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RESENHA

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Michael Weinman[*]

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* Bard College, Berlin.

1. While this discussion of Horky's book appears under my signature, I want to flag clearly and loudly that it owes a real debt to my research assistant, Lindsay Parkhowell.

2. In the interest of full disclosure, I should report that when this was presented at the "Recent Books on Pythagoreanism" book celebration at the State Library of Berlin on Monday 21 October 2013, Philip Horky greatly objected to this, and insisted that in his view it is precisely the chapters not presented here that are to him the most important. I leave it to his readers—who will be many—to decide for themselves.

Philip S. Horky's *Plato and Pythagoreanism* is both deeply insightful and actually pleasant to read. According to the way it presents itself, his work is meant chiefly to offer two things. First, he means to defend a controversial thesis that offers a perspective on the role mathematics played in the development of Plato's philosophy that differs meaningfully from the commonly accepted view of this matter. Second, he means to do so through a comprehensive analysis of the earliest philosophical, historical, and literary evidence concerning Pythagoreanism.

It is clear that in both respects, it is a great success. My aim here is to point out some of the ways in which it succeeds. The majority of what follows is my best shot at a simple excursus through many of the central claims of the work—though, for reasons that will emerge, I focus on the first, second, and sixth of his chapters because this seems to me to allow me to do the best job I can of doing some justice to his central, and as he notes, controversial thesis on "the role mathematics played in the development of Plato's philosophy," without getting too lost in the very learned and very interesting thickets of his "comprehensive analysis" of all the relevant sources. Also, if we are honest, what discussion of Pythagoreanism wants to get caught up in chapters

numbered 3, 4, 5?[2]

The central feature in Horky's account is what he (and obviously not only he) calls "mathematical" Pythagoreanism; the "obviously not only he" modifier is a reference to the tradition—dating back to Aristotle—to divide Pythagoreans between the acousmatic and the mathematical, the ones who hear (only) certain things, and the one who attend to a certain kind of technical knowledge that relates to the features of numbers, and especially to small whole-number ratios. Fair enough. What is novel—and challenging—in Horky's picture is, first, the precise way in which he characterizes what makes the mathematical Pythagoreans the mathematical Pythagoreans, and, second, the way in which he attempts to establish his view that "Plato inherits mathematical Pythagorean method only to transform it into a powerful philosophical argument concerning the essential relationships between the cosmos and the human being."

My version of the "big picture" of Horky's argument comes fairly into focus just from the titles of the three chapters on which I focus; namely: (1) Aristotle on Mathematical Pythagoreanism in the 4th Century BCE; (2) Hippasus of Metapontum and Mathematical Pythagoreanism; (3) [ch.6] The Method of the Gods: Mathematical Pythagoreanism and Discovery. As we can see from this, the first thing we need to do, in order to take in Horky's main claim, is to achieve the proper (i.e., critical) understanding of Aristotle's version of what is meant by the category "mathematical Pythagoreanism"; in so doing, Horky will work closely with the findings of Burkert, Huffman, and most recently Cornelli, in order to expound on the grounds of Aristotle's distinction between the two kinds of Pythagoreans and also point toward what Aristotle might not have entirely grasped about them. Chiefly relevant in this is the proper understanding of the role of Hippasus, to which Horky devotes chapter 2, and through whom he wants to bring out his own understanding of mathematical Pythagoreanism. The following chapters then show how this mathematical Pythagoreanism both manifests itself in Plato's philosophy, and is put to work (appropriated) by Plato in order to discover and bring to light something that transcends the level of perspicacity that figures like Hippasus, Empedocles, Philolaus, and Archytas had achieved. This last part of the story is not re-capitulated here, but I believe my summary of how the findings of the first two "legs" of the race are deployed in the final longer leg will all same convey the sense of how Horky's two main goals are met in this book.

So, first, Aristotle and mathematical Pythagoreanism. Here, Horky basically wants us to believe a few things, none of which requires us to deviate very far from what seems to me a consensus about the subject matter of this chapter that has emerged over the past generation and a half. Namely, we are to begin with a more or less trusting belief in the evidence Aristotle provides for a distinction between mathematical and acousmatic Pythagoreans. Namely, these are distinguished by their *methodology:* mathematical Pythagoreans employ mathematical sciences to explain the "reason why" they hold their philosophical position, whereas acousmatic's "appeal to basic, empirically derived fact (3)." Further, Aristotle says, we should hold that the demonstrations of mathematical Pythagoreans represent an innovation over "facts" of acousmatic Pythagoreans. Philolaus' fragments provide further evidence in analysing these claims regarding mathematical Pythagoreans and Aristotle. All the same, Horky, here in a manner similar to Cornelli (2013), wants to investigate a different tradition than the one set down by Aristotle and not just take Aristotle's definitions of acousmatics and mathematicians for granted. In Horky's (2013: 5) words: "Indeed, the primary criterion for distinguishing acousmatic from mathematical Pythagoreans, as I will show, is each group's *pragmateia* (πραγματεία), a term that must be further contextualized in order to make sense of precisely how Aristotle draws the line (5)."

What do we find when (in the context of "Aristotle and mathematical Pythagoreanism") we deepen our account through a careful consideration of *pragma*? Perhaps most importantly, Horky's conclusion that Iamblichus is referring to Pythagoreans in general in his fragment on the question 'what is to be done', rather than mathematical/acousmatic factions. Horky also provides three reasons for why he thinks Iamblichus' passage applies to

Pythagoreans in general: because he does not use a conjunction to separate the groups here (where he has previously); the two groups shared religious precepts; the passage is repeated later to apply to all Pythagoreans. This matters because it shows that whatever divides these two groups it cannot simply be (as Burkert had it) that the mathematical Pythagoreans were the scientists/theorists and the acousmatic were practical/political. For Horky, the complaint recorded by Iamblichus actually presents Aristotle's criticism of "the activities of the mathematical Pythagorean Archytas of Tarentum (32)." What we primarily take home from this version of "mathematical Pythagoreanism" through the eyes of Aristotle, according to Horky, is that the for Aristotle, the fundamental difference between acousmatics and mathematical Pythagoreans was how the latter used demonstrative argumentation. Additionally, we should bear in mind how the mathematical Pythagoreans would also establish similarities between number and perceptibles, as well as an ontological order that was closely related to the social order of the *polis*. (This view of politics is discussed further, especially in chapters 3-5, not discussed in detail here.)

The crucial role of Hippasus in bringing us from mathematical Pythagoreanism as we encounter it through Aristotle and the mathematical Pythagoreanism that motivated Plato emanates from Hippasus's importance for Horky's continuing enquiry into the *pragmateia* of the mathematical Pythagoreans. Understanding Hippasus (or at least what middle-Platonists attributed to him, as we cannot always hope to disentangle the two) helps us to see "how metaphysics could have been brought to bear on religion and politics in the mathematical Pythagorean *pragmateia* (38)." In trying to figure out the genuine place of Hippasus (and Philolaus and Archytas) in this development, Horky discusses two sets of sources for his enquiry: the Platonists of the early academy (following Plato's death in 347 BCE) and Aristotle's associates at the Lyceum, Theophrastus and Aristoxenus. Theophrastus is listed as an especially important source for two reasons: firstly, because his knowledge of Pythagoreans was informed by Platonic teachers and not Aristotle's skewed vision, and secondly because his "doxographical" works also reveal important differences with Aristotle. Aristoxenus, meanwhile, is also important because the fragments that survive of his work on Pythagoreanism reveal a deep engagement with the tradition.

Horky is interested in comparing Aristoxenus' idea of "aiming at the divine" and Aristotle's idea of ordering the universe according to what is more honourable, using Wehrli, F23 in this analysis. Horky (2013: 46) concludes his analysis of the fragment by saying: "this fragment evidences Aristoxenus's interest to explain a Pythagorean *axiology of the "honorable"* by appeal to strategies of assimilation between numbers and things." This conclusion, he asserts, is important for two reasons, what is says about the "first principles" themselves, and how these first principles are both ontological and a principle of military and household rule. For Horky, the principle that the ἀρχή is a "most honorable" thing" is originally a product of Platonic thought and was systematized in Aristotle; it is drawn from sources in mathematical Pythagoreanism, but is original to Plato. Horky provides a long list of places in the dialogues where "honourable" appears, including the *Timaeus,* to show that Plato was aware of and using this concept. He then argues that the combination of what is "better" with what is "honourable" is a recurring *topos* in Aristotle's writing and that this raises the view that arguments that involve the metaphysics of the honourable, and attributed to the Pythagoreans by Aristoxenus, may in fact be Aristotealian in origin. He concludes this section with a discussion of how there is *no* reference to axiological uses of the *honourable* in genuine fragments of mathematical Pythagoreans like Philolaus and Archytas, and how this fact complicates his interpretation.

The remainder of this chapter surveys the many, conflicting views put forth about Hippasus—both those of the specialists of the past two generations, and those of the tradition, from the Academy and Lyceum through the Hellenic and medieval periods—concluding with Xenocrates of Chalcedon, whose doctrines bare striking resemblance to those of Hippasus. Horky's goal is to show

that the Early Platonists wrote about Hippasus and assimilated Hippasus' doctrine to Pythagorean ideals. Horky's (2013: 77) specific suggestion is that Xenocrates might have considered the "Forms" as "paradigms," which would not be a major innovation since "a strong association of these concepts follows almost naturally from a reading of Plato's *Timaeus*, and more important, it might have already been circulating in the Early Academy after Plato's death." On this basis, Horky returns to a discussion of Aristotle's views of the Pythagoreans, where he concludes that Aristotle is the source of the claim that Hippasus is a natural philosopher *as well as* the source of the claim that Hippasus was the progenitor of the 'mathematical' school within Pythagoreanism. Aristoxenus, Horky believes, takes over from Aristotle the focus on what is "honourable" in Pythagoreanism and that the doctrine ascribed to Hippasus, that he believed that "Soul-number is the first paradigm of the making of the world," is owed to Speusippus's or possibly Xenocrates's writings on the Pythagoreans, in an attempt to align Hippasus's supposed ancient doctrine with their own (which, subsequently, has been derived in various fashions from Plato's *Timaeus*)."

Which brings us, again leaving to the side for the moment a treasure of threads worth retracing that are found in chapters three through five—and let me point specifically among them Horky's treatment of the two classes, "what is" (τί ἔστι), "what is to the greatest degree" (τί μάλιστα), as "forming the background for Plato's dialectical response to Pythagoreanism,"discussed at length in chapters 4 and 5—to the question Horky tries to answer in chapter 6: how did Plato advance beyond mathematical Pythagoreanism? His answer involves Plato's use of what Horky (2013: 201) calls Plato's "first-discoverer myths" (of Prometheus, Palamedes, and Theuth), which are used by Plato to explore the methods of inquiry of the mathematical Pythagoreans, and which "allow him to attack the positions of his contemporary intellectual competitors without naming them (201)." Horky distinguishes between two periods in Plato's dialogues utilizing the "first--discoverer" myths, and naturally we will focus on the second, later period which includes the *Timaeus*. (The early period, not further discussed here, deals with problems of mathematics and writing, as relevant to the pursuance of the Good.) Horky (2013: 202) believes that with the later-period "first-discoverer" myths, "Plato demonstrates a reevaluation of what empirical science—especially that employed by the mathematical Pythagoreans in their approaches to harmonic theory—could offer to his own approaches to cosmogony, metaphysics, and dialectic." Horky will try to answer his question by means of showing what the proper interpretation of the "first-discoverer" tradition teaches us about Plato's critical response to the Pythagoreans. He does so by interpreting the place of the figures of Palamedes, Prometheus, and Theuth in the *Protagoras, Republic, and Phaedrus*.

Horky proceeds by addressing the "heurematographical *topos*" in these dialogues. Horky adopts the term "heuromatography" from Zhmud (2006) and it means: "the surviving written treatments of various "elements of culture as discoveries (εὑρήματα)" made by certain "first discoverers (πρῶτοι εὑρεταί)," whether divine or human." Though of immense interest, I pass over the discussion of *Protagoras* and *Phaedrus*, to conclude with Horky's presentation of, as his subject heading has it, "mathematical pythagoreans and the musical dialectics in the *Timaeus* and *Philebus*."

With respect to *Philebus*, Horky (2013: 252) works with the basic binary opposition between quantity and quality in the intervals with regard to 'number,' introduced at 17c11-e3, finding that it is "difficult to know for sure whether Plato intended pitch height or depth to be numerically quantifiable, if indeed this is the right way to read this passage." Horky's claim is that the *Timeaus* offers a 'third way' between two interpretive responses here. Namely, that the number of notes is in fact limited quantitively *because it is shown to repeat (*252). Horky (2013: 254) this way: "It is pretty clear that Plato's description of the generation of a complex entity such as "health" or "music" that is made up of a factor that limits the unlimited in the *Philebus* is coordinate with other late presentations of the cosmic generation of entities marked by the qualities of being concordant and symmetrical, especially

what is found in Plato's *Timaeus*." Horky (2013: 255) here cites what he calls the "dialectical tenor" of Timaeus's description (at 80b2-8, translation is Horky's following Barker 1989) of συμφωνίαι in which slower sounds "catch up [to swifter sounds] they do not disturb their motion by imparting a different one…[but]…by attaching [to one another] in a similarity [ὁμοιότητα προσάψαντες], they are blended together into a single effect, derived from the high and the low [μίαν ἐξ ὀξείας καὶ βαρείας συνεκεράσαντο πάθην]. Hence they provide pleasure to people of poor understanding, and delight to those of good understanding, because of the imitation of the divine *harmonia* that comes into being in mortal movements."

For Horky (2013: 256), and following Barker, "the Demiurge's activity of division is based on the classification of means and proportions advanced by Archytas in Fragment 2.189. It remains only a speculation, but we can nevertheless see Hippasus of Metapontum hiding in the background of Archytas's classification, informing both Archytas's approaches to music theory and Plato's approaches to generation of the world-soul." This then manifests in the spatiotemporal "pause", by which Horky (2013: 256) means "the assimilation of one thing to another that had previously been different, or alternatively to the placing of things in opposition in a relationship of concordance (256)." This pause occurs in dialectical relationships as well as physics and metaphysics, which Horky relates to Plato's theorizing about the "monochord". Here Horky (2013: 258) makes fascinating use of Mitchell Miller's claim that Plato is thinking of the so-called 'Dorian mode' (when in *Tim 35b4-36b6* the Demiurge dividing universe with Pythagorean ratios) in order to show that if a two-octave stretch of string were divided in such a way the seven-notes of the octave would be *repeated once*, there would thus be a *repeating order* in the continuum. For Horky (2013: 258), Plato could thus describe this as a limit on the unlimited continuum: "Plato might describe this activity as bringing a limit based in "due measure" to bear on what is otherwise unlimited, the continuum that lacks proper measurement and is thereby neither "commensurate" nor "concordant" without it. Dialectic, cosmology, and metaphysics are thus understood in Plato's *Timaeus* and *Philebus* to conform to the rules of mathematics, both harmonic and calculative, *and* are understood to be informed by empirical observation. (258)"

Here—in this final conclusion about dialectic, cosmology and metaphysics are seen as *both* the result of a calculative and harmonic *and* informed by empirical observation—we see the singular value of both Horky's "controversial thesis" about Plato as an inheritor and extender of the tradition of mathematical Pythagoreanism and his "comprehensive analysis" of the all the sources for that tradition, both antedating and postdating Plato. In its comprehensiveness and its precision, this concluding claim seems to me emblematic of the success of Horky's work, and why it will be a standard text for those interested in Plato and in Pythagoreanism , and especially for those of us interested in their interconnection.

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