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# Ptolemy's Defense of Theoretical Philosophy<sup>1</sup>

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Claudius Ptolemy is rightly remembered for his scientific contributions, and his *Mathematical Composition* – hereafter referred to by its more common title, the *Almagest*, from its Latinized Arabic moniker – stands as one of the most influential texts in the history of science. In the *Almagest*, Ptolemy presents his astronomical models, which account for the several movements of the stars and planets, including the sun and moon. The content of the *Almagest*, however, is not strictly scientific – or, rather, mathematical, as Ptolemy characterizes astronomy as a branch of mathematics. The introduction to the text, *Almagest* 1.1, is manifestly philosophical. It outlines the philosophical theories underlying Ptolemy's astronomy, and, moreover, it epitomizes Ptolemy's general philosophical position. In *Almagest* 1.1, Ptolemy positions himself as an expert on philosophy, he defines and distinguishes the parts of philosophy, and he defends the ethical benefits of studying mathematics and astronomy in particular.

Although Ptolemy's philosophical system is generally understudied, this paper will investigate a nearly unexplored area: Ptolemy's definitions and evaluations of theoretical and practical philosophy.<sup>2</sup> An examination

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<sup>1</sup> I would like to thank Alain Bernard for encouraging me to write this article and acknowledge Thomas Bénatouil and Brad Inwood, as well as Alain Bernard, for providing me with exceedingly helpful comments during the writing process.

<sup>2</sup> Franz Boll summarizes Ptolemy's descriptions in *Almagest* 1.1 of theoretical and practical philosophy in his "Studien über Claudius Ptolemäus: Ein Beitrag zur Geschichte der griechischen Philosophie und Astrologie," *Jahrbücher für classische Philologie*, supplement 21 (1894), 68. Liba Taub discusses the *Almagest*'s definitions of theoretical and practical philosophy in *Ptolemy's Universe: The Natural Philosophical and Ethical Foundations of Ptolemy's Astronomy* (Chicago: Open Court 1993), 19–21, 35–37. Alain Bernard addresses the relationship between theoretical and practical philosophy

of this topic not only sheds light on Ptolemy's justification for spending more of his free time engaged in theoretical rather than practical philosophy – and more time in mathematics than the other theoretical sciences – but also encapsulates Ptolemy's reliance on and reaction to contemporary philosophical trends, specifically the Middle Platonic and nascent Aristotelian commentary traditions. Ptolemy rarely cites his sources, let alone his philosophical ones. However, by drawing connections among the philosophical statements in Ptolemy's texts and from them to the texts of contemporary philosophers, as well as to the authorities on which they drew, I hope to both elucidate Ptolemy's philosophical ideas pertaining to the relationship between theoretical and practical philosophy and demonstrate his deep embeddedness in the contemporary philosophical context.

In the first lines of the *Almagest*, Ptolemy establishes his expertise in philosophy by stating a criterion by which to judge who the legitimate philosophers are. He states, 'It seems to me that the legitimate philosophers, Syrus, were entirely right to have distinguished the theoretical part of philosophy from the practical.'<sup>3</sup> By asserting that legitimate philosophers – as opposed to, presumably, illegitimate ones – distinguish the theoretical part of philosophy from the practical part, Ptolemy positions himself on the side of the legitimate philosophers. He, like the legitimate philosophers, differentiates the theoretical part of philosophy from the practical part.

As is well known, this distinction between the theoretical and the practical, while prefigured in Plato, emerges fully articulated in Aristotle's texts. Ptolemy recognizes his philosophical heritage from Aristotle by citing Aristotle's name in connection with the tripartite division of theoretical philosophy: 'For Aristotle divides the theoretical [part of philosophy], too, very fittingly, into three primary genera, the physical, mathematical, and theological.'<sup>4</sup> In his corpus, Ptolemy cites only two philosophers: Aristotle, here in *Almagest* 1.1 as well as in the *Planetary Hypotheses*, and Plato, in the *Planetary Hypotheses*.<sup>5</sup> Ptolemy cites Aristotle and Plato in the *Planetary Hypotheses* in order to reject and support, respectively, elements of their cosmological models. The citation of Aristotle in *Almagest* 1.1,

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for Ptolemy in "The significance of Ptolemy's *Almagest* for its early readers," *Revue de Synthèse* 131, no. 4 (Dec. 2010) 495–521.

<sup>3</sup> Ptolemy *Almagest* 1.1, H4. Jaap Mansfeld notes that Syrus is Ptolemy's 'standard dedicatee' and that variations of Ptolemy's phrase οἱ γνησίως φιλοσοφῆσαντες are common in ancient philosophical texts, from Plato to Proclus. See *Prolegomena Mathematica: From Apollonius of Perga to Late NeoPlatonism* (Brill: Leiden 1998), 66, 67 note 227.

<sup>4</sup> Ptolemy *Almagest* 1.1, H5

<sup>5</sup> Ptolemy *Planetary Hypotheses* 2.4–5, H113.31, H114.15, 26

therefore, is Ptolemy's only citation of a philosopher in an explicitly philosophical context.

Because Ptolemy cites Aristotle in relation to the tripartite division of theoretical philosophy, one might assume that Ptolemy drew his definitions of the theoretical sciences, as well as his distinction between theoretical and practical philosophy, from *Metaphysics* E 1 and K 7. In her book *Ptolemy's Universe*, however, Liba Taub demonstrates that the language Ptolemy uses to discuss the theoretical sciences is not Aristotle's.<sup>6</sup> Indeed, a thorough analysis of Ptolemy's definitions of the theoretical sciences reveals that he drew from several of Aristotle's texts, not only the *Metaphysics*.<sup>7</sup> Regardless of which texts Ptolemy employed as his sources, in *Almagest* 1.1, he recognizes Aristotle's authority over the tripartite division of theoretical philosophy.

Yet, Ptolemy does not cite Aristotle when differentiating the theoretical and practical parts of philosophy, and he omits the productive part, which Aristotle includes in *Metaphysics* E 1, 1025b25, and K 7, 1064a16–17, when distinguishing practical, productive, and theoretical understanding. This omission could call into question Ptolemy's appropriation of Aristotle's trichotomy of the types of understanding. Nevertheless, as just mentioned, Ptolemy drew philosophical ideas from several of Aristotle's texts, and *Almagest* 1.1 is manifestly not a commentary on the *Metaphysics*. In addition, Aristotle occasionally omits productive understanding when differentiating the theoretical and practical, and therefore, it is possible that Ptolemy derived his definitions of theoretical and practical philosophy from Aristotle's corpus more generally. Furthermore, the juxtaposition of the theoretical and practical became paradigmatic in ancient philosophy, and the omission of the productive in the dichotomy of the theoretical and practical was common in post-Hellenistic philosophy.<sup>8</sup>

Whether or not Ptolemy read Aristotle's texts, or only sources derived from them, in the *Almagest*, Ptolemy joins Aristotle in the tradition of defending the contemplative life over the life of action.<sup>9</sup> In the first lines of the *Almagest*, Ptolemy launches his defense by asserting a distinction between theoretical and practical philosophy: 'For even if the practical

<sup>6</sup> Taub, 21–30

<sup>7</sup> See Jacqueline Feké, *Ptolemy in Philosophical Context: A Study of the Relationships Between Physics, Mathematics, and Theology* (Ph.D. diss., University of Toronto 2009).

<sup>8</sup> Jaap Mansfeld corroborates my interpretation here: "The parallels in ps.Plutarch and Diogenes show that by Ptolemy's time [the bipartite division] had come to be seen as a standard Aristotelian view" (67 note 227).

<sup>9</sup> For instance, Aristotle defends the contemplative life in the *Protrepticus*. See D. S. Hutchinson and Monte Ransome Johnson, "Authenticating Aristotle's *Protrepticus*," *Oxford Studies in Ancient Philosophy* 29 (2005) 193–294.

[part of philosophy], before it is practical, happens to be theoretical (καὶ γὰρ εἰ συμβέβηκε καὶ τῷ πρακτικῷ πρότερον αὐτοῦ τούτου θεωρητικῷ τυγχάνειν), nevertheless one can see that there is a great difference between the two ...'.<sup>10</sup> In this relatively short but complex statement, Ptolemy claims that even if practical philosophy is reducible to, or dependent on, theoretical philosophy, a great difference distinguishes them.

Ptolemy reveals himself here to be engaging in a contemporary debate over the relationship between theoretical and practical philosophy. This debate seems to have evolved from post-Hellenistic attempts to synthesize Aristotle's and Plato's accounts of the relationship between theoretical and practical philosophy. While Aristotle's texts establish an absolute distinction between the two, Plato's corpus does not consistently distinguish them. At times, Plato indicates that theoretical and practical philosophy are unconditionally distinct, as in *Gorgias* 500c–d, where Socrates portrays the political and philosophical lives as disparate, and in *Statesman* 258d–e, where Socrates distinguishes practical (πρακτικήν) and theoretical (γνωστική) knowledge. On the other hand, Plato's texts also depict practical knowledge as dependent on theoretical knowledge. At *Republic* VI, 500d, for instance, Socrates argues that one should apply what one sees when contemplating the divine to shaping one's and others' characters:

And if he should come to be compelled to put what he sees there into people's characters, whether into a single person or into a populace, instead of shaping only his own, do you think he will be a poor craftsman of moderation, justice, and the whole of popular virtue? ... And when the majority realize that what we are saying about the philosopher is true, will they be harsh with him or mistrust us when we say that the city will never find happiness until its outline is sketched by painters who use the divine model?<sup>11</sup>

Molding the city according to the divine model, the philosopher shapes the city into its most happy and just state; after contemplating the divine, the philosopher is able to rule the city in the best possible way. In other words, practical philosophy is dependent on theoretical philosophy. The analogy of the cave, at *Republic* VII, 514a–17a, reiterates this dependency. The individual who has left the cave and seen the sun is compelled to return to the cave. Correspondingly, the philosopher who has contemplated the Forms and obtained knowledge is qualified and compelled to rule Kallipolis. At *Republic* VII, 540a–b, Socrates explains that at the age of 50, individuals who have succeeded thus far in both practical and scientific matters (ἐν ἔργοις τε καὶ ἐπιστήμας) must proceed to study the Forms

<sup>10</sup> Ptolemy *Almagest* 1.1, H4, translation after G.J. Toomer (London: Duckworth 1984).

<sup>11</sup> Plato *Republic* VI, 500d, trans. G. M. A. Grube, rev. C. D. C. Reeve (Indianapolis: Hackett Publishing Company, Inc. 1997).

and contemplate the Good. Thereafter, they use the Good as the paradigm for the city they are compelled to rule:

And once they've seen the good itself, they must each in turn put the city, its citizens, and themselves in order, using it as their model. Each of them will spend most of his time with philosophy, but, when his turn comes, he must labor in politics and rule for the city's sake, not as if he were doing something fine, but rather something that has to be done (οὐχ ὡς καλόν τι ἀλλ' ὡς ἀναγκαῖον πράττοντας).<sup>12</sup>

The rulers of Kallipolis mold the city according to the divine model they have already contemplated. Hence, Plato occasionally depicts practical philosophy as dependent on theoretical philosophy.

The discrepancy between Plato's and Aristotle's corpuses on whether practical philosophy is dependent on or independent of theoretical philosophy seems to have produced a debate, for which we have evidence from the second century CE. Again, Ptolemy asserts that, despite the possible dependency of the practical part of philosophy on the theoretical, a great difference separates the two. Correspondingly, in the first lines of his commentary on the *Nicomachean Ethics*, Aspasius, a contemporary of Ptolemy, writes, "The treatment of ethics and especially politics is prior (προτέρα) to theoretical philosophy (θεωρητικῆς φιλοσοφίας) in respect to necessity but subsequent (ὕστερα) in respect to value."<sup>13</sup> Later in the text, when defining action (πραῖξις), Aspasius identifies ethics and politics as practical:

But activity in accord with an active science (ἡ κατὰ πρακτικὴν ἐπιστήμην) is also called "action." In general, all those arts are called "active" which have no other product apart from an action, for example dancing and flute-playing. But more particularly the political and ethical arts are called active (ἰδίως δὲ ἡ τε πολιτικὴ καὶ ἠθικὴ πρακτικαὶ λέγονται), and activities that concern what is noble and shameful are called actions.<sup>14</sup>

Evaluating the relationship between theoretical and practical philosophy, Aspasius argues that ethics and politics, arts representative of practical philosophy, are prior or subsequent to theoretical philosophy in respect to necessity or value.

Ptolemy and Aspasius seem to be engaging in a common, second-century debate over the relationship between theoretical and practical philosophy. Of note is that both Ptolemy and Aspasius discuss theoretical and practical philosophy rather than theoretical and practical understanding, or διάνοια, as Aristotle does in *Metaphysics* E 1 and K 7. Moreover, both use the term πρότερος when addressing the relationship between theoretic-

<sup>12</sup> Ibid., VII, 540a-b.

<sup>13</sup> Aspasius *In ethica Nicomachea commentaria* 1.2–4, translation after David Konstan (London: Duckworth 2006).

<sup>14</sup> Ibid., 3.19–23, trans. David Konstan.

cal and practical philosophy. According to Aspasius, theoretical and practical philosophy are prior (προτέρα) or subsequent to one another in various respects but remain independent. Therefore, Aspasius adheres to what I will call, for the purposes of this paper, the Aristotelian model, where theoretical and practical philosophy are independent of one another. For Ptolemy, the point of concern is the potential dependency of practical on theoretical philosophy – that before (πρότερον) practical philosophy is practical, it is theoretical. Ptolemy addresses this possible dependency and then asserts that a great difference separates them. Thus, Ptolemy admits the possible legitimacy of what I will call the Platonic model – where practical philosophy is dependent on theoretical philosophy – but thereafter appears to champion the Aristotelian model.

Ptolemy takes a similar approach to a philosophical debate in his text *On the Kritêrion and Hêgemonikon*.<sup>15</sup> In *On the Kritêrion*, Ptolemy eschews philosophers' quibbles over terminology. He calls these quibbles 'battles over words (φωνομαχίαις)', of which some are 'meddlesome tattle (ἄδολεσχίας πολυπράγμονος)'.<sup>16</sup> He explains that these debates are useful only inasmuch as they include investigations of the objects signified by the debated terminology. Like Galen – who also renounces terminological disputes and claims that they should be the subject of grammarians and orators rather than physicians and natural philosophers<sup>17</sup> – Ptolemy aims to utilize terms that reflect the nature of the objects signified. He explains, 'Such a proposal removes dispute about nomenclature from our discussions but keeps our enquiry into the things underlying the words intact and free from distractions.'<sup>18</sup> In keeping with this emphasis on ontology rather than terminology, Ptolemy asserts the following when defining the soul in contrast to the body:

<sup>15</sup> While some historians have doubted the authenticity of *On the Kritêrion and Hêgemonikon*, the manuscript tradition explicitly names Ptolemy as the text's author, and I consider Alexander Jones' argument in support of its authenticity to be persuasive. See our joint article: Jacqueline Feke and Alexander Jones, "Ptolemy," *The Cambridge History of Philosophy in Late Antiquity*, vol. 1, ed. Lloyd Gerson (Cambridge: Cambridge University Press 2010) 197–209.

<sup>16</sup> Ptolemy *On the Kritêrion and Hêgemonikon*, La9, trans. Liverpool/Manchester Seminar on Ancient Philosophy (Liverpool: Liverpool University Press 1989).

<sup>17</sup> Galen *On Critical Days* 9.789. R.J. Hankinson and Ben Morison disagree on how to interpret this passage: R.J. Hankinson, "Usage and abuse: Galen on language," *Language, Companions to Ancient Thought*, vol. 3, ed. Stephen Everson (Cambridge: Cambridge University Press 1994) 166–187, 171; Ben Morison, "Language," *The Cambridge Companion to Galen*, ed. R.J. Hankinson (Cambridge: Cambridge University Press 2008) 116–156, 130–131.

<sup>18</sup> Ptolemy *On the Kritêrion and Hêgemonikon*, La10, trans. Liverpool/Manchester Seminar on Ancient Philosophy.

This is not the place to bother whether we ought also to call this part “body.” As we have said, we are not at present discussing the names to give to the natural objects before us; what we are investigating is the difference (διαφοράν) between these things, a difference which we recognize as being unchangeable in reality even if one alters the nomenclature a thousand times, or at one time says that the soul is incorporeal, following those who lay it down that what is known by sense perception is to be called “body,” and at another time that it is body, following those who define body as that which can act and be acted upon. The difference between the natures of the said entities being of this kind, there would be universal agreement that it is by the soul that we think and not by the body. And we would also acknowledge that it is by the soul, not the body, that we make our sensory and all other movements, if we took note too of the quantitative aspect of what happens when they separate.<sup>19</sup>

In this passage, Ptolemy explains that philosophers dispute whether the soul is alike or different in kind from the body, and he insists that the soul is different from the body, as the soul causes human beings to think, and the body produces all other movements in human beings. This pattern of recognizing a debate over whether one object is reducible to another and then asserting a difference, διαφορά, between them also appears in *Almagest* 1.1. Ptolemy recognizes the debate over whether, as he frames it, practical philosophy is dependent on theoretical philosophy, and he asserts a great difference, διαφορά, between the two.

In the case of theoretical and practical philosophy, the διαφορά is how one attains virtues in relation to each part of philosophy. After Ptolemy asserts that a great difference separates theoretical and practical philosophy, he gives an account of the difference:

... in the first place, it is possible for many people to possess some of the moral virtues (ἠθικῶν ἀρετῶν) even without being taught (μαθήσεως), whereas it is impossible to obtain the theory of the universe (τῆς δὲ τῶν ὅλων θεωρίας) without instruction (διδασκαλίας); furthermore, one derives most benefit in the first case [practical philosophy] from continuous practice in actual affairs (ἐκ τῆς ἐν αὐτοῖς τοῖς πράγμασι συνεχούς ἐνεργείας), but in the other [theoretical philosophy] from making progress in the theories (ἐκ τῆς ἐν τοῖς θεωρήμασι προκοπῆς).<sup>20</sup>

In the case of practical philosophy, some of the moral virtues are attainable without instruction, and they derive mainly from continuous activity; concerning theoretical philosophy, theoretical apprehension of the universe is dependent upon instruction, and most benefit in theoretical philosophy consists in progress in theories.

Following Franz Boll, Liba Taub points to the influence of Aristotle's *Nicomachean Ethics* 1103a on Ptolemy's differentiation between theoretic-

<sup>19</sup> Ibid., La11–12, translation after Liverpool/Manchester Seminar on Ancient Philosophy.

<sup>20</sup> Ptolemy *Almagest* 1.1, H4, translation after G. J. Toomer.

cal and practical philosophy.<sup>21</sup> Here, at the beginning of Book 2 of the *Nicomachean Ethics*, Aristotle divides virtue in two:

Virtue being, as we have seen, of two kinds, intellectual and moral (Διττῆς δὴ τῆς ἀρετῆς οὐσης, τῆς μὲν διανοητικῆς τῆς δὲ ἡθικῆς), intellectual virtue is for the most part both produced and increased by instruction (διδασκαλίας), and therefore requires experience and time; whereas moral virtue is the product of habit (ἔθους), and has indeed derived its name, with a slight variation of form, from that word.<sup>22</sup>

Like Ptolemy's practical philosophy, which depends on continuous activity, Aristotle's moral virtue requires habit; just as Ptolemy's theoretical philosophy progresses by instruction, so, too, Aristotle's intellectual virtue relies on instruction.

Nevertheless, just as Ptolemy did not take his definitions of the three theoretical sciences directly from the *Metaphysics*, neither is it likely that he simply reinterpreted the *Nicomachean Ethics*. Indeed, Ptolemy's definitions of theoretical and practical philosophy join the ancient philosophical tradition of distinguishing virtues according to their attainment by either instruction or habit. Again, Ptolemy distinguishes theoretical and practical philosophy according to their relation with either theory or moral virtues, cultivated by instruction or activity. Similarly, Aspasius points to learning as the source of intellectual virtues and training or habit as the source of ethical virtues, and, when commenting on *Nicomachean Ethics* 1103a, he affirms Aristotle's distinction between the two sets of virtues.<sup>23</sup> Moreover, Alcinous – a likely contemporary of Ptolemy, and the author of the *Didaskalikos*, or *Handbook of Platonism* – distinguishes between the rational and affective parts of the soul by arguing that the former is cultivated through instruction (διδασκαλία) and the latter through habitual practice (τῆς ἔθους ἀσκήσεως).<sup>24</sup> For influences on this passage in Alcinous' text, John Dillon points to both *Nicomachean Ethics* 1103a14–18 and *Republic* VII, 518d–e.<sup>25</sup> In the latter, Socrates characterizes education as the craft that turns the soul toward the good and depicts habit and practice as what cultivate the virtues of the soul that are akin to the body. Correspondingly, in *Phaedo* 82a–b, Socrates remarks that popular and political virtue (τὴν δημοτικὴν καὶ πολιτικὴν ἀρετὴν) is developed from habit and care (ἔθους τε καὶ μελέτης), and, in *Phaedo* 82d–83c, he states that philosophy

<sup>21</sup> Boll, 70; Taub, 19–20.

<sup>22</sup> Aristotle *Nicomachean Ethics* 1103a14–18, translation after H. Rackham (Cambridge, MA: Harvard University Press 1962).

<sup>23</sup> Aspasius *In ethica Nichomachea commentaria* 25.18–26, 37.1–8.6.

<sup>24</sup> Alcinous *Didaskalikos* 24.1.

<sup>25</sup> John Dillon, *Alcinous: The Handbook of Platonism* (Oxford: Clarendon Press 1993), 151.

teaches the lovers of learning (φιλομαθείς) that their souls, imprisoned in their bodies, guide them to see the intelligible and invisible. Thus, Aristotle's distinction between intellectual and moral virtues has a precedent in Plato's writings, and Middle Platonic philosophers, like Alcinous, appropriated these sets of ideas.

What is interesting in Ptolemy's account, however, is not only that he distinguishes between the intellectual and moral virtues according to whether they are gained by instruction or habit but that he also applies this distinction between the virtues to the differentiation of theoretical and practical philosophy. Yet, even this application has a precedent in Middle Platonic philosophy. For instance, Plutarch, who lived from the first to the second century CE, distinguished the parts of philosophy by their dependence on teaching or habit. Like many other Middle Platonic philosophers prior to and contemporary with Ptolemy, Plutarch divided philosophy into three categories – physics, logic, and ethics – and he distinguished logic and ethics according to their relation to learning and habit: καλῶ δὲ λόγον μὲν τὴν μάθησιν, ἔθος δὲ τὴν ἄσκησιν.<sup>26</sup> Hence, Ptolemy's application of the distinction between the sets of virtues to the differentiation of the parts of philosophy has a precedent in Middle Platonic philosophy. What is unusual, and perhaps unique, with Ptolemy's account is his specific blending of these Middle Platonic trends. Ptolemy uses instruction and habit to distinguish theoretical and practical philosophy.

Of significance to this analysis is Ptolemy's enumeration and definition of the virtues in Book 3 chapter 5 of the *Harmonics*, his text on music theory, which he likely published before the *Almagest*.<sup>27</sup> In the *Harmonics*, Ptolemy offers three alternative models of the human soul. Each is tripartite, and the names of the three parts in the first model are Aristotelian, in the second, they are Platonic, and, in the third, they represent a synthesis of the previous two. With each model, Ptolemy makes an analogy between the parts of the soul and the octave and concords in music. Just as the octave has seven species (εἶδη), the concord of the fifth has four species, and the concord of the fourth has three species, so, too, in the case of the Platonic model, the rational part (λογιστικόν) of the soul has seven species, the spirited part (θυμικόν) has four species, and the appetitive part

<sup>26</sup> Plutarch *de Liberis Educandis* 2a10–11.

<sup>27</sup> The dating of the *Harmonics* before the *Almagest* depends on the relationship of *Harmonics* 3.14–16 to the *Canobic Inscription*, and Ptolemy must have written the *Canobic Inscription* before the *Almagest* because he corrects numerical values from the former in the latter. See N. M. Sverdlow, "Ptolemy's *Harmonics* and the 'Tones of the Universe' in the *Canobic Inscription*," *Studies in the History of the Exact Sciences in Honour of David Pingree* (Leiden: Brill 2004) 137–80, 175.

(ἐπιθυμητικόν) has three species.<sup>28</sup> In the case of Ptolemy's Platonic model, these species of the soul are species of virtue.

Before listing the individual virtues, Ptolemy defines virtue in general as a melodiousness (ἐμμελές) of souls and vice as an unmelodiousness (ἐκμελές): '... virtue among souls is a melodiousness belonging to them, while vice is an unmelodiousness. A feature common to both classes is the attunement (ἡρμοσμένον) of their parts, when they are in a condition conforming to nature, and lack of attunement (ἀνάρμοστον) when they are in a condition contrary to nature.'<sup>29</sup> In accordance with both the Platonic and Stoic traditions, Ptolemy describes the relations between the parts of the soul in harmonic terms.<sup>30</sup> Thereafter, he lists the species of virtue corresponding to each part of the soul. First, just as in music the concord of the fourth has three species, the appetitive part of the soul has three species of virtue: moderation (σωφροσύνη), self-control (ἐγκράτεια), and shame (αἰδώς). Second, just as the concord of the fifth has four species, the spirited part of the soul has four species of virtue: gentleness (πραότης), fearlessness (ἀφοβία), courage (ἀνδρεία), and steadfastness (καρτερία). Third, just as the octave has seven species, the rational part of the soul has seven species of virtue: acuteness (δξύτης), cleverness (εὐφύια), shrewdness (ἀγχίνοια), judgment (εὐβουλία), wisdom (σοφία), prudence (φρόνησις), and experience (ἐμπειρία). By providing a list of virtues, Ptolemy follows a typically Hellenistic trend, which has a precedent in Aristotle's corpus.

By ascribing virtues to distinct parts of the soul, as opposed to the soul in its entirety, however, Ptolemy joins the Middle Platonic tradition. Salvatore R. C. Lilla notes in his monograph, *Clement of Alexandria: A Study in Christian Platonism and Gnosticism*, that Clement, Philo, Alcinous, and Apuleius 'ascribe a particular virtue to each part of the soul, thus forming a piece of coherent doctrine which remained the same throughout Middle Platonism and was also adopted, without any noticeable variation, even by exponents of Neoplatonism such as Plotinus and Porphyry.'<sup>31</sup> One must expand this tradition to include pseudo-Andronicus' *de Passionibus*.<sup>32</sup> Lilla

<sup>28</sup> Plato uses the terms λογιστικόν, θυμοειδές, and ἐπιθυμητικόν in *Republic* IV, 440e-1a. The use of θυμικόν instead of θυμοειδές for the spirited part of the soul seems to have been common in the second century. Alcinous, too, uses θυμικόν in *Didaskalikos* 17.4, 29.1.

<sup>29</sup> Ptolemy *Harmonics* 3.5, D97, translation after Andrew Barker (Cambridge: Cambridge University Press 1989).

<sup>30</sup> See A.A. Long, "The harmonics of Stoic virtue," *Stoic Studies* (Cambridge: Cambridge University Press 1996) 202–23.

<sup>31</sup> Salvatore R.C. Lilla, *Clement of Alexandria: A Study in Christian Platonism and Gnosticism* (Oxford: Oxford University Press 1971), 80.

<sup>32</sup> A. Glibert-Thirry discusses the dating and authorship of *de Passionibus* in the introduction to his critical edition. He concludes simply that the text situates the author

notes that the philosophers he lists assign φρόνησις to the λογιστικόν, ἀνδρεία to the θυμοειδές, and σωφροσύνη to the ἐπιθυμητικόν. Pseudo-Andronicus, too, assigns φρόνησις to the λογιστικόν and σωφροσύνη to the ἐπιθυμητικόν, but he allocates πραότης, rather than ἀνδρεία, to the θυμοειδές.<sup>33</sup> While these philosophers differ on which virtue they assign to the spirited part of the soul, Ptolemy's account coheres with both sets, as he assigns more than one virtue to each part of the soul. Indeed, it is this point that distinguishes Ptolemy's account. Although other Middle Platonic or Peripatetic philosophers ascribe only one virtue to each part of the soul, Ptolemy assigns several virtues to each part. This decision is not only untraditional, but, in the second century, it would have been controversial. After all, in a polemic against Chrysippus, Galen assigns a single virtue to each part of the soul and argues that only one virtue can belong to each part.<sup>34</sup> Yet, it may be Galen's historical adversary that influenced Ptolemy's model. Holding the soul to be a unity, the Stoic tradition assigned many virtues to the soul. Ptolemy's association of several species of virtue with each part of the soul may be a confluence of Stoic and Platonic theories, in this case of a Stoic model of the relationships among the soul's virtues and a Platonic tripartition of the soul.

In addition to listing the species of virtue, Ptolemy provides short definitions of each virtue. The closest philological match to these definitions is found in the pseudo-Platonic *Definitions*, composed during the fourth century and most likely developed incrementally over the course of centuries.<sup>35</sup> Franz Boll first drew attention to the potential influence of the *Definitions* on Ptolemy's list of virtues, and Ingemar Düring later agreed that not only does a great deal of overlap exist between the two texts, but, furthermore, this overlap cannot be accidental.<sup>36</sup> Every single virtue that Ptolemy lists in the *Harmonics* appears in the *Definitions*. Many of the virtues have their own definitions, but those virtues that are not defined in the *Definitions* are still included in the definitions of other terms. For example, acuteness (ὀξύτης) does not have its own definition, but it – like cleverness (εὐφύλια), which is defined in the *Definitions* – is used to define shrewdness (ἀγχίνοια), another virtue of Ptolemy's rational part of the

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within a current of Hellenistic philosophy characterized by a mixture of Stoic, Peripatetic, and Platonic elements: *Pseudo-Andronicus de Rhodensibus ΠΕΡΙ ΠΑΘΩΝ* (Leiden: E. J. Brill 1977), 34.

<sup>33</sup> Pseudo-Andronicus *de Passionibus* 2.1.3, 4.4.1, 6.1.1.

<sup>34</sup> Galen *de Placitis Hippocratis et Platonis* 7.1.24–32.

<sup>35</sup> D. S. Hutchinson discusses the *Definitions*' authorship in *Plato: Complete Works*, ed. John M. Cooper, assoc. ed. D. S. Hutchinson (Indianapolis: Hackett Publishing Company 1997), 1677–8.

<sup>36</sup> Boll, 106; Ingemar Düring, *Ptolemaios und Porphyrios über die Musik* (Göteborg: Elanders Boktryckeri Aktiebolag 1934), 271

soul.<sup>37</sup> Moreover, obvious terminological overlap exists between several of the definitions pseudo-Plato – the author(s) of the *Definitions* – and Ptolemy provide. For instance, according to Ptolemy, wisdom (σοφία) has to do with the theoretical (θεωρητικόν), and according to pseudo-Plato, it is ‘non-hypothetical knowledge; knowledge of what always exists; knowledge which contemplates (θεωρητική) the cause of beings.’<sup>38</sup> Similarly, both Ptolemy and pseudo-Plato define gentleness (πραότης) in relation to anger (ὀργή)<sup>39</sup> and courage (ἀνδρεία) in relation to dangers (κίνδυνοι).<sup>40</sup> In addition, both Ptolemy and pseudo-Plato use the phrase ‘endurance of hardships (ὑπομονή πόνων)’ in their accounts of steadfastness (καρτερία). Ptolemy defines it as ‘the endurance of hardships (ταῖς ὑπομοναῖς τῶν πόνων),’<sup>41</sup> and pseudo-Plato describes it as ‘endurance (ὑπομονή) of pain for the sake of what is admirable; endurance of hardships (ὑπομονή πόνων) for the sake of what is admirable.’<sup>42</sup> Concerning Ptolemy’s virtues of the appetitive part of the soul, both Ptolemy and pseudo-Plato define moderation (σωφροσύνη) in relation to pleasures (ἡδοναί),<sup>43</sup> characterize self-control (ἐγκράτεια) as a type of enduring (ὑπομονή),<sup>44</sup> and use forms of the term εὐλάβεια to define shame (αἰδώς).<sup>45</sup> Hence, a considerable amount of textual overlap exists between Ptolemy’s definitions of the virtues and their definitions in the pseudo-Platonic *Definitions*. It is possible, of course, that Peripatetic and Stoic definitions of the virtues influenced Ptolemy’s definitions.<sup>46</sup> However, the textual correspondences between Ptolemy’s and pseudo-Plato’s accounts suggest a Platonic source. Ptolemy may have used a Platonic handbook, such as the *Definitions*, when composing this section of the *Harmonics*, or perhaps he simply drew these definitions from his earlier education. Either way, it is fitting that Ptolemy should use Platonic definitions of the virtues when delineating the species in a Platonic model of the human soul.

After Ptolemy presents his models of the parts and species of the human soul in *Harmonics* 3.5, in the following chapter, he describes the gen-

<sup>37</sup> Pseudo-Plato *Definitions* 412e4–5.

<sup>38</sup> Ibid., 414b5–6, trans. D. S. Hutchinson (Indianapolis: Hackett Publishing Company 1997).

<sup>39</sup> Ptolemy *Harmonics* 3.5, D97; Pseudo-Plato *Definitions* 412d6–7.

<sup>40</sup> Ptolemy *Harmonics* 3.5, D97; Pseudo-Plato *Definitions* 412a7.

<sup>41</sup> Ptolemy *Harmonics* 3.5, D97, trans. Andrew Barker.

<sup>42</sup> Pseudo-Plato *Definitions* 412c1–2, translation after D. S. Hutchinson.

<sup>43</sup> Ptolemy *Harmonics* 3.5, D97; Pseudo-Plato *Definitions* 411e6–7.

<sup>44</sup> Ptolemy *Harmonics* 3.5, D97; Pseudo-Plato *Definitions* 412b3.

<sup>45</sup> Ptolemy *Harmonics* 3.5, D97; Pseudo-Plato *Definitions* 412c9–10.

<sup>46</sup> Boll (106–8) emphasizes the possible influence of pseudo-Andronicus’ *de Passionibus*, in addition to the pseudo-Platonic *Definitions*, on Ptolemy’s definitions of the virtues.

era to which the species belong and the two principles (ἀρχαί) to which the genera belong. The two principles are the theoretical and the practical, and the genera are the three theoretical and three practical sciences. Ptolemy states, 'For each principle (ἀρχήν), that is, the theoretical (θεωρητικήν) and the practical (πρακτικήν), there are three genera: physical (φυσικοῦ), mathematical (μαθηματικοῦ), and theological (θεολογικοῦ) in the case of the theoretical, and ethical (ἠθικοῦ), domestic (οἰκονομικοῦ), and political (πολιτικοῦ) in that of the practical.'<sup>47</sup> As mentioned above, Ptolemy's three theoretical sciences have a precedent in Aristotle's corpus, such as in *Metaphysics* E 1, 1026a6–32, and K 7, 1064a28–b6. The practical sciences, although they recall *Eudemian Ethics* VI 8, 1141b23ff., appear only in scholastic interpretations such as Alcinous' *Didaskalikos* 3.3.<sup>48</sup> Of note is Ptolemy's separation in *Harmonics* 3.6 of the theoretical and practical sciences; Ptolemy portrays theoretical and practical philosophy as absolutely distinct. Therefore, Ptolemy's distinction of theoretical and practical philosophy in *Almagest* 1.1, as explored thus far, is consistent with Ptolemy's portrayal of theoretical and practical philosophy in *Harmonics* 3.6. Both texts depict theoretical and practical philosophy as independent of one another.

After distinguishing theoretical and practical philosophy in *Almagest* 1.1, Ptolemy defends his preference for dedicating most of his free time to theoretical philosophy:

Hence, we thought it fitting for them [viz., the legitimate philosophers], on the one hand, to order their actions according to the applications of the *phantasiai* of these (τὰς μὲν πράξεις ἐν ταῖς αὐτῶν τῶν φαντασιῶν ἐπιβολαῖς ῥυθμίζειν) in such a way as never to forget, even in ordinary affairs, to strive for a fine and well-ordered state (τὴν καλὴν καὶ εὐτακτον κατάστασιν), and, on the other hand, with leisure to devote the most time to the instruction of theories, being many and fine, but especially those particularly called mathematical.<sup>49</sup>

Given that progress in theoretical philosophy depends on instruction and the attainment of moral virtues requires activity, it is preferable for philosophers to spend more of their free time engaged in theoretical rather than practical philosophy. Nevertheless, it is imperative to explain how it is that a philosopher should guide his actions even in ordinary affairs, as is stated, as well as in practical philosophy, as is implied. According to Ptolemy, one should order his actions according to the applications of *phantasiai*.

Ptolemy's phrase – τὰς μὲν πράξεις ἐν ταῖς αὐτῶν τῶν φαντασιῶν ἐπιβολαῖς ῥυθμίζειν – is peculiar and requires unpacking. Prescribing the ordering of actions, Ptolemy uses the verb ῥυθμίζειν. This verb occurs in only one

<sup>47</sup> Ptolemy *Harmonics* 3.6, D98, translation after Andrew Barker.

<sup>48</sup> Dillon, 60.

<sup>49</sup> Ptolemy *Almagest* 1.1, H4–5.

other instance in Ptolemy's corpus, in *Tetrabiblos* 1.3. While defending the usefulness of astrology, Ptolemy champions the utility of foreknowledge:

For, in the first place, we should consider that even with events that will necessarily take place their unexpectedness is very apt to cause excessive panic and delirious joy, while foreknowledge accustoms and orders the soul (ἐθίζει καὶ ῥυθμίζει τὴν ψυχὴν) by experience of distant events as though they were present, and prepares it to accept with peace and stability whatever comes.<sup>50</sup>

In other words, knowledge of the future accustoms and orders the soul, and these processes prepare the individual for future action. Ptolemy's collocation of the verbs ἐθίζειν and ῥυθμίζειν does not seem to be accidental. The term ἐθίζει recalls the significance of habit for the development of moral virtues, which distinguish practical philosophy in *Almagest* 1.1. Here in *Tetrabiblos* 1.3, Ptolemy associates the verb ἐθίζει with ῥυθμίζει, indicating the ordering of the soul in preparation for future events. In *Almagest* 1.1, ῥυθμίζειν seems to carry the same connotation as in *Tetrabiblos* 1.3. Ptolemy uses the verb when prescribing the ordering of future actions in the sphere of practical philosophy.

Second, Ptolemy uses the term *phantasiai*. To extract what this term means in this context, one must look at Ptolemy's *On the Kritêrion and Hêgemonikon*. Among the components of Ptolemy's criterion of truth is *phantasia*, which Ptolemy defines as the mediator between sense perception and the intellect. Ptolemy explains, "To the faculty of sense perception belong both sense organs and *phantasia*. The sense organs are the bodily instruments through which contact is made with perceptible things, while *phantasia* is the impression and transmission to the intellect, whose retention and memory of the things transmitted we call conception."<sup>51</sup> Hence, in Ptolemy's theory of cognition, *phantasia* has the technical meaning of a sense impression that transmits a perception to the intellect. Ptolemy uses the plural form, *phantasiai*, later in the text when discussing the transmission of sense impressions: αἱ τῶν φαντασιῶν διαδόσεις.<sup>52</sup> In *Almagest* 1.1, the term conveys the same meaning: impressions transmitted to the intellect.

As for what Ptolemy means by the abstruse phrase ἐν ταῖς αὐτῶν τῶν φαντασιῶν ἐπιβολαῖς, one might look to a similar phrase in *Ars Rhetorica* by the third-century CE philosopher Cassius Longinus. Longinus juxtaposes memory with recollection. He defines the former as σωτηρία

<sup>50</sup> Ptolemy *Tetrabiblos* 1.3, H15, translation after F.E. Robbins (Cambridge, MA: Harvard University Press 1940).

<sup>51</sup> Ptolemy *On the Kritêrion and Hêgemonikon*, La5, trans. Liverpool/Manchester Seminar on Ancient Philosophy.

<sup>52</sup> Ptolemy *On the Kritêrion and Hêgemonikon*, La16.

φαντασιῶν or the preservation of *phantasiai*; he defines the latter as ἐπιβολή φαντασίας or the application of *phantasia*.<sup>53</sup> This translation is further supported by the use of the phrase φανταστική ἐπιβολή by Epicurus, the only other philosopher to use a phrase similar to ἐπιβολή φαντασίας before Ptolemy. In the *Letter to Herodotus*, Epicurus describes φαντάσματα, or appearances, as applications of the mind (ἐπιβολὰς τῆς διανοίας), which are criteria of truth.<sup>54</sup> In Epicurus' materialist theory of perception and cognition, these φαντάσματα represent to the mind the external object being perceived. The phrase φανταστική ἐπιβολή appears again in maxim 24 of *The Principal Doctrines*:

If you reject unqualifiedly any sense perception and do not distinguish the opinion about what awaits confirmation, and what is already present in the sense perception, and the affections, and every phantastical application of the mind (πάσαν φανταστικὴν ἐπιβολὴν τῆς διανοίας), you will also disturb the rest of your sense perceptions with your pointless opinion; as a result you will reject every criterion.<sup>55</sup>

Diogenes Laertius also uses the phrase φανταστική ἐπιβολή in Book 10 of his *Lives of Eminent Philosophers*,<sup>56</sup> and, in *Lives* 10.31, he explains that while Epicurus called sense perceptions, preconceptions, and affections criteria of truth, the Epicureans added phantastical applications of the mind to the list.<sup>57</sup> Therefore, one may attribute the concept of phantastical applications of the mind, if not to Epicurus, then at the very least to the Epicureans. Ptolemy and Cassius Longinus' employment of the phrase ἐπιβολή φαντασίας may descend from this Epicurean use.

With this notion of the applications of *phantasiai*, let us return to *Almagest* 1.1. Again, Ptolemy explains that it is fitting that the individual order his actions according to the applications of *phantasiai*. The text implies that one should perform this ordering when engaging in both practical philosophy and ordinary affairs. This description of applications of *phantasiai* that order actions may stem from Ptolemy's inclusion of the virtues in his definitions of theoretical and practical philosophy. To begin with, in the *Harmonics*, Ptolemy defines *sophia* as the virtue having to do with the theoretical and *phronêsis* as the virtue having to do with the practical: σοφία δὲ ἡ περὶ τὸ θεωρητικόν, φρόνησις δὲ ἡ περὶ τὸ πρακτικόν.<sup>58</sup> When Ptolemy contrasts theoretical and practical philosophy in *Almagest* 1.1, he may also have in mind this distinction between *sophia* and *phron-*

<sup>53</sup> Cassius Longinus *Ars Rhetorica* 572.9–12.

<sup>54</sup> Diogenes Laertius *Lives of Eminent Philosophers* 10.51.

<sup>55</sup> Ibid., 10.147, translation after Brad Inwood and L. P. Gerson (Indianapolis: Hackett Publishing Company, Inc. 1994).

<sup>56</sup> Diogenes Laertius *Lives of Eminent Philosophers* 10.50.

<sup>57</sup> Ibid., 10.31.

<sup>58</sup> Ptolemy *Harmonics* 3.5, D97.

*êsis*. In *Nicomachean Ethics* 1142a, Aristotle asserts that *phronêsis* is not *epistêmê* because it has to do with the thing to be done (πρακτόν); it has to do with the particular, which is the object of perception rather than knowledge. Moreover, he calls *phronêsis* a form of perception: ἀλλ' αὕτη μᾶλλον αἰσθησις ἢ φρόνησις, ἐκείνης δ' ἄλλο εἶδος.<sup>59</sup> This relation of *phronêsis* to perception arises in the Middle Platonic tradition, as in Plutarch's *de Animae Procreatione in Timaeo* 1025d–e and Alcinous' *Didaskalikos* 2.2. In the latter, Alcinous labels the state of the theoretical soul *phronêsis* – perhaps because of the influence of *Phaedo* 79d<sup>60</sup> – and, contrasting the practical with the theoretical life, he remarks, 'Action, on the other hand, and the active life, being pursued through the body, are subject to external hindrance, and would be engaged in when circumstances demand, by practicing the transferral to human affairs of the visions of the contemplative life (ἃ κατὰ τὸν θεωρητικὸν βίον ὁρᾶται).'<sup>61</sup> In other words, visions in accordance with the theoretical life guide actions in the practical life. For an influence on this passage, John Dillon points to *Republic* VI, 500d, which I analyze above in relation to Plato's conception of the dependency of the practical on the theoretical.<sup>62</sup> Again, Socrates argues in *Republic* VI, 500d, that the philosopher should influence the populace by putting what he sees (ὁρᾷ) in the ordered and divine into human beings' characters (εἰς ἀνθρώπων ἦθη). Both Aristotle's identification of *phronêsis* with perception and Plato's prescription to apply what one sees when studying the divine to one's and other's characters seem to inform Alcinous' relation of the theoretical and practical lives. Arguing that one should transfer to human affairs visions of the contemplative life, Alcinous describes how it is that the theoretical life may impact the practical.

Ptolemy's text seems to convey a similar meaning to Alcinous'. Although Alcinous transfers visions of the contemplative life to human affairs, Ptolemy applies *phantasiai* in his ordering of actions. Based on this similarity, two questions arise: (1) Why does Ptolemy use the term *phantasiai* rather than visions or 'that which is seen (ἃ ὁρᾶται)', which Alcinous uses? (2) Although Alcinous' visions are of the contemplative life, of what are Ptolemy's *phantasiai*, or, in other words, what does the αὐτῶν refer to in the phrase ἐν ταῖς αὐτῶν τῶν φαντασιῶν ἐπιβολαῖς? The answer to the first question is apparent from the relation of Ptolemy's phrase ἐν ταῖς αὐτῶν τῶν φαντασιῶν ἐπιβολαῖς to Cassius Longinus' definition of recollection as ἐπιβολὴ φαντασίας. Ptolemy uses *phantasiai* rather than visions because he is invoking a theory of memory similar to Aristotle's. Unlike Cas-

<sup>59</sup> Aristotle *Nicomachean Ethics* 1142a29–30.

<sup>60</sup> Dillon, 55.

<sup>61</sup> Alcinous *Didaskalikos* 2.2, trans. John Dillon (Oxford: Clarendon Press 1993).

<sup>62</sup> Dillon, 56.

sus Longinus, Ptolemy does not define recollection (ἀνάμνησις) in his texts, but he does define memory in conjunction with his definition of *phantasia* in *On the Kritêrion*.<sup>63</sup> Again, Ptolemy states, '... *phantasia* is the impression and transmission to the intellect, whose retention and memory (μνήμην) of the things transmitted we call conception.'<sup>64</sup> Ptolemy's choice to define *phantasia* and memory in conjunction with one another derives from his appropriation of Aristotle's theory of memory. According to Aristotle's *On Memory*, sense perception is of what is present to the individual; memory is of the past. Impressions of what were previously thought of or perceived, *phantasiai*, rather than sense perceptions, are the objects of memory. Therefore, by invoking *phantasiai* rather than visions, Ptolemy indicates that the philosopher applies the impressions of what he remembers, or – if one makes a stronger correlation with Cassius Longinus' text – what he recalls.

In response to the second question, I would argue that the αὐτῶν in ἐν ταῖς αὐτῶν τῶν φαντασιῶν ἐπιβολαῖς refers to the θεωρήμασι in the previous sentence.<sup>65</sup> The *phantasiai* are of *theôrêmata*, which I have translated as 'theories'. The idea that *phantasiai* may represent not only images but also theories – only metaphorically related to images – in an ancient philosophical system is a controversial claim. One might take a more orthodox position and instead ascribe the αὐτῶν to πράγμασι in the clause preceding θεωρήμασι. For instance, Toomer translates the phrase ἐν ταῖς αὐτῶν τῶν φαντασιῶν ἐπιβολαῖς as 'under the impulse of our actual ideas [of what is to be done]'.<sup>66</sup> The interpolated [of what is to be done] does not tie back directly to the πράγμασι. It interpolates a πρακτὸν into the text, rather than drawing on the potential antecedents in the previous sentence. Still, Toomer indicates that he believes the *phantasiai* represent some phenomenon related to action. However, Toomer's translation of *phantasiai* as 'actual ideas' reveals that he did not have a strong sense of Ptolemy's psychological theory, and, consequently, his translation here should not be taken as authoritative. Moreover, if Ptolemy meant the *phantasiai* to represent some phenomenon related to action, πρακτὸν or πράγμασι, why would he prescribe the application of the *phantasiai*? The application, itself, implies that the *phantasiai* represent objects different in kind from the actions being ordered. In other words, impressions of actions do not

<sup>63</sup> The only occurrence of the term 'ἀνάμνησις' in Ptolemy's corpus is in *Tetrabiblos* 4.5, H310, where the term has a technical, astrological meaning.

<sup>64</sup> Ptolemy *On the Kritêrion and Hêgemonikon*, La5, trans. Liverpool/Manchester Seminar on Ancient Philosophy.

<sup>65</sup> I must thank Alain Bernard for bringing to my attention the possible connection between these two terms in *Almagest* 1.1.

<sup>66</sup> Ptolemy *Almagest* 1.1, H5, trans. G. J. Toomer.

order actions; impressions of higher-order phenomena, such as *theôrêmata*, order actions.

In her analysis of Aristotle's *On Memory*, Martha Nussbaum champions a similar claim as mine in her analysis of Aristotle's psychology. According to Nussbaum, Aristotle's *phantasiai* may occasionally represent phenomena that are only metaphorically pictorial. At *On Memory* 450b11ff., for instance, Aristotle discusses the nature of what one remembers. He repeatedly mentions the contemplation (θεωρεῖν) of images, and, at 450b26, he juxtaposes θεωρημα with φάντασμα: 'Just in the same way we have to conceive that the image (φάντασμα) within us is both something in itself and relative to something else. In so far as it is regarded in itself, it is only an object of contemplation or an image (θεωρημα ἢ φάντασμα) ...'.<sup>67</sup> Nussbaum notes that Aristotle most likely did not consider the θεωρημα in this passage and the lines that follow to be pictorial. She concludes, 'Aristotle seems to admit here that memory may not always work through quasi-pictures, but might consist in regarding a non-pictorial thought as referring to something in the past'.<sup>68</sup> This claim is controversial, as Aristotle maintains that all thought depends on *phantasiai*, and the conventional interpretation supposes that Aristotle intended all thoughts to rely on pictorial representations.<sup>69</sup> Nussbaum, however, rejects the common interpretation of *phantasiai* as mere images and aims to recast them as selective and interpretive data. In his review of Nussbaum's *Aristotle's De Motu Animalium: Text with Translation, Commentary and Interpretive Essays*, H. B. Gottschalk criticizes Nussbaum's interpretation but admits that it is occasionally difficult to interpret Aristotle's *phantasia* as pictorial.<sup>70</sup> The ambiguity in Aristotle's corpus regarding the pictorial nature of *phantasiai* may have led to Ptolemy's theory that *phantasiai* are not only juxtaposed with but, an even stronger correlation, representative of *theôrêmata*.

Although Aristotle's theory of cognition significantly shaped ancient theories of *phantasia*, the Stoic tradition had just as much of an influence on the concept's development. In *Ethics and Human Action in Early Stoicism*, Brad Inwood, like Gottschalk, rejects Nussbaum's interpretation of

<sup>67</sup> Aristotle *On Memory* 450b24–6, translation after J. I. Beare, ed. Jonathan Barnes (Princeton: Princeton University Press 1984).

<sup>68</sup> Martha Craven Nussbaum, *Aristotle's De Motu Animalium: Text with Translation, Commentary and Interpretive Essays* (Princeton: Princeton University Press 1978), 250.

<sup>69</sup> See Aristotle *de Anima* 3.8 and *On Memory* 449b30–1, where Aristotle cites the *de Anima*.

<sup>70</sup> H. B. Gottschalk, review of *Aristotle's De Motu Animalium: Text with Translation, Commentary and Interpretive Essays*, by Martha Craven Nussbaum, *The American Journal of Philology* 102, no. 1 (Spring, 1981) 84–94, 93.

Aristotle's *phantasia*, and he addresses evidence for a Stoic theory of propositional *phantasiai* before dismissing it as inconsistent with Stoic psychological theory.<sup>71</sup> Inwood's argument is compelling. However, what is relevant to this discussion is the possibility that another theory could have evolved – perhaps with a foundation in a Stoic notion of propositional *phantasiai* and/or Aristotle's ambiguous portrayal of non-pictorial *phantasiai* – where *phantasiai* represent not only images but also *theôrêmata*. This evolution is certainly speculative. However, it would allow for a semantic broadening of the concept of *phantasia* up to and in the time of Ptolemy, and it would support the relation, syntactic as well as semantic, of the αὐτῶν in Ptolemy's ἐν ταῖς αὐτῶν τῶν φαντασιῶν ἐπιβολαῖς to the θεωρήμασι in the previous sentence. Furthermore, it would establish a strong correspondence between Ptolemy's and Alcinous' texts, such that Ptolemy's application of *phantasiai* of *theôrêmata* to the ordering of actions would convey a similar meaning to Alcinous' transferral of visions of the contemplative life to human affairs.

Whether or not the *phantasiai* in *Almagest* 1.1 represent *theôrêmata*, the reason Ptolemy provides for why one should order his actions according to the application of *phantasiai* suggests that theoretical philosophy is relevant to this ordering. Again, Ptolemy claims that one should order his actions in order to strive, even in ordinary affairs, for a fine and well-ordered state (τὴν καλὴν καὶ εὐτακτον κατάστασιν). Ptolemy explains what he means by, and how one achieves, this fine and well-ordered state near the end of *Almagest* 1.1. Promulgating a theory common in ancient Greek philosophy and rampant in the Platonic tradition, Ptolemy champions the *telos* of becoming godlike:

With regard to virtuous conduct in actions (πράξεις) and character (ἦθος), [mathematics], above all, could make clear-sighted men (διορατικούς); from the constancy (ὁμοιότητος), good order (εὐταξίας), commensurability (συμμετρίας), and calm (ἀτυφίας) which are contemplated in the case of the divine (τῆς περὶ τὰ θεῖα θεωρουμένης), it, on the one hand, makes its followers lovers of this divine beauty (τοῦ θεοῦ τούτου κάλλους), and, on the other hand, accustoms and, as it were, reforms their natures to a similar state of the soul (πρὸς τὴν ὁμοίαν τῆς ψυχῆς κατάστασιν).<sup>72</sup>

In this statement, Ptolemy embraces the widely accepted *telos* of transforming the individual's soul to a state similar to the divine.<sup>73</sup>

<sup>71</sup> Brad Inwood, *Ethics and Human Action in Early Stoicism* (Oxford: Clarendon Press 1985), 11–13, 55–60.

<sup>72</sup> Ptolemy *Almagest* 1.1, H7.

<sup>73</sup> In *Ptolemy's Universe*, Liba Taub identifies the roots of Ptolemy's statement in three of Plato's texts: the *Symposium*, *Republic*, and *Theaetetus*. See Taub, 31–4.

For early endorsements of *homoiôsis theôî*, one may look to Plato's *Theaetetus* 176b and *Republic* VI, 500c–d. Both texts maintain that the philosopher should transform himself into a condition as similar to the divine as is possible for a human being; contemplation of the divine makes one like the divine. In the second century, several philosophers appropriated this concept. The Anonymous Commentator on the *Theaetetus* confirms this *telos* of a human being – and rejects *oikeiôsis* as the basis for justice – at section 7.18–19. In *de Platone et eius Dogmate* 2.23, Apuleius affirms that the end of wisdom is the emulation of the gods, and in *Introductio in Platonem* 6.25–9, Albinus asserts that the theoretical life (referring to the study of physics and ethics) and the practical life (involving the practice of politics and economics) together yield a becoming like a god (τὸ ὁμοιωθῆναι θεῷ). Alcinous dedicates an entire chapter, *Didaskalikos* 28, to *homoiôsis theôî*. Tracing the doctrine through several of Plato's texts, he quotes the *Theaetetus*, *Phaedo*, and the *Laws*. Hence, the concept of *homoiôsis theôî* was common in the second century, and, in *Almagest* 1.1, Ptolemy joins this tradition.

Plato's *Timaeus* influenced this passage in *Almagest* 1.1 more obviously than did the *Theaetetus* and *Republic*. Ptolemy claims that one attains a state in his soul similar to the divine by means of mathematics and the contemplation of celestial bodies' qualities in particular. Correspondingly, *Timaeus* explains how an individual may organize the revolutions of his soul according to the order of the universe:

... the god invented sight and gave it to us so that we might observe the orbits of intelligence in the universe and apply them to the revolutions of our own understanding. For there is a kinship between them, even though our revolutions are disturbed, whereas the universal orbits are undisturbed. So once we have come to know them and to share in the ability to make correct calculations according to nature, we should stabilize the straying revolutions within ourselves by imitating the completely unstraying revolutions of the god.<sup>74</sup>

Because a kinship exists between the immortal part of a human soul and the heavens, one may model the soul's revolutions according to the order of the heavens. The individual performs this transformation in order to stabilize the soul's revolutions and return the soul to its proper order. Correspondingly, according to Ptolemy, the study of mathematics and, in particular, the contemplation of the constancy, good order, commensurability, and calm of celestial objects makes the individual a lover of divine beauty and transforms his soul to a state similar to the celestial one.

<sup>74</sup> Plato *Timaeus* 47b–c, trans. Donald J. Zeyl, ed. John M. Cooper, assoc. ed. D. S. Hutchinson (Indianapolis: Hackett Publishing Company 1997). Cf. Plato *Timaeus* 44d, 90a–d.

Strikingly, the terms Ptolemy uses to signify the divine qualities one contemplates – ὁμοιότης, εὐταξία, συμμετρία, and ἀτυφία – indicate that the divine objects contemplated are mathematical in kind. In his commentary on Aristotle's *Metaphysics* M, Alexander of Aphrodisias, the second-century Peripatetic philosopher, asserts that mathematics concerns commensurable, well-ordered, and defined things (τὰ σύμμετρα καὶ εὐτακτα καὶ ὀρίσμενα).<sup>75</sup> He adds that mathematics aims to study commensurable, constant, proportional, and ordered things (συμμετριῶν καὶ ὁμοιοτήτων καὶ ἀναλογιῶν καὶ τάξεων).<sup>76</sup> Alexander makes these comments in response to Aristotle's discussion of the relation of the fine and good to mathematics. Concerning beauty, Aristotle states, "The main species of the fine (καλοῦ) are order, commensurability, and definiteness (τάξις καὶ συμμετρία καὶ τὸ ὀρίσμενον), which the mathematical sciences exhibit most."<sup>77</sup> Hence, commenting on Aristotle's *Metaphysics* M, Alexander mentions three of the four mathematical terms Ptolemy characterizes as divine qualities in *Almagest* 1.1: ὁμοιότης, εὐταξία, συμμετρία.

Of interest is Alexander's substitution of Aristotle's order (τάξις) with well-ordered things (εὐτακτα). This substitution may seem trivial. However, in his corpus, Alexander consistently uses the term εὐτακτα when describing the orderly movement of heavenly bodies. The most obvious instances of this connotation reside in Alexander's *de Fato*. According to Charles Genequand, the influence of heavenly bodies' movements on sublunary generation and corruption is a central notion in Alexander's theory of providence.<sup>78</sup> Alexander states the following in the *de Fato*: 'It is for this reason, too, that men say that the first causes of coming-to-be of each thing in accordance with nature (that is, the divine and their well-ordered revolution [ἔστιν δὲ ταῦτα <τὰ> θεῖα καὶ ἡ τούτων εὐτακτος περιφορά]) are also causes of fate. For the beginning of all coming-to-be is the divine, in their motion, being in one type of position or another to things on earth.'<sup>79</sup> The divine things, whose well-ordered revolution determines the fate of sublunary bodies, are manifestly the heavenly bodies. Therefore, not only does Alexander use forms of the terms Ptolemy employs in *Almagest* 1.1 – συμμετρία, ὁμοιότης, and εὐταξία – in a mathematical context, but he also uses a form of εὐταξία in an explicitly astronomical context. Thus, in the second century, the terms Ptolemy lists as exemplars of divine qualities connoted mathematical and, in particular, astronomical objects.

<sup>75</sup> Alexander of Aphrodisias *In Aristotelis metaphysica commentaria* 739.28-9

<sup>76</sup> *Ibid.*, 739.32-3.

<sup>77</sup> Aristotle *Metaphysics* M, 1078a36-b2.

<sup>78</sup> Charles Genequand, "Quelques aspects de l'idée de la nature d'Aristote à al-Ghazali," *Revue de Théologie et de Philosophie* 116 (1984) 105-130, 115.

<sup>79</sup> Alexander of Aphrodisias *de Fato* 169.23-6, translation after R. W. Sharples (London: Duckworth 1983). Cf. 203.22-3.

According to Ptolemy, the contemplation of mathematical, particularly astronomical, objects makes the individual a lover of divine, celestial beauty. Transforming his soul to a state similar to the divine, celestial one, the individual imposes onto his soul mathematical qualities: constancy, good order, and commensurability. In this way, perhaps, the human soul takes on the qualities of celestial souls, which Ptolemy examines in Book 2 of the *Planetary Hypotheses*.

The term εὐταξία appears again in *Harmonics* 3.4, and it is the only other occurrence of the term in Ptolemy's corpus outside of *Almagest* 1.1. Having defined the power of *harmonia* in the previous chapter, Ptolemy proclaims the following:

Let this be enough to show that the power of *harmonia* is a form of the cause corresponding to reason, the form that concerns itself with the commensurability of movements (περὶ τὰς τῶν κινήσεων συμμετρίας), and that the theoretical science of *harmonia* is a form of mathematics (ἡ θεωρητικὴ ταύτης ἐπιστήμη μαθηματικῆς), the form concerned with the ratios of differences between things heard, this form itself contributing to the good order (εὐταξίαν) that comes from theory and understanding (θεωρίας καὶ παρακολούθησως) to people habituated (ἐθιζόμενοις) in it.<sup>80</sup>

As in *Almagest* 1.1, Ptolemy proclaims that theoretical study, and mathematics in particular, leads to good order. In the *Almagest*, Ptolemy emphasizes the psychological benefits of astronomy, and here, in the *Harmonics*, he recommends astronomy's cousin science, harmonics. People who are habituated in studying harmonics take on good order, just as, in *Almagest* 1.1, astronomers' souls reform to a state that is similar to the well-ordered state of celestial objects.

Continuing on from the above passage, in *Harmonics* 3.4, Ptolemy argues that the power of *harmonia* is present in all bodies that have in them a source of movement, but it is present to the greatest extent in those bodies that have the most complete and rational nature (τελειοτέρας καὶ λογικωτέρας φύσεως).<sup>81</sup> In other words, every natural body is characterized to some degree by a ratio, in its movements and in the configuration of its matter. The more complete and rational an object is in its movements and form, the more it is characterized by harmonic ratios. According to Ptolemy, the most complete and rational bodies are, in addition to musical pitches, human souls and heavenly bodies:

... it is found in those movements that are involved most closely with forms. These, as we said, are those of things that are most perfect and rational in their natures, as among divine things are the movements of the heavenly bodies, and among mortal things those of human souls, most particularly, since it is only to each of these that

<sup>80</sup> Ptolemy *Harmonics* 3.4, D94–5, translation after Andrew Barker.

<sup>81</sup> Ibid., D95.

there belong not only the primary and complete sort of movement (that in respect of place), but also the characteristic of being rational.<sup>82</sup>

The most complete and rational bodies in the cosmos are musical pitches, human souls, and heavenly bodies. Their movements exhibit harmonic ratios and consist in motion from place to place. One may reform one's soul to a harmonic structure, a good order, by habitually studying the movements of musical pitches and/or astronomical objects.

Returning to the *Almagest*, Ptolemy uses a form of the term *εὐταξία* twice in *Almagest* 1.1. In the first instance, he claims, as mentioned above, that one should order his actions by applying *phantasiai* as to never forget even in ordinary affairs – and, as is implied, in practical philosophy – to strive for a fine and well-ordered state (τὴν καλὴν καὶ εὐτακτον κατάστασιν). The second instance is the one just examined, where Ptolemy lists *εὐτάξια* among the qualities of celestial bodies and explains that a well-ordered state, or *κατάστασις*, of the soul results from the qualities of heavenly bodies being contemplated (θεωρουμένη). This latter passage recalls *Harmonics* 3.4, where the student of harmonics takes on good order. Comparison of these passages reveals how the *telos* of a divine-like state relates to theoretical and practical philosophy. The *telos* is achievable by means of theoretical philosophy – specifically astronomy and/or harmonics – and one should keep the *telos* in mind when engaging in practical philosophy.

Yet, in *Almagest* 1.1, Ptolemy introduces the *telos* of a divine-like state with a nod to practical philosophy. He asserts, 'With regard to virtuous conduct in actions and character, [mathematics], above all, could make clear-sighted men (πρὸς γε μὴν τὴν κατὰ τὰς πράξεις καὶ τὸ ἦθος καλοκαγαθίαν πάντων ἂν αὕτη μάλιστα διορατικούς κατασκευάσειεν) ...'<sup>83</sup> Ptolemy posits here a particular relationship between theoretical and practical philosophy. The contemplation of celestial bodies and the resulting transformation of one's soul relate to virtuous conduct in actions and character. The way they relate is that theoretical study prepares one for action. Ptolemy claims that mathematics, more than any other science, makes one clear-sighted (διορατικός). I argued above that Ptolemy's use of *phantasiai* may derive in part from Aristotle's definition of *phronêsis* as a type of perception in *Nicomachean Ethics* 1142a, and this interpretation is further supported by the correspondence of Ptolemy's text to Alcinous' prescription to transfer to human affairs the visions of the contemplative life (ἃ κατὰ τὸν θεωρητικὸν βίον ὁράται). For Ptolemy, clear-sightedness enhances one's application of *phantasiai* to actions.

<sup>82</sup> Ibid., trans. Andrew Barker.

<sup>83</sup> Ptolemy *Almagest* 1.1, H7.

Clear-sightedness has this effect because of the relationship between sight and the soul's faculty of thought. In *Harmonics* 3.3, Ptolemy remarks that sight and hearing are the senses most closely affiliated with the ruling part of the soul, the *hégemonikon*. When discussing the power of *harmonia*, Ptolemy proclaims, 'This sort of power employs as its instruments and servants the highest and most marvelous of the senses, sight and hearing, which, of all the senses, are most closely tied to the *hégemonikon*...' <sup>84</sup> Ptolemy reiterates this association of sight and hearing with the *hégemonikon* in *On the Kritêrion and Hégemonikon*. The sense of touch is, according to Ptolemy, more material and extends throughout the body's flesh and blood. Regarding the other four senses, Ptolemy argues, 'Among the latter some are more easily activated and more valuable, viz. sight and hearing, and because they are located above the others approach more closely to the soul's faculty of thought (τὸ διανοητικὸν τῆς ψυχῆς) ...' <sup>85</sup> Because the senses sight and hearing are located in a human being's head, supposedly higher than the senses taste and smell, they are physically close to the soul's faculty of thought.

The faculty of thought is the most valuable of the human soul's faculties, and, as such, it is the *hégemonikon* in regard to both living and living well. <sup>86</sup> Before pronouncing the faculty of thought a *hégemonikon*, Ptolemy ponders the following in *On the Kritêrion*:

If we give the name *hégemonikon* to what is the best absolutely and the most valuable (τὸ βέλτιστον ἀπλῶς καὶ τιμώτατον), it will be located in the brain. We have given sufficient proof that the faculty of thought has a higher degree of worth and divinity (τιμώτερον καὶ θειότερόν), both in power and in substance and both in the universe and in us, and also that its place is the highest position, heaven in the cosmos, the head in man. <sup>87</sup>

In this passage, Ptolemy asserts that the faculty of thought is more valuable and more divine than the other faculties of the human soul, just as the heavens are divine and more valuable than the sublunary realm. This comparison, of the part of the human soul in the head with the heavens, again alludes to Plato's *Timaeus*.

Although the faculty of thought is the *hégemonikon* in regard to living and living well, sight and hearing assist in the latter purpose. Ptolemy ascribes the *telos* of living well to sight and hearing in *On the Kritêrion*:

<sup>84</sup> Ptolemy *Harmonics* 3.3, D93, translation after Andrew Barker.

<sup>85</sup> Ptolemy *On the Kritêrion and Hégemonikon*, La20–1, trans. Liverpool/Manchester Seminar on Ancient Philosophy.

<sup>86</sup> Ibid., La22. Cf. *de Placitis Hippocratis et Platonis* 2.3.4, where Galen identifies the *hégemonikon* with the *logistikon*.

<sup>87</sup> Ptolemy *On the Kritêrion and Hégemonikon*, La22, translation after Liverpool/Manchester Seminar on Ancient Philosophy.

If a second prize has to be awarded to one of the other means towards the end of living well, the prize would go elsewhere than to the faculty of thought: what is around the heart would not even be runner-up. It would go rather to the senses, and if not to all of them, then only to those which contribute most to assist thought in its consideration and judging of real things, i.e., hearing and sight. These are themselves positioned near the head and the brain, above the other senses, and near neighbors, because of their special relationship, to the first and chief cause of living well.<sup>88</sup>

According to *On the Kritêrion*, sight and hearing assist the faculty of thought in causing a human being to live in a good way. Therefore, clear-sightedness is integral to living a good life, and, as such, it is a means to virtuous conduct in actions and character, or success in practical philosophy, as it is in *Almagest* 1.1.

Although clear-sightedness is a means toward success in practical philosophy, its initial cause is theoretical philosophy, specifically mathematics. What is it, then, that the clear-sighted men in *Almagest* 1.1 see? If the 'sightedness' is literal, then the passage suggests that they see the celestial bodies, whose qualities they contemplate. The benefit to virtuous conduct of this literal clear-sightedness would result from the close relationship between sight and the faculty of thought. Literally seeing in a clear way entails metaphorically seeing how to act. This reference to acting as a type of seeing recalls, as mentioned above, *Nicomachean Ethics* 1142a, wherein Aristotle characterizes *phronêsis* as a form of perception. Ptolemy states, however, that it is the science of mathematics that makes men clear-sighted. Therefore, the sightedness, like the subsequent seeing how to act, may be metaphorical. With astronomy, the branch of mathematics referred to in this passage, one does more than simply observe celestial bodies; one constructs hypotheses, which account for the movements of the stars and planets. In this metaphorical interpretation of 'sightedness', then, the men clearly see mathematical *theôrêmata*. The *theôrêmata* account for the movements of celestial bodies and reveal their constancy, good order, commensurability, and calm, which are apparent, not from simple observation, but from the calculation of celestial bodies' movements. These mathematical theories are the catalysts which, when contemplated, make the individual a lover of divine beauty and transform the human soul to a state similar to the divine. Furthermore, this metaphorical interpretation of 'clear-sightedness' connects this passage more firmly to Ptolemy's use of *phantasiai* earlier in *Almagest* 1.1. In the literal reading, if men clearly see celestial bodies, and the *phantasiai* are pictorial representations of celestial bodies, one would wonder how the application of celestial bodies' images is able to order actions. If, on the other hand, the clear-

<sup>88</sup> Ptolemy *On the Kritêrion and Hêgemonikon*, La23, translation after Liverpool/Manchester Seminar on Ancient Philosophy.

sighted men metaphorically see mathematical *theôrêmata*, then the application of *phantasiai* of *theôrêmata* would indeed order an individual's actions. Representations of mathematical theories of constancy, good order, commensurability, and calm would order one's actions in a manner concordant with these divine qualities, and they would ensure that the individual keep in mind the *telos* of a divine-like state, which results from these qualities' mathematical contemplation. Indeed, Ptolemy indicates that this fidelity to the *telos* of a divine-like state is the goal he has in mind for the ordering of one's actions; he proclaims that one should apply *phantasiai* to the ordering of actions as to never forget, even in ordinary affairs, to strive for a fine and well-ordered state.

Furthermore, the divine-like state itself, like clear-sightedness, prepares the individual for future action. Evidence for this interpretation lies in *Harmonics* 3.7, wherein Ptolemy discusses how listening to music affects the human soul. As a melody modulates, the soul – consisting, as it does, of the same ratios existing among musical pitches – experiences various conditions in sympathy with the activities of the melody. From this theory, Ptolemy concludes the following:

I suppose it was because he understood this fact that Pythagoras advised people that when they arose at dawn, before setting off on any activity (*ἐνεργείας*), they should apply themselves to music and to soothing melody, so that the disorder (*ταραχῶδες*) of their souls resulting from arousal out of sleep should first be transformed into a pure and settled state (*κατάστασιν*) and an orderly gentleness, and so make their souls well-attuned and concordant for the actions (*πράξεις*) of the day.<sup>89</sup>

In this passage, Ptolemy applies his psychological theory to explain the legendary habits of Pythagoras and his followers. In the fourth century BCE, Aristoxenus wrote that the Pythagoreans used music to purify the soul,<sup>90</sup> and, in the first century CE, Quintilian, a Roman rhetorician, wrote, 'On awakening, it was the Pythagoreans' custom to arouse their souls with the sound of the lyre, so that they might be more alert for action, and before going to sleep they soothed their minds by means of this same music in order to calm them down, in case too turbulent thoughts might still inhabit them.'<sup>91</sup> In other words, Quintilian, like Ptolemy after him, portrays the Pythagoreans as listening to music every morning in order to prepare their souls for action. He depicts the music as arousing, or exciting, a soul. However, Ptolemy claims that the music transforms the soul into a pure and settled state. Nevertheless, in his *Vita Pythagorae* Porphyry, the third-century-CE philosopher, cites Antonius

<sup>89</sup> Ptolemy *Harmonics* 3.7, D100, translation after Andrew Barker.

<sup>90</sup> Aristoxenus *Fragmenta* 26.

<sup>91</sup> Quintilian *Institutio Oratoria* 9.4.12, trans. Christoph Riedweg (Ithaca: Cornell University Press 2002).

Diogenes, who depicts Pythagoras singing paeans at dawn in order to calm the soul (καθημερῶν τὴν ψυχὴν).<sup>92</sup> Hence, in *Harmonics* 3.7, Ptolemy relates a common, contemporary legend about Pythagoras and, moreover, explains the physics underlying Pythagoras' legendary practice. According to Ptolemy, Pythagoras advised that one settle his soul into a state (κατάστασις) aligned by harmonic ratios in order to prepare for ensuing actions. I suggest that the *Harmonics*' relation of the soul's harmonic state to success in future actions underlies the *Almagest*'s relation of theoretical and practical philosophy. The reformation of one's soul to a divine-like state is the product of theoretical philosophy, and, in turn, the divine-like state enables virtuous conduct in actions and affairs, the domain of practical philosophy.

Therefore, despite his efforts to assert the independence of theoretical and practical philosophy from one another, to posit a great difference between the two, Ptolemy ultimately portrays practical philosophy as dependent on theoretical philosophy. Mathematics makes one clear-sighted, which enhances one's applications of *phantasiai* to the ordering of actions, and the study of harmonics and/or astronomy reforms one's soul to a state that prepares the individual for virtuous conduct in actions and character. Furthermore, the great distinction itself, which Ptolemy posits between theoretical and practical philosophy, loses its force when one brings the *Harmonics* to bear on the *Almagest*. Again, in *Almagest* 1.1, Ptolemy allows that some ethical virtues may benefit from learning, even though some are possible without it, but he portrays theoretical philosophy as subject to instruction only. In *Harmonics* 3.4, however, it is the people who are habituated (ἐθιζομένοις) in theoretical philosophy who attain good order in their souls. Consequently, Ptolemy's distinction between theoretical and practical philosophy is not absolute. Instruction in theoretical philosophy prepares one to act in practical philosophy, and habit, the tool of practical philosophy, enhances the study of theoretical philosophy.

This pattern – of asserting a great distinction and then dissolving it – also appears in Ptolemy's *On the Kritêrion and Hêgemonikon*. I mentioned above how Ptolemy recognizes in *On the Kritêrion* what he considers to be a rhetorical debate over the definitions of soul and body, and, in response to this debate, he propounds the actual difference between them. Later in the text, however, Ptolemy reveals his materialism. He depicts the soul as consisting of matter, specifically air, fire, and aether.<sup>93</sup> Ptolemy depicts the soul as consisting of fine particles, or elements, that scatter when released from the body: 'The soul is so constituted as to scatter immediately to its proper elements (τὰ οἰκεία στοιχεῖα), like water or breath (πνεύ-

<sup>92</sup> Porphyry *Vita Pythagorae* 32. Cf. Iamblichus *de Vita Pythagorica* 25.110–14.

<sup>93</sup> Ptolemy *On the Kritêrion and Hêgemonikon*, La12, 20.

μα) released from a container, because of the preponderance of finer particles (λεπτομερείας) ... the body, on the other hand, although it stays in the same state for a considerable time because of the thicker consistency of its matter (τὸ τῆς ὕλης παχυμερές) ...'.<sup>94</sup> The soul consists of finer particles than the particles constituting the body, and these finer particles are so small that they are imperceptible. Correspondingly, Ptolemy claims in *Tetrabiblos* 3.12 that the body is more material (ὕλικώτερον) than the soul.<sup>95</sup> Therefore, despite his assertion of a difference between soul and body, Ptolemy's more detailed expositions reveal that he considered them to differ merely in degree rather than kind. Adhering to a similar pattern of exposition, Ptolemy asserts in *Almagest* 1.1 a great difference between theoretical and practical philosophy, which establishes their independence from one another. However, he then portrays practical philosophy as beholden to theoretical philosophy.

Thus, in *Almagest* 1.1, Ptolemy engages in a contemporary debate over the relationship between theoretical and practical philosophy. He first asserts that the two are independent of one another, separated by a difference evident in the manner one attains virtues in each sphere, whether by instruction or by continuous activity. Thereafter, Ptolemy diminishes the distinction between the two parts of philosophy by revealing how they relate. Theoretical philosophy prepares the individual for action, and, according to the *Harmonics*, habit, the tool of practical philosophy, enhances the study of theoretical philosophy. Despite his initial insistence on the independence of the two parts of philosophy, Ptolemy reveals in *Almagest* 1.1 that practical philosophy is dependent on theoretical philosophy.

In his eclectic definitions and evaluations of theoretical and practical philosophy, Ptolemy demonstrates his unique amalgamation of Middle Platonic and Aristotelian conceptions of the parts and aim of philosophy, the soul, and its virtues. Furthermore, Ptolemy appropriated the structure of *Almagest* 1.1 from contemporary philosophical handbooks. In his second monograph on ancient prefaces, *Prolegomena Mathematica: From Apollonius of Perga to Late NeoPlatonism*, Jaap Mansfeld observes that *Almagest* 1.1 incorporates structural elements common to ancient introductions to an author or a text. Tracing the late antique *schema isagogicum* to its roots, Mansfeld discovers several of the 'headings' or 'main points' (*kephalaia*) of ancient prefaces in *Almagest* 1.1, including the purpose of the author, the utility, aim, and order of the present study, the historical contributions of predecessors, and the qualities required of the student.<sup>96</sup> In

<sup>94</sup> Ibid., La12, trans. Liverpool/Manchester Seminar on Ancient Philosophy.

<sup>95</sup> Ptolemy *Tetrabiblos* 3.12, H224.

<sup>96</sup> Mansfeld, 68–9.

this way, Mansfeld demonstrates that Ptolemy's *Almagest* fits within a far-reaching, non-genre-specific, ancient literary culture.

The resemblance of *Almagest* 1.1 to Alcinous' *Didaskalikos*, however, is more striking. In the first three chapters of his text, Alcinous defines philosophy and the philosopher, describes the theoretical and practical types of life, and expounds the parts of theoretical and practical philosophy. In *Almagest* 1.1, Ptolemy identifies the legitimate philosophers, distinguishes the theoretical and practical parts of philosophy, and defines the parts of theoretical philosophy before portraying the aim of theoretical philosophy, the transformation of one's soul to a divine-like state. Alcinous and Ptolemy participated not only in the broad literary culture that Mansfeld describes but also in the genre-specific rhetorical culture of philosophical handbooks. Indeed, Ptolemy's mimicry of a philosophical handbook would have been apparent to any contemporary philosopher. The question, then, is why Ptolemy decided to appropriate this structure. His decision could simply have resulted from his embeddedness in the contemporary philosophical context. As the result of reading philosophical handbooks, he may simply have acquired the style. Yet, again, what is interesting is that Ptolemy utilized the structure not only of ancient prefaces, in general, but of philosophical handbooks in particular. He deliberately chose to introduce his astronomical models by situating them within the philosophical context of distinguishing the parts of philosophy and defending his choice to spend more of his free time pursuing theoretical rather than practical philosophy.

Within this context, Ptolemy portrays astronomy as ethically and epistemologically the highest branch of theoretical philosophy. Not only does the mathematical contemplation of celestial bodies, or astronomy, yield the *telos* of a divine-like state, but, also, mathematics is the only branch of theoretical philosophy to yield knowledge. In other words, unlike every preceding and contemporary philosopher, Ptolemy does not portray mathematics as propaedeutic; mathematics, for Ptolemy, is not a means to a higher science, such as theology or metaphysics.<sup>97</sup> In *Almagest* 1.1, Ptolemy makes the unprecedented claim that theology and physics are conjectural and that mathematics alone yields incontrovertible knowledge:

<sup>97</sup> In the second century, for example, the following philosophical texts promoted the propaedeutic value of mathematics: Nicomachus *Arithmetica Introductio* 1.3.6–7; Theon of Smyrna *Expositio* 1.1–2.2; Plutarch, *Quaestiones Conviviales* 718c; Alcinous *Didaskalikos* 7. Dominic J. O'Meara argues that Nicomachus portrays arithmetic as the highest science because, in Nicomachus' Pythagorean philosophical system, arithmetic becomes identical with metaphysics: *Pythagoras Revived: Mathematics and Philosophy in Late Antiquity* (Oxford: Clarendon Press 1989), 14–23. Nevertheless, Ptolemy's claim in *Almagest* 1.1 remains unique because he dissociates mathematics and theology and claims that, while the former yields knowledge, the latter is conjectural.

From all this we concluded: that the first two genera of the theoretical [part of philosophy] should rather be called guesswork (εἰκασίαν) than knowledge (κατάληψιν ἐπιστημονικὴν), the theological because of its completely invisible and ungraspable nature, the physical because of the unstable and unclear nature of matter (τὸ τῆς ὕλης ἄστατον καὶ ἄδηλον); hence, there is no hope that philosophers will ever be agreed about them, and that only the mathematical can provide sure and incontrovertible knowledge to its devotees, provided one approaches it rigorously.<sup>98</sup>

The only science to produce knowledge rather than conjecture, mathematics is epistemologically superior to theology and physics. In addition, astronomy is the most preferable of the mathematical sciences. Ptolemy explicates this epistemological preference in the following:

We were drawn to cultivate this sort of theory [viz. mathematics], the whole of it as far as we were able, but especially the theory concerning divine and heavenly things (θεῖα καὶ οὐράνια). For that alone is devoted to the investigation of the eternally unchanging. For that reason it too can be eternal and unchanging (which is a proper attribute of knowledge) in its own apprehension, which is neither unclear nor disorderly (οὔτε ἄδηλον οὔτε ἄτακτον).<sup>99</sup>

Because astronomy studies objects that are eternal and unchanging, the type of apprehension astronomy affords is itself eternal and unchanging. Ptolemy's epistemology of the theoretical sciences deserves its own, extended study,<sup>100</sup> but, for now, I will simply note that in *Almagest* 1.1 Ptolemy characterizes astronomy as both ethically and epistemologically the highest science.

If astronomy is the highest science, then the *Almagest*, a synthesis of Ptolemy's astronomical models, would indeed require a grand philosophical introduction. While Alcinous designed his *Didaskalikos* to epitomize the philosophical doctrines of Plato, Ptolemy composed the *Almagest* to demonstrate his astronomical models. Representing his unique philosophical views – influenced as they were by the Middle Platonic and Aristotelian commentary traditions – the preface to the *Almagest* carves out a place for Ptolemy's astronomical theory within the contemporary philosophical context. In this way, perhaps, Ptolemy thought his astronomical models to be as authoritative and philosophically relevant as the works of Plato or any other philosophical authority.

<sup>98</sup> Ptolemy *Almagest* 1.1, H6, translation after G. J. Toomer.

<sup>99</sup> Ibid., H6–7.

<sup>100</sup> See Feke (2009).