there at 12d8-10 that the isosceles is also ἄρτιος, which must mean that an isosceles triangle can be divided equally, whereas a scalene triangle cannot. In the *Theaetetus* at 148a6-9, where Plato introduces to us the problem of incommensurables, οὐ συμμέτρους, he has Theaetetus discuss square and oblong plane ἀριθμοί — these are multitudes of units arranged in the shape of rectangles, formed by the product of like numbers or unlike numbers.[21] While περιττός and ἄρτιος can be predicated to any object, to any multitude, it is only the lone μονάς that is left over from what can be equally divided as 'discrete and indivisible units' that marks περιττός in that kind of ἀριθμός.[22] Though μονάς itself is not a number, it is still περιττός.[23] Why this would be true for the Greek mathematicians can be found in Euclid IX, proposition 27.[24] Traditionally μονάς has not been understood quite this way in the passage under consideration.

Monάs Interpretations in T1

There are scholars who try to understand *monas* within the confines of the arguments in the *Phaedo* without attention to the Greek mathematical understanding of *monas* and *arithmos*. Burnet says that *monas* means here 'unity' but then he finds fault with Plato's argument. In a note he says that 'there are other odd numbers than the number one'.[25] Burnet takes 'unity' to mean 'one', a common understanding of the term. Yet as noted before, 'one' could not be an *arithmos* for Plato, since one is not a multitude. One might think that an advantage to Burnet's account is that if 'unity' were identified with 'one' then *monas* would be sufficient to generate the odd in *arithmos*. Yet Plato is not looking for a sufficient generation, since at 105d1-3 he will need to use an exclusion of a specific opposite for the final proof, something that will necessarily exclude death from the soul, just as he needs something that will necessarily exclude the even in a particular *arithmos*. The crucial turn in the final proof is at 105d6-12, where soul necessarily excludes death. So whatever has soul is not dead. But to prove that the soul is immortal, ἀθάνατος, Socrates must show that soul is the kind of thing that exists separately from the body, and never admits death. As Kanayama points out, ἀθάνατος does not simply mean 'alive' it means not admitting death.[26] Whether it is the case that fire and fever only apply to extended objects or something else, Socrates leaves these subtle answers, and focuses on three being odd by the unit in the final proof. Yet there are more ways commentators have thought about μονάς in the T2 passage.

Bluck says that μονάς is 'oneness' but leaves 'oneness' out of his analysis of the final proof.[27] 'Oneness' might work for a generation of περιττός if we understand περιττός as that which cannot be divided into two equal parts. We'd have to understand 'oneness' here as something that cannot be divided at all for it to be in harmony with the account of the odd in Euclid VII.7. Yet, 'oneness' alone would not generate περιττός in an ἀριθμός since an *arithmos* is more than one and so can be di-

vided. In other words, 'oneness' could not be applied to a multitude. Nor can μονάς be understood as a Form, as Hackforth did, though interestingly in his text he translates μονάς as 'unit,' and explains the analogy in this way: 'Just as μονάς brings up περιττότης and excludes ἀρτιότης, so ψυχή brings up ζωή and excludes θάνατος. All these are Forms.'[28] It doesn't make sense for a unit to be a Form, as there are multiple units in an ἀριθμός, and if what Plato says about forms at 78d1-d7 holds, then a Form can only be μονοειδὲς ὂν αὐτὸ καθ'αὑτό, as Bluck translates, 'being of single Form when taken by itself,'[29] — there can only be one of its kind, not many. Yet I agree with Hackforth when he says that μονάς excludes ἄρτιος by being the unit 'left over' in the middle.[30] This, in fact, is closer to the second disjunct of the definition of odd in Euclid's *Elements* VII.7.

There are others who completely leave out *monas* in their evaluation of the final proof and not surprisingly their evaluations often claim that the final proof fails.[31] Bostock leaves out a discussion of μονάς altogether in his analysis of the analogy of soul being alive and three being odd, and he claims that three must be a Form.[32] This leads to interpretive grief for Bostock, as he says the more subtle causes are 'a mixed lot': some being Forms, others being Forms-in--somethings and others being physical stuffs. Bostock says that they give us little guidance as to how to understand the most important cause, soul.[33] Schiller, though he suggests intermediates, leaves out a discussion of μονάς.[34] Yet it is precisely μονάς, as itself by itself, and as a collection of equally divided units that give us the designations τὸ ἄρτιον and τὸ περιττόν. As demonstrated previously in the T1 passage, the multitude here can mean sensible or non--sensible objects, whatever can be 'counted', whether that is through our senses or through thought, whether what are counted come from extended or non extended objects.[35]

To recap, for the Greeks and for Plato, most importantly, number, i.e., *arithmos,* is a limited multitude — it is what can be counted. We see evidence for this in the *Theatetus* at 198c4-6, where Theatetus agrees with Socrates that 'we should take counting to be nothing other than seeing how many (*posos*) any number happens to be': τὸ δὲ ἀριθμεῖν οὐκ ἄλλο τιθήσομεν τοῦ σκοπεῖσθαι πόσος τις ἀριθμὸς τυγχάνει ὤν. So one as such is not a number because there is not a multitude in one, but simply, one unit, the monad, ἡ μονάς. The unit is by means of which we count, but it is not what is counted. On this view, two begins the number series. We see 'two' beginning the number series in the T1 passage at 103e9 to 104b4. Every number is not just a limited multitude, but every countable number also contains comparable units equal to themselves.[36] Units are τὰ ἴσα 'equals' to one another in a multitude. Moreover, we should remember that Plato avails himself of more than one kind of number. In his *Republic* at 525 b-d Plato distinguishes pure number from counting things that you can see and touch. The passages in Plato's *Euthyphro, Theaetetus*, and *Philebus* previously discussed demonstrate that μονάδα, 'units' are counted, but the kind of objects counted, determine the relations among units, and these relations are determined by Forms. For now, what is important to conclude about passage 105c4-6 in the *Phaedo* is that Plato has a very specific relation of μονάδα and their ἀριθμός and the Forms περιττός and ἄρτιος in mind for the final proof.

THIRD PASSAGE

The third and last passage under consideration is the argument by analogy in the final proof (105c9-105e8):

[T3] Ἀποκρίνου δή, ἦ δ' ὅς, ᾧ ἄν τί ἐγγένηται σώματι ζῶν ἔσται;
Ὧι ἄν ψυχή, ἔφη.
Οὐκοῦν ἀεὶ τοῦτο οὕτως ἔχει;
Πῶς γὰρ οὐχί; ἦ δ' ὅς.
Ψυχὴ ἄρα ὅτι ἂν αὐτὴ κατάσχῃ, ἀεὶ ἥκει ἐπ' ἐκεῖνο φέρουσα ζωήν;
Ἥκει μέντοι, ἔφη.
Πότερον δ' ἔστι τι ζωῇ ἐναντίον ἢ οὐδέν;
Ἔστιν, ἔφη.
Τί;
Θάνατος.
Οὐκοῦν ψυχὴ τὸ ἐναντίον ᾧ αὐτὴ ἐπιφέρει ἀεὶ οὐ μή ποτε δέξηται, ὡς ἐκ τῶν πρόσθεν ὡμολόγηται;
Καὶ μάλα σφόδρα, ἔφη ὁ Κέβης.
Τί οὖν; τὸ μὴ δεχόμενον τὴν τοῦ ἀρτίου ἰδέαν τί νυνδὴ ὠνομάζομεν;
Ἀνάρτιον, ἔφη.
Τὸ δὲ δίκαιον μὴ δεχόμενον καὶ ὃ ἄν μουσικὸν μὴ δέχηται;
Ἄμουσον, ἔφη, τὸ δὲ ἄδικον.
Εἶεν· ὃ δ' ἄν θάνατον μὴ δέχηται τί καλοῦμεν;
Ἀθάνατον, ἔφη.
Οὐκοῦν ψυχὴ οὐ δέχεται θάνατον;
Οὔ.
Ἀθάνατον ἄρα ψυχή.
Ἀθάνατον.
Εἶεν, ἔφη· τοῦτο μὲν δὴ ἀποδεδεῖχθαι φῶμεν; ἢ πῶς δοκεῖ;
Καὶ μάλα γε ἱκανῶς, ὦ Σώκρατες.

Then tell me, what in a body will generate life?
The soul, he said.
Does it always do this?
Why wouldn't it?
Then isn't it soul that always brings life upon that which it occupies?
Indeed it brings.
Then is there something opposite to life, or not?
There is.
What?
Death.
Then isn't the opposite to which soul brings never admitted, as we agreed before?
Indeed, most definitely said Cebes.
What then? What name did we call just now the Form that does not admit the even?
Uneven, he said.
And what do we call that which doesn't admit justice and the musical?
Un-musical and un-just.
It is; what do we call that which wouldn't admit death?
The un-dead.
Then isn't it the soul that doesn't admit death?
Yes.
Then the soul is un-dead.
It is, he said; Would you say that we proved this, or how does it seem to you?
Indeed, sufficiently proved, Socrates.

Soul is that 'whatever thing' that generates life in a body. This answer matches the μονάς that generates odd in an *arithmos*. As noted previously, ψυχή and μονάς are decidedly different from fire and fever, the other more subtle answers. It is not only that μονάς and ψυχή necessarily and sufficiently gener-

ate their essential characteristics, being odd and being alive, it is that what ἀριθμός and ψυχή are here is ambiguous; they have a double existence. Number can exist abstractly, and necessarily be odd or even by nature, such as περιττός in ἡ τριὰς, καὶ ἡ πεμπτὰς and all the rest. (104a8) These are not sensible bodies counted, but rather, collections of units themselves. Or, number can be called odd or even whenever it happens to exist in bodies, such as the ἄρτιος in τὰ δύο καὶ τὰ τέτταρα and all the rest. (104b2-3) These are the sensible bodies that happen to be numbered, there is nothing 'by nature' that makes them their number. Sensible bodies have number; they are not identified as their number. This double existence matches that of ψυχή. For soul exists itself by itself, a sort of abstraction or separation from the body, and soul can exist in a body. Notice that bodies are not essentially connected to soul, any more than bodies are essentially connected to the equals themselves.[37] However, the unit is essentially connected with its Form Odd. Μονάς, itself by itself, carries with it the Form character Odd and so makes a collection of equals themselves 'odd' whenever a unit happens to be left over from them being equally divided. Likewise, ψυχή, itself by itself, always carries with it the Form characteristic Life and so 'enlivens' whatever body it is in. Thus soul is essentially connected with its Form Life. This is the force of line 105d2-3:

> Ψυχὴ ἄρα ὅτι ἂν αὐτὴ κατάσχηι, ἀεὶ ἥκει ἐπ'ἐκεῖνο φέρουσα ζωήν;
>
> Therefore, whatever the soul occupies, isn't it always bringing life to it?

Soul always has and carries with it life, and so it follows by nature that soul is always with life. While it is clear at 105d2-3 that the subject of κατάσχηι is ψυχή, so, 'occupies' or 'dwells in' – κατάσχηι here is used in a double sense.[38] Whenever the soul occupies, it always carries with it life. But it follows too that soul is occupied by that which it carries. Not only is the soul compelled by what it carries, in a certain sense, the opposite of what it carries affects the soul and the body that soul occupies. What is true for the soul is true for whatever body it occupies, but only when it occupies it. Right away we should recall 104d1-3:

> ἆρ' οὖν, ἔφη, ὦ Κέβης, τάδε εἴη ἄν, ἃ ὅτι ἂν κατάσχῃ μὴ μόνον ἀναγκάζει τὴν αὑτοῦ ἰδέαν αὐτὸ ἴσχειν, ἀλλὰ καὶ ἐναντίου αὐτῷ ἀεί τινος;
>
> But then Cebes, he said, wouldn't they be those things which compel whatever they occupy to contain not only its own Form but also always the Form of some contrary?

The principle at 104d1-3 is recalled at 105d2-3. Together, they bring the logical force of the final proof to its conclusion. Notice that Socrates moves from the opposite of the soul's essential characteristic life (death) to the opposite of the essential characteristic of being odd, at 105d13-15 with an unstated premise in the proof. I suggest that the unstated premise follows that of 105d2-3:

> Μονάς ἄρα ὅτι ἄν αὐτὴ κατάσχηι, ἀεὶ ἥκει ἐπ'ἐκεῖνο φέρουσα περιττὸν;
>
> Therefore, whatever the unit occupies, isn't it always bringing the odd to it?

If we agree that this premise is suppressed in the proof, then we can track the logical

connection that Socrates makes, from the soul being the generative cause of life in a body (105c9), and the exclusion of the opposite of soul's essential characteristic which gives soul its immortal status (105e7). Similarly, the lone unit is the generative cause of a multitude of equals being odd, i.e., the character of being odd (105d13) and the exclusion of their opposite, equal multitudes being equally divided, that gives three objects their uneven status. Now we can put together the three texts we've discussed to examine the final proof in the *Phaedo*.

Soul, itself by itself, is compelled by the life-giving characteristic and necessarily brings that characteristic to a body, making that body alive. So, too, the trio of units are compelled by that odd-giving characteristic, the left over unit, μονάς, and they necessarily bring this characteristic to a trio of bodies, making those bodies that happen to be a trio, odd. The opposite of life is death, just as the opposite of odd is even. While it is true that the soul itself can never be dead (104d1-3) because it will always exclude the opposite character to which it necessarily carries, it does not follow, as Strato and much later Keyt and others following him would argue, that the embodied soul will never die.[39] For ψυχή is not always in a body, just as sensible objects do not always keep their number. This is the force of the ontological distinction of non-sensible intermediates on the one hand and sensible bodies on the other.

Though the participants agree that they've proved the soul's immortality (105e9) Socrates continues, for he needs to keep his promise to Cebes (88b, 95b-e) that the soul be ἀνώλεθρον, indestructible, as well as ἀθάνατον, immortal.[40] As Burnet's note tells us, we still have two possible alternatives. Even though the soul will not admit death, Socrates still needs to show that the soul will 'withdraw' (the first alternative) and not perish with the body (the second alternative). The case of τὸ ἀθάνατον is, Burnet says, *ipso facto* ἀνώλεθρον.[41] This is where many commentators find fault with the final proof.[42]

Bostock offers a reconstruction of the argument to demonstrate that Socrates is question begging:

> 1. If there is anything that is indestructible, then what is immortal is indestructible (d2-4).
> 2. But there is something indestructible, namely God and the Form of life (d5-7).
>
> Therefore: What is immortal is indestructible.[43]

Bostock argues that the premises presume the conclusion of what they are trying to prove, and he says we have no reason to accept the first premise anyway. Yet we can do better than Bostock, as 'one man's begging the question might be another man's tacit assumption.'[44] There is a way to unpack the hidden premises in this very last stage of the argument. Recall what has already been established in the first part of the final proof:

1. When objects lose or gain characteristics, they undergo change. (103b2--e1)
2. When objects lose their essential characteristics, they cease to exist. (103e2--103e5)
3. There are some objects that never lose their essential characteristics. (103e6--104b1)
4. ἡ τριάς and ἡ ψυχή never lose their essential characteristics, 'odd' and 'life'. (104a3-8, 105d2-3)

5. What never loses its essential characteristic will always exclude that essential characteristic's opposite from coming into being in that object. (104c7-d3)
6. The opposite of odd is even, opposite of life is death. (104d12-14, 105d6-9)

From premises 1-6, we can conclude that ἡ τριάς will never be even, and soul will never be dead. That is what the first part of the final proof establishes, formally. Now, from the conclusion that soul will never be dead, and three will never be even, we get the following:

7. Whatever never loses its essential characteristic is everlasting. (106a1)
8. Whatever loses its essential characteristic is not everlasting. (106b3-c8)
9. Soul never loses its essential characteristic life. (105d3-e4)
10. Whenever a living body loses its soul, it dies. (106e3)
11. Whatever has as its essential characteristic, life, is immortal. (premises 1-6)
12. Whatever is immortal is everlasting. (premises 7-11)

Therefore: A living body is neither immortal nor everlasting (106e5). Soul, itself by itself, is immortal and everlasting (106e9-107a).

So snow has its essential characteristic cold, but it can lose this characteristic and it will no longer be snow. Socrates may lose unessential characteristics and still remain who he is: whether Socrates is tall or short, he is Socrates. Yet Socrates as a composite body and soul is not everlasting because the composite is an extended, sensible object. Moreover, being alive is not an essential characteristic to a body, any more than a left over monad is an essential characteristic to a multitude of units. Although life is an essential characteristic for Socrates being alive, his composite loses this characteristic at death. Three, ἡ τριάς, on the other hand, will always have the left over unit in its multitude of equally divided units and so will always be odd. Likewise, soul will always carry life and so will never die, soul will always be immortal. Therefore soul and three, since they are objects that will always bear their essential characteristics, are everlasting.

To demonstrate this last phase of the argument, it is instructive that Socrates begins with ἀριθμός, specifically, the neuter plural τὰ τρία (106a) and not the feminine singular ἡ τριάς (104e8).[45] Socrates is using an embodied trio, so, sensible particulars that happen to be three and so odd, and not the abstract trio separated from bodies for this part of his argument. The embodied trio is not necessarily three, for at any time another bodied unit could come along or be taken away and the περιττός would withdraw. So the triad of bodies are only temporarily odd and so never everlasting: if the bodies themselves were destroyed, then the trio would withdraw. To speculate, Plato doesn't use ἡ τριάς here because it is not the three itself that he needs for the argument (for τριάς is by nature odd); he needs to start with the embodied three, just like he needs to start with the embodied soul, to convince Cebes and Simmias that the soul of Socrates is indestructible as well as immortal once it separates from the body.

CONCLUSION

I have analyzed some of Plato's passages in the *Phaedo* with careful attention to μονάς and its analogy with ψυχή, and how they logically connect the propositions in the final proof to

the conclusion that the soul is immortal, and since it is immortal, soul is everlasting. While other commentators point out the logical flaws and inconsistencies in the arguments, I showed that Plato avails himself two ontological distinctions of number: as embodied in sensible particulars and as abstract collection of units. In a similar fashion, we should understand soul, like the unit, to share this dual status, in that both can become embodied and joined with sensible objects and both can be understood as existing separately from bodied particulars. Yet souls and units, although understood as responsible for generating characteristics in objects, are not Forms themselves, but bearers of Form characteristics, for they are able to effect change in bodies, yet unlike sensible objects, they never lose their essential characteristics. Perhaps this dual role for souls and units is due to their ontological status, τὰ μεταχύ, between Forms and sensible particulars.

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NOTES

1 Rist 1964, 30.

2 Aristotle *Metaphysics A*. 992b16; Annas 1975, 148, 155, 162.

3 One might take issue with my use of Euclid's *Elements*, a text composed later than Plato in Alexandria, to justify an interpretation of arithmetical objects in Plato's dialogues. Klein 1968, 43 conjectures that Book X, which addresses incommensurables, which also presupposes content from Books VII, VIII and IX, comes from the ideas of Theaetetus. It is evident that Plato was familiar with the work of Theaetetus as shown in the dialogue named after him. Lasserre 1964, 16-17, tells us that we learn from Proclus that there were several texts called 'Elements' before Euclid's, and that Euclid had incorporated many of the mathematical principles from the prior texts. This suggests that much of the content in Euclid's *Elements* was known to the Greek mathematicians of the 4th century, BCE, and perhaps even earlier. It is no coincidence that Plato's treatment of *arithmoi* and the accounts of odd and even is compatible with their definitions found in Euclid. Accordingly, I have pointed to other passages in Plato's dialogues that are in accord with the definitions and postulates in Euclid's *Elements*.

4 Cf. Kanayama 2000, 74, 'he [Socrates] grounds the safety of the subtler answers on the safety of the old safe answers.'

5 E.g. Arist. *Metaph.* A 6, 987b15, 991b217-31, 992b16 and 995b17, Z 1028b18-21, K 1069a34-6, λ 1076a19-21, M 1090a4-6, N 1090b32-1091a5, and also, see Plato *Philebus* 16d7-e2.

6 Pritchard 1995, 14.

7 Burger 1984, 261n.9.

8 Cf. Burnet 1892, repr. 2018, 313, n. 42, 'The use of the zero was unknown in antiquity, and this made all modern arithmetical methods impossible.'

9 For example, Gallop 1993, 97, Schiller 1967, 57, Bluck 1957, 119, Haynes 1964, 18, Rist 1964, 29-30 claim there is no distinction.

10 In the *Theatetus* at 198d8-c10 Socrates discusses the knowledge of number, as it applies to ἀριθμοί in the soul and the external objects that possess them. In *Philebus* at 56d-e, Socrates distinguishes the counting that the ordinary arithmetician does, with unequal units, and the counting that the philosopher does, with equal units. See Lasserre 1966, 22-25.

11 Schiller 1967, 57 is the exception, who understands the difference between τὰ τρία and ἡ τριάς as the number three, 'which is different from things (which it occupies) and threeness (which occupies it)'.

12 Burger 1984, 261n.9.

13 Burger 1984, 261 n.9.

14 A similar 'by nature' claim was established previously in the text at *Phaedo* 103c1-2.

15 Cf. Kanayama 2000, 52.

16 Greek texts are from J. Burnet, 1900 and 1901 and W.D. Ross, 1924. http://stephanus.tlg.uci.edu/Iris/indiv/browser.jsp#doc=tlg&aid=0059&wid=004&q=PLATO&st=0.

17 There is much debate in the literature regarding the status of these characteristics. They can be 'immanent Forms', 'Forms', or sensible qualities or characteristics.

18 We should understand 'body' here to be also a 'figure', where Socrates says in the *Meno* at 75a-76a that a figure has color. It follows that all bodies/figures are perceptible through sense perception. For discussion, see Heath 1981, 292-293.

19 Pritchard 1995, 150-151.

20 Klein 1968, 46-60; Pritchard 1995, 15-16, 63-78.

21 For example, three multiplied by three is a square *arithmos*, while three multiplied by four is an oblong *arithmos*.

22 Klein 1968, 57.

23 Contra Kanayama 2000, 82, who says that the unit, while never admitting the Form of the Even, is not odd since it is not a number. While it is true that the unit is not a number, and so not an odd number, it doesn't follow that it is not odd.

24 Euclid IX, proposition 27 says that, 'if from an odd number an even number be subtracted, the remainder will be odd.' Thus, it is obvious if one takes three, an odd number, and subtracts from it two, an even number, the remainder will be 'one', which is not a number, but is nevertheless, odd. I used Heath's translation of Euclid's Elements from 2012.

25 Burnet 1911, reprinted 1959, 105.

26 Kanayama 2000, 82.

27 Bluck 1955, 124.

28 Hackforth 1955, repr. 1991, 162.

29 Bluck 1955, 75.

30 Hackforth 1955, repr. 1991, 158n.2. He cites Stobaeus, *Ecl.* I, but we need not use Stobaeus, for περιττός is in Euclid's 7th definition in Book VII of his *Elements*.

31 Prince 2011, 22-27, at 27, 'Socrates's overall argument does not succeed'; Bostock 1989, 184-191, at 191, 'there is still a gap in the argument' i.e., that soul must be shown to be a proper cause of life; Keyt 1963, to name a few.

32 Bostock 1986, repr. 1989, 185. Bostock is referring to *Phd.* 104 d6, ἡ τῶν τριῶν ἰδέα, which could mean 'the Form of three' but it could also be 'the Form of three things', which would be περιττός.

33 Bostock, 1989, 188.

34 Schiller 1967, 51-58.

35 Cf. *Philebus* 56d4-57a4, where Socrates and Protarchus distinguish between two kinds of calculating and measuring, one practiced by merchants and builders, the other practiced by the philosophers. The main difference is that the first calculate and measure with unequal units, μονάδας ἀνίσους (56d9-10) whereas the philosophers calculate and measure with an infinite many equal units, (56e2-3). Also see *Theaetetus* 198c1-2, where a man

can count numbers alone, αὐτὸς πρὸς αὑτὸν αὐτὰ, or count that which has number.

36 Altman 2016, 377-378.

37 In fact, we could understand a body as simply a collection of unequal Form characteristics.

38 Schiller 1967, 53-57.

39 Hackforth 1955, 195-197, translates the objections of Strato which were noted in Olympiodorus's commentary on the *Phaedo*, no. B 'Objections to the Principle of Exclusion of Opposites.' Keyt 1962, 172, imputes to Plato a fallacy of composition.

40 Rowe 1993, 262.

41 Burnet 1911, 123.

42 Kanayama 2000, 97, says that Socrates leaves this principle, that whatever is ἀθάνατος is indestructible, unexamined. Hackforth says that really nothing more has been shown Hackforth 1955, 164. Williamson calls it 'logically worthless', Skemp calls this move 'a blatant *petitio principii*.' Williamson and Skemp are quoted in Bluck 1955, Appendix Nine, "The Proof of the Soul's Indestructibility," 188.

43 Bostock 1986, 192.

44 Pakaluk 2003, 92.

45 After 104e8, Socrates doesn't use the singular feminine of ἡ τριάς.

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Thumos and *doxa* as intermediates in the *Republic*

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ABSTRACT

Broadly speaking, something can be called intermediate for Plato insofar as it occupies a place between two objects, poles, places, time, or principles. But this broad meaning of the intermediate has been eclipsed by the Aristotelian critique of the intermediate ***objects*** of the ***dianoia***, so that it has become more difficult to think of the intermediates as ***functions*** of the soul. The aim of this paper is to show how, in the ***Republic***, ***thumos*** is analogously treated as an intermediate with other kinds of intermediate objects, and tentatively to relate this psychological intermediate in a broader theory with ***doxa***, as its epistemological ground in the course of action.

Keywords: intermediate, ***thumos***, ***doxa***, opinion, spirit, ***metaxu***

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INTRODUCTION

When it comes to "intermediates" in Plato, one is tempted to think solely of mathematical intermediates, the objects of *dianoia* in book 6 of the *Republic*. Whether or not it comes from Aristotle's critique on such intermediates, one must admit that he himself forgets to describe as intermediates some of the most important aspects of Plato's psychology and ethical theory[1]. But the word "*metaxu*" has undoubtedly a broader meaning in Plato's dialogues. As Joseph Souilhé already noted in his thesis in 1919[2], Plato can be called a "philosopher of the intermediates" insofar as the aim of the whole of his philosophy is to bridge the gaps between what is taken to be two poles or two kinds of reality. Souilhé's first aim was to classify the wide range of intermediates into categories: "psychological" (*thumos, erōs, doxa, dianoia*), "ethical" (*sophrōsynē, dikaoisunē, bios meson*), "political", "cosmological", and "metaphysical"; a second consideration was to question whether there was a more systematic link between those intermediates.

This paper addresses the following question, which is crucial for the meaning we are to give to Plato's moral psychology in the *Republic*: is there a link between *thumos* as intermediate and its epistemological counterpart, *doxa*? Let us recall briefly what *thumos* and *doxa* stand for. In book 4 of the *Republic* (436b-441c), Socrates argues that the soul is composed of three so-called "parts" or rather "functions": the reasoning part (*to logistikon*), the desiring part (*to epithumetikon*), and an intermediary part (*to thumoeides* or *thumos*), which is often translated as "spirit"[3]. This intermediary function is presented as having a key role — in the best case — to mediate reason's commands, against the power of the desiring part. For whatever reason Plato shifts from a bipartition of the soul (with reason and desire) to a tripartition, *thumos* introduces a new way of thinking of the relation between reason and desire: *thumos* is immediately thought to be a *metaxu*. As for *doxa*, which we take to mean *opinion*, but also *belief*, this is certainly an ubiquitous concept in Plato's dialogues which is not tied with any systematic presentation; nevertheless, as it will be shown, *doxa* is presented in the *Republic* as a *metaxu* too, between knowledge and ignorance, having its object somewhere between what is and what is not.

The aim of this paper is certainly not to look for a system of intermediates. It will thus not be argued that *thumos* is the "seat" of *doxa*. As Sylvain Delcominette already showed convincingly, one should not conflate what appears to be a theory of the "parts" or "functions" of the soul, and what we could call a theory of "faculties" or "capacities"[4]. Indeed, insofar as *doxa* is concerned, it is quite clear from the *Republic* that *doxa* can be at least ascribed to different "structures" or characters or, broadly speaking, to the "agent"; it seems conversely impossible to ascribe the faculty of *doxa* to a specific "part" of the soul, and even less so to ascribe different "kinds" of *doxa* to different parts[5]. Nevertheless, the issue persists: if we are to accept the idea that there is an ethical function of *thumos* in the tripartite soul, which is manifest for the auxiliaries, for example in the form of what has been called an "imperfect virtue"[6], one has to look for the epistemological grounds of such virtues or dispositions.

The question I want to raise is slightly different from the ones which try to ascribe systematically *doxa* (or whatever function) as an intermediate *faculty* to *thumos* as an intermediate *part*; my question would rather be: is there a reason why we would ascribe *doxa* to *thumos* because these two are both *intermediates*? In what follows, I will try to show that there is

a homogenous theory of the functionings of the intermediates, that leads us to ascribe in a privileged way *doxa* to *thumos* in certain ethical situations.

1. *THUMOS* AS INTERMEDIATE

The argument for positing *thumos* as intermediate is found in book 4 of the *Republic* (439e-441c), it is not the place here to recall the precise argument that leads to the discovery of the tripartite soul[7], but it is interesting to note that the "intermediate" dimension of *thumos* can be understood in a polysemic way.

1) Meaning 1: *Thumos* is found out by contrasting its function first with desire (439e6-440e6), then with reason (441a5-c2); it is neither desire nor reason even if some of its features seem identical. *Thumos* is then first described as a kind of "interval" covering a variety of ambivalent actions and passions: being angry or ashamed, resisting desires or fighting for some values, etc., all of them being best described as in-between reason and desire.
2) Meaning 2: *Thumos* is nevertheless a "median position" between the two extremes regarding virtue; if *thumos* is first thought as an interval, it represents at the end of the argument an autonomous function (*eidos*, *genē*) of the soul in-between the two other poles, the range of actions and passions being unified by a single class-term (439e4; 440e8; 441c6). In this respect, the *thumoeidic* person, as it is clearly showed by the examples of Leontius, the honest man (who does not seem to be a "wise man" though), children, animals and Ulysses, are not paragons of virtue, but they may nevertheless embody an honest behavior without being completely virtuous.
3) Meaning 3: According to Socrates, *thumos* helps reason to fight desires whenever it is possible and provided that it is well educated; *thumos* is an auxiliary (*epikouros*) for reason (441a2-3). A third meaning of "intermediate" emerges here, insofar as *thumos* is not only an interval and a median position, but also transcribes reason's recommendation in the whole agent. In other words, *thumos* "mediates" reason's rule in a positive way[8].

The polysemy of "intermediate" in our passage may explain how difficult it is to ascribe a clear-cut theory of the cognitive power of *thumos*. Examples of conflicting situations (thirst, and then the example of Leontius) show that a complex epistemic process is going on in the agent, which relies on different understandings, depending on the function of the soul that leads the course of the action[9]. The action is morally distinct whether we rely on a) what is pleasant and painful, b) or on what is worthy or valued by others, c) or on what is reasonable and/or rational. There is a supplementary difference, which has been notoriously described through the distinction between good-independent and good-dependent principles[10], whether we act out of mere compulsion, or out of knowledge, or out of a *doxa* which is potentially right or wrong.

If we take the example of Leontius (439e6--440a6), his desire to see the corpses refers to a cognitive understanding that confers pleasure

to this kind of morbid desire, whereas his anger against his same desire relies on a internalized judgement according to which taking pleasure in the misfortune of others is morally bad. By contrast, Ulysses (441b2-c2) may well be driven by his revengeful anger to kill the suitors out of a judgement that condemns such a vile behavior, but he forms a rational (yet not necessarily morally just) judgement that prevents him to do so right away, probably to make his revenge more efficient.

The question is: in the course of action, what kind of activity does the agent enact, and by which part of the soul? A straightforward answer is that the desiring part *desires*, *needs, craves, pushes and pulls,* that the reasoning part *reasons*, *learns, contemplates*, and finally that the *thumoeides* affects a state of mind in the agent that is *anger, shame,* and other emotions that are precisely intermediate in being neither a desire nor a reasoning (meaning 1). How can we characterize *thumos*'s function in this tripartite model? Following Angela Hobbs's analysis[11], we can say that the *thumos* "*values*", that is: gives personal importance to principles or objects, and leads the agent to commit himself in what he finds good, beautiful and just because that's what he values most. Anger and shame are thus intermediate behaviors that exemplify the intermediate *position* of the character regarding virtue (meaning 2). As a motivational principle, *thumos* has then a role to play in each action we make, regardless of whether we are philosopher or not, depraved or not, *philotimos* or not. For in the course of action, there is a *desire*, and either *knowledge* proper, or *doxa*, right or wrong; and in the last case, *thumos* gives the content of the *doxa* a value that commits the agent in his action, all the more so if *reason* pervades or produces this *doxa*. What is at stake here is the way *thumos* as a part of the soul might be able to grasp something as a form or appearance of the good, insofar as moral judgments bear upon something which is potentially related to a kind of knowledge (meaning 3). It is all the more important for our topic, for if a kind of virtue – an imperfect one[12] – is related to *thumos*, notably for the auxiliaries, it has to do with their ability to acquire some intermediary disposition between knowledge and mere obedience and compulsion.

Taking the same previous examples of Leontius and Ulysses, one thing is to say that there is, in every situation, a judgement that relies on grounds that can be pleasure and pain, values and reason, and another thing to ascribe to each function of the soul a definite cognitive power. Leontius and Ulysses have, to say the least, a conflicting behavior; one way to understand this conflict is to posit opposite judgements on what is actually good and bad – each judgement coming from a general cognitive apprehension of the situation depending on different criteria. It is not necessary for our present purpose to claim that desire and *thumos* have their own cognitive capacity; let us just say, in a more economical manner, that the rational part *reasons*; *thumos listens* to reason and acts according to a *doxa* that comes from reason giving it some value; and the desiring part *desires*, but might infect the *doxa* with its own criterion of appraisal, that is pleasure and pain. *Thumos* is intermediary because its *function* is to give value to a *doxa*, wherever it may come from, committing the agent into this system of values.

2. *THUMOS* AS PSYCHOLOGICAL SUPPORT TO *DOXA*

How can we explain the relative privileged link between *thumos* and *doxa* in the *Republic*? Instead of focusing on a putative theory be-

tween faculties and parts of the soul, we may try to follow another path to link the two functions, in positing an analogy between *thumos* and *doxa* as *intermediates*. For as a matter of fact, the way Socrates describes *doxa* as an intermediate in book 5 can be well compared with the way *thumos* is discovered in book 4. Again, three meanings could be found of *metaxu* when applied to *doxa*.

1) Meaning 1. Given that there is a wide range of objects and discourses between authentic knowledge, and ignorance, there must be an "interval" between these two poles (477a9-b1). *Doxa* is the name given to what is "in-between" being first contrasted with knowledge (477e8-478a1), and then with ignorance (478b6-c5). Its object being between "what is" and "what is not", *doxa* refers to this interval, which we know to be very wide: from an ordinary perceptive opinion on what is beautiful to a strong judgement on what is just and good, the reign of the opinion is potentially infinite. This first meaning of *doxa* relies, so to say, on its extension. Socrates ends his argument by insisting on the operation of considering *doxa* precisely as an interval defined by these two poles, even if it is in a negative way, in order to mark the limits of this capacity.

> Now, we said that, if something could be shown, as it were, to be and not to be at the same time, it would be intermediate between what purely is and what in every way is not (μεταξὺ κεῖσθαι τοῦ εἰλικρινῶς ὄντος τε καὶ τοῦ πάντως μὴ ὄντος), and that neither knowledge nor ignorance would be set over it, but something intermediate (μεταξὺ) between ignorance and knowledge? - Correct. - And now the thing we call opinion has emerged as being intermediate (μεταξὺ) between them? - It has. - Apparently, then, it only remains for us to find what participates in both being and not being and cannot correctly be called purely one or the other, in order that, if there is such a thing, we can rightly call it the opinable, thereby setting the extremes over the extremes and the intermediate over the intermediate (τοῖς μὲν ἄκροις τὰ ἄκρα, τοῖς δὲ μεταξὺ τὰ μεταξὺ ἀποδιδόντες). Isn't that so? - It is. (*Resp.* V, 478d5-e5, trans. Grube, rev. C.D.C. Reeve).

   As for *thumos*, "setting the intermediate over the intermediate" is already giving *doxa* its place, and preventing it from overflowing reason's function.
2) Meaning 2. *Doxa* has power; where does it comes from? *Doxa* is not only a vague interval but also a "position" between knowledge and ignorance. As a judgement, a belief, or even as a perceptual image, *doxa* gives the illusion to maintain something steady, even if plural and wrong. This is the case of the "lovers of sights" and "sounds" who claim to be experts in beauty (475d1-e1; 479d3-e5). Because those who do have a *doxa* act and speak as if they possess a real knowledge – and precisely because they do not abstain or claim their ignorance, *doxa* is a *metaxu* between knowledge and ignorance insofar as they assert something which, even if false, pretends to be real and true. It is then not sufficient to demarcate *doxa* in its extension, in be-

tween what is and what is not; Socrates has to define *doxa* as a *metaxu* in a hierarchical way, as a *median* position between what is truly known and what is simply ignored. In giving its right place as median position, Socrates makes *doxa* a class of judgement in regard to true knowledge, accounting for its inconsistency and nevertheless its psychological power.

3) Meaning 3. But why does Socrates then admit that *doxa* is a capacity, rather than a non-capacity, as ignorance is?[13] Last, *doxa* is described as a possible "mediation" through the two other poles (knowledge as a capacity, and ignorance as a non-capacity), insofar as people would accept, in the best case scenario, that there is a difference between the *philosopher* and the *philodoxos*. We know, from the *Meno* (97b9), that *doxa* is as efficient in the action, if true, as knowledge. Here in the *Republic*, Socrates makes a further step. In forming a true opinion, in being *persuaded* by the philosopher that there is indeed a difference between knowledge and opinion (476d8-e3), one might expect, at best, that one can hold a *doxa* knowing that it is a *doxa* and not knowledge. This is not to say that *doxa* could, if true, be as valuable as knowledge; but in succeeding the refutation and persuasion, Socrates could make *doxa* a (non-rational) mean to assert the superiority of reason[14]. I will come to this point in my third section.

This analogy between the functioning of both intermediates, *doxa* and *thumos*, does not necessarily entail that there is a privileged link between ethical and epistemological intermediates. And there is no hint in the description of *doxa* which is explicitly said about its ethical counterpart, *thumos*. Nevertheless, it is interesting to show how these two intermediates in the *Republic* are associated to give a full account on what it is to have an opinion, a belief, a representation of a value, as the experience of the agent[15].

2.1. The doxastic object of thumos

First of all, *thumos* seems to have a privileged range of objects, all of them reducible to *timē* (honor and esteem) and *nikē* (victory) according to book 9 (581a9-10). The *philotimos* (lover of honor) behaves according to *doxai* that refer to these two objects. Now, these two terms could apply to many other objects, persons or actions, insofar as they contribute to acquire some *timē* or *nikē*; for example, public honors or presents are thought to be necessary to acquire more *timē* (social honor) in general. It goes the same way with victory, beauty, courage and manliness, love for action rather than love for discourse and knowledge, power, love for gymnastics rather than love for music, etc. All these objects are valued by the *philotimos* with the view to acquire more *timē*. In theory, one can "value" anything, so as to become a privileged object for his *thumos*, but the *philotimos* selects what he *values* for the sake of *timē*. To put it in a nutshell, the kind of action attributed to *thumos* in book 4 (to esteem and to value) is generally (though not systematically) equivalently understood as a special kind of desire: "to love *timē*" as an object[16]. *Timē* and *nikē*, which refer to relative status are best described as *doxai*, thought as reputation and all the kinds of judgements that refer to this very reputation:

what people say, praise and blame, rumor, and further mode of appearances such as glory, shame, etc.

We are now in a position to have a better understanding of this meaning of intermediate as "interval", both for *doxa* and *thumos*. There is an intimate connection between those two intermediates not so much because of a so--called cognitive ability of *thumos*, but because both the function of the soul and the capacity pervades a very wide range of objects, some of which are not easy to refer to desire or reason only, as book 9 recalls:

> Won't a money-maker say that the pleasure of being honored (τὴν τοῦ τιμᾶσθαι ἡδονὴν) and that of learning are worthless compared to that of making a profit, if he gets no money from them? — He will. — What about an honor-lover (ὁ φιλότιμος)? Doesn't he think that the pleasure of making money is vulgar (φορτικήν τινα ἡγεῖται) and that the pleasure of learning — except insofar as it brings him honor (μὴ μάθημα τιμὴν φέρει) — is smoke and nonsense? — He does. — And as for a philosopher, what do you suppose he thinks the other pleasures are worth compared to that of knowing where the truth lies and always being in some such pleasant condition while learning? Won't he think that they are far behind? (*Resp.* IX, 581c10-e3, trans. Grube, rev. C.D.C. Reeve).

Objects of *thumos* are always *doxai* in the sense that they are social and political constructions of what people value most in a given city. No wonder then, that the objects of *thumos* are potentially instable, inconsistent, and rest all the more so on sensible particulars and situations.

2.2. Thumos gives power to doxa to overcome desires

A second important aspect of the analogous functioning between *thumos* and *doxa* is the way the first gives strength to the latter, and especially over pleasure and pain.

> But what happens if, instead, he believes (ἡγῆται) that someone has been unjust to him? Isn't the spirit within him boiling and angry, fighting for what he believes to be just (συμμαχεῖ τῷ δοκοῦντι δικαίῳ)? Won't it endure hunger, cold, and the like and keep on till it is victorious, not ceasing from noble actions until it either wins, dies, or calms down, called to heel by the reason within him, like a dog by a shepherd? (*Resp.* IV, 440c7-d3, trans. Grube, rev. C.D.C. Reeve).

The honest man holds a *doxa* on what is just and unjust. It is not said how the agent (in our case an honest person, but not necessarily a "virtuous" one) forms its belief on justice, but it appears that this belief gains its force through his spirited part, through bodily symptoms and anger. *Thumos* is not the function through which a *doxa* is formed, but it is, for sure, that through which it gains its force and value in the course of action. As it has been often pointed out, there are many desires that are supported by a *doxa*, especially in the case of the characters in book 8 and 9, for example the oligarch[17]. It may even be the case that an acratic person is best understood as an agent whose *doxai* follow opposite directions[18]. So again *thumos* is certainly not the only function in the soul that deals with *doxa*; rather, *thumos* is an auxiliary powerful enough to overcome natural pleasure and pain ("hunger, cold, and the like") or even

life ("either wins, dies, or calms down"), in giving *doxa* a sufficient value against competing desires that would follow a pleasure/pain criterion.

2.3. Thumos gives doxa a relative stability

A third feature of the *thumos*/*doxa* relation is made explicit in book 4 through the description of civic courage of the auxiliaries. Even if *doxa* is volatile, not being grounded on reason, *thumos* is capable to transform a *doxa* into a quasi-permanent disposition.

> Then, you should understand that, as far as we could, we were doing something similar when we selected our soldiers and educated them in music and physical training. What we were contriving was nothing other than this: that because they had the proper nature and upbringing, they would absorb the laws in the finest possible way (ὅτι κάλλιστα τοὺς νόμους πεισθέντες δέξοιντο), just like a dye (ὥσπερ βαφήν), so that their belief (δόξα) about what they should fear and all the rest would become so fast (δευσοποιὸς) that even such extremely effective detergents as pleasure, pain, fear, and desire wouldn't wash it out — and pleasure is much more potent than any powder, washing soda, or soap. This power to preserve (τὴν δὴ τοιαύτην δύναμιν καὶ σωτηρίαν) through everything the correct and law-inculcated belief (δόξης ὀρθῆς τε καὶ νομίμου) about what is to be feared and what isn't is what I call courage, unless, of course, you say otherwise. (*Resp.* IV, 429e7-430e5. trans. Grube, rev. C.D.C. Reeve)

In this passage, the origin of *doxa* is made clear enough: coming from law and reason, a series of beliefs are internalized by the auxiliaries through different means (music, gymnastic, and other kinds of training that have been depicted especially in book 3). Because the origin of *doxa* is reason and law, it is a just and correct one (*orthē*). But it is not because it is a *right* opinion or belief that it lasts in the face of pleasure, pains and other passions: *thumos*, which is known to be one of the tendencies that has been the attention of the educator in the prior education, has the power (*dunamis*) to preserve (*sōtēria*) the opinion against other desires. A difference then should be made between having an opinion, believing it is true and assenting to it on the one hand, and having an opinion that constitutes one's character on the other hand. Of course, this is an "imperfect" virtue which is described here, insofar as counterfactual situations may well destroy the power of *thumos*; but it remains true that only the power of *thumos* conveys the *doxa* to be steady in spite of its ontological and epistemological instability.

What is important then is not only the fact that the *doxa* is right or wrong, but also the way *thumos* (and the whole agent) considers it as a dynamic intermediate to perform a good or (imperfect) virtuous action. If we want to account for the epistemological processes of *thumos,* we should not properly say that it *has* or *forms* a *doxa*, but rather that it gives *doxa* some of the properties to become not only a judgement, either propositional, or perceptual or both, but a real valuable belief.

3. THE FUNCTIONS OF THE INTERMEDIATES IN THE EDUCATION

It is now possible to account for the importance of the notion of "intermediate" during education in the *Republic*, in giving *doxa* and *thumos* the role of *mediation* towards the positive pole from which they are defined as an in-between position.

At the end of book 4, Socrates concludes, with the help of a metaphor, on what it is to harmonize our own soul in giving a last definition of "justice", after he gave definitions of the three other cardinal virtues.

> And in truth justice is, it seems, something of this sort. However, it isn't concerned with someone's doing his own externally, but with what is inside him, with what is truly himself and his own. One who is just does not allow any part of himself to do the work of another part or allow the various classes within him to meddle with each other. He regulates well what is really his own and rules himself. He puts himself in order, is his own friend, and harmonizes the three parts of himself (συναρμόσαντα τρία ὄντα) like three limiting notes in a musical scale (ὥσπερ ὅρους τρεῖς ἁρμονίας) — high, low, and middle (νεάτης τε καὶ ὑπάτης καὶ μέσης). He binds together those parts and any others there may be in between (εἰ ἄλλα ἄττα μεταξὺ τυγχάνει ὄντα), and from having been many things he becomes entirely one, moderate and harmonious. Only then does he act. And when he does anything, whether acquiring wealth, taking care of his body, engaging in politics, or in private contracts — in all of these, he believes (ἡγούμενον) that the action is just and fine that preserves this inner harmony and helps achieve it (ἣ ἂν ταύτην τὴν ἕξιν σῴζῃ τε καὶ συναπεργάζηται), and calls it so (ὀνομάζοντα), and regards as wisdom the knowledge that oversees such actions (σοφίαν δὲ τὴν ἐπιστατοῦσαν ταύτῃ τῇ πράξει ἐπιστήμην). And he believes that the action that destroys this harmony is unjust, and calls it so, and regards the belief that oversees it as ignorance (ἀμαθίαν δὲ τὴν ταύτῃ αὖ ἐπιστατοῦσαν δόξαν). (*Resp.* 443c9-444a2; trans. Grube, rev. C.D.C. Reeve).

Socrates has already used the musical metaphor to convey an image of a harmonized soul in book 2 and 3, notably in 410c-412a, where the aim of the first education by music and gymnastics was to find a balance in the soul of the future guardian between her/his *thumoeides* and her/his *philosophical nature*, in "tuning" them. It is by this tuning that one could achieve a musical "chord", through the equilibrium between these dispositions (412a4-7)[19]. In book 4, the chord depends on the knowledge and *sophia* that comes from the law, in tuning the three strings of the harmony which correspond to each function of the soul. The *harmonia* is then not only a tuning between dispositions, but a hierarchical ordering of the soul's three parts, so that reason should rule over the others (*epistatousa*), *thumos* should "preserve" (*sōzē*) reason's rule — as we have seen through the dying metaphor (429e7-430e5), and the desiring part should obey this disposition. So that from book 3 to book 4, *thumos* is not anymore a natural tendency in the soul, but should become the equivalent of the *mesē* in the musical instrument, that is the position through which the interval between reason and desire is made definite and virtuous.

One may wonder about the oddity of the sentence: "and any others there may be in between", as if there were other intermediates than *thumos*. Plato probably refers here to a tetrachord, and mentions only the principal fixed strings (*horoi*) — the *hypate* and *nete* being the lower and the highest string, the *mese* and *paramese* being in between —, the movable other strings depending on the type of *harmonia* wanted[20]. It is unlikely that Plato means that there are other "intermediates" between reason and desire than *thumos*; rather, we should understand that, given the fixed position of these three strings, some variations may occur between the just persons, whether they belong to the ruling class, the auxiliary class, or the third class of the city, and whether their natural disposition is more akin to one of the natural tendencies that have been described in book 3. In other words, *thumos* as a position in-between reason and desire in book 4 overlaps the "interval" of actions and dispositions that it covers in book 3. Then, we must recognize that there is a certain "plasticity" of the *thumos* that can be molded, shaped and modeled during education, in order, at least, to have an "imperfect" virtuous person.

The two last sentences are quite relevant as to the link between *thumos* and *doxa* as *mediation.*

Knowledge (*epistēmē*) is presented as the sole ground for virtue and *sophia*, whereas it is a *doxa* that is assimilated to disharmony, but also to ignorance (*amathia*). This strong dichotomy between knowledge and *doxa* does not seem to be coherent with what is said of *doxa* in book 5 where ignorance is distinct from it from an ontological point of view. A solution to this apparent paradox would be to refer to a distinction between a right and a wrong *doxa*, the latter being responsible of ignorance and vice. However, it is not a right *doxa* which is responsible for virtue either, but proper knowledge. So I would suggest, rather, that this description of this harmonious person is not of a "real" virtuous man who would have the knowledge of it, but a mere ordinary man, who already has a *doxa* on what is the principle of the harmony or disharmony in his soul. Grube translates the "ἡγούμενον" as "he believes", as if it were another *doxa* whose object itself is the difference between knowledge and *doxa*. What is maybe an over-translation is getting to the point: what the honest man has is a "thinking", an ethical judgement, which, depending on the education of his *thumos*, values reason and law as the rule of his action. A similar situation occurs in book 5, when the philosopher finally persuades the other citizens that there is a difference between *doxa* and knowledge, even if the citizens do not have access to proper knowledge. We must then recognize that *thumos*'s function here is to value reason and law as the proper origin of right *doxa*; this explains why the honest man finally "names" *sophia* the rules and recommendations that *thumos* is inclined to follow. Here, *thumos* has a crucial role to play in recognizing, through a right *doxa*, what falls within reason or the law's rule, and what falls within mere unjustified *doxa*. The median position of the intermediate is not enough to ascribe to one of the opposites a positive value; another function of the intermediate is to be a step forward to the positive pole. In other words, the intermediate gives a meaning to the poles in being a mediation between them and positing them as extremes as it does, and valuing reason, good, fine, noble, as positive poles rather than desire, pleasure and pain.

CONCLUSION

All these striking links and similarities between *thumos* and *doxa* should not lead us to posit that *thumos* is a seat of *doxa*, nor that, I contend, *thumos* is an epistemological faculty similar to *doxa* as far as ethical judgments are concerned. Plato never says that explicitly and has probably no reason to do so. We cannot go further then in positing a system of intermediate faculties. However, *thumos* is said to be sensitive to reason in a way that compels us to make it an essential psychic function to give *doxa* a practical meaning. If there is no theory between ethical and epistemological intermediates, there are, indeed, *analogous* operational relations between them. *Thumos* and *doxa* are polarized intervals, but also positions between real and pre-existent valued poles (what is valued as good), and finally dynamic starting points to access the positive pole (reason's rule).

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NOTES

1 For example, as it has been recalled by (Cooper 1998, chap. 10), Aristotle may use the platonic tripartite model of the soul in his *Ethics*, but *thumos* has no longer the status of the intermediate – at least as it has been defined by Plato – between reason and desire, for the tripartite model is used to convey three distinct type of desires.

2 See (Souilhé 1919).

3 For a general presentation of *thumos* in Plato, see (Renaut 2014a).

4 (Delcomminette 2008).

5 See especially (Gerson 2003, 102–12).

6 On this point, see (Kamtekar 1998).

7 For an extensive description of the argument, see (Cornford 1912; Stocks 1915; Hall 1963; Penner 1971; Renaut 2014a; Wilburn 2015). We should bear in mind that the autonomy of this part has been questioned by commentators for they see either an *ad hoc* argument to fit in the tripartite model of the city (Cornford), or that it is not clear whether *thumos* is distinct from reason and desire (Penner), as if its functions could be reduced to one or the other. Some other commentators (Smith 1999) endorse a strong version of the autonomy of this intermediate, but remain skeptical about the overall coherence of this psychological theory. I thank N. Smith for having pointed out that thesis out to me.

8 On different meaning of *metaxu* as far as *thumos* is concerned, see (Brennan 2012), esp. p. 122, where *thumos* is presented as "bond, medium and middle-term". See also (Renaut 2014b) on which this conclusion is based.

9 On this point, see (Crombie 1962, 341–68).

10 See esp. (Carone 2001) for the consequences of this distinction.

11 See (Hobbs 2000).

12 I am relying here on (Kamtekar 1998).

13 I thank N. Baima for pointing this difficulty out to me. On this passage, see also (Szaif 2007).

14 (Szaif 2007), esp. §54-58, who rightly insists on the link between the transient mode of acquaintance of *doxa*, and the possibility, nevertheless, for *doxa* to be a possible transition towards understanding. About the *philodoxos*, Szaif writes: "They are in an intermediate state which is not knowledge but at least provides some starting-points in the quest for real understanding".

15 See (Lafrance 1982), who recalls quite rightly that *doxa* should not be understood in an exclusive epistemological and ontological point of view. In a way, I think the *Republic* gives us a fuller account of what it is to have a belief than the *Meno*, precisely in associating *thumos* and *doxa*.

16 See (Wersinger 2001, 191).

17 See *Resp.* 554d9-e5, and on this point (Irwin 1995, 217–18), and for a stronger view (Bobonich 2002, 317).

18 For the strong view that *akrasia* stages competing *doxai* from different functions of the soul, see (Carone 2001); I agree rather with (Kamtekar 2006), esp. p. 186, in saying that personification of *doxai* does not necessarily entail that each function has its own doxastic power.

19 On this passage in book 3, see (Wersinger 2001, 171–79; Brancacci 2005).

20 See (Barker 1989, 11–13).

The Mixed Mathematical Intermediates

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ABSTRACT

In *Metaphysics* B.2 and M.2, Aristotle gives a series of arguments against Platonic mathematical objects. On the view he targets, mathematicals are substances somehow intermediate between Platonic forms and sensible substances. I consider two closely related passages in B2 and M.2 in which he argues that Platonists will need intermediates not only for geometry and arithmetic, but also for the so-called mixed mathematical sciences (mechanics, harmonics, optics, and astronomy), and ultimately for all sciences of sensibles. While this has been dismissed as mere polemics, I show that the argument is given in earnest, as Aristotle is committed to its key premises. Further, the argument reveals that Annas' uniqueness problem (1975, 151) is not the only reason a Platonic ontology needs intermediates (according to Aristotle). Finally, since Aristotle's objection to intermediates for the mixed mathematical sciences is one he takes seriously, so that it is unlikely that his own account of mathematical objects would fall prey to it, the argument casts doubt on a common interpretation of his philosophy of mathematics.

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1. INTRODUCTION

Much of the literature on Aristotle's objections to Platonic mathematical objects is concerned with assessing the accuracy of Aristotle's reports. My focus is rather on Aristotle's own reasoning about these objects. Besides some discussion of what Annas 1975 names the "uniqueness problem", little has been said about this.[1] I examine two closely related passages (*Metaphysics* B.2 997b12–24 and M.2 1076b39-1077a9), where Aristotle argues that Platonists[2] will need intermediates not only for the pure mathematical sciences, but also for the mixed mathematical sciences, and ultimately for all sciences of sensibles. This is generally seen as mere polemics, and so of little interest: Aristotle is — rather unfairly — piling on absurdities in order to score points against his opponents. My aim is to show that the argument reveals another reason a Platonic ontology needs intermediates (at least according to Aristotle), and that this is in fact a serious argument for him, as he is himself committed to its key premises. Consequently, a careful examination of the argument sheds light on Aristotle's own view about mathematical objects, which should avoid the objections he raises against his opponents.

2. AN ACCUMULATION OF INTERMEDIATES IN *METAPHYSICS* B.2 AND M.2

Aristotle and his Platonic opponents agree that mathematical propositions are not true of sensible things as such.[3] But neither, it seems, can they be true of Platonic forms. Annas (1975) argues that this is due to the uniqueness problem (151). If each form is unique, then there will be only one form of two, one form of three, and so on. Hence mathematical statements such as 2+2=4 cannot be true of forms.[4] There must therefore be non-sensible substances of which mathematical statements can be true, and there must be many of the same kind — e.g. many twos, many triangles, etc. Aristotle reports that there are many (or even an unlimited number) of each kind of intermediate (*Metaphysics* A.6 987b14-18, B.6 1002b14-16, 21-22). Although he does not state that the uniqueness problem is what motivates Platonists to posit intermediates, Annas argues persuasively that this is strongly implied. She adds that this is "the sole line of argument suggested by Aristotle's references to the intermediates" (151; see also 152), and that on his view the intermediates are posited solely as a solution to the uniqueness problem, which is a problem only for the mathematical sciences (156).

This may well be true for arithmetical and geometrical intermediates. However, for the other mathematical sciences — the ones Aristotle calls "the more natural branches of mathematics" (*Physics* 2.2 194a7–8) — there is an additional reason why Platonists ought to supplement their ontology with intermediates. Like the uniqueness problem, this one is unstated but strongly implied. The B.2 and M.2 passages suggest that Aristotle sees intermediates for the mixed sciences as entities his opponents should accept, given their commitment to arithmetical and geometrical intermediates. The arguments run as follows:

> B.2 997b12-24: Further, if we are to posit besides the forms and the sensibles the intermediates between them, we shall have many difficulties. For clearly on the same principle there will be lines besides the lines-in-themselves and the sensible lines, and so with each of the other classes of things; so that since as-

tronomy is one of these mathematical sciences there will also be a heaven besides the sensible heaven, and a sun and a moon (and so with the other heavenly bodies) besides the sensible ones. Yet how are we to believe these things? It is not reasonable even to suppose these bodies immovable, but to suppose their *moving* is quite impossible. And similarly with the things of which optics and mathematical harmonics treat. For these also cannot exist apart from the sensible things, for the same reasons. For if there are sensible things and sensations intermediate between form and individual, evidently there will also be animals intermediate between animals-in-themselves and the perishable animals.[5]

M.2 1076b39-1077a9: Moreover, how can we solve the difficulties reviewed in the *Discussion of Problems*? There will be objects of astronomy over and above perceptible objects, just like objects of geometry — but how can there be a <separate> heaven and its parts, or anything else with movement? Similarly with the objects of optics and harmonics; there will be utterance and seeing over and above perceptible individual utterances and seeings. Clearly this is true of the other sensings and objects of sense too — why one rather than another? But if so, there will be <separate> animals too, if there are <separate> sensings.[6]

Aristotle's claim in the B.2 passage is that if the objects of the pure mathematical sciences are intermediates, then not only astronomy (and mechanics, though he does not mention it here) but also optics and harmonics will require intermediate objects. Since these four sciences are also branches of mathematics, they too should have intermediate substances for objects. He then pushes the accumulation further: there will also be intermediate sensations or senses (αἰσθήσεις, 997b23), and intermediate animals (b24). The M.2 argument explicitly recalls the B.2 passage and relies on (while leaving unstated) some of its premises.[7] It also extends the point about the impossibility of an intermediate heaven to anything with movement and adds *all* sensations and sensible things to the accumulation.

3. IS THIS A BAD ARGUMENT?

In both passages, Aristotle's move from (1) arithmetical and geometrical intermediates to (2) intermediate sensible things (utterances, heaven and its parts, seeings) to (3) all sensible objects, sensations, and animals creates the strong impression that his aim is to undermine his opponents' view simply by accumulating many kinds of intermediates. This is how Madigan 1999 represents the B.2 argument in his commentary (56), and Annas, too, interprets both arguments in this way (143). She objects to the move from (2) to (3): "Aristotle's Platonist here is a straw man", since while an expert in harmonics might say that he studies not actual sounds but ideal sounds, he "would certainly not think of 'the ideal sound' as a sound, or give it the logical behavior of one, as Aristotle tries to force him to do" (143). On this interpretation, the move from intermediate numbers and figures to intermediate seeings and utterances may be warranted,[8] but the move from the latter to intermediate senses and animals is mere polemics.

My aim is to show that there is more going on in these passages, and in particular that they reveal something about Aristotle's own account

of mathematical objects. The first task is to show that this is for Aristotle a serious argument, in that while of course he does not accept intermediates, he is committed to the premise that moves from arithmetical and geometrical intermediates to intermediate utterances and seeings (that is, from 1 to 2), and to the premise that moves from the latter to intermediate senses and animals (from 2 to 3).

The move from (1) to (2) rests on the premise that the mixed sciences are proper mathematical sciences. For Aristotle, the sciences in question (astronomy, mechanics, harmonics, and optics) are under or subordinate to (ὑπό) the pure mathematical sciences: optics, mechanics, and astronomy are under geometry, and harmonics is under arithmetic (*Posterior Analytics* 1.13 78b35–9).[9] They are called 'mixed' because they study the mathematical properties of different kinds of sensible things. Astronomy studies the mathematical properties of the motion of sensible heavenly bodies, optics of sensible sights (visual phenomena), harmonics of sensible voices or utterances, and mechanics of the motion of bodies. What distinguishes these sciences from each other is the kind of sensible object that they study. What distinguishes them from the pure mathematical sciences is that while the objects of both may be said of an underlying subject (because the lines, figures, etc. they study are properties of sensible things), in the case of pure mathematics they are not studied "as being said of an underlying subject", while in the case of the mixed sciences they are (*Posterior Analytics* 1.13 79a7-10 with 1.27 87a33-4; see also the contrast between astronomy and the pure mathematical sciences at *Metaphysics* Λ.8 1073b5–8). [10] Or as Aristotle puts it in *Physics* 2.2, the mixed sciences "are in a way the converse of geometry. While geometry investigates natural lines but not *as* natural, optics investigates mathematical lines, but *as* natural, not *as* mathematical" (194a9-12). That is, while both geometry and optics consider the mathematical properties of sensible things, optics (and not geometry) considers these properties insofar as they belong to a specific subset of sensible objects: visual phenomena.[11] Similar contrasts can be made between the pure mathematical sciences and the other mixed sciences.

It is clear that Aristotle considers these to be genuinely mathematical sciences. As noted above, he refers to them as "the more natural branches of mathematics" (τὰ φυσικώτερα τῶν μαθημάτων, *Physics* 2.2 194a7–8). There are several other passages where this is clear. For example, in *Metaphysics* Λ.8, he writes of "one of the mathematical sciences which is most akin to philosophy — viz. that of astronomy" (1073b4-5), and refers to astronomers as mathematicians (1073b1-12) and in *Posterior Analytics* 1.14 he lists optics (ὀπτική) as one of the mathematical sciences (αἵ … μαθηματικαὶ τῶν ἐπιστημῶν, 79a18-20). [12] So Aristotle endorses the premise that begins the accumulation—the premise that moves from (1) pure mathematical intermediates to (2) mixed mathematical intermediates.

One might object on behalf of the Platonists that the move from (1) to (2) is gratuitous: even if the pure mathematical sciences require intermediates, the mixed mathematical sciences are simply the application of mathematics to sensibles. Hence there is no need for a new and special kind of intermediate.[13] But Aristotle makes it clear in N.3 why, as reasonable as this view of the mixed sciences might be, his opponents cannot adopt it. His targets claim that "branches of knowledge (αἱ ἐπιστῆμαι) cannot have <perceptible> things as their objects" (1090a27–8), and they make mathematical objects separate (κεχώρισται τὰ μαθηματικά, 1090a29). But if mathematical

objects were separate (that is, a kind of substance distinct and somehow apart from sensibles), "their attributes would not apply to bodies" (1090a29–30). Since anyone who separates the objects of the pure mathematical sciences cannot explain "why, if numbers are in no way present in perceptible things, their attributes apply to perceptible things" (1090b3–5), they are not warranted in applying their separated numbers and geometrical objects to sensibles. They must therefore posit a new kind of entity to serve as objects of the mixed mathematical sciences — an entity that has the connection between the mathematical and the sensible already built into its nature.[14]

So much for the move from (1) to (2). The move from (2) to (3) seems the more objectionable one. We have seen that Annas objects to it on the grounds that Aristotle is inappropriately insisting that his opponents treat an intermediate utterance (φωνή) or seeing (ὄψις) just like a sensible utterance or seeings — that is, as an entity sensed by (intermediate) senses possessed by (intermediate) animals.

However, Aristotle is not insisting that these intermediates must be just like their sensible counterparts. His argument only requires that they be like them in certain relevant respects. Ideal though they are, they must share certain features with their individual sensible counterparts if they are to serve as objects of their respective sciences. On the view Aristotle is targeting, each science requires a special kind of substance — number-substances for arithmetic, point-, line-, and figure-substances for geometry, and (as Aristotle has argued) seeing-substances and utterance-substances for optics and harmonics, respectively. Since pure mathematics on this view is about ideal arithmetical and geometrical substances, these entities must, like their sensible counterparts, be divisible and combinable; further, the ideal numbers must be composed of units, the solid figures must be bounded by planes, the planes by lines, the lines by points, and so on.[15] That is, they must be capable of undergoing the many operations arithmeticians and geometers regularly perform. The same should also be true for intermediate seeings and utterances. Harmonics is about utterances, and Aristotle has shown that on the targeted view, these utterances should be intermediates. These ideal utterances may differ from their sensible counterparts by e.g. being perfect instances of a note. But if they also differ by being inaudible, then they are not utterances at all — in which case, harmonics turns out not to be about utterances.[16] As Alexander observes, "how is it possible for there to be certain visible things, the objects of optics, if they are not sensible? Or for there to be audible things, the objects of harmonics, if they are not sensible? For the essence of optics is to speak about things that are visible, and the essence of harmonics is to speak about things that are audible"(198, 2-6).[17]

But do audible ideal utterances entail the existence of ideal senses and animals? This move looks more objectionable than the previous one, but Aristotle has good reasons for making it.[18] Being audible is a capacity for being heard; hence it is a potentiality. In *Metaphysics* Θ.3, Aristotle argues that something cannot even potentially be the case if its actuality is impossible (Θ.3 1047a24-6); and in Θ.4 he argues that "it cannot be true to say 'this is capable of being but will not be'" (1047b3-5). Thus if something is audible, it must be possible for it to be heard. Since we sensible, perishable animals never in fact hear ideal utterances, the audibility of intermediate utterances would seem to require ideal hearers — or as Aristotle says, intermediate senses and animals. Given his commitment to his Θ.3-4 premise, the move from (2) to (3)—from intermediate ut-

terances and seeings to intermediate senses and animals — is not mere polemics for Aristotle. His opponents can certainly reject the Θ.3-4 premise, though not without the cost Aristotle there argues this would entail, that is, that nothing — even e.g. the commensurability of the diagonal and side of a square — is incapable of being. This is a high cost, and it is not clear that paying it would be better than accepting the existence of intermediate senses and animals. Hence Aristotle has a strong argument here against anyone who posits intermediates for arithmetic and geometry.

4. INTERMEDIATE SENSIBLES AND ARISTOTLE'S OBJECTIONS

Since Aristotle is not just foisting absurdities on his opponents, it is worth carefully considering the nature of the objects he argues they ought to accept, as well as his objections to them. This may reveal something about how to understand his own statements about the nature of mathematical objects. Since — if he has not committed a significant error — what Aristotle finds objectionable about intermediates should not apply to his own mathematical objects, understanding his objections may cast serious doubt on certain interpretations of his view.

We can begin with the mixed mathematical intermediates. The first thing to notice is that these are quite different in nature from the arithmetical and geometrical intermediates. While the latter are non-perceptible, Aristotle refers to the mixed sciences' objects as sensibles intermediate (αἰσθητὰ μεταξὺ) between individual sensibles and forms (997b23); and in the M.2 passage he describes the harmonic and optical intermediates as "voice and sight" (φωνή τε καὶ ὄψις) respectively, both of which are sensible things.[19] He specifies that these will have to exist in addition to (παρά + accusative) "the sensible, i.e. individual, voices and sights" (1077a4-6).

Why must these intermediates be in some sense sensible? Because what makes each of the mixed sciences the science that it is, and not just the pure science to which it is subordinate, is the fact that it studies certain mathematical properties insofar as they belong to specific kinds of natural objects or processes.[20] What makes optics *optics* is that it studies lines insofar as they belong to sensible sights (visual phenomena). If it studied lines apart from sensible sights, then it would be not optics but geometry. Note that the claim is not that optics studies lines that just happen to be in sensible sights, so that the only difference between optics and geometry is the substratum in which those lines happen to be. It is rather that optics studies these lines insofar as they belong to sensible sights. That is, at least one sensible property of sights is part of the causal story an optical scientist tells when explaining e.g. the shape of a visual phenomenon like a halo. Hence the objects of optics, unlike the objects of geometry, retain at least one sensible property, and it is appropriate to refer to them as intermediate sensibles.

The sensible property that distinguishes the objects of the mixed sciences from the objects of arithmetic and geometry is motion. Mechanics, unlike solid geometry, studies the motion of bodies; astronomy studies the motion of the heavens and its parts; harmonics studies the relationships between certain sounds played or voiced in sequence (musical scales, melody);[21] and optics studies visual rays.[22] Further, it is the motion of the visible and audible objects themselves that brings sense-perception about. For example, "colour sets in movement (κινεῖ) what is transparent, e.g. the air, and that [viz.

the movement of the air], extending continuously from the object of the organ, sets the latter [viz. the organ] in movement (κινεῖται)" (*De Anima* 2.7 419a13-15)[23]; and the production of a sound is the "setting in movement a single mass of air which is continuous up to the organ of hearing" (2.8 420a3–4).[24] Hence if there are intermediates for the mixed sciences, these intermediates will be in motion.

Such intermediates will be ideal-sensible hybrids: they will be imperishable and perfectly precise, yet capable of undergoing motion — and as we have seen, Aristotle refers to them as intermediate sensibles. Lear 1982 supposes that "having to admit that ideal objects move" is simply "embarrassing" for Platonists, and (pointing to *Republic* 528a-b and 529c-d) he observes that "it is far from clear that Plato was embarrassed by this" (167 and n. 10). But these objects are more than just embarrassing. They push proponents of intermediates into what Owen 1970 and Vlastos 1981 call a 'two-level paradox' — that is, a conflict between an object's ideal and proper attributes. [25]

Imperishable sensible objects that undergo motion are not inherently paradoxical; Aristotle himself accepts some such objects, and some (most prominently Lear 1982) have argued that they are perfectly precise (e.g. that the stars are perfect spheres). However, this kind of object is paradoxical for his opponents, since according to their principles it will have to be both immovable and movable. It will have to be immovable because of its status as an ideal mathematical substance: such objects (intermediates) are supposed to be motionless (ἀκίνητα, A.6 987b16-17, B.2 998a14-15, M.2 1076b35). But it will have to be movable because the mixed sciences study, among other things, the motion of their objects (e.g. the motions of the heavens, sounds). The ideal and proper attributes of these intermediates are incompatible.

The reason Aristotle's opponents face a two-level paradox while he does not is that they make an assumption about the ontology of mathematical objects that he does not make. This is that the objects of the mathematical sciences are in fact unmoving. Aristotle instead takes mathematical objects to be sensibles considered *qua* unmoving (ᾗ ἀκίνητα, E.2 1026a9–10), i.e. considered without their motion and its associated properties. As Mignucci 1987 helpfully explains, for Aristotle, "immobility is not a positive property of mathematical objects — if it were so, mathematical objects would have properties which would be inconsistent with properties of physical bodies" (181).[26]

Aristotle makes this very point when he objects that it is "not reasonable" to suppose that such an object is unchanged; yet "for it to be changed is altogether impossible" (997b19-20, trans. Madigan).[27] Alexander explains that "the essence and nature of these things is bound up with such and such a kind of motion" (ἡ γὰρ οὐσία καὶ ἡ φύσις τούτων μετὰ τῆς τοιᾶσδε κινήσεως). Aristotle recalls this B.2 objection in M.2, when he protests that it does not seem possible that there is "a heaven and its parts — or indeed anything which has movement" — apart from the sensibles (παρὰ τὰ αἰσθητὰ). Notice that he is explicitly extending this objection to anything else with movement (ἄλλο ὁτιοῦν ἔχον κίνησιν, 1077a4) — that is, to the objects of any science of sensibles whatsoever. His opponents will need to posit intermediates not just for the heavens, seeings, and utterances, but for every other kind of sensible thing, too. As he says at 1077a6–8, "this is true of the other sensings (αἰσθήσεις) and objects of sense (αἰσθητά) too — why one rather than another?". So for example, zoology will be about intermediate animals and medicine will be about intermediate healthy things. Like the intermediate heaven and its parts, these objects

must be sensible-ideal hybrids; and so like the intermediate heaven and its parts, their nature as ideal entities requires that they be immovable, while their sensible nature requires that they be moving or changeable. Thus they must, impossibly, be both moving and immovable.[28]

This indicates that when Aristotle argues in B.2 and M.2 that his opponents will need intermediates for the mixed sciences, he is doing more than just insisting that since the mixed sciences are mathematical, they require intermediates (997b16–18). He is also pointing to a reason such intermediate sensibles are needed on his opponents' own principles — a reason that will also require them to accept intermediates for every science of sensibles.

The reason is this: his opponents are committed to the view that mathematical truth requires immovable mathematical substances, yet they seem to have no adequate objects for the mixed sciences. The forms will not do, because these sciences study, among other things, the motion or change of their objects, while the forms are immovable and unchanging. Alexander makes note of this in his comments on B.2: if something is not "enmattered and by its own nature sensible" then it cannot be in motion (ἀδύνατον γὰρ κινεῖσθαι τὸ μὴ ὂν ἔνυλον καὶ τῇ αὑτοῦ φύσει αἰσθητόν, 198, 13–14); so it is an absurdity (ἄτοπον) to hold "that there is some Idea of heaven, Heaven Itself, and of the sun, Sun itself; for how is it possible to conceive of any of these as immovable (ἀκίνητον)?" (198, 14-16). Since forms are essentially immovable and the heaven and sun are essentially movable, they are by their very natures incompatible. We can call this the "movability problem". But neither can sensibles as such be the objects of any science — a point of agreement for Aristotle and his opponents.[29] As we have seen, according to Aristotle's account, his opponents posit intermediates for geometry and arithmetic because neither forms nor sensibles can serve as objects for these sciences: the uniqueness problem rules out forms, while perishability and imperfection rule out sensibles. They ought then to posit intermediates to secure the truth of the mixed sciences, since the uniqueness problem and the movability problem rule out forms, while perishability (and perhaps also imperfection) rule out sensibles. In fact, they should posit them for zoology, medicine, and the other sciences as well, since the movability problem again rules out forms, and the perishability of sensibles rules them out as objects for these sciences, too.

In short, two of the same problems — the immovability of forms and the perishability of sensibles — that warrant positing intermediates for mixed mathematical sciences also warrant them for unmixed sciences of sensibles like zoology and medicine. When Aristotle extends the accumulation to senses and animals, he is not simply showing that his opponents will need to bite the bullet and accept these objects for the sake of the mixed mathematical sciences. He is also showing that intermediates are required for *all* sciences studying sensibles. Since the ideal-sensible nature of all such intermediates renders them paradoxical, the problem is not just that the accumulation is embarrassing; it is also, perhaps more importantly, that the accumulated objects are impossible.

5. WHAT THIS CAN TELL US ABOUT ARISTOTLE'S OWN VIEW

I have argued that the B.2 and M.2 passages constitute a serious argument, and that Aristotle is committed to the key premises that produce the accumulation. If this is correct, then he ought to try to avoid these

objections in his own account of mathematical objects.

On one common line of interpretation, Aristotle takes mathematicians' statements to be about entities distinct in kind from sensible objects — entities that are in some sense mind-dependent. Alexander is an early proponent of this interpretation. He writes: "mathematical objects do not subsist independently, but by thought (ἐπινοίᾳ); for after the matter and the motion have been separated from enmattered things, the things according to which and with which mathematical objects have their subsistence, these objects are left" (*On Aristotle* Metaphysics, 52.15-18). Contemporary commentators who take this line suggest that mathematical objects are somehow tied to or constrained by the sensible world, but distinct from sensible things and mind-dependent.

For example, Modrak 2001 argues that "the mathematician realizes a potentiality in thought that is not realized concretely" (121), and that "the arithmetical unit is actualized as an object of thought" (123). On this view, mathematical objects exist potentially but never actually in the sensible world, because they are always only "imperfectly exemplified in physical objects" (120). They can only be actualized by the mathematician's thinking: an actual mathematical object is a conceptualization (122). Since these ideal objects are actualizations of potentialities in the sensible world, Modrak denies that they are "mere projections of the mathematician's mind" (122). Nevertheless, all actual mathematical objects are "dependent upon the way humans conceptualize the world" (123). Along similar lines, Halper 1989 insists that mathematical objects do not exist only in the intellect, since they exist potentially in the sensible world. However, he argues that they only exist actually in the intellect (265–6, 268–9).[30] But the mathematician studies the actual objects of mathematics: Aristotle insists that ἐπιστήμη is always of what is prior (ἀεὶ … περὶ τὰ πρότερα ἡ ἐπιστήμη, *Metaphysics* M.2 1076b35-6), and he devotes Θ.8–9 to showing that the actual is prior in every way to the potential. If then mathematical objects are actualized only in thought, it follows that all of the mathematician's proofs and statements are about perfect objects that exist only in thought.[31]

On this view, Aristotle and his opponents agree that the mathematician does not study objects in the sensible world; they disagree only over the ontological status of the mathematicians' objects. While Aristotle's opponents make them ideal, thought-independent substances, Aristotle makes them ideal, thought-dependent non-substances. But if this is indeed Aristotle's view, then he is vulnerable to much the same objection he levels against his opponents. This is because, as we have seen, the mixed sciences are genuinely mathematical for Aristotle. As he states in the *Physics* 2.2 passage, optics studies mathematical lines *qua* natural — that is, optics studies the same objects as geometry (lines and figures), only it studies them insofar as they belong to certain sensible things (visual phenomena).[32] If (as the interpretations in question hold) the objects of geometry do not exist in actuality in the sensible world, but rather only as ideal objects of thought, then optics will be the study of ideal thought-objects insofar as they belong to visual phenomena, i.e. *qua* natural. Similarly, the objects of harmonics, astronomy, and mechanics will be ideal thought-objects *qua* natural.

We can see why this is a problem if we consider any of the mixed sciences. We can take astronomy as our example. One of astronomy's principal concerns is to investigate the circular motion of its objects. On the interpretation in question, this means that astronomy studies

circles *qua* natural, and these circles are themselves ideal objects existing only in thought. Now, Aristotle is clear that what exists only in thought cannot undergo locomotion, except incidentally (as the soul is moved when the body is moved; *De Anima* 1.3). This is because locomotion is change of place, so that what undergoes locomotion must have place. While a thought-object may have a location (where the soul of the thinker is located, and so at the same location as the body), it does not have place. Place is the innermost motionless boundary of what contains a body (*Physics* 4.4), and objects existing only in thought are not bodies.[33] So if geometrical points, lines, and circles exist only in the minds of mathematicians, the astronomer — who studies geometrical points, lines, and circles *qua* natural — is studying something *per se* immovable *qua per se* movable. In the first place, this is asking too much of the *qua*, which can only isolate a property (or set of properties) an object already has.[34] Indeed, the *qua* locution is closely associated with ἀφαίρεσις — subtraction — while on this interpretation, it works like addition (πρόσθεσις).[35] But even if the *qua* could do this work, the astronomer would be left with an impossible object: a *per se* immovable thought-object that is *per se* movable.

In short, if Aristotle's mathematical objects exist only in thought, then he and his Platonic opponents have almost the same problem with the objects of the mixed mathematical sciences. Even if they are derived from the sensible world, in that they are actualizations of what is only ever imperfectly expressed in sensible objects, the fact remains that all mathematical statements and proofs will be about these actualizations — these perfect entities existing only in the mind of the mathematician. Their nature as thought-objects will require them to be immovable; but their status as objects of the mixed sciences requires that they be moving. Thus like the Platonists Aristotle targets in B.2 and M.2, his own view of the objects of the mixed sciences would, paradoxically, have them be both immovable and movable. Of course it is possible that Aristotle has committed this error. But since there are other plausible interpretations available on which he does not, this tips the scale in their favor.[36]

6. CONCLUSION

My aim has been to show that it is fruitful to consider Aristotle's own reasoning about mathematical intermediates. The examination has revealed first that while Aristotle's targets' ontology requires intermediates for the pure mathematical sciences because of Annas' uniqueness problem, there is an additional reason it requires them for the mixed mathematical sciences, and indeed for all sciences of sensibles. This is the movability problem: since every science of sensibles explains some kind of movability or change, and since forms are essentially immovable, forms cannot be the objects of any science of sensibles. Second, I have argued that Aristotle is committed to the premises of his B.2 and M.2 argument against these objects, and to the argument's moves from (1) arithmetical and geometrical intermediates to (2) intermediate sensible things to (3) all sensible objects, sensations, and animals. If this is correct, then his objections to Platonic intermediates are more than mere polemics. Since the problem his B.2 and M.2 argument identifies — that these objects must, impossibly, be both immovable and movable — is one he himself formulates and takes seriously, it is unlikely that his own account of mathematical objects would fall prey to it. This in turn

casts doubt on a common interpretation of his philosophy of mathematics, as it would have him running into just this problem. Thus a further result of the examination is that it reveals something useful for understanding Aristotle's own view about the ontological status of mathematical objects.

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NOTES

1 Arsen 2012 is an exception.

2 By 'Platonists' I mean the opponents Aristotle is targeting here, namely those who posit forms and intermediates. I consider Aristotle's reasoning independently of the question whether Plato himself posits intermediates.

3 *Metaphysics* B.2 997b35-998a3, K.1 1059b10-12, N.3 1090a35-b1

4 See also Cook Wilson 1904, 249–51, for an earlier description of the same difficulty.

5 All translations of Aristotle (except for *Metaphysics* M-N) are from Barnes 1984.

6 All translations of *Metaphysics* M-N are from Annas 1976.

7 Annas 1976 supposes that in M.2 the argument is "tacitly generalized over all ideal mathematical objects" (142). I do not see evidence of this generalization,

and find it implausible given that Aristotle is speaking here as in B.2 about the objects of the mathematical sciences.

8 Annas finds fault with this part of the argument, too. She suggests that a Platonist might respond that he has no problem with saying that there are ideal objects for all of the sciences: these are the forms. However, it seems unlikely any proponent of Platonic forms would wish to respond in this way, because it would imply that the "separate heaven" that is the object of astronomy is a form. We have seen that this is problematic because the heaven that the astronomer studies (which includes the sun, the moon, and the many stars) is in motion, and hence this form would have to be in motion. The Platonists would presumably recognize that a moving form is not possible.

9 This passage does not specify that astronomy is under geometry, though that Aristotle so classifies it is clear from his descriptions of what astronomy studies. See also *Posterior Analytics* 1.7 75b14–17.

10 In *Metaphysics* A.9, Aristotle argues that while "things in this world (e.g. harmony) are ratios of numbers", this does not support the view that there are forms that are numbers—that is, ideal number substances. For a harmony (συμφωνία) and each of the other kinds of ratios in sensible things, there is always "some one class of things of which they are ratios". He refers to this "some one thing" as "the matter" (*Metaph.* A.9 991b13-15).

11 Thus to say that optics studies mathematical lines *qua* natural is not to say that it studies all the natural properties of natural lines. Burnyeat 2005 explains that although the lines studied by optics are studied *qua* natural, they remain mathematical. Hence "[y]ou cannot legitimately infer that if the rays move, or have degrees of strength, they are corporeal and therefore have standard properties of physical bodies such as weight and thickness" (36).

12 See Distelzweig 2013 90-91 for additional passages and argument showing that these are indeed mathematical sciences, for Aristotle.

13 Thanks to Lloyd Gerson for raising this concern.

14 We will see (section 4) why such objects are problematic.

15 For this argument, see Katz 2014 354 and 354 n. 12. Arsen 2012 argues that for the same reason, they must be relational (209).

16 One might object that in *Republic* 7, Plato has Socrates propose a new kind of harmonics that would study the consonance of numbers independently of auditory experience (530d–531c). (See Burnyeat 2000 52–3 for an interpretation of this passage.) Perhaps then Platonists would reject the claim that the ideal utterances in question are audible. However, like the new astronomy described at *Republic* 529c–530c, this science of inaudible consonance is not the mixed science Aristotle is targeting. The mixed science is the one Socrates says involves "measuring audible consonances and sounds against one another" (531a). Hence even if, for Platonists, there is another harmonics of inaudibles, the problem with the objects of the harmonics of audibles remains.

17 All translations of Alexander are from Dooley and Madigan 1992.

18 Annas takes the move to rest on the premise that ideal sounds are *produced* in a manner exactly like sensible sounds: "from ideal throats of ideal people" (143). However, since Aristotle speaks of sense-objects and sensings, it is more natural to read him in the way I suggest, that is, as concerned not with how these ideal sounds are produced, but rather with how they are perceived. Further, even if we include Annas' premise, so that Aristotle is *also* thinking of how these objects of harmonics are produced, this is not a terrible argument. Aristotle is speaking not of sound (ψόφος) (as Annas has it) but of utterance or what is voiced (φωνή). In *De Anima* 2.8 he distinguishes between these two kinds of audible objects and specifies that what is voiced "is a kind of sound characteristic of what has soul in it; nothing that is without soul utters voice" (ἡ δὲ φωνὴ ψόφος τίς ἐστιν ἐμψύχου· τῶν γὰρ ἀψύχων οὐθὲν φωνεῖ, 420b5–6). Hence there is a tight connection between what is voiced and what has a soul (i.e. animals).

19 The claim here that there are intermediate sensibles is different from the earlier claim (997b3-12) that forms are just eternal sensibles.

20 For detailed discussion, see Distelzweig 2013, 94-100.

21 Aristotle states that harmony (ἁρμονία) is about "magnitudes which have motion and position" (τῶν μεγεθῶν ἐν τοῖς ἔχουσι κίνησιν καὶ θέσιν, *De Anima* 1.4 408a5-7), and sounds are motions of masses of air (*De Anima* 2.8). In his *Elementa harmonica*, Aristoxenus, a pupil of Aristotle, defines harmonics as "the science which deals with all melody, and enquires how the voice naturally places intervals as it is tensed and relaxed. For we assert that the voice has a natural way of moving, and does not place intervals haphazardly" (Barker 1989, 149). He argues that the conditions for understanding music are that we must "perceive what is coming to be and remember what has come to be" (Barker 1989, 155). And a Platonist taking seriously *Timaeus* 80a-b would also think that harmonics studies (among other things) the motion of its objects (sounds). Plato has Timaeus explain pitch in terms of the speed at which sounds travel, and harmony and lack of harmony in terms of the motion produced by slow and fast sounds as they move toward the auditor.

22 The visual ray (ὄψις or ἀκτίς) for Aristotle is the line of sight from the eye to the object seen. This is what "arrives at" (ἀφικνεῖται ἡ ὄψις, *De Caelo* 2.8 290a21) the visible object, and what is reflected by the air (under certain atmospheric conditions) and smooth surfaces (ἡ ὄψις ἀνακλᾶται *Meteorology* 3.2 372a29–31), producing visual phenomena like halos and rainbows. He is critical of the account given in the *Timaeus*, according to which the visual ray is a body (σῶμα), and specifically a kind of internal fire flowing out from the eyes (45b4-8) that coalesces with external fire (typically daylight) (45c2-5). Aristotle sharply criticizes this view in *Sense and Sensibilia*

2: "It is, to state the matter generally, an irrational notion that the eye should see in virtue of something issuing from it; that the visual ray should extend itself all the way to the stars, or else go out merely to a certain point, and there coalesce, as some say, with rays which proceed from the object" (438a25–7).

23 This is not to say that for Aristotle light (φωτός) travels (φέρω). Indeed he denies this (*De Anima* 2.7 418b20–4). Light is the actuality of the potentially transparent (which is excited to actuality by e.g. fire).

24 This is also reflected in the third century *Sectio Canonis* (possibly Euclid's work). In the *Sectio*'s introduction, the author writes: "If there were stillness and no movement there would be silence", and that "some notes must be higher, since they are composed of closer packed and more numerous movements, and others lower, since they are composed of movements more widely spaced and less numerous" (Barker 1989, 191-2).

25 Vlastos discusses this paradox as it applies to Platonic forms. The paradox arises because of a conflict between the ideal and proper attributes of forms—that is, properties the form F has *qua* form (ideal) or *qua* F. As Vlastos puts it, "The Idea of *F* is *P*" is "true if *P* is predicated of 'the Idea *qua* Idea,' (…) [but] false if predicated of it '*qua F*'" (323). Vlastos notes that this is not really a paradox for Aristotle, since he sees that it is one thing to assert a predicate of F *qua* form and quite another to assert it of F *qua* F. But it remains a paradox for anyone who either has not acknowledged this distinction, or whose other views prevent him from doing so consistently. Vlastos argues that Aristotle believes that Plato is such a one (323–4).

26 He continues: "Mathematical objects do not move, not because they are unaffected by movement, but because movement is left out of consideration" (181)." Mignucci is explaining (180–1) why there is no inconsistency in Aristotle's view that the objects of geometry are the shapes or limits of sensible things (for example in *Physics* B.2). But the same point explains why there is no inconsistency in his view that the objects of the mixed mathematical sciences are sensibles.

27 See Madigan (56).

28 Later in B.2, Aristotle makes the same objection to a different kind of ideal-sensible intermediate: arithmetical or geometrical intermediates located in sensible objects. Since these intermediates are in sensibles, which are moving, they will not be immovable; but according to the theory, intermediates are supposed to be immovable (998a14–15). (Aristotle claims that certain thinkers have adopted this problematic view (998a7–9). Perhaps they did so in response to the problem Aristotle raises in N.3. (See the objection to the move from (1) to (2), in section 3 above.)

29 Plato argues that sensible things are only opinable, and not knowable, because they are between what purely is and what in every way is not. The many beautiful visible things are in a way beautiful and in a way not beautiful; and the many doubles are in a way doubles, but also in a way halves (*Republic* 476a9-480a13). Knowledge can only be of "the things themselves that are always the same in every respect" (*Republic* 5 478e7--480a13; see also e.g. *Phaedo* 74a9-77a5). Aristotle agrees that the objects of knowledge must be imperishable (e.g. *Nicomachean Ethics* 6.3 1139b19-24), and in *Metaphysics* B.2 he seems to acknowledge that geodesy and astronomy cannot study sensible magnitudes and the sensible heavens respectively, since sensible magnitudes are perishable (so that geodesy would then perish along with its objects) and sensible objects and processes seem not to be like or the same as (ὅμοιον, τὸ αὐτό) the objects the geometer or astronomer describes (997b32-998a6). However, I do not take the B.2 passage (nor K.1 1059b7–12, the other oft--cited passage) to rule out sensibles as the proper objects of these sciences. I rather understand B.2 and K.1 in light of Aristotle's later insistence, in M.3, that mathematics and other sciences are about sensibles *qua* a certain subset of their properties. Hence what he is denying in B.2 and K.1 is only that these sciences are of sensibles *qua* all (and in the case of geometry, any) of their sensible properties.

30 See also White 1993, 179–81. All of these commentators are careful not to claim that mathematical objects are utterly disconnected from the sensible world. This makes their view unlike what Mueller 1990 calls the "mentalistic" interpretation, which he associates with "at least the majority of the [ancient] commentators" (465). This modern view is rather that mathematical objects are somehow potentially in the sensible world. However, all those who take this line agree that this is a special kind of potentiality, inasmuch as it cannot be actualized in the sensible world, but rather only in the mind of the mathematician.

31 These interpretations appear to be prompted by (1) *Metaphysics* B.2 997b34–998a6 and K.1 1059b7–12, where Aristotle states that mathematicians do not treat of sensible things, and (2) *Metaphysics* Θ.9 1051a29-32, where Aristotle states that "the potentially existing [geometrical] relations are discovered by being brought to actuality (the reason being that understanding is an actuality)" (trans. Ross, slightly modified). (1) As for the first set of passages: while I do not quite follow Lear 1982 in asserting that in B.2 "it is an imagined Platonist speaking, and not Aristotle" (176), I agree that these passages do not count against the view that for Aristotle, mathematicians study sensible things. This is because Aristotle claims that mathematicians in fact study sensibles; they just do not study them *qua* sensible (*Metaphysics* M.2 0178a2-5, *Physics* 2.2 193b22-5 with b31–3). So we can understand an implied "*qua* sensible" in the B.2 and K.1 statements. (2) In the Θ.9 passage, Aristotle does not state that the mathematician actualizes geometrical objects by means of an intellectual working-up of the sensible (as Modrak and Halper have it). Rather, the passage simply describes how the geometer works: she discovers geometrical relations (e.g. symmetry, similarity, parallelism, etc.) by dividing figures and so producing new ones (e.g. by dividing the line AB at the point C, she produces or actualizes the lines AC and CB).

32 See also e.g. *Posterior Analytics* 1.12, 77b1–2, where Aristotle states that optical things (τὰ ὀπτικά) are "proved from the same things as geometry" (ἐκ τῶν αὐτῶν δείκνυται τῇ γεωμετρίᾳ).

33 This is why the soul is in place only accidentally (*Physics* 4.5 212b11-12).

34 Lear aptly describes it as a "predicate filter". A filter does not add predicates; it removes them.

35 For a lucid account of Aristotelian ἀφαίρεσις, see Cleary 1985.

36 For example, Lear 1982's view that the geometer "considers genuine properties of objects, in particular, geometrical properties actually possessed by physical objects" (186). Lear, like the above-mentioned interpreters, takes mathematical objects to exist only in the mind of the mathematician; he calls them harmless (172) and useful (188) fictions. However, he distinguishes between these objects—the objects to which terms like 'triangle' refer—and the truthmakers for mathematical statements. He takes the latter to be geometrical properties perfectly instantiated in the sensible world (e.g. the spherical shape of the stars) (169). I have a different interpretation of Aristotle's philosophy of mathematics; but it should be noted that Lear's is not vulnerable in the same way that the above-mentioned views are.

Unclarity and the Intermediates in Plato's Discussions of Clarity in the *Republic*

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ABSTRACT

In this paper, I argue that the two versions of divided line (the first in Book VI and the recalled version in Book VII) create problems that cannot be solved — with or without the hypothesis that the objects belonging to the level of διάνοια on the divided line are intermediates. I also argue that the discussion of arithmetic and calculation does not fit Aristotle's attribution of intermediates to Plato and provides no support for the claim that Plato had such intermediates in mind when he talked about διάνοια in the ***Republic***. The upshot of my argument is negative: even if Aristotle's report about Plato and intermediates is correct, there is no evidence for such objects provided in the passages I review from the ***Republic***. If they are to be found in Plato, it will have to be elsewhere that they are found.

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I. THE PROBLEM

In Book VI of the *Republic*, Plato indicates that the proportions of the divided line are intended to indicate different degrees of clarity and truth:

> There are four such conditions in the soul (παθήματα ἐν τῇ ψυχῇ), corresponding to the four subsections of our line: Understanding (νόησις) for the highest, thought for the second (διάνοια), belief (πίστις) for the third, and imaging (εἰκασία) for the last. Arrange them in a ratio, and consider that each shares in clarity (σαφήνεια) to the degree that the subsection it is set over shares in truth (ἀλήθεια). (*Republic* VI.511d6-e4[1])

In this paper I explore some of the problems that arise in Plato's discussions of clarity in the *Republic*, and whether these are solved by the hypothesis that Plato has the intermediates in mind when he talks about the subsection associated with διάνοια. As far as what Plato has in mind with respect to the role of clarity, it seems like this passage gives us as good a start as one could ever hope for: clarity applies to the παθήματα ἐν τῇ ψυχῇ--that is, to νόησις, διάνοια, πίστις, and εἰκασία, respectively; truth applies to whatever these παθήματα ἐν τῇ ψυχῇ are "set over" (ἐφ' οἷς).

The παθήματα ἐν τῇ ψυχῇ, I take it, are cognitive conditions of some sort. And these are said to be "set over" whatever in the divided line passage is supposed to be evaluated in terms of degrees of ἀλήθεια. Now scholars have (correctly, I think) regarded ἀλήθεια as the measure that applies to the objects associated with each of the subsections of the line.[2] But this was not obviously the initial way in which these two measures were associated with the proportions of the line's subsections. Consider how Plato first divides the line (see appendix I for a representation):

> It is like a line divided into two unequal sections. Then divide each section—namely, that of the visible and that of the intelligible — in the same ratio. In terms now of relative clarity and opacity (σαφηνείᾳ καὶ ἀσαφείᾳ), one subsection of the visible consists of images. And by images I mean, first, shadows, then reflections in water and in all close-packed, smooth, and shiny materials, and everything of that sort, if you understand.
> I do.
> In the other subsection of the visible, put the originals of these images, namely, the animals around us, all the plants, and the whole class of manufactured things.
> Consider them put.
> Would you be willing to say that, as regards truth and untruth (ἀληθείᾳ τε καὶ μή), the division is in this proportion: As the opinable (τὸ δοξαστὸν) is to the knowable (τὸ γνωστόν), so the likeness is to the thing that it is like?
> Certainly. (*Republic* VI. 509d6-510b1)

I wish Plato had managed to make the appropriate connections between what is supposed to be measured by clarity and truth more consistent, but these two passages already reveal such a wish to be in vain. In the passage at 511d6-e4, it seemed obvious that clarity applied to cognitive conditions, but in this passage it seems that clarity applies to the objects with which the cognitive conditions (only named at the very end of the divided line passage, quoted above) are associated. Truth is brought in at 510a9, but applied to "the opinable" and "the knowable." This distinction reminds us of

Plato's discussion of knowledge, opinion, and ignorance at the end of Book V (to which I will turn in the next section), but what it seems to be referring to more immediately here is the original division of the line into two unequal parts, which Plato had initially associated with "the intelligible" (τὸ νοητόν — 509d2) and "the visible" (ὁρατόν). Whatever we are to say about these (intelligible and visible), it seems not to be an option to think of them as cognitive entities, but (*qua* intelligible and *qua* visible) as the kinds of entities to which cognitions might be applied. Thus, at the very beginning of the divided line passage, it appears that *both* clarity and truth are intended to apply to the kinds of entities to which cognitions might be applied, rather than to the cognitions themselves. This would seem to leave us with the uneasy interpretive option of either supposing that clarity and truth are just different names for the same measure, where the measure itself is a measure of some character of objects to which cognitions might be applied, or else that they are both measures of objects to which cognitions might be applied, but are nonetheless (somehow) different measures. But again, neither of these options strictly works for the explicitly different applications of clarity and truth that Plato gives at 511d6-e4.

So, my first problem in the association of clarity with truth has now been introduced: Plato seems to be somewhat less than clear in telling us precisely what truth and clarity are supposed to measure.

II. BACK TO BOOK V

Comparisons of the relative clarity of cognitions were first discussed in Book V, when Plato has Socrates and Glaucon compare the relative merits of knowledge (sometimes called ἐπιστήμη; sometimes called γνῶσις), opinion (δόξα) and ignorance (ἄγνοια):

> Then opinion is neither ignorance nor knowledge.
> So it seems.
> Then does it go beyond either of these? Is it clearer than knowledge or darker than ignorance (ὑπερβαίνουσα ἢ γνῶσιν σαφηνείᾳ ἢ ἄγνοιαν ἀσαφείᾳ)?
> No, neither.
> Is opinion, then, darker than knowledge but clearer than ignorance? (γνώσεως μέν σοι φαίνεται δόξα σκοτωδέστερον, ἀγνοίας δὲ φανότερον)
> It is. (*Republic* V.478c7-14)

In this passage, too, Plato manages to use different words to identify the relative qualities of the cognitive powers (δυνάμεις)[3]: σαφής and φανός seem to apply to the same quality, with ἀσαφής and σκοτώδης as their opposites, respectively). But since the two different terms are used in consecutive sentences on what is obviously the same subject, it is clear enough (if I may) that Plato intends to use the language of clarity and brightness to refer to the quality of cognitions, and unclarity and dimness/darkness to refer to the relative deficiency of cognitive quality. This "simile of light," as it has sometimes been called, is then carried through into the contrasts of light and dark in Book VI in the simile of the sun and applied to the intelligible and visible realms, respectively. This same contrast is then represented on the divided line.

Also in Book V, Plato compares each of the three cognitive δυνάμεις in terms of what each one is "set over" (ἐπί), but also in terms of what each one accomplishes:

> In the case of a power, I use only what it is set over and what it does, and by

> reference to these I call each the power it is: What is set over the same things and does the same I call the same power; what is set over something different and does something different I call a different one. Do you agree?
> I do. (*Republic* V.477d1-7)

As everyone knows, he goes on to claim that knowledge is "set over" what is (τὸ ὄν; 477b11, 478a7, 478c3, 478d6), ignorance is "set over" what is not (478c3, 478d7), and so opinion, which has been shown to be intermediate between these others, is thus "set over" "what participates in both: what is and what is not" ἀμφοτέρων μετέχον, τοῦ εἶναί τε καὶ μὴ εἶναι — 478e1-2). Most of the remainder of Book V is thus spent on showing that "what is" consists in the forms, whereas what is and is not consists in such things as the "many beautiful things" (479a5-6), "just things" (479a6-7), "pious things" (479a7), and so on, all of which will be beautiful, just, or pious in some way, but also their opposites in some way, and will thus participate in both opposites (479b7).

Given this discussion, it seems just obvious to me that Plato is putting the cognitive powers into "set over" relationships with objects—and not at all with propositions or sentences that we think of as being the contents of cognitions.[4] Rather, here in Book V, the "set over" relationship is between cognitions and the kinds of objects to which such cognitions are (naturally — see πέφυκε at 477b11) applied. Plato began this discussion by stating that philosophers are "those who love the sight of truth" (τοὺς τῆς ἀληθείας φιλοθεάμονας — 475e4). In the remainder of the passage, he does not mention truth; he only tells us that the object the cognitive powers are "set over" differ in terms of their degrees of ***being***. But toward the end of his discussion, he also applies the language of clarity/brightness and unclarity/dimness (or darkness) to such objects:

> Then do you know how to deal with them [sc. the things that both are and are not]? Or can you find a more appropriate place to put them than intermediate between being and not being? Surely that can't *be* more than what is or *not be* more than what is not, for apparently nothing is darker than what is not or clearer than what is (οὔτε γάρ που σκοτωδέστερα μὴ ὄντος πρὸς τὸ μᾶλλον μὴ εἶναι φανήσεται, οὔτε φανότερα ὄντος πρὸς τὸ μᾶλλον εἶναι) (*Republic* V. 479c6-9)

So here again we find the same problem as the one with which we began: comparisons in terms of clarity (or brightness) are made between both cognitions and the sorts of objects to which cognitions are applied. I suggest, then, that we take the first sort of application of clarity/brightness comparisons to reflect the second — that is, the quality of cognitions is explicable in terms of the quality of the kinds of objects to which they are applied.

If my suggestion is correct, then if we use the distinction Plato provides in the passage with which we began (*Republic* VI.511d6--e4), it will mean that the clarity/brightness of cognitions will co-vary with the truth of the objects they are "set over." At least Plato remains consistent (in the middle books of the *Republic*, at any rate[5]) in applying measures of truth/untruth to the kinds of objects to which cognitions may be applied (as at 511d6-e4 and 510a9, both mentioned above, but see also 484c8, 508d10). Truth, in the simile of the sun, is the intelligible analog to light in the visible world, and different levels of each of these are said to co-vary with the clarity or obscurity of

the kinds of cognitions produced when applied to the objects "illuminated" by each.

But lest this summary of the relationship between clarity and truth seem like it will suffice to explain Plato's proportions in the divided line, we should not conclude our discussion without paying attention to another very important passage that scholars have used to try to figure out how to understand this connection. Unfortunately, if we consult this other passage, we can actually manage to create an even greater problem.

III. THE NIGHTMARE AT 533D4--534A9

As he sums up his discussion of the role of dialectic in the higher education of the rulers of *kallipolis*, Socrates has a few choice things to say about how dialectic compares with the practices of the mathematical studies, and then (incorrectly) recalls what he said about the divided line in Book VI (see appendix 2 for a representation):

> From force of habit, we've often called these crafts sciences or kinds of knowledge (ἃς ἐπιστήμας), but they need another name, brighter[6] than opinion but darker than knowledge (ἐναργεστέρου μὲν ἢ δόξης, ἀμυδροτέρου δὲ ἢ ἐπιστήμης). We called them thought (διάνοια) somewhere before. But I presume that we won't dispute about a name when we have so many more important matters to investigate.
>
> Of course not.
>
> It will therefore be enough to call the first section knowledge (ἐπιστήμη), the second thought (διάνοια), the third belief (πίστις) and the fourth imaging (εἰκασία), just as we did before. The last two together we call opinion (δόξα), the other two, intellect (νόησις). Opinion (δόξα) is concerned with becoming (γένεσις), intellect (νόησις) with being (οὐσία). And as being (οὐσία) is to becoming (γένεσις), so intellect (νόησις) is to opinion (δόξα), and as intellect (νόησις) is to opinion (δόξα), so knowledge (ἐπιστήμη) is to belief (πίστις) and thought (διάνοια) to imaging (εἰκασία). But as to the ratios between the things these are set over and the division of the opinable (δοξαστόν) or the intelligible (νοητόν) sections into two, let's pass them by, Glaucon, lest they involve us in arguments many times longer than the ones we've already gone through.

To be frank, I don't see how arguments of any length could pull Plato out of the hole into which he has dug himself here.

As I indicated above, Plato has emphatically not recalled things here "just as we did before." Instead, he has not only changed several bits of terminology, but also done something to the proportion that calls for our attention. First, terminology: Notice that what had been the παθήμα provided for I2 in the original version (νόησις) is now given as the name for I1 and I2 combined (which had originally been said to stand for τὸ νοητόν). Given the relation between these two terms (νόησις/νοητόν), it is perhaps understandable that Plato would have exchanged them here. But more troubling is that what used to be νόησις is now given as ἐπιστήμη — a term never used in the original divided line passage, but which obviously (again) recalls the cognitive power of the end of Book V. This is now contrasted to διάνοια, which is said to be darker than ἐπιστήμη, but brighter than δόξα. But δόξα has also now been substituted for what had been τὸ ὁρατόν. Again, this may seem benign, especially given

the connections Plato makes between opinion and vision at the end of Book VI and also in the simile of the sun. Bringing in the two cognitive powers of Book V in order to place διάνοια between them in terms of brightness and darkness allows us to make sense of the relative cognitive merit of διάνοια, but if we try to put all of this together with what Plato actually did say about the divided line in Book VI, we run into problems.

For one thing, notice that Plato has also modified the proportion that he originally provided. (See the bottom left sections of the two appendices.) In both passages, Plato claims that the proportion expressed by the original division of the line (that is, between the combined top two subsections and the bottom two subsections) is the same as one that obtains between two of the subsections. But the two subsections he places into that proportion, here in Book VII, are different from the two he thus compared in Book VI. In Book VI, the proportion that was said to obtain between I1 + I2 and V1 + V2 (intelligible and visible, respectively) was the same as those to be found between I2 and I1 and also V2 and V1, that is:

$$I1 + I2/V1 + V2 = I2/I1 = V2/V1$$

But here in the later passage (in Book VII), the proportion is different, viz.:

$$I1 + I2/V1 + V2 = I2/V2 = I1/V1$$

In other words, Plato has interchanged the places of I1 and V2 in the proportions given. As a simple point of mathematics, this interchange would not yield the same proportion unless the length of I1 (representing διάνοια in both versions) is the same as that of V2 (which represents πίστις in both versions).

Scholars have divided over the question of whether or not Plato intended the proportions he gives to make the middle subsegments (I1 and V2) equal in length, though no one doubts that as a simple matter of mathematics, they must in fact be equal. On the one hand, Plato never actually explicitly says anything about this implication of his construction. But on the other, here in the recapitulation of the line, he alters the proportions in a way that would make no sense if he weren't at least aware of this consequence.

One advantage that has been claimed for thinking that Plato really did intend to the middle segments to be equal is given by scholars who think the same objects are associated with each of them,[7] though this has not been a view much shared by the many scholars who have written about this subject.[8] Most scholars have argued that Plato surely would not have intended to make the two subsections equal in length, because this would imply that διάνοια would be equal in clarity to πίστις, which he surely does *not* accept, and which seems to be explicitly contradicted in the long quote just above, at 533d5-6.[9] The problem is, again, that the modified proportions that Plato supplies here in Book VII — which, again, are supposed to recall the ones he provided in Book VI — require the very equality that most scholars have regarded as unintended. I do not see any persuasive solution to this problem, and in my earlier work, I confess to offering a rather strained speculation in response to it, which as far as I know, no one has ever actually accepted.[10] I have no better explanation to offer even now.

In case this is not already enough of a problem, what Plato has to say about the relative merits of ἐπιστήμη, διάνοια, and δόξα actually makes things worse. Now it is strictly true that when he makes this comparison at

533d5-6, the relative merits are expressed in terms of brightness and darkness (ἐναργής and ἀμυδρός), but scholars have managed to agree on at least the understanding that this should be understood as a comparison of relative clarity (again, usually σαφήνεια). These, recall (together with relative degrees of ἀλήθεια) were said to be what the varying lengths of the line's segments and subsegments were supposed to represent (again, see 509d9 and then 511e3). Most scholars have taken what Plato has to say here about ἐπιστήμη, διάνοια, and δόξα to show that he cannot regard διάνοια and πίστις to be equal in clarity, and so dismiss the equality of the middle segments as an aspect of the proportions of the line that Plato did not really intend or wish to call our attention to. But in order to represent διάνοια as clearer (or truer) than all of δόξα in the recapitulation of the line, it would have to be true that I1 is longer than V1 + V2, which it plainly can't be for the proportion to hold. For the proportion, again, it must be that I1 = V2 (in length). So it now looks like Plato is trying to tell us something about the epistemic merits of διάνοια that cannot be represented in the line as he has drawn it originally in Book VI, or as he recapitulates in here in Book VII.

Now, it is presumably because of the superiority of διάνοια to πίστις and δόξα that scholars have proposed that Plato must have the intermediates in mind, since they would surely be truer than the visible originals that belong to the level of πίστις, or even the entire domain of visibles that belong collectively to δόξα. Just saying this seems to provide some advantage for the hypothesis. But many scholars have resisted the hypothesis, on two grounds: (1) Plato actually never manages to mention the intermediates in the divided line passage. Supporters of the intermediates here have claimed that they fulfill the requirements of the simile by being intelligible images of the forms. But the fact remains that while Plato does manage to associate the level belonging to διάνοια with images, the only images of forms he actually mentions in connection with this subsegment are the visible things drawn by the mathematicians — and these images are mentioned *seven times* in this very short passage (510b4-5, 510b7-9, 510b5-6, 510c1--a1, 511a6-7, 511c1, 511c7-8). If he wanted us to have mathematical intermediates in mind when he identified the images belonging to this level, he could hardly have done a worse job of it. But in case this is not enough of a reason for doubting the hypothesis about the intermediates, there is another one, which I have already mentioned: (2) The way Plato makes his construction not only requires the middle two segments to be equal, his later "recollection" of what he had said absolutely requires that he be aware of that equality in reporting the proportions the way he does in Book VII. The alleged advantage to the hypothesis involving the intermediates makes sense only if we also reject the equality of the two middle subsegments by recognizing the ontological superiority of the mathematical intermediates — that is, their allegedly greater truth or reality (again, ἀλήθεια) which would be proportionate to the greater σαφήνεια of διάνοια, relative to the subsegments below it. The problem is that Plato's construction does not and cannot represent these alleged ontological and epistemic superiorities. In fact, I think there is also a third problem with the hypothesis, which is that the mathematical intermediates are supposed to be perfect examples of their characteristics. But given the way Plato seems to measure ἀλήθεια, this would seem to make them no less true than the forms they supposedly image or participate in. Supporters could argue, I suppose, that their lack of uniqueness entails a lower degree of

ἀλήθεια, but again, I do not find this alleged measure of ἀλήθεια in our text. In any case, I will have more to say about this specific objection in the next section, where I talk about alleged intermediates in the higher education of the future rulers.

At any rate, the hypothesis about the intermediates does not help solve the problems I have noted with what Plato has to say about the divided line in terms of truth and clarity. Instead of clarifying or explaining what the text says, the hypothesis could perhaps help with one passage in Book VII, but then conflicts with what Plato actually says about his proportions and what they are supposed to represent — in both Books VI and VII.

As far as the problems with what Plato does say, these only get worse. In order for *either* version of the divided line to work, there must be a proportion between the two sections of the visible *taken together*, and the two sections of the intelligible *taken together* that can be applied to two of the subsections *taken alone* similarly compared. (Again, see the proportions given in the lower right of each appendix.) As far as I know, there has been no notice in the literature[11] about the problem that this seems to create, namely, that V1 + V2 (that is, the entire lower section of the original division) must be clearer (and, as we soon learn, given the association of clarity and truth, also truer) than either V1 or V2 by themselves. But this seems to me to create nonsense: How can V1 + V2 be *clearer* or *truer* than either V1 or V2? Why would adding the relative lack of clarity (and truth) in V1 to whatever we find in V2 make V1 + V2 clearer (and truer) than V2 just by itself? Plato tells us that V1 consists in shadows and reflections in water and other reflective surfaces. Why would adding these to the visible originals give us a collection of things that is clearer or truer than the collection of visible originals *without* shadows and reflections added to that collection?

The same problem, obviously, clouds whatever we are supposed to make of the upper subsections of the line. If the lengths of the line segments are supposed to represent degrees of clarity and truth, it follows that I1 + I2 (the entire intelligible section of the original division) must be both clearer and truer than either I1 or I2 alone. But how can that be?

To go back to my troubles in the first section, the problem does not dissolve whether we take clarity or truth to measure objects to which cognitions apply or to measure some character of the cognitions themselves. The problem is that it seems absurd to think that visible originals taken together with their visible images (V1 + V2) will be clearer or truer than the visible originals alone (for example). Similarly, it seems absurd to think that taking the forms together with whatever objects we associate with διάνοια[12] will yield *greater* clarity and truth than the clarity and truth of the forms alone. So, too, the epistemic deficiencies we are supposed to associate with the lower subsections of the line, relative to the subsections just above them in each of the original divisions,[13] make it absurd to suppose that Plato intends whatever epistemic condition we should apply to the entire lower line (V1 +V2) — δόξα in the recapitulation — to be clearer and truer than either εἰκασία or πίστις by themselves. Why would adding the (*less clear/true*) εἰκασία to πίστις yield a clearer (or truer) cognitive condition (taken as a whole) than that enjoyed by πίστις alone? So, too, why would adding the (presumably inferior) clarity and truth associated with διάνοια to what νόησις provides yield a clearer (or truer) cognitive condition than νόησις by itself? The problem is that whatever we are to say about degrees of truth and clarity, it does not seem like these are

going to be *additive* in the way that a continuous line would suggest: plainly, the lengths of *either* of the main segments of the line will be longer than the lengths of the subsegments it contains. But if Plato's proportions are supposed to work, the relative lengths of whatever parts of the line we are comparing are supposed to indicate the proportionate degree of clarity and truth of each part, whether in the original division or in the subsequent subdivisions.[14] We are left with the unhappy result that Plato makes proportions of clarity and truth the focus of the comparisons he makes in the divided line passage, but in doing so, he creates an image that has both mathematical and also philosophical entailments that do not seem to represent views he would accept.

IV. INTERMEDIATES IN THE MATHEMATICAL EDUCATION OF BOOK VII?

At 524c13, Socrates reintroduces the distinction between the intelligible and the visible, which has run through all of the great "similes of light" in Books VI and VII. And then at 524d6, Socrates asks Glaucon to which of these do number and the one belong. When Glaucon first responds that he doesn't know, Socrates reminds him of how summoners work — do things appear to be just one at any given time, or do they appear to be both one and also the opposite of one at the same time (524d8-a3). Glaucon is more nimble this time: he responds that "the sight of the one does possess this characteristic to a remarkable degree, for we see the same thing to be both one and an unlimited number at the same time" (525a4-6). Socrates then gets Glaucon to agree that the same is true for all numbers (525a7-9). Since "calculation and arithmetic are wholly concerned with numbers (525a10-11), "evidently they lead us towards truth" (525a13).

Here, too, in Plato's discussion of numbers, scholars have tended to see Plato's alleged commitment to such "mathematical intermediates." Plato certainly encourages us to regard the numbers as belonging to the intelligible domain. But the question we should ask is whether invoking the "intermediates" makes better sense of the text than some other interpretation.

As a matter of fact, it seems to me that invoking the "intermediates" here actually adds an unnecessary complication to Plato's discussion.[15] Since Plato has Socrates insist that what he says about numbers is supposed to be understood in the very way he had characterized all of the summoners he mentioned immediately before, it would seem to follow that if the numbers to which he refers here are supposed to be intermediates between forms and sensibles, then the same would presumably apply to all of the other examples of summoners he has provided, including obviously bigness and smallness, thickness and thinness, hardness and softness, lightness and heaviness. The first and last of these pairs of contraries are included among the list of things that were also identified as part of "what is" in Book V. As I said earlier, one problem with intermediates is that they seem to qualify as wholly being what(ever) they are, but still managing to be intermediate between sensibles and forms. But the only characteristic Plato gives us of forms here in the *Republic* is that they are wholly what(ever) they are. So we are left with no reason to imagine that Plato has intermediates in mind when he discusses "what is" in Book V, and also no reason to suppose that he had them in mind at the end of Book VI, in the divided line. Here, too, I would say, that Plato is giving us the same characterization of "what is" as he has done

consistently throughout his discussion of being in the *Republic*, and no reason is provided in the text for supposing that "what is" consists in anything other than the forms.

Plato has Socrates ask Glaucon whether "the one (τὸ ἕν) is adequately seen itself by itself (αὐτὸ καθ' αὑτὸ)" by the senses (at 524d8--e1). A bit later, Socrates says that calculation "leads the soul forcibly upward and compels it to discuss the numbers themselves (αὐτῶν τῶν ἀριθμῶν, never permitting anyone to propose for discussion numbers attached to visible or tangible bodies" (525d5-8).[16] It seems the only good reason we might have to wonder if Plato has intermediates in mind here is what Aristotle reports about Plato's view (without, however, saying that the view is reported in the *Republic*). So let us see whether what Plato has to say here is a good fit with what Aristotle reports. Here is what Aristotle said:

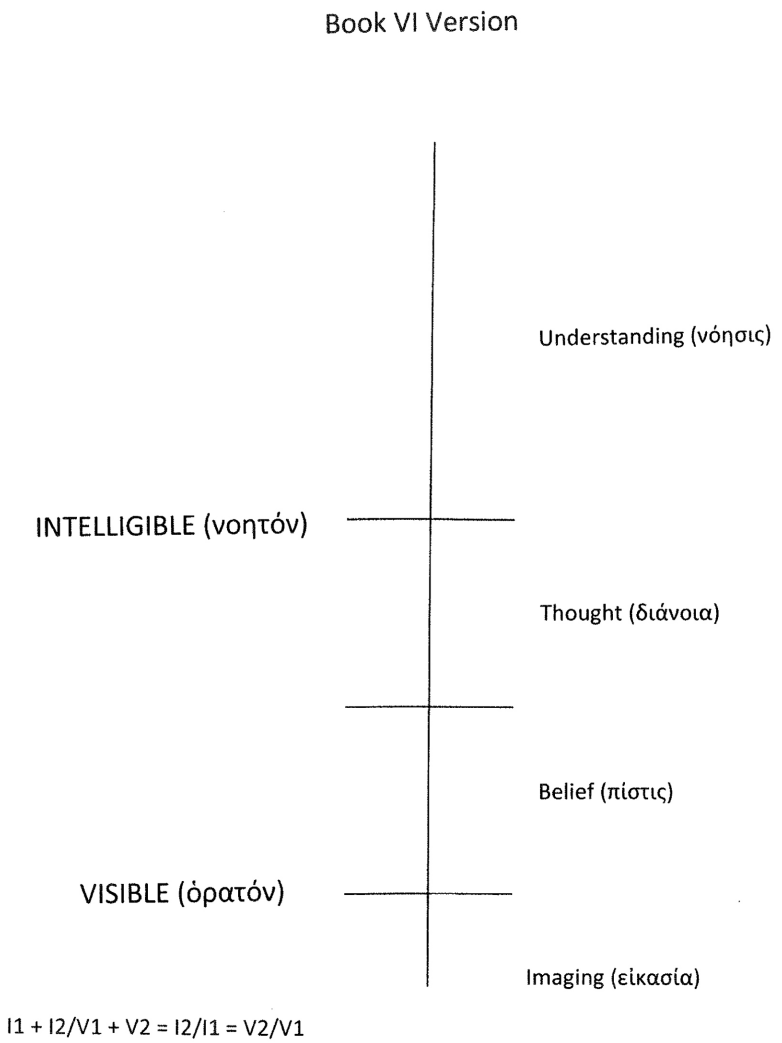
> He says that besides the sensible things and the forms, and between these, there exist the mathematical objects, differing from the sensible things in being eternal and immovable, and from the forms in that there are many alike whereas the form itself corresponding to these is only one. (Aristotle, *Metaphysics* 987b14-18; trans. Apostle and Gerson [1991][17])

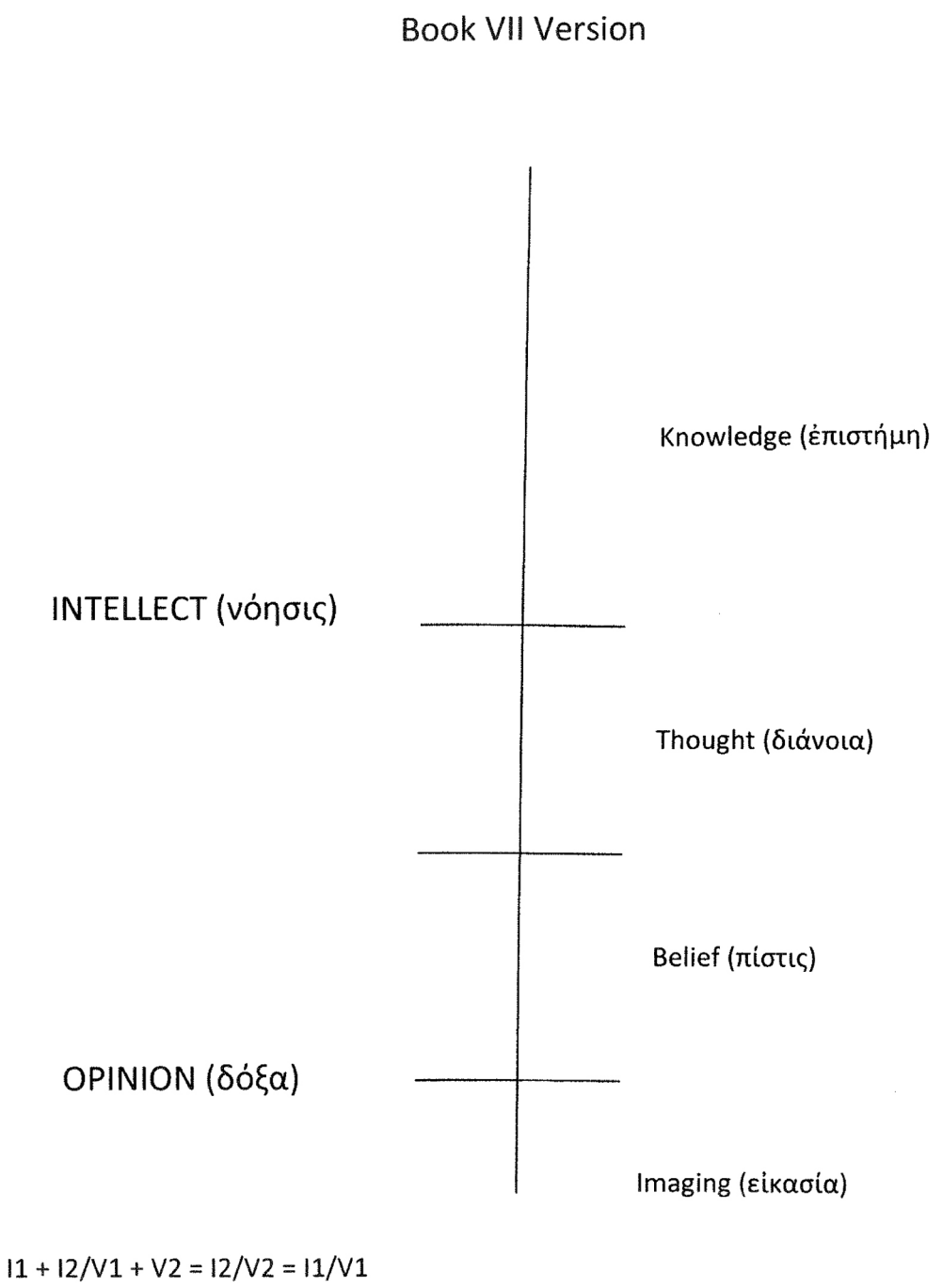
I argued earlier that the mathematical objects characterized here do not seem to be needed to explain what Plato has to say about any of the objects he mentioned in the divided line passage. I also noted that the introduction of these objects, as belonging to the subsection of the line associated with thought (*dianoia*), require interpreters to attribute to Plato a strange oversight, since such "intermediates" are never actually mentioned by Plato in that famous image. Neither are they mentioned here in Book VII, where Plato talks about numbers, for it is completely explicit that when Plato has Socrates tell Glaucon about why numbers belong to the intelligible world, each one of the things he is talking about are "only one." Each number belongs to the domain of intelligence because each one of them can be "adequately seen itself by itself," but not by the senses. It may be that Plato thought there could be innumerably many perfect squares or triangles (or whatever) of different dimensions, whereas there is just one square itself and triangle itself (the forms of square and triangle, respectively, that is) and not many of each. So, the grounds that Aristotle gives for attributing the belief in "mathematical intermediates" to Plato plainly do not apply to what he has to say in this passage about the one or any of the other numbers. What he has to say about numbers in this passage, rather, seems to fit only with what Aristotle says applies to Plato's forms. If Plato did intend to mention "mathematical intermediates" here in Book VII, he manages to do it in such a way that his own student, Aristotle, would have to count as a reference to forms, and not intermediates. This obviously does not count as an advantage for this proposed interpretation.

V. SUMMARY AND CONCLUSION

In this paper, I have discussed two of the passages in the *Republic* where scholars have been inclined to invoke the mathematical intermediates. I have found, however, no reason to support this hypothesis and several reasons to resist it. In brief, the intermediates do not solve the problems (which continue to me to seem unsolvable) in what Plato has to say about the divided line, and its proportions and what they signify. Moreover, where invoked to explain what Plato has to say about numbers in

Plato's discussion of higher education in Book VII, the hypothesis fails even more obviously — since what Aristotle actually says about the intermediates does not seem to apply to the very things that supporters of the intermediates hypothesis want to explain in terms of them. Obviously, this does not prove that Aristotle was wrong or misreporting Plato's thought. The most we can conclude from what I have said, at best, is just that the *Republic* gives no evidence for Aristotle's claim.





I1 + I2/V1 + V2 = I2/V2 = I1/V1

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NOTES

1 All translations provided herein will be from Cooper 1997, occasionally modified slightly.

2 Problems begin here, of course. Rather than assign any of the different names Plato has given to the main divisions or subsegments of the line, let's simply refer to them (see appendices) as V1 and V2 (for the two sections of the visible part of the line) and I1 and I2 (for the two sections of the intelligible). The relevant objects for V1, V2, and I2 are uncontroversial (shadows and reflections of visible things, the visible things themselves, and forms, respectively). But the objects belonging to I1 have been a matter of great disagreement among scholars. See Smith 1996 for review and discussion, but I will have more to say about this issue below.

3 At least Plato has no problem being consistent in using this term: see 477b6, b9, c1-2, c6, d1, d3, d9, e1, e2, e3, 478a4, a14.

4 My complaint here is obviously with Fine 1990, who implausibly argues for a "veridical reading" of what Plato means by "what is," "what is not," and "what both is and is not." See Smith 2000 and 2012 for my own criticisms of this view, and also the criticisms made by Gonzalez 1996 and Szaif 2007.

5 In Book II, Plato has Socrates talk about a false παθήματος ἐν τῇ ψυχῇ (*Republic* II.382b8-c1), for which a "falsehood in words" is an image. I believe Plato would understand sentential falsehood (falsehood in words) in terms of objective falsehood (falsehood of objects), and not the other way around. The relevant passages here, I think, will be Plato's discussion of truth early in Book V. See, for several examples, *Republic* V.485c3-4, c10, 485d2, 490a1, 490c2, 501d2, 508d4.

6 Translation modified here: Cooper 1997 translates the term as "clearer," which may get the meaning right, but which ignores the problem I intend to discuss.

7 See, for examples, Bedu-Addo 1978: 116n15, 1979: 89-90, 105-108; Fogelin 1971: 381-382; Morrison 1977: 220-227; Ringbom 1968: 91-94.

8 Again, see Smith 1996 for a discussion and review of this vast literature.

9 I say "surely does not accept," but perhaps any certainty on this entire subject is presumptuous. My reason for thinking that Plato "surely does not accept" this consequence is not just that it seems to be explicitly ruled out by what he says at 533d5-6, but also would seem to violate his insistence on the superiority of intellection and the intelligible realm to vision and the realm of the visible/opinable.

10 For the sake of full disclosure, here is what I said: "I am tempted to think that Plato might have woven this subtle flaw into the intricate fabric of his own image, because he wished to avoid the sin of perfection" (Smith 1996: 43).

11 I have discussed this problem in private correspondence with Damien Story, however, who had also noticed it prior to our discussion.

12 See note 2, above.

13 Again, not to mention the scholarly debates around the fact that Plato's construction makes V2 equal in length to I1.

14 The problem becomes even more obvious when we compare the length of the entire line to any of its subsegments. Plato would surely not have wished us to understand that V1 + V2 + I1 + I2 taken as a whole would be clearer or truer than what we are supposed to find at I2 alone.

15 My argument here has a great deal in common with the one in Franklin 2012, who also thinks that intermediates do not appear in the *Republic*. I go further than Franklin, however, in denying that Plato does not

even recognize ideal mathematical entities as "theoretical fictions," as Franklin describes them. Instead, I claim that only forms and sensible images of forms appear in Plato's discussions of mathematical studies.

16 A good example of a distinguished scholar who sees "the one" and also "the numbers themselves" as examples of "intermediates" is to be found in James Adam's justly famous edition of the *Republic* (Adam 1963 vol. 2, 114, note on 525D).

17 I eliminated the translators' uses of upper case for "Forms" and "Mathematical Objects" because I have not used this convention in my own discussions. Otherwise the translation provided above as the one cited.

From Intermediates through Eidetic Numbers: Plato on the Limits of Counting

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ABSTRACT

Many have argued that Plato's intermediates are not independent entities. Rather, they exemplify the incapacity of discursive thought (διάνοια) to cognizing Forms. But just what does this incapacity consist in? Any successful answer will require going beyond the intermediates themselves to another aspect of Plato's mathematical thought - his attribution of a quasi-numerical structure to Forms (the 'eidetic numbers'). For our purposes, the most penetrating account of eidetic numbers is Jacob Klein's, who saw clearly that eidetic numbers are part of Plato's inquiry into the ontological basis for all counting: the existence of a plurality of formal elements, distinct yet combinable into internally articulate unities. However, Klein's study of the *Sophist* reveals such articulate unities as imperfectly countable and therefore opaque to διάνοια. And only this opacity, I argue, successfully explains the relationship of intermediates to Forms.

Keywords: Plato, Aristotle, Mathematics, Eidetic Numbers, Forms, *Sophist*, Jacob Klein

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When trying to square Aristotle's testimony about Plato's intermediate mathematical entities (τὰ μεταξύ) with the available material in the dialogues, two alternatives have traditionally been on offer. On the one hand, we can assume that Aristotle's testimony on this point is largely credible and then endeavor a reconstruction of a clear, systematic Platonic argument along its lines. This, however, necessitates that the dialogues be put on the rack in order to yield such an argument from materials that are, in point of fact, diffuse and ambiguous. And so, in a work like that of Anders Wedberg, for example, we try to say what Plato should have said about the intermediates, were he thinking straight.[1] The other road, traveled by Cherniss, is to argue that it is *Aristotle* who was not thinking straight. All of the passages about the 'unwritten teachings' (ἄγραφα δόγματα) including the ontological commitment to intermediates, are not testimonies so much as garbled mistranslations of Plato's thought (and that of his successors) into Aristotelian categories.[2]

Faced with such fixed battle lines, revisiting a subject this infamously abstruse can seem like the classic fool's errand. Not so. When properly understood, the issues at stake here are not abstruse at all, but convey us directly to the heart of Plato's thinking about the first principles of rationality. And, moreover, the battle lines are not as fixed as they first appear. Scholars *have* made some new headway, and in an eminently philosophical fashion: by re-examining whether the questions which framed the possible answers were at all apt. For example, instead of trying to ascertain whether Aristotle is trustworthy or not, Julia Annas starts from an entirely different direction: Why is it that the one argument on the basis of which Aristotle thought Plato must be committed to intermediates – the argument that since each Platonic Form (the Two, the Circle Itself, etc.) is unique and not addible, actual mathematics or geometry requires a multiplicity of eternal and intelligible units or geometric shapes – why is it that *this* argument is nowhere explicitly found in Plato?[3] That Socrates distinguishes mathematical from aesthetic numbers, and geometric exemplars from visible models, is not in doubt. So, in this sense, Plato and Aristotle are both talking about the entities that Aristotle calls 'intermediates'.[4] But mere naming is never philosophizing. Annas raises the possibility that Plato and Aristotle are not talking about intermediates in the same way, or for the same ends, which raises the further possibility that their mode of being, and doctrinal importance, might be something which the two men assessed very differently.

One could extend Annas' question still further: if the intermediates really were *onta* of another metaphysical order from both sensible particulars and Forms, as per the view Aristotle seems to attribute to Plato,[5] how to explain that Plato never gives them *any* extended treatment as he does for the other two kinds of being? Would this not constitute philosophical negligence of the most unforgivable kind? Over the years, scholars like Smith (1981, 1996), Miller (2007) and Franklin (2012) have cut new paths through the thicket, not by simply ignoring Aristotle of course, but rather by addressing questions like these to the dialogues themselves and trying to understand what we can learn from what Plato actually chose to say about the objects of mathematics. The common denominator of these studies is that the pure arithmetical units and perfect geometric exemplars hinted at in the Divided Line passage or at *Philebus* 56d-e are, in fact, not *onta* at all. Rather, they are the way Forms appear, or are thought and related to, in the medium of mathematical διάνοια – a medium by its very nature incapable of thinking Forms

directly.[6] As for the ontological status of these intermediates, Plato is content, as Lee Franklin argued, to leave things 'murky'.[7]

I think these are solid results. But if we are to say that διάνοια is always oriented toward Forms but unable to think them adequately, we need to elaborate *what it is* about Forms that the mathematical inflection of διάνοια cannot handle. And this means understanding how mathematical thinking as a whole is implicated in Plato's reflections on διάνοια as a whole. One of the most rigorous and far-reaching attempts to achieve such an understanding is without a doubt Jacob Klein's *Greek Mathematical Thought and the Origin of Algebra* and we can, I think, attain a more refined judgment about why Plato's treatment of intermediates has the ambivalent character it does by relating recent scholarship back to Klein's book – specifically to a quite unexpected and understudied part of that book. That is what I aim to do here.

Klein saw mathematics – especially its simplest manifestation, counting – as the 'exemplary' expression of διάνοια: distinguishing and relating articulable structures. Mathematics is exemplary because all dianoetic activity is rooted in a powerful, but nevertheless unexamined, assumption to be discussed at length in what follows, viz., in order to be anything at all, something must at least be countable - a determinate distinguishable unity having a determinate number of distinguishable parts.[8] This assumption about the enumerability of things – indeed, their *precise* enumerability – also lies behind the characteristic certainty of the mathematician and geometer that their subject matter requires no further account since it is παντὶ φανερῶν, clear to all.[9]

That Plato is fully aware that the activity of διάνοια must be grounded in something else is evident enough, and not least from the Divided Line. But what of that deeply rooted assumption about the relation between being and being countable? As we shall see, Klein argues that this assumption undergoes close inspection not in the *Republic,* but in the *Sophist* and its account of the 'greatest kinds', the μέγιστα γενή. Many would file this passage away under conceptual analysis, others under ontology of some extravagant sort. But in any case it is usually far outside the purview of any discussion about the intermediates.[10] By showing that the problem of formal inter-relation (or κοινωνία τῶν εἰδῶν) is a problem about whether the most basic constituents of intelligibility are themselves *countable*, Klein shows us why this is a mistake. Only from here, I want to argue, can we begin to understand how intermediates – whatever their ontological status – represent an incomplete grasp of the mode of being of Forms and why Plato chooses to be so reticent about them.

I

'Geometers and their ilk', says Glaucon at *Rep.,* 511d1-5, do not possess intelligence (νοῦν οὐκ ἴσχειν) about the objects of their study. Leaving to one side, for a moment, the ontological status of these objects, let us try to elaborate what exactly is unintelligent about the cognitive stance toward them.[11] I will take my bearings from Franklin's analysis, which lucidly expresses the basic insight that intermediates are derivative of Form.

Mathematical and geometrical thought are defined by a tension, peculiar to them, between the universality and necessity of their results and the particularity of the ideal entities with which they work. As Socrates indicates at *Republic* 510d5-511e2 and at *Philebus* 56d9-e3, any mathematician or geometer worth his salt is aware that the numbers or figures of which

his theorems are true are not visible groups of countable objects, or visible circles on paper. No visible circle is perfectly circular in shape, of course; the geometer is quite clear on this. Geometers reason about ideal exemplars – 'perfect bearers' of the geometric properties of the triangle – and mathematicians about pure, 'idealized' units.[12] These would be the intermediates Aristotle is talking about. The theorems *exemplified* by these entities are then taken to hold universally of all similar cases.

The difficulty is that the perfection of the geometrical exemplar does not explain the universality of the theorem. That is, the former is an instantiation of a true theorem, but it is not that *by which* the theorem is true; it is not the ground of the universal truth of the relations expressed in the theorem. This ground must be sought in Forms, Franklin argues, in 'universal mathematical properties' that make, for example, particular triangles all alike with regard to the sum of their angles being equal to two right angles.[13] The mathematician is congenitally incapable of noticing this distinction:

> ….we may re-describe the mathematicians' orientation…as a blinkered stance toward truth. Unaware of Forms and their distinctive manner of being, the mathematician believes that the only way *to be* F is to be an instance of F.[14]

It is crucial to note, though, that this 'blinkered' fixation arises from the very quality which makes mathematics invaluable as a preparation for dialectic – its ability to see through, or behind the sensible and realize that sensibility requires a foundation in something clearer and more precise. Mathematical intelligence always embodies an awareness that the sensible is obscure and imprecise even though the exact nature and sources of the clarity and precision lacking in the sensible have not been made thematic for it.[15]

In this way, mathematics combines a philosophical and a pre-philosophical orientation to experience.[16] It is philosophical because mathematics is simply impossible without a distinction having already been made between sensible particulars and intelligible originals.[17] But it is pre-philosophical (or at any rate incompletely philosophical) because the Forms, the causes of intelligibility in perceptible particulars, are still understood as though *they* were another kind of particular, just of a higher order than the ones encountered in perception.[18] To borrow a phrase from Aristotle, the mathematician understands intelligible beings as if they were αἰσθητὰ ἀίδια, eternal perceptible things.[19] This is why Socrates likens mathematics and geometry to dreaming.[20] Just as a dream is a fantastical re-combination of elements from wakeful life without an awareness of what one is doing, mathematics combines imagistic and truly foundational thought without a lucid awareness of the difference between being an instance (even a perfect instance) of X and the *what-it-is-to-be* that makes X what it is. The *what-it-is-to-be* cannot be another instance, just as the ἕν τι εἶδος ('some one form') which makes all bees what they are does not sting us.[21] Let us try to get a still firmer grasp on this difference.

Note, for example, what happens if we set about fully articulating the what-it-is-to-be, the essential definition, of a triangle – say, along the lines of Definitions 20 and 21 of Book I of Euclid's *Elements*. We could not do so except by making use of a multiplicity of concepts standing in mutually implicating relationships to one another. We would have to speak of Three, Equal, Straight, Line. And, even though the geometer would not focus on it explicitly, the articulation would also necessarily involve

still more general concepts like Figure, Being, Same, and Other, since we would speak of a triangle as a figure that is such and so, with an equilateral being different from an isosceles or scalene triangle, and so on. As should be clear, then, the *what-it-is-to-be* that we are seeking is a formal complex.

I have concentrated here on the geometric example but the same point holds true for the other type of intermediates – the pure units of mathematical calculation at *Rep.* 525d5-8. The mathematician knows that numbers cannot be the assemblages of αἰσθητά encountered in everyday life (e.g., these four apples) and so turns to assemblages of idealized units. But each of these units must still *be*, be self-identical, and be equal to every other unit, and yet they must be a multitude, combinable in the act of counting.[22] Even when thinking mathematical numbers, then, we are invoking formal complexity.

In other words, since all dianoetic activities involve distinguishing and relating, they all presuppose a multiplicity, and multiplicity presupposes distinctness. But, then, distinctness presupposes at least determinacy – each element in a structure must be a 'this something' of such and such a kind. Now, what makes it possible to be 'of such and such a kind'? Only a unity of properties (of these certain properties, and not those, etc.). So all dianoetic activity, including its mathematical and geometrical expressions, presupposes at least some basic internal complexity to things. Our language is already registering such complexity even if we just say that each element in a structure is, is one, is self-same, and is other than another element; we are already thinking Being, Identity, and Difference. If, then, we wish to say that intermediates are a result of mathematicians and geometers cognizing Form as merely another, more exalted kind of particular, we are saying that mathematical or geometrical διάνοια has some problem thinking through this internal complexity or holding onto the way Forms inter-relate to yield a multiplicity of distinct things available for counting.[23] And with such considerations, we are face to face with the problem of κοινωνία τῶν εἰδῶν in the *Sophist* and are prepared for Klein's study of it.

II

Klein's most important claim, for our purposes, is that the dialogues contain evidence for a Platonic hypothesis that Forms inter-relate in a manner analogous to the way units combine into number. This mode of relation, he argues, lies behind an even more obscure element in Aristotle's testimony about Plato's mathematical thought: the so-called eidetic number (εἰδητικὸς ἀριθμός).[24]

I can readily understand why, to someone trying to get clear on the intermediates, it must seem like mischievous comfort to be told that understanding them requires turning to the even more impenetrable eidetic numbers. First of all, it is not entirely clear to scholars what Aristotle is even talking about when he speaks of Forms being numbers.[25] Second, whatever eidetic numbers are, did not Aristotle mount an annihilating critique of their value, even their coherence, as an explanation of the nature of number?[26]

On the basis of the *Sophist,* however, Klein aims to show that eidetic numbers are not, strictly speaking, an *answer* to the question of the nature of the numbers we count with. Rather, they are one step in a broader investigation of the ontological conditions for there being anything available for us to count in first place.

We begin at *Soph.,* 232bff, at the height of efforts by Theaetetus and the Eleatic Stran-

ger to define the sophist. The property which 'reveals' the sophist most of all (μὰλιστα κατεφάνη),[27] and thus explains what attracts the Athenian youth to him so irresistibly, is his ability to produce opinions that seem to be what they are not – comprehensive knowledge (233c1-11). The sophist is first and foremost an imitator, then (235a8). But this means that the sophist's being what he is (*qua* imitator) precisely involves *not being* what he appears to be (an actual knower of all things). Consequently, the very being of the sophist cannot be expressed without non-being. And so, the Stranger tells Theaetetus (241a7-c3), they will only get hold of the sophist if they find some way to explain how non-being does after all 'interweave' with Being despite Parmenides' strictures (240c2-3). This is the 'first and greatest of perplexities', the absolutely fundamental ontological problem (238a2-3).

Fundamental though it may be, the problem is only part of a more general difficulty of the same order: how to articulate the relation of elements which comprise the very basis of the intelligibility of anything at all. Since all discourse itself is a συμπλοκή εἰδῶν, a weaving together of distinct formal elements (259e5-6), the forms (εἰδή), though distinct and indivisible, must be amenable to entering into relationships with one another, to communing somehow. This is what Klein calls the 'ontological *methexis*' problem: the relationship among Forms such that they can be subsumed under more general classes of Forms without erasing the distinctness of the subordinate Forms or destroying the unity of the higher, more comprehensive ones.[28]

What is significant for our purposes is that the Eleatic Stranger, from the very beginning, brings this problem into the closest possible relation to counting. At 238a11-b1, for example, in showing the absurdity of trying to predicate non-Being of anything, the Stranger asks Theaetetus if number is one of the things that are, to which the latter replies, 'Certainly, if we are to set anything down as being'.[29] The point of this move is to show Theaetetus that if he thinks it absurd to join being to non-being in any way, then no numerical descriptor should ever be attached to non-Being. But this is impossible on its face. After all, I must say 'You can't speak non-Being, or join it in any way to Being', and this is already to invoke number, since I must say either non-*Being* in the singular or non-*Beings* in the plural.

Similarly, further on (at 241dff) after it has become clear that we have no choice but to force our way through to the conclusion that non-Being somehow *is*, i.e. that it does interweave with Being after all, he first sets out the problem of how to speak of Being in mathematical terms. How, he asks, are we to understand the attribution of being to any multitude of things (even the smallest multitude, two), such as 'hot' and 'cold'?

> Is it [that is, εἶναι] a third thing alongside those two [πότερον τρίτον παρὰ τὰ δύο ἐκεῖνα], so that we are to set it down that…the All is three and not two? For surely, when you call one or the other of the pair being, you're not saying that both similarly are. For then, in both cases, the pair would pretty much be one and not two… (243e2-6)

In other words, how many constituents are there here? If 'hot' is some one thing, and 'cold' another, is the Being attributed to each also another thing? In that case, we have three: θερμὸν (Hot), ψυχρὸν (Cold) and εἶναι (Being). If not, is being identical with just one of the two? But then only that one would be, and the other would not. The Stranger suggests another

possibility: what if we say that the two constituents *are* only together (243e8)? This, however, would entail that the two elements are actually one, since neither *is* separate from the other.

If we recall for a moment that the Eleatic Stranger is speaking to a young mathematician, his presentation of the problem becomes immediately comprehensible. He is approaching the question of Being within the horizon of precisely that assumption which seemed self-evident to a mathematician like Theaetetus at 238b1, but which is in fact self-evident to διάνοια as such. It seems unproblematic to predicate of anything countable that, at minimum, it is something that *is*, that it has Being. More significantly, the reverse seems equally obvious: whatever else we can say about it, surely to *be* something is at least to be countable?[30] For Klein, it is the Stranger's treatment of the μέγιστα γενή that explains where this assumption comes from and, in the process, demolishes its self-evidence.

III

We come to the μέγιστα γενή during the second part of the γιγαντομαχία περὶ τῆς οὐσίας, the great battle between those who identify Being exclusively with the perceptible and the 'Friends of the Forms' whose most fundamental contention is the separation of true Being from the perceptible (248a7-8). This separation preserves the self-identity of Being from the flux of becoming but in so doing raises a new problem, since we now need to explain how we can commune in any way with Being, how we can *think* it. Thinking is an activity and being-thought is a being-affected (248e4, 249b5-6) and hence neither is comprehensible apart from a kind of motion (different from locomotion, to be sure). But nor could Motion itself, or anything else, be conceived if everything was perpetually in motion without any fixity whatsoever (249b8-9). Rest is thus another necessary ingredient in explaining Being. Being, and hence all things, will be literally unthinkable unless we find some way to explain how two direct contraries – Motion and Rest – both *are* (248d4-249d7). Being (ὄν), Motion (κίνησις) and Rest (στάσις) appear as three basic ontological constituents that must inter-relate for intelligible structures to actually be intelligible. But now we face the same problem encountered with the hot and the cold: how to count the constituents? It is at this point that the necessity of a communion among the εἰδή becomes explicit.

The Stranger posits three possible ways of understanding this communion: either no Forms can intermix, or all can, or there are some which can and some which cannot (252e1-2). He shows Theaetetus in short order that only the third is a real possibility,[31] and it is here that Klein makes his link to Aristotle's testimony about eidetic numbers:

> *The very formulation of this possibility* [that some forms can intermix while others cannot, A.G.] *indicates the* arithmos *structure of the* gene: for what is it but the division of the whole realm of *eidē* into single groups or assemblages such that each *eidos,* which represents a single, unique eidetic 'unit'...can be 'thrown together' with other ideas of the same assemblage, but not with the ideas of the other assemblages? The *eidē*, then, form assemblages of monads…*arithmoi* of a peculiar kind.[32]

Forms then, or at least those which are ingredients in the being of anything at all,[33] have a numerological structure: they are combinable – as mathematical units are combined to

make the number five or ten – but only *partly* combinable since, unlike numerical monads which can be indifferently combined to make any number, Forms can be brought together with others 'only insofar as they happen to belong to one and the same assemblage' (that is, an assemblage having a particular, shared ideational content, as Horse, Dog and Man, for example, would share in 'Animality'). Klein continues, 'The Platonic theory of *arithmoi eidetikoi* is known to us in these terms only from the Aristotelian polemic against it (cf., above all, *Metaphysics* M 6-8).'[34]

It must be said that this identification is not at all clear from the actual text of the *Metaphysics*. It is true that Chapter 6 of Book M opens with a discussion which loudly echoes the one in the *Sophist*. In his critique of the Platonist understanding of number, Aristotle, too, lays out the same three possibilities: units in Form-numbers may be non-combinable (ἀσύμβλητος) with any other unit, or all combinable (πᾶσαι...συμβληταὶ) with one other, or some combinable and some not (τὰς μὲν συμβλητὰς τὰς δὲ μή).[35] And it is true that Aristotle concentrates most of his considerable firepower on the third option, the refutation of which constitutes the longest single stretch of argument in M, 6-8.[36] This impressively 'ruthless' assault, as Julia Annas describes it, ends with a summary conclusion containing the phrase, 'If the Forms are numbers' (εἴπερ εἰσὶν ἀριθμοὶ αἱ ἰδέαι): namely, if Forms are numbers then Plato is impaled upon a fork because Aristotle takes himself to have shown that the units of such Form-numbers can be neither combinable *nor* un-combinable, neither partially nor totality.[37]

But what are these Form-numbers, which Aristotle believes he has done to death? Determining this is no simple matter. Cherniss takes the target of the attack to be a thoroughly *ersatz* doctrine, cooked up by Aristotle under the influence of his readings of Speusippus and Xenocrates, which has it that all Forms can be reduced to Forms of numbers, and as such all Forms are 'generated' from the same principles as numbers (the One and the Indeterminate Dyad). Aristotle thought this reduction necessary because he had convinced himself that Platonic dialectic was meant as an account of the ontological *generation* of intelligible structures in which more specific Forms are somehow derived from the more general, beginning from the One.[38]

For, Annas, however, the target is not the identification of all Forms with numbers, but rather the thesis that all numbers are Forms (that is, there is a Form of Two, a Form of Three, etc.), and she dedicates several pages to a careful analysis of all relevant passages in which phrases like 'Forms are numbers' appear, in order to show that they cannot bear the weight that is sometimes loaded onto them.[39] Nevertheless, she too can see her way clear to Cherniss' position, up to a point. For her, Aristotle believes he has refuted *both* the possibility that numbers are Forms and the possibility that Forms (or some of them) are numbers. This latter position, she argues, is largely a polemical addition of Aristotle's – perhaps arising from his irritated dismissal of some vague musings about the relation of Form to numbers which may indeed originate with Plato but were certainly not the heart of his mathematical thought.[40]

Klein knows about all these ambiguities, of course. And he knows how devastating Aristotle's critique of eidetic numbers is within the context of mathematics; that is, within any discussion of how Forms contribute to understanding the nature of number. Why, then, does he make such a strong connection between Aristotle's testimony and the μέγιστα

γενή passage of all things? There are three main reasons: First, only the eidetic number structure points to a way forward in thinking through ontological μέθεξις. Indeed, it is only within the context of the μέθεξις among Forms that we find any explicit echo, in the dialogues, of such a numerological relation among partially combinable units. Second, Klein will argue that it is the ontological, and *not* the mathematical, employment of this number-unit relation that was Plato's main concern all along. Third – and here is the crux of the matter – the text of the *Sophist* displays Plato's full awareness that this 'solution' to the ontological μέθεξις problem is only partly analogous to number, but therefore also partly unlike it. We will see Plato taking pains to show the limits of this 'mathematical' solution.[41] Therefore, for Klein, Aristotle's critique of the mathematical significance of eidetic numbers can be simultaneously cogent and partially misdirected. In raising the possibility that Forms may have a structure analogous to numbers, Plato is looking *through* eidetic numbers at a problem that Aristotle seems not to see.[42]

IV

Numbers, as we easily realize upon reflection, have a 'curious *koinōn* character: *every number of things belongs to these things only in respect of their community, while each single thing taken by itself is one*.'[43] As Socrates remarks in the *Hippias Major,* the property of duality, which two things share together, they somehow do not have when each is taken singly.[44] Any number is a number of things (of units, say), and hence a whole with parts, but the integrity of the number is exactly not partitioned into its parts. It is this property which interests the Stranger in trying to understand the relation of Being, Motion, Rest and the μέγιστα γενή more generally.

Since, as we saw, Motion and Rest must *be* together for thinking to be possible, there is no choice, says the Stranger, but to demand, like children, that we have our cake and eat it too:

> …For the philosopher, who most honors these things, it is a necessity…not to agree to those who say that the All is at rest either as a one or as many forms. Nor should he listen at all to those who would move being every which way. But rather, just like the children's prayer he must assert, 'Whatever is unmoved and moved' – that Being and the All consist of both together.[45]

The 'arithmetical' structure of the realm of ideas permits a solution of this problem as follows:[46] What Aristotle describes as the constituent units of an eidetic number are in fact collections of *Forms* belonging, by virtue of their content, to a higher class, a γένος. A γένος – animal, say – has a determinate number of εἰδή which comprise it. These can commune, or be compatible with other ideas of that γένος, but not with the formal monads of a different one. Furthermore, the γένος itself exhibits 'the mode of being of an *arithmos*'.[47] 'Human being', 'horse' and 'dog' all partake of Animal, for example, but Animal is not divided among them in any way, nor do the different kinds of animals lose their species identity by being inter-related in the same γένος:

> Only the *arithmos* structure…is able to guarantee the essential traits of the community of *eidē* demanded by dialectic: the indivisibility of the single 'monads' which form the assemblage, the limitedness of this assemblage….and *the untouchable*

> *integrity of this higher idea* as well. What the single *eidē* have 'in common' is theirs only *in their community* and is not something which is to be found *beside* and *outside*...them.[48]

The eidetic number, then, which for Aristotle was an (completely hopeless) explanation of the nature of number is in fact an explanation 'of the mode of being of the *noēton* as such':[49]

> Only the *arithmoi eidētikoi* make something of the nature of number possible in this our world. They provide the foundation for all counting and reckoning…in virtue of their *particular* nature which is responsible for the differences of *genus* and *species* in things so that they may be comprehended under a *definite number*…[50]

To put the point in terms of our earlier analysis in Section I, only by virtue of eidetic numbers could there be intelligible structures with the unity and determinacy presupposed by our ability to distinguish and hence count.

But are these noetic structures, these principles (ἀρχαί) of determinacy and number, themselves countable? On the basis of the *Sophist* the answer must be – No. This becomes evident if we look at what Klein identifies as the first eidetic number (and the only one he finds treated with any explicitness in Plato) the 'Eidetic Two', corresponding to Being, comprising two γενή – Motion and Rest.

In the relation of ὄν, κίνησις and στάσις, we have two forms which are directly incompatible with one another (Motion is not Rest, and Rest is exactly what is not in Motion).[51] But Being must mix with both of them, since both Rest and Motion *are*. As a result, says the Stranger, in the very act of trying to think them, the two γενή – Motion and Rest – 'become three' (τρία δὴ γίγνεται, 254d12); three discreet entities to be counted. But this had already been shown to be impossible at 250c-d. If Being is some ''third thing in the soul' alongside the other two – and to Theaetetus this seemed the natural consequence of the fact that there are three names – we will find ourselves with the absurd result that to be would mean being neither at Rest nor in Motion, and neither Rest nor Motion would have Being. To avoid this kind of nonsense, Being must be the *togetherness* of these two forms, not some *tertium quid* ranged alongside them.

But this means that, unless we are careful, the use of the word number in 'eidetic number' and 'mathematical number' fudges a crucial difference. In the mathematical number Two each of the constituent units is exactly *one* unit. We do not predicate duality of each unit by itself. But in the case of the Eidetic Two known as Being, we *must* predicate being of its constituent units (Motion and Rest) by themselves, and yet they cannot be by themselves and Being cannot be without them. Where exactly *is* Being, then? We have three distinct names but not three discreet countable entities corresponding to them. When we count the mathematical number Two, everyone understands perfectly well that there are only two monads to count. No one goes on to count the 'Number Two' as a third monad alongside the two constituent ones. But just this cannot be said of the relationship among the most basic ontological ingredients.[52] Klein writes,

> In respect to *on, kinēsis*, and *stasis* the logos fails! It fails because it must count 'three' when in truth there are only 'two', namely *stasis* and *kinēsis*, which are each one and both two!...The *logos* cannot conclude the count with 'two' because it says that *stasis* and *kinēsis* 'are' not only

> 'together' but also 'singly'…*On, kinēsis,* and *stasis, in spite of their 'arithmetical'* koinōnia, *cannot be 'counted' at all…*[53]

But counting, we recall, is the basic activity of dianoetic thought! It is our most familiar point of entry to the νοητός τόπος, the intelligible region,[54] and, moreover, it seems to apply in such an utterly unproblematic fashion to whatever it is we count in our mathematical operations. Nevertheless, it fails to grant us access to the conceptual structure obtaining among the basic ingredients of intelligibility. And this is a radical result, one with direct implications for our thinking about Platonic intermediates.

In counting sensible things or mathematical units, διάνοια naturally associates enumerability with the precisely discreet nature of what is being counted. This, after all, is what is behind the distinction between ordinary (sensible) and genuinely philosophical numbers at *Philebus* 56dff – a classic proof text for a Platonic commitment to intermediates. If we are counting armies (to take Socrates' example) we would get a different number based on what we focus on. If we focus on the two opposing armies, we count two. If we focus on the total number of divisions comprising each army, our count might reach into the hundreds or, if we count individual soldiers in the army, hundreds of thousands. The shift to counting 'pure' mathematical units seems to clear matters up quite nicely, since we replace those shifty perceptible entities with a field of perfectly precise, indivisible thought-units whose only property is their enumerability. And this is a paradigmatic example of the activity of διάνοια as such, since διάνοια is that mode of our thinking which is always striving to look through or past the unstable realm of sensibility, impelled by its certitude that 'behind' or 'beyond' this confounding flux there must lie objects more knowable because they stand in the clearly discernable, precisely countable relations which sensibility lacks.[55]

And yet, when we try to articulate the basic structure which allows us to speak of the being of anything at all – whether a sensible entity or a mathematical monad – the tight, ostensibly self-evident, link between discreetness, intelligibility and enumerability is snapped: Being, Rest, Motion (as well as Same and Other) are distinguishable, but they are not discreet in the same way as their names are. Here the attempt by διάνοια to get a precise count is stymied.[56] The eidetic number structure, then, to the extent that it actually appears in the dialogues, highlights the *outer limits* of mathematics, and with it, of διάνοια as such.[57] If the positing of intermediate mathematical entities results from mathematical thought being opaque with regard to its own foundations because it is partly opaque to Form, Klein shows that only a *general* critique of διάνοια reveals just what this opacity consists in: an assumption about the ontologically fundamental status of precision and enumerability which cannot be substantiated discursively.

And this, I think, also explains why the dialogues make no hard and fast commitments about the ontological status of τὰ μεταξύ. To demand of Plato a definitive account of what the intermediates are – thought-objects, images of Forms, an autonomous ontological province within the νοητός τόπος – is to assume what Plato is not prepared to assume, that logos is capable of achieving a full closure of account-giving. In the present case, such closure would mean a complete account of the basic conditions for there being anything countable in the world at all. Only from the vantage point of those 'basic conditions' could we fully unders-

tand whether, and to what extent, mathematical activity necessitates its own *onta*. Only thus could we put the intermediates 'in their place'. This, I take it, is Glaucon's target when he says that the objects of mathematics and geometry are intelligible, 'given a beginning'.[58] Such a beginning would presumably be available to 'logos itself' (ἀυτὸς ὁ λόγος), the logos in which νόησις (intellect) is fully operative at the top of the Divided Line (*Rep.,* 511b2 and d8). But the eidetic number problem shows us that expressing, with perfect clarity, what is seen from that vantage point exceeds the capacities of διάνοια.

Here, then, is that sense in which Plato and Aristotle may be speaking of the same thing but not saying the same things about it. Aristotle's entire critique of Platonic number theory is focused on what strikes him as the senseless and self-defeating separation, or χωρισμός, of intelligible entities (νοητά) (whether numbers or Forms) from the concrete particulars of this world.[59] But, for Plato, reflection on the nature of number quickly leads us to an entirely different gap: the one that opens up between those very νοητά and logos as the συμπλοκή which weaves them together. This gap would explain not only Plato's studied reticence about the intermediates, but his only marginally more explicit statements about the Forms themselves – statements which, even at best, are maddeningly brief, tentative, and often expressed in the language of allegory and myth by which Plato supplements conceptual discursivity and thus points unmistakably to its limits.

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NOTES

1. Wedberg 1955, 14, 15-16 and 19. Earlier examples of such reconstructions are Robin 1908 and Stenzel 1924.
2. Cherniss 1945, 8-9, 25-30. See also pp. 48-51.
3. Annas 1975, 147, 150-151, 164.
4. Ibid, 165.
5. Arist. *Metaph.,* Z, 2, 1028b19-20: ὥσπερ Πλάτων τά τε εἴδη καὶ τὰ μαθηματικὰ δύο οὐσίας. See also 1069a30-b2 and 1076a19-22. References to the *Metaphysics* are to Jaeger's edition, while references to the *Sophist* are to the new OCT edition edited by Duke, Hicken, et al.
6. For Franklin, as we shall see, the objects of διάνοια just are Forms seen through a glass darkly. Cook-Wilson 1904, 258, agrees that the objects of διάνοια in the divided line are Forms, but arrives at this conclusion by an analysis quite different from Franklin's. Smith 1981, argues that in order to preserve the simile between the lower and upper sections of the Divided Line there must be distinct objects corresponding to the third segment. But these objects are just the *visibles*, the αἰσθητὰ of the second stage. Διάνοια, however, takes these visibles precisely *qua* mere images of forms. That is, it takes them *sub specie,* under a certain description (133). Since the description under which διάνοια takes these objects is different from that of πίστις, we are dealing with objects different in their intension (though identical in extension) (134).
7. Franklin 2012, 505.
8. Klein 1968, 69-79, esp. 74. This assumption may have received its first thematic expression in the Pythagorean confidence that ἀριθμὸν εἶναι τὴν οὐσίαν πάντων, *Metaph.* A, 5, 987a19. See also 985b25-26.
9. *R.* 510d1.
10. It is not mentioned even once by Wedberg in his reconstruction (in Chapter V) of Plato's philosophy of mathematics, for example. The *Sophist* is discussed by Cherniss, 1945 and Annas, 1976, but neither dwells on its illuminating connection to the intermediates.
11. What Franklin 2012, 484 and 485, calls the 'opacity of mathematical discourse'.
12. Ibid, 492.
13. Ibid, 496.
14. Ibid, 494.
15. According to Miller 2007, 326, 'For the geometer to look to the perfection that…the visible particular lacks is not, or not yet, for him to bring an object to mind; rather, it is for him to orient himself toward the sensible particular in a way that first allows…the perfect figure that the sensible particular "falls short of" to present itself'. Cf. pp. 316, 324.
16. Franklin 2012, 493.
17. According to Aristotle, this distinction is one that the Pythagoreans had not yet made. They assume that being is coterminous with being perceptible: τὸ γε ὂν τοῦτ' ἐστὶν ὅσον αἰσθητόν ἐστι... *Metaph.* A, viii, 990a6.
18. Franklin 2012, 493: 'Mathematicians are not yet acquainted with Forms as such…as unitary essences common to and responsible for the character of a plurality of like particulars.' Cf. Klein 1968, 78.
19. *Metaph.* B, ii, 997b12.
20. *Rep.,* 533b5-c2. I elaborate on the dream-like character of claims to comprehensive discursive knowledge in German (2017), 637-639 and on the imperfect self-knowledge which characterizes mathematical thinking in German (2019).
21. *Men.,* 72c7. And cf. Franklin 2012, 494: 'Crucially, the Form of a Bed is not *a* bed – one cannot sleep in it – but the Being of Bed, *what it is to be a bed*.' The *what-it-is-to-be* a bed must be a combination of properties; e.g., those properties which allow restful sleep to human beings, like solidity to support weight, a certain position in space that enables reclining, and so on. Presumably, the mathematician imagines the Form of the Bed is something perfectly 'sleepable'.
22. See *Rep.,* 528d8-526a7.
23. Including, as well, how Forms relate to the τοῦ παντὸς ἀρχή (the 'first principle of the all') at the top of the Divided Line. See Cook-Wilson 1904, 258-259. Hence, while neither Franklin nor I are saying the same thing as Smith 1981, who understands the objects of διάνοια to be visibles taken as images of Forms, our positions converge on the central point. On Smith's account, too, there is no evidence that διάνοια can grasp with perfect clarity the conceptual inter-relations we will now study.

24. Klein 1968, 79-92.
25. Annas 1976, 64 has a helpful compilation of all such passages.
26. This is assumed by Annas 1976, 19 and Rosen 1983, 53.
27. *Soph.,* 232b3-4. Henceforth, unless stated otherwise, all Stephanus references shall be to the *Sophist*.
28. Klein 1968, 82. See the discussion of the relationship between the *genos* "Animal" and its constituent forms, on pp. 13-14 below.
29. Εἴπερ γε ἄλλο τι θετέον ὡς ὄν.
30. Klein 1968, 85.
31. 252e4 and 256cb9-10.
32. Klein 1968, 89. Emphases are in the original.
33. At 254c1-4, the Stranger indicates that the analysis he will now carry through about the greatest of Forms (τῶν ἐιδῶν...τῶν μεγίστων) would be applicable to Form as such, but that he will concentrate on a few for ease of comprehension.
34. Klein 1968, 91.
35. *Metaph.,* M, vi, 1080a19-23. Klein 1968, 89. Ross 1924, 427 on *Metaph.,* M, vi, 1080a19 writes: '… in this context, συμβληταί seems to mean capable of entering into arithmetical relations with one another – of being added and subtracted, multiplied and divided'. Unfortunately, Ross does not develop further his insight at the beginning of the same note about the equivalence of ἀσύμβλητος (un-combinable) and ἕτερον ὂν τῷ εἴδει ('different in form') at line a17 of Aristotle's text.
36. Ibid., M, vii-viii, 1081b35-1083a20.
37. Ibid., M, viii, 1083a17-20.
38. Cherniss 1980, 31-59 *in passim*, esp. 33, 37-48 and 57.
39. For a general statement of her position, see Annas 1976, 63-73. As for Aristotle's aforementioned statement at 1083a17, Annas writes: "the context makes it clear that this is a mistake or not to be taken seriously…it is the theory *that numbers are Forms* that has been the subject of [Aristotle's] criticism." Annas 1976, 175 [emphasis mine]. See also p. 173 for a similar assessment of the Aristotelian declaration at 1082b23-24 (οὐδὲ ἔσονται αἱ ἰδέαι ἀριθμοί). This is also how Cook-Wilson 1904, 257 takes the force of Aristotle's use of εἰδητικὸς ἀριθμός.
40. Annas 1976, 72-73.
41. Interestingly, while Annas 1976, 68-72, provides an explanation of why Aristotle might have thought that Plato identified Forms with numbers which very closely tracks Klein's, she fails to see this crucial point.
42. Cf. Klein 1968, 92 with Klein 1985, 52.
43. Klein 1968, 81.
44. *Hipp. mai.,* 301e7-302b3.
45. 249c10-d4 (ὅσα ἀκίνητα καὶ κεκινημένα).
46. Klein 1968, 89-90.
47. Ibid.
48. Ibid, 90.
49. Ibid, 91.
50. Ibid, 92-93.
51. The Stranger emphasizes the 'twoness' of Motion and Rest by his use of the grammatical dual at 254d7-10.
52. Hopkins 2008, 155.
53. Klein 1968, 95 [emphases in the original]. As Klein goes on to argue on pp. 95-97, this situation is repeated and becomes even more complicated with regard to the other two γενή: Same and Other.
54. *Rep.,* 522c5-6.
55. Here, for Klein, is the meaning of Socrates' statement, at *Rep.,* 510b5, that in this kind of thinking the soul is 'compelled to inquire by means of hypothesis' (ψυχὴ ζητεῖν ἀνακάζεται ἐξ ὑποθέσεων), i.e., it is compelled to suppose that some more exact things (the pure square grasped in thought) underlie other things which were the starting points of our investigation (the sensible square). Klein 1968, 73.
56. Hopkins 2011, 39 is thus exactly right to say that, 'Plato's second account of the *eidē* [in the *Sophist*, A.G.] is best characterized as 'arithmological' rather than 'arithmetical' in recognition of the non-mathematical nature of the units that are united as an *arithmos*. Cf. with Klein, 89: eidetic numbers are *arithmoi* 'of a peculiar kind'.
57. Surprisingly, the critique in Rosen 1983 does not see that this is what Klein is trying to demonstrate. The mistake, I believe, derives from an over-hasty classification of Klein as another example of 'the application of modern analytic techniques to the Platonic text' (48) and 'the assimilation of our thoughts to numbers' (55). But this is exactly what Klein is trying to show is impossible! Hopkins 2011, 34-42 sees the point aright.
58. Reading *Rep.,* 511d2 with Burnet as regards the words καίτοι νοητῶν ὄντων μετὰ ἀρχῆς. I can find no convincing reason in the manuscript tradition for suspecting these words.
59. *Metaph.,* M, ii, 1077a1-16.

BOOK REVIEWS

Plato Laws 1 and 2. Translated with and Introduction and Commentary. By Susan Sauvé Meyer (2015, 2017).

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(Clarendon Plato Series)

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It is perhaps not entirely normal to review a paperback issuing of a book already reviewed in its hardback issuing,[1] but Susan Sauvé Meyer's (hereafter "SSM") Clarendon translation and commentary of *Laws 1 and 2* certainly deserves the attention of the readers of this Journal.

Although serious Plato scholars have generally been aware of the *Laws*, this lengthy dialogue has generally gotten much less attention than most other works of Plato, surely less than the *Republic*. For English-readers there have been several decent translations – T. Saunders (1970) and T. Pangle (1980) are two of the more recent. Detailed commentaries have been more scarce – L. Brisson & J.-F. Pradeau (2006) and especially K. Schöpsdau (1994-2011) have been valuable for readers of French or German, and Robert Mayhew (2008) in Clarendon for *Laws Book 10*.[2] C. Bobonich has written a good deal about the *Laws*, including a book focusing primarily on the *Laws*, and an edited volume of essays.[3] Beyond this core bibliography there is of course more, but not an overwhelming list, not the sort of bibliography one would see of the *Republic*.[4]

As previous reviewers have noted, the translation is both clear and sensitive to philosophical points. A large advantage of the Clarendon format is the opportunity to defend one's translation, and to include alternative readings of difficult passages. A sample: at 629d2 the Athenian says that *stasis* is πάντων πολέμων χαλεπώτατος, translated by SSM as "the hardest conflict," by Bury (in Perseus) and Saunders as "most bitter," and by England as "deadliest." SSM defends her translation by contrasting *chalepos* with its opposite *praos*, and pointing out that at 630a4-5 Theognis is quoted to the effect that civil war is the most difficult to fight (p.99).

The commentary often gives succinct philosophical analyses: at 631b6-c1, the Athenian

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says that a city that receives divine goods (wisdom, moderation, courage, and justice) also receives the human goods (health, beauty, strength, and wealth), "otherwise it is bereft of both." SSM points out (p. 109) that this joins a "sufficiency thesis (possessing divine goods suffices for possessing the human ones) and a necessity thesis (possessing the divine goods is necessary for possessing the human ones." Is it the city or individuals who receive the relevant goods? Some, e.g. Bobonich, have wanted the text to tell us that the Athenian is talking about individuals, but that's not entirely plausible, since virtuous individuals may be ill or poor. Rather, the Athenian is talking about *cities* that possess the "divine goods," without which they cannot reasonable expect to receive the "human goods."

Another spot, a few pages along, concerns the understanding of courage, argued by the Athenian to oppose not only fear and pain, but also desire and pleasure (633c9). SSM usefully distinguishes (A) pleasant and painful experiences and (B) affective responses to the prospect of A-type experiences. It's the B-type, the anticipations, that one must battle against, and the Athenian's notion of appropriate training for the courage to resist is directed against those. SSM makes clear how the Athenian envisages the well-regulated drinking parties to educate participants to proper responses to the prospects of pleasure and pain.

Book II begins with a focus on the thesis that only the just are truly happy – a theme that many will remember from the *Republic*. Is the Athenian defending the sufficiency thesis, that "Anyone who is just is happy," or the necessity thesis, that "Anyone who is not just is unhappy"? SSM (p. 258) does not believe that Book II provides the arguments to decide whether Plato is committed to one of these theses; rather, she believes that the Athenian is arguing that it is essential that the state *teach* that the just life is happiest and most pleasant.

I felt particularly enlightened by SSM's explanation of the three choral groups: the "Chorus of the Muses," composed of children to the age of 18, the "Chorus of Apollo," from 19 to 30, and the "Chorus of Dionysus," from 30 to 60. The Athenian spends much the most amount of time talking about the aesthetic virtues that are meant to emanate from the Dionysian choral groups, but SSM makes clear how those regulate the educational functions of the Chorus of the Muses and stabilize the productions of the Chorus of Apollo.

Anyone who wishes to understand Plato's contribution to political thought must turn to the *Laws* as well as the *Republic* and *Statesman* (and other dialogues too). An understanding of the complex and sometimes obscure *Laws* is very much facilitated by this excellent translation and commentary. One shouldn't try to read the *Laws* without it!

NOTES

1 Online, by D. J. Riesbeck in *Notre Dame Philosophical Reviews* 2016.05.23 and by N. R. Baima in *Bryn Mawr Classical Review* 2016.06.26; in print by M. Brumbaugh in *The Classical Review* July 2016, and by M. L. Bartels in *Mnemosyne* 70.6 (2017) 1059-1072. There may well be others.

2 L. Brisson & J.-F. Pradeau (2006). *Platon Les Lois, traduction, introduction, et notes.* 2 vols. Paris: Flammarion. Robert Mayhew (2008). *Plato: Laws 10.* Oxford University Press. Oddly, SSM does not include Mayhew in her bibliography or index. T. Pangle (1980). *The Laws of Plato, translated with Notes and an Interpretive Essay.* University of Chicago Press. T. Saunders (1970). *Plato: The Laws. Translated with an Introduction.* Penguin. K. Schöpsdau (1994-2011, three volumes). *Platon: Nomoi (Gesetze).* Vandenhoek und Ruprecht.

3 C. Bobonich (2002). *Plato's Utopia Recast.* Oxford University Press. Ed. (2010), *Plato's Laws: A Critical Guide.* Cambridge University Press.

4 PhilPapers claims 205 items under *Plato: Laws* and 1385 under *Plato: Republic.*

Compte rendu de Il disordine ordinato, la filosofia dialettica di Platone, Maurizio Migliori, Morcelliana, 2013

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Placée sous l'intitulé *Il disordine ordinato: la filosofia dialettica di Platone*, la monographie de Maurizio Migliori, parue chez Morcelliana en 2013, s'impose autant par ses dimensions monumentales (deux volumes qui recouvrent 1484 pages) que par sa visée «d'une autre époque» (p.8), qui consiste à proposer une vision unitaire de l'ensemble de la pensée platonicienne plutôt que d'en cibler un aspect spécifique. Ainsi, Migliori se penche sur l'écriture platonicienne, sa métaphysique, sur des questions de chronologie, de cosmologie, de psychologie, d'éthique et de politique en adhérant aux prémisses herméneutiques de l'École de Tübingen: la critique platonicienne de l'écriture expliquerait le fait que certains enseignements sont restés oraux; en conséquence, Platon miserait souvent sur l'aspect dramaturgique ou narratif des dialogues pour suppléer à la communication explicite qu'il ne se permettrait pas. Migliori se penche longuement sur la méthode littéraire de Platon dans le cadre du premier chapitre: *Comment écrit Platon*. Il introduit l'idée d'une «écriture contrôlée qui décide toujours quelle information fournir» (p. 41) et qui opère «une sorte de sélection du lecteur» (p. 39). S'il y a sélection du lecteur, Migliori n'en récuse pas moins le label «ésotériste», tout en se disant un exposant de l'École de Tübingen-Milan.

Devant un œuvre aux dimensions si gigantesgues, le meilleur parti, à notre sens, est de circonscrire certains points forts qui en véhiculent *l'esprit*. Deux aspects du premier chapitre nous semblent propices à une telle entreprise. La question de l'écriture contrôlée sera récurrente tout au long de l'œuvre et prendra, la plupart des fois, la forme du «jeu» dramaturgique par l'entremise duquel Platon inviterait ses lecteurs. La question de la doxographie aristotélicienne jette pour sa part les fondements de l'approche herméneutique de Migliori et appert, pour cette raison, de la première importance.

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LA QUESTION DES TÉMOIGNAGES ARISTOTÉLICIENS

Migliori se prononce en faveur d'une utilisation prudente des témoignages d'Aristote, pour laquelle il pose par conséquent quelques jalons de méthode. Il se positionne en ce sens par rapport à Brisson et Isnardi Parente, selon lesquels la doxographie aristotélicienne se référerait aux développements académiques de la doctrine platonicienne davantage qu'à la doctrine de Platon. Celle-ci serait dès lors, tout compte fait, une déformation de la théorie platonicienne et, par conséquent, sa valeur historique serait discutable. Leur vocabulaire est changé, le ton est moins tranchant, mais l'argument de Migliori, fort simple, consiste à mettre en lumière ce que présuppose leur position, qui, au bout du compte, reconduit *grosso modo* à celle de Cherniss; car il s'agit encore et toujours de plaider un doute raisonnable afin de mettre un embargo sur le témoignage d'Aristote. L'argumentation de Migliori souligne que, puisque les enseignements oraux sont souvent nommément attribués à Platon, pour que cette position soit valable, il faudrait tout d'abord admettre qu'Aristote eût menti, mais surtout, qu'il eût menti sans qu'on ne le perçât immédiatement à jour, ce qui appert très improbable: du Lycée à l'Académie, la chose se serait très certainement ébruitée assez vite. Migliori concède naturellement que Brisson a raison lorsqu'il mentionne que l'idée selon laquelle Platon réservait certains enseignements à l'oralité ne «ne se fonde sur aucune donnée incontestable ni chez Platon ni chez Aristote» (p. 42). L'histoire de la philosophie ne relève toutefois pas, de poursuivre Migliori, de certitudes incontestables, mais bien de «reconstructions plus ou moins fortes, plus ou moins complètes, plus ou moins cohérentes, plus ou moins probables» (idem). En ce sens, parce que les deux hypothèses relèvent du possible, Migliori préconise une méthode prudente: on peut débattre sur le contenu des ἄγραφα δόγματα, mais pas sur leur existence. En effet, si Aristote, dans le cadre de ses cours, pouvait librement parler de doctrines non écrites, c'est que l'on devait bien savoir à quoi il faisait allusion. En vue d'une reconstruction des enseignements oraux, il sied toutefois d'analyser systématiquement le langage d'Aristote: lorsqu'il s'exprime en adoptant la terminologie platonicienne, il serait injustifié de le remettre en cause; mais s'il emploie plutôt son propre vocabulaire, la doctrine platonicienne a nécessairement subi une transposition qui dépasse la simple sphère langagière et touche également au contenu théorique. Par rapport à l'aspect polémique, il est admis qu'Aristote, en tant que théoricien, tente d'attaquer Platon sur le point qu'il considère le plus vulnérable, quitte à légèrement remanier son propos afin de faire pencher la balance en sa faveur. Il faut néanmoins garder à l'esprit, précise Migliori, que si Aristote avait trop modifié les thèses de Platon, il aurait en premier lieu couru le risque qu'on le lui reprochât ouvertement, ce que Speusippe, Xénocrate ou d'autres n'auraient sans doute pas manqué de faire. Deuxièmement, il est très probable que, si Arisote s'était permis de remanier la position platonicienne en profondeur, c'est à sa propre argumentation qu'il aurait nui en la discréditant.

L'argumentation de Migliori, sur ce point, nous semble irréprochable.

LE «JEU DE L'ÉCRIT»

C'est parce que Platon fait jour de ses réticences vis-à-vis de l'écrit qu'intervient la notion du «jeu». Ce jeu prendrait plusieurs

formes et viserait toujours à s'adapter à l'âme du lecteur. Il s'agirait de:

> fournir une aide respecteuse du niveau de maturité de l'élève, dire de manière simple pour les âmes simples et complexe pour les âmes complexes, ce qui requiert toujours et donc justifie une grande *réticence éducative* du maître, qui ne veut empêcher le lecteur de *découvrir la vérité* en la lui communiquant (italiques de l'auteur, p. 72).

Platon, parce qu'il aurait voulu écrire en respectant ses principes pédagogiques, aurait:

> *inventé* une technique d'écriture qui lui permettrait d'affronter les deux principaux problèmes: la croissance personnelle du sujet et la défense du contenu qu'il met à disposition du lecteur (italiques de l'auteur, p.74).

Migliori explique donc l'approche narratologique par sa vocation parénétique, de sorte que la diversité des procédés littéraires et de la mise en scène dans les dialogues est ultimement reliée à la diversité des âmes des lecteurs. Il sera du reste soutenu que, « vu le génie artistique de Platon, il serait plus judicieux de ne pas essayer de reconduire en un schéma unique sa capacité à communiquer » (italiques de l'auteur, p.93). On remarque là une approche nuancée qui consiste à ne pas fixer dans une structure trop rigide la versatilité de la dramaturgie platonicienne. En ce sens, plutôt que d'attribuer au seul dialecticien le monopole de la position platonicienne, ce qui reviendrait rechercher dans les dialogues la forme du traité, Migliori prône une herméneutique plus ouverte

> La fonction des interlocuteurs ne sont pas seulement les porteurs de leur propre position, mais peuvent aussi devenir les porte-paroles d'une position *correcte* ou d'un signal que l'Auteur entend donner (italiques de l'auteur, p. 94).

Migliori prône donc qu'on laisse parler la dramaturgie afin de jouer le jeu auquel Platon invite ses lecteurs. La visée de Platon serait toujours (partiellement du moins) de nature protreptique, en tant qu'elle aspirerait constamment à opérer le retournement de l'âme qu'est la philosophie (un dialogue comme le *Parménide* ne serait évidemment pas proptreptique sous le même rapport qu'un dialogue comme l'*Apologie de Socrate*). Ces jeux peuvent d'ailleurs s'étaler sur plusieurs dialogues, pensons entre autres à la trilogie *Sophiste-Politique-Philosophe* où le point culminant de la trilogie, par choix de l'Auteur, serait demeuré non écrit. L'intention de Platon aurait été de se limiter à «conduire son lecteur *le plus près possible* de ce niveau de réflexion <celui de s'interroger, à la lumière des acquis du *Sophiste* et du *Politique*, sur l'essence du philosophe>» (p.113), sans pour autant lui exposer sa doctrine explicitement, ce qui n'aurait pas représenté une approche pédagogiquement viable.

Migliori, qui multiplie les exemples de jeux dramaturgiques, se limite néanmoins à illuster au moyen d'exemples et ne fixe pas la dramaturgie platonicienne dans un schéma structurant, qui serait nécessairement trop peu malléable pour rendre justice à la richesse littéraire des dialogues. Au contraire, il lui insuffle quelques principes de cohésion: la critique platonicienne de l'écriture, le témoignage de l'Ancienne Académie et la visée protreptique de Platon, sur la base desquels il élabore la notion d'un «jeu» structurant la narrativité des dialogues. Cette approche peut être critiquée en cela qu'elle serait une license pour l'interprétation *ad hoc*, et par suite un retour au point de départ. Nous répondrions alors que si l'on

admettait ces quelques principes pour l'interprétation des dialogues, tout en soutenant que les dialogues sont et demeurent la voie la plus sûre pour comprendre la philosophie de Platon, l'effort herméneutique contemporain serait déjà amplement plus unitaire. Migliori parle d'une «écriture contrôlée» et donne une quantité impressionnante d'exemples qui démontrent qu'il y a bel et bien un constant contrôle de l'information fournie de la part de Platon. Si l'approche herméneutique qu'il privilégie est assez libre, nous aimerions la désigner comme une «herméneutique contrôlée», qui encadre la lecture sans pour autant brimer sa marge de manœuvre ni réduire l'immensité fluide du corpus platonicien à un schéma qui, pour brillant qu'il soit, serait toujours trop restrictif. Par son étude rigoureuse de la dramaturgie platonicienne, le dernier ouvrage de Migliori offre qui plus est une énième réfutation à ceux qui estiment qu'«une lecture ésotériste vide les dialogues, et surtout les dialogues de jeunesse de leur contenu spécifique, pour les représenter sous le jour d'une doctrine des principes» (Brisson 1998, p. 494). Pour la vaste étendue des sujets traités, l'originalité de sa lecture et surtout, pour ses thèses minutieusent étayées, *Il disordine ordinato, la filosofia dialettica di Platone* constitue, à notre avis, l'une des études spécialisées les plus importantes du vingt-et-unième siècle et promet de s'imposer en incontournable des études platoniciennes.

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