NORTHWESTERN UNIVERSITY

Aristotle's Notion of Teaching and Its Role in His Theory of Moral Education

A DISSERTATION

SUBMITTED TO THE GRADUATE SCHOOL IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

for the degree

DOCTOR OF PHILOSOPHY

Field of Philosophy

By

William B. Cochran

EVANSTON, ILLINOIS

June 2020

Abstract

This dissertation offers a novel interpretation of Aristotle's notion of teaching (*didaskalia*). In Part I, I defend my claim that we can find in Aristotle's works a conception of teaching, which is a crucial yet under-explored part of his theory of education. In Part II, I use this interpretation to settle two long-standing debates in Aristotle's ethics concerning the development of the virtues of character and practical wisdom. Finally, in Part III, I show how my reading helps Neo-Aristotelian moral educators respond to the objection that Aristotelian education deprives students of their autonomy.

I begin my interpretation in Part I with Aristotle's clear yet general statements about teaching and 'those who teach.' Chapter 2 establishes that for Aristotle the goal of teaching is to instill scientific understanding (*epistêmê*) in students. On my view, scientific understanding should be interpreted as the possession of true, well-reasoned accounts (*logoi*), which are ultimately grounded in explanatorily basic, subject-specific first principles (*archai*). Chapter 3 then shows how Aristotle's comments about the pre-conditions for teaching and didactic learning support and extend this reading of teaching's ultimate goal. Chapter 4 takes up Aristotle's teaching methodology. Teachers use induction, definition, and (in special circumstances) analogy to generate students' conviction in indemonstrable first principles. Once students grasp these principles, teachers use demonstration and definition to explain what follows from them. When students internalize the whole account such that they can produce it themselves at will, the teacher's task is complete.

I turn to Aristotle's moral philosophy in Part II. Chapter 5 contrasts teaching with habituation (*ethismos*)—the method of education primarily responsible for bringing about the virtues of character in the appetitive part of the soul. Some of the most prominent interpretations of

Aristotle's theory of moral education contend that habituation must involve some teaching. I argue against this view by showing how Aristotle consistently maintains that teaching is solely devoted to cultivating intellectual virtues in the rational parts of the soul. Chapter 6 takes up a long-standing debate about what Aristotle's practically wise person (*phronimos*) knows. According to the Grand End View, the *phronimos* possesses a philosophical conception of the human good, which he uses as a lodestar in his decision-making. I support the Grand End View against its critics by arguing that since (i) teaching cultivates the intellectual virtues, one of which is practical wisdom, and (ii) teaching instills scientific understanding, which includes a grasp of the explanatorily basic first principles of a subject, therefore, (iii) a necessary component of practical wisdom involves comprehending the first principle of action—*i.e.*, the human good (*eudaimonia*) as the final goal of *praxis*.

Finally, in Part III, I use my interpretation of teaching to fortify Aristotelian educational theory against the objection—often called 'the paradox of moral education'—that habituation robs students of their autonomy. That would be fair enough, if education only included habituation. But Aristotelian education also includes teaching, which furnishes students with the ability to provide true, well-grounded accounts. This ability, I argue, actually strengthens students' autonomy.

Acknowledgments

I am indebted to my whole committee, but especially my supervisor, Richard Kraut, who provided near-instant and always insightful feedback as well as his unwavering support. I will proudly carry what I have learned from him about philosophy, writing, and mentorship beyond Northwestern. Kyla Ebels-Duggan, in addition to giving her own incisive comments, organized a dissertation workshop with other graduate students that became one of the most beneficial parts of the writing process. Stephen White inspired confidence in me and offered ways to help me think about the contemporary relevance of my work. Patricia Marechal's prompt and detailed feedback, in addition to her encouragement, greatly enhanced every aspect of the dissertation.

My father, Andrew Cochran, provided guidance at every stage, but especially in the final stretch, when it was needed most. This dissertation is dedicated to the memory of his mother, my grandmother, Maxine Cochran. My own mother, Brenda McBean, lent me both her empathetic ear and her experienced writing advice when times were tough. It is impossible to acknowledge both consisely and properly the ways Lindsay, my wife, has contributed to the completion of this dissertation. So I will just say this: *thank you for everything*. Norah, our daughter, demonstrated a level of understanding and patience well beyond her years as she shared her father with his work. No doubt this is largely because her mother was her model.

Several others contributed as well. The philosophical friendship of the graduate students in ancient Greek and Roman philosophy, especially Evan Dutmer, Guiseppe Cumella, Blaze Marpet, Andy Hull, Annie Corbitt, Susan Bencomo, and Paymun Zagar will remain one of the highlights of my time at Northwestern. The staff in the Philosophy Department office, especially Crystal Foster

and Tom Winters, provided crucial administrative support at several critical moments. Finally, this dissertation draws on research supported by the Social Sciences and Humanities Research Council. I thank them for their generous financial support.

List of Abbreviations

Abbreviations of Aristotle's Works

APo.	*Posterior Analytics*
APr.	*Prior Analytics*
Cat.	*Categories*
DA	*De Anima*
DC	*De Caelo*
EE	*Eudemian Ethics*
GC	*On Generation and Corruption*
HA	*History of Animals*
Meta.	*Metaphysics*
NE	*Nicomachean Ethics*
PA	*Parts of Animals*
Phys.	*Physics*
Poet.	*Poetics*
Pol.	*Politics*
Rhet.	*Rhetoric*
SE	*On the Sophistical Elenchus*
Sens.	*De Sensu*
Top.	*Topics*

Abbreviations of Plato's Works

Apol.	*The Apology of Socrates*
Crat.	*Cratylus*
Phdrs.	*Phaedrus*
Rep.	*Republic*
Symp.	*Symposium*

Dedication

---

for AH

Table of Contents

Part III: NEO-ARISTOTELIAN EDUCATIONAL THEORY

Chapter 1:

Introduction

1.1 General Introduction

Aristotle begins Book II of his *Nicomachean Ethics* by making the following distinction:

> **TP-1** Since virtue, then, is twofold, of thought on the one hand, and of character on the other, while that of thought has both its generation and development mostly from teaching (for which reason it requires experience and time), that of character comes about from habits. (*NE* II.1 1103a14-17)[1]

While Aristotle's comments on developing the virtues of character through habituation have generated a vast amount of scholarship, both in the history of ancient philosophy and in contemporary educational theory, his discussion of teaching (*didaskalia* and its cognates) has not received the amount of attention form scholars that it deserves. For according to Aristotle in TP-1, the intellectual virtues are cultivated mostly by teaching, yet perhaps the dominant interpretation of Aristotle's notion of teaching is that there is nothing—at least nothing specific—to be found in Aristotle's corpus on this topic. Curzer expresses this view particularly well when he writes, "As

---

[1] *Διττῆς δὴ τῆς ἀρετῆς οὔσης, τῆς μὲν διανοητικῆς τῆς δὲ ἠθικῆς, ἡ μὲν διανοητικὴ τὸ πλεῖον ἐκ διδασκαλίας ἔχει καὶ τὴν γένεσιν καὶ τὴν αὔξησιν, διόπερ ἐμπειρίας δεῖται καὶ χρόνου, ἡ δ' ἠθικὴ ἐξ ἔθους περιγίνεται.* Unless otherwise noted, translations are from Reeve's New Hacket series, often with modifications from me. Translations from the *APo.* are from Barnes (1994). The Greek text is from the *Oxford Classical Texts* series, as accessed through the *Thesaurus Linguae Graecae* online. I have provided the Greek text for longer passages throughout in the footnotes. Individual Greek terms and short phrases are transliterated and placed in in-text citations.

usual, what is clear is quite general, specifics are frustratingly absent…Aristotle leaves the nature of teaching unspecified, as will I" (2012: 351).

This thesis—that there is nothing specific to be gleaned from Aristotle's texts about his notion of teaching—has been prevalent in the scholarly literature for a long time. Burnet writes in his *Aristotle on Education* that "what the scientific training recommended by Aristotle was, we can only guess" (1900: 135). This line of interpretation has been taken up in the history of educational theory as well. The editors of *The Historical and Philosophical Foundations of Western Education*, for example, note the same lacuna in our understanding of Aristotle's thoughts on the education of the intellect (1973: 75-76). Moreover, the conclusion that there is nothing specific about the nature of teaching in Aristotle has had an impact on contemporary Neo-Aristotelian educational theory. Kristjánsson, perhaps the most prominent Neo-Aristotelian educational theorist, echoes Curzer's sentiment when he writes in his *Aristotelian Character Education* that "looking for guidance in Aristotle's own texts on how *phronêsis* can be taught is like looking for wool in a goat's house" (2015: 86).[2]

This state of affairs is untenable, for several reasons. First, it leaves unresolved multiple areas of scholarship which hinge upon an interpretation of Aristotle's notion of teaching, such as aspects of his epistemology and his theory of moral education —not to mention how Aristotle thinks we cultivate intellectual virtues, and thereby, through their possession and exercise, lead a flourishing life. However, it is indeed the case that Aristotle's extant corpus lacks a sustained treatment on the

---

[2] In fact, Kristjánsson's very next sentence quotes the same line from Curzer about Aristotle's notion of teaching lacking specifics.

nature of teaching.[3] Even so, Aristotle is not completely silent on the topic of teaching in his works. There are in fact a significant number of passages which, I contend, refract a specific notion of teaching that runs throughout Aristotle's texts. This dissertation aims to supply an interpretation of Aristotle's notion of teaching by showing how these passages—which I refer to collectively as *the teaching passages*—cohere with, support, and substantiate the following core claim:

> CORE CLAIM: For Aristotle, "teaching" (*didaskalia*) is the activity of instilling scientific understanding (*epistêmê*) in a student who is capable of receiving it.

This is only a general account—an outline sketch—which will be filled in over the course of the dissertation.

In Chapter 2, I first establish *via* the direct textual evidence available to us that the goal of teaching is to instill *epistêmê* in students. Chapter 3 provides further evidence for this claim, while simultaneously expounding upon the various pre-requisites that Aristotle states are necessary for the activity of teaching to take place. Chapter 4 builds upon the foundation provided by Chapters 2-3 to provide a novel interpretation of Aristotle's teaching methodology: Aristotle marshals a host of different *logoi* in the service of instilling *epistêmê*—not just demonstration (*apodeixis*), as most scholars who have treated this topic have focused on. Finally, in Chapter 5, I distinguish teaching from another of Aristotle's methods of education (one which has received by far the most attention from

---

[3] I say "extant" because all three ancient lists of Aristotle's works mention a work called the *Peri Paideia* (*On Education*). Perhaps Aristotle's treatment of teaching was in that lost work (if it does indeed belong to Aristotle). There is, however, another possible explanation as to why Aristotle has no work called "On Teaching"—one that it does not rely on contingencies of history. Aristotle delineates the sciences (*epistêmai*), broadly speaking, into (1) the theoretical, (2) the practical, and (3) the productive. Almost all of Aristotle's works are on (1) or (2). Aristotle did not give extended treatments of (3), except for in the *Poetics* and *Rhetoric*. Since teaching is a *technê*, the lack of an "On Teaching" by Aristotle should be no more suspicious than the lack of an "On Medicine" by him either.

scholars)—habituation (*ethismos*). I contrast teaching with habituation to show how Aristotle kept these two methods of education conceptually separate from one another.

These chapters provide a more complete interpretation of Aristotle's notion of teaching than has been attempted in Aristotle scholarship.[4] Chapter 5 also begins Part II, where I apply the interpretation secured in Part I to two aspects in Aristotle's ethics: on the development of the virtues of character (Chapter 5), and of practical wisdom (Chapter 6). In Part III, I show how my interpretation of Aristotle on teaching can be of interest to Neo-Aristotelian educational theorists. I use the discussion of the previous two Parts of the dissertation to settle the so-called *paradox of moral education*—one of the most significant problems that has impeded the incorporation of Aristotelian thinking about moral education into today's pedagogical practices.[5] The applications of my interpretation in Parts II & III represent a sampling of the possible avenues of scholarship that begin to open up once we secure Aristotle's notion of teaching. I therefore conclude the dissertation in Chapter 8 by outlining the future work that becomes possible once Aristotle's specific notion of teaching has been established.

---

4 Though see my discussion of Spangler's *Aristotle on Teaching* (1998) in the next section.

5 Kristjansson (2014) provides an overview of many such impediments. Miller, citing Kristjansson, characterizes the problem as follows: "The long-standing charge is that not only is character training authoritarian and anti-democratic (Kristjánsson 2007: 31), the very notion that virtue (and hence moral knowledge and understanding) can be habituated is nonsensical; that mindless conditioning in the form of habituation, and reasoned reflection or deliberation in the form of *phronêsis*, are antithetical to each other" (2016: 28). Miller also calls the paradox of moral education in particular "possibly the most serious objection, the one potentially undermining of Aristotle's whole ethical system" (2016: 28).

1.2 Literature Overview

As mentioned in the previous section, there is not much scholarship on the topic of teaching in Aristotle. In this section, I provide a brief summary and analysis of the scholarship that *does* discuss Aristotle's notion of teaching. This scholarship can be divided, broadly speaking, into two groups:

1. Those who study the *Posterior Analytics* to determine whether, for Aristotle, teaching is done by demonstration (*apodeixis*)[6]
2. Those who discuss teaching's role in connection with Aristotle's account of character education—specifically in connection with habituation (*ethismos*) and the development of *phronêsis*. [7]

The scholarship in (1) establishes that teaching has some sort of connection with demonstration, but the nature of this ~~this~~ connection is still a matter of debate. The scholarship in (2) appears to show that teaching is a constitutive component of Aristotle's program of moral education—specifically, it is supposed to train the critical faculties—yet it remains unclear how teaching will produce this result.

I take up these issues in Chapters 4 and 5 respectively. Suffice it to say for now that neither avenue of research has turned up a conclusive account of Aristotle's notion of teaching. The reason for the lack of such an account, it seems, is that neither area makes determining Aristotle's notion of teaching its main priority. In (1), the aim is not to determine what Aristotle's notion of teaching consists of; rather, the central concern is to settled debates in Aristotle's epistemology. Similarly, in

---

6 See Barnes (1969), Burnyeat (1981), Wians (1989), Bauman (1998), & Bronstein (2016).

7 *E.g.*, Sherman (1989) and Curzer (2012)

(2), the aim is not to secure an account of teaching, but to ascertain a better understanding of Aristotle's account of moral education. My study departs from both of these avenues of research and focuses first and foremost on Aristotle's notion of teaching. This is why I first establish, in Chapters 2-3, that the goal of teaching is to instill scientific understanding in students: only once it has been established what Aristotle's notion of teaching consists of, *then* we can proceed to draw conclusions about Aristotle's epistemology and methods of moral education.

Before moving on, there is one work that requires special mention. In all of scholarship, there is only one book which is fully devoted to the topic of teaching in Aristotle: Mary Michael Spangler's *Aristotle on Teaching* (1998). Yet this book, like the topic that it treats, has received almost no attention from scholars of ancient philosophy. This is perhaps because of the fact that Spangler was not exactly a scholar of ancient philosophy herself, but rather a Dominican Sister of the Peace, a Catholic school elementary educator, and a faculty member in the Department of Education at Ohio Dominican University. This biographical background also helps explain why Spangler relies so heavily on the commentaries of St. Thomas Aquinas in her interpretation of Aristotle. Still, Spangler's treatment of Aristotle on teaching is both wide-ranging and compelling. She has identified many of the places in Aristotle's corpus where he treats the topic of teaching, and she has also selected a number of Aristotle's principles from other areas of this thought which elucidate his theory.

Spangler's assessment of Aristotle on this topic is largely in agreement with my own. But despite the positive aspects of her work, Spangler's interpretation is beset by two problems. First, as noted above, Spangler's study of Aristotle on teaching is heavily influenced by the commentaries of St. Thomas Aquinas. Even a cursory look at her endnotes reveals that Spangler cites Aquinas about as much as (if not more than) Aristotle. Perhaps, given the relative paucity of textual evidence from

Aristotle's own texts on the topic of teaching, such reliance is to be expected. Nevertheless, I think we can do better by sticking with Aristotle's own words. Moreover, her reliance on St. Thomas leads Spangler into a Thomistically-tinted interpretation of Aristotle. While there is nothing inherently wrong with studying the way Aquinas interpreted Aristotle, the aim of her study (and mine) is to understand *Aristotle's* notion of teaching—not Aquinas's interpretation of Aristotle on teaching. Therefore, a study which examines Aristotle's notion of teaching without Aquinas's aid is to be preferred.

Second, Spangler's study begins by assuming what it ought to prove. In the preface of her work, Spangler notes a restriction of the meaning of "teaching" that she will observe throughout her work: "teaching" only includes the act of explaining a certain subject matter; it does not have the other connotations of disciplining, motivating, and testing (1998: vii). But this sort of restriction in the meaning of teaching is precisely what has to be argued for when looking to Aristotle's thinking about the nature of this topic. Indeed, I think Spangler is right to observe this restriction, because this is the reading of Aristotle's notion of teaching that the textual evidence supports. But when the prevailing scholarly opinion is that Aristotle has no specific notion of teaching, such a specification cannot be assumed; it must be proved.

1.3 Methods & Aims of this Study

Much of my work in this dissertation—especially in Part I—is a reconstruction of Aristotle's notion of teaching. But within studies of Aristotle's educational theory that aim to interpret him correctly, the term 'reconstruction' has had various meanings, so it is important to clarify the sense in which I am using the term. According to Kristjánsson, for example, reconstructions depart from pure

exegeses and make pronouncements about what Aristotle *should* have said about a topic, given the available textual evidence surrounding it (2015: 90).

I think this distinction between the purely exegetical on the one hand and the reconstructive on the other is misleading. For it is possible to engage in an exegesis of Aristotle's thought by reconstructing what he says about it from several different passages—and to do so without venturing into unfounded pronouncements about what Aristotle *should* have said. A prime example of just such an exegetical project that proceeds *via* such a reconstruction is Burnyeat's "Learning to Be Good" (1980)—the article that kick-started the serious study of Aristotle's theory of moral education. In it, Burnyeat writes,

> My aim … is to reconstruct Aristotle's picture of the good man's development over time, concentrating on the earlier stages. Materials for the construction are abundant in the *Nicomachean Ethics*, but scattered; the construction will be gradual, its sense emerging progressively as the pieces come together from their separate contexts. I shall have to forgo extended exegesis of the various discussions from which Aristotle's remarks are extract, but I trust that it is not necessary to apologise for the undefended interpretive decisions this will involve; such decisions are an inescapable responsibility of the synoptic enterprise.[8]

Burnyeat's aim here is exegetical, yet he attempts to achieve his goal *via* a reconstruction of Aristotle's thought from passages that are scattered from across the *Nicomachean Ethics*. My own approach is similar to Burnyeat's in style, but larger in scope. I also aim to reconstruct Aristotle's

---

[8] Burnyeat (1980: 69-70).

thinking, but I do so by canvassing passages scattered across different works of Aristotle's corpus. That is to say, I take the many different puzzle pieces—shards of text where Aristotle mentions teaching—and attempt to show how they collectively support a single, specific, and coherent account. In other words, my goal is to provide an interpretation of what Aristotle *would* have said about teaching, had he offered an extended treatment of this topic.

Perhaps such a project will seem controversial, since it presupposes that it is possible to take passages from Aristotle's different texts and stitch them together. What assurance is there to prevent such a reconstruction from creating a kind of Frankenstein's monster out of Aristotle's scatter-shot comments on teaching? Ultimately, whether the interpretation I offer is plausible will be up to each reader's individual judgment. But here are a few remarks intended to ameliorate this concern:

1. None of my claims about Aristotle's notion of teaching depend upon the topics where Aristotle appears to offer conflicting accounts.[9] Therefore, my interpretation neither presumes nor discounts a systematic unitarian reading of Aristotle's works.
2. I actually agree with Curzer's assessment—at least part of it: there are some parts of Aristotle's account of teaching that *are* clear, though they are stated in quite general terms. I take Aristotle's clear yet general statements about teaching as the starting-point of my interpretation. I then proceed to fill in the details of this outline sketch with other passages in Aristotle.
3. Projects with a similar method and scope have been tried on many different topics.[10]

---

[9] For a helpful discussion of these areas and the scholarly debate about them, see Graham (1987: Ch. 1). Compare Shields (1999: 9, n. 1).

Finally, specifically with regard to the topic of Aristotle's theory of education, Tachibana, in his "How Aristotle's Theory of Education Has Been Studied in Our Century," concludes that a reconstruction of the sort that I deploy is the only viable methodology (2012: 53-58). He also provides an analysis of the relevant success criteria that attends such an interpretive enterprise: the accuracy of a reconstructive project such as mine is to be judged on whether it is *plausible—i.e.*, consistent with the textual evidence we *do* possess, and given what else we know about Aristotle's thinking, captures what he *would have* said about the topic under consideration (ibid).[11]

1.4 Expected Contributions

By exploring Aristotle's notion of teaching, this study aims to make a contribution to understanding Aristotle's theory of education. But since there are many different types of study which aim to make such contributions particularly to this field, it will be worthwhile to clarify the specific aims of this study. Tachibana (2012) helpfully delineates three different approaches that have been taken in studies of Aristotle's educational theory:

1. *The interpretive approach* simply seeks to interpret what Aristotle's texts say on the subject of education. Some prominent examples include Kraut (1998), Curzer (1996), and Lawrence (2011).

---

[10] More recent example of similar projects include Crivelli's *Aristotle on Truth* (2004), Pearson's *Aristotle on Desire* (2012), and Pfeiffer's *Aristotle's Theory of Bodies* (2019), Moss's *Aristotle on the Apparent Good* (2012).

[11] Compare Bronstein (on his approach to interpreting Aristotle on the acquisition of *nous*: "My claim is not that Aristotle put all of the pieces together in exactly the way I describe. My claim is rather that all of the pieces are there to be put together in the way I describe" (2016: 9). Furthermore, compare Aristotle himself: "Since these, then, are the sorts of things we argue from and about, it will be satisfactory if we can indicated the truth roughly and in outline; since <that is to say> we argue from and about what holds good usually <but not universally>, it will be satisfactory if we can draw conclusions of the same sort" (*NE* I.3 1094b19-22, trans. Irwin).

2. *The applicative approach* seeks to apply some aspect of Aristotle's theory to today's pedagogical practices and techniques. Kristjánsson's many book-length works (2007, et. al.) are perhaps the best examples of this approach. In Kristjansson's words, "my eventual aim is to say something germane about moral education rather than about Aristotle" (2007: 5).
3. *The intermediate approach* combines the aims of (1) and (2). The example Tochibana gives is Curren's *Aristotle on the Necessity of Public Education* (2000). Curren's aim is threefold: to interpret Aristotle correctly, analyze his thought for its substantive value, and then "weigh and elaborate their importance for current debates about the nature of and grounds for educational equality, the place of moral education in public schools, and school choice and privatization" (2000: 8).

Part I of this dissertation aims to secure and defend an accurate interpretation of Aristotle's notion of teaching. It therefore belongs squarely within (1) the interpretive approach. Once secured, however, Aristotle's conception of teaching has many potential applications. Part II applies the interpretation defended in Part I to two debates in Aristotle's ethics, and Part III uses this interpretation to solve a problem for contemporary Neo-Aristotelian educational theory. Part III, therefore, belongs to (2) the applicative approach. But in so far as the three Parts of this dissertation aim at (1) and (2), the work of the whole dissertation can fairly be described as belonging to (3) the intermediate approach.

1.5 A Note on Scope

I conclude the dissertation in Chapter 8 by noting how additional projects become possible once Aristotle's notion of teaching has been established. One such work is an aspect of the intermediate

approach that I will not take up in this dissertation—analyzing Aristotle's notion of teaching for its substantive value. While I think Aristotle's notion of teaching offers a lot of promise for the practice of education today, articulating and assessing that promise is a work for another time. Another promising area of scholarship is comparing Aristotle's notion of teaching with that of his own teacher, Plato. A complete treatment of this topic will have to wait for another time, too, but I will make occasional comparisons between Socrates, Plato, and Aristotle during the course of my interpretation in order to illuminate various aspects of Aristotle's account.

Finally, perhaps readers will be tempted to press Aristotle on how teaching, which instills scientific understanding in students, results in the intellectual virtues such as practical and theoretical wisdom. Addressing such a question will require a treatment of the nature of the intellectual virtues in Aristotle as well as the specifics of the relationships between *epistêmê* and *technê*, *phronêsis*, *sophia*, and *nous*.[12] But before we can study how teaching cultivates intellectual virtue, it is necessary to first understand what Aristotle's notion of teaching consists of. My interpretation therefore provides a necessary starting-point for the interpretation of Aristotle on the cultivation of intellectual virtue (§5.4), but I leave the complete treatment of this topic to future work.

---

12 And, perhaps, *sunesis* (see *NE* I.13 1103a5-7).

Part I: ARISTOTLE ON TEACHING

In this Part, I address two of the three theses found in the literature on Aristotle's notion of teaching:

1. Aristotle has no specific notion of teaching in his works (Chapters 2-4)
2. For Aristotle, teaching is done by demonstration (Chapter 4)

Each of the chapters in this part is a response to the first (and, judging from the relative lack of scholarship, perhaps the most prevalent) thesis—that Aristotle has no specific account of teaching. Chapter 2 establishes that Aristotle thinks that the end (*telos*) of teaching is the instillation of scientific understanding (*epistêmê*) in a student's soul. Chapter 3 supports and extends this interpretation by providing a treatment of the passages where Aristotle discusses the conditions that must be met before the goal of teaching can be achieved. Chapter 4 further supports and extends my interpretation by showing how Aristotle's teaching methodology aligns with my work in Chapters 2-3.

I address the second thesis, that for Aristotle teaching is done by demonstration, in Chapter 4. I argue that Aristotle thinks teaching *can* be accomplished *via* demonstration, but also involves induction, definition, and (in special circumstances) analogy.

Chapter 2:

The *Telos* of Teaching

2.1 Introduction

The goal of this chapter is to establish that for Aristotle the *telos* of teaching is to instill *epistêmê* (or, as I translate it, scientific understanding) in a student's soul.[13] I proceed by canvassing a significant number of passages from throughout Aristotle's corpus which either state this claim directly or admit of a *prima facie* reading that coheres with this interpretation. I present these passages in §2.2. Then, because it is central to Aristotle's notion of teaching, I discuss Aristotle's concept of scientific understanding in §2.3. Finally, in §2.4, I consider and ultimately reject some potential objections to my interpretation.

---

[13] My translation of *epistêmê* may be unorthodox (though see Kosman 1973), but my interpretation of this all-important Aristotelian concept is not. I present my reading of *epistêmê* in §2.3, where I essentially adhere to the orthodox view. The translation for *epistêmê* that seems to be most favored at the moment is "scientific knowledge." Bronstein argues for translating *epistêmê* as "scientific knowledge" because this translation captures the fact *epistêmê* is a species of *gnôsis* (2016: 18-21). I will not ultimately disagree with Bronstein's interpretation of *epistêmê*, but I see no reason why "scientific understanding" should prevent us from recognizing that *epistêmê* is a species of *gnôsis* either. To my mind, "scientific *understanding*" is a better rendering of the fact that, for Aristotle, *epistêmê* is primarily about grasping the causes (*aitia*, or explanatory factors) of some subject. Bronstein's main opponent in this debate over the proper translation of *epistêmê* is Burnyeat, who argues for translating *epistêmê* as "understanding" (1981 & 2012). Perhaps there is some ambiguity in this translation, since "understanding" may also refer to a kind of emotional empathy which is not part of Aristotle's notion of *epistêmê*. It is for this reason that I have opted for "*scientific* understanding" rather than just "understanding" by itself (although, of course, one needs to keep in mind that Aristotle's concept of a "science" differs from ours, too—again, see §2.3). Lesher, by contrast, opts for "expert knowledge" or "disciplinary mastery" (2001), and while these seem like good options to me, they do not make for very good English sentences. Largely for the sake of euphony, throughout the dissertation I will not be not so rigid with my translations of *epistêmê*. Sometimes I will use "understanding," other times "knowledge" and other times I will leave *epistêmê* untranslated. I shall trust the reader to tell, based on context, whether and when I am referring to Aristotle's conception of *epistêmê*.

It will be helpful to keep in mind what I am *not* claiming as well. I am not claiming that Aristotle uses "teaching" in a perfectly consistent manner across all of his works. To expect that he did so would be to set too high a bar for the interpretation of Aristotle's notion of teaching—or, for that matter, almost any concept in Aristotle's works. Even so, there is still a remarkably high level of consistency in the way Aristotle uses this term. In fact, there is enough consistency between these passages to demonstrate that—contrary to one prevailing opinion about Aristotle's notion of teaching—Aristotle *does* have a specific notion of teaching.[14] The passages that support this interpretation come from a diverse range of texts in Aristotle's corpus, and they show, with a remarkable consistency, that for Aristotle the core sense of teaching is the activity of instilling scientific understanding in a student. Painting the full picture of this notion of teaching will require work beyond this chapter. Here I seek to establish that instilling scientific understanding is the aim, or *telos*, of teaching according to Aristotle. I leave it to Chapters 3 and 4 to fill in the details of how this aim is achieved.

2.2 Teaching & *Epistêmê*: Some Clear Yet General Statements

There is no unambiguous, detailed, and explicit definition of teaching in Aristotle's works. The closest that any passage comes to such a statement, however, comes from Aristotle's *Rhetoric* I.1:

> **TP-2** An account in accordance with scientific understanding is [characteristic of] teaching. (*Rhet.* I.1 1355a26)[15]

---

[14] This is the scholarly thesis about teaching best represented by Curzer (2012: 351), which I discuss in §1.1&2.

[15] διδασκαλίας γάρ ἐστιν ὁ κατὰ τὴν ἐπιστήμην λόγος.

There is some controversy over whether Aristotle wrote the genitive or the nominative of *didaskalia* in this passage. The difference matters: if nominative, this is a straightforward definition of teaching: teaching *is* an account in accordance with scientific understanding. If genitive, then Aristotle is not *defining* teaching, but rather describing a characteristic feature of it: teaching is *characteristically* an account in accordance with scientific understanding, but it can have other features, too. A note in the critical apparatus of the OCT suggests an alternative manuscript reading of *didaskalia* from Dionysius of Halicarnassus, who also notes the appearance of the nominative in most (*plures*) manuscripts. While the nominative is perhaps the more natural reading, I suspect that the editor of the Oxford Classical Text chose the genitive based on the principle of *lectio difficilior*. Since the genitive is the more difficult reading, it is not likely to have been copied into subsequent manuscripts unless it was there originally. If we follow the OCT, there is room for teaching to be more than just an account in accord with scientific understanding. If we follow Dionysius of Halicarnassus, then this is the definition of teaching. In any case, the passage establishes a tight connection between teaching and *epistêmê*—though it remains unclear what, exactly, that connection entails, since it is not yet clear what it means for an account (*logos*) to be *kata epistêmê*.[16] Nevertheless, we can glean this much from TP-2: what distinguishes teaching from other types of *logoi* is its being in accord with scientific understanding.

The only other passage in Aristotle which is directly about teaching comes from Aristotle's *Physics* III.3:

---

16 Barnes uses this passage to bolster his argument for his positive thesis—that teaching for Aristotle is done by demonstration (*apodeixis*). He argues that the context of TP-2, where Aristotle contrasts rhetoric with a more exacting account (*i.e.*, teaching) suggest that Aristotle is talking about the kind of precise explanation given in a demonstration. I shall take up Barnes's claims in Chapter 4.

> **TP-3** Teaching is the activity of the one who has the capacity to teach, and indeed it is in someone; it is not cut off, but is *of* something *in* someone. (*Phys.* III.3 202b7)[17]

This sentence is maddeningly vague. Clearly it is about teaching, but it provides only the contours of an account. My suggestion, which I shall support with additional passages in this section, is that we should fill in the blanks of this statement as follows: (i) teaching is *of* scientific understanding and (ii) it takes place *in* the learner.

Sometimes, if the exact nature of a capacity is unclear, Aristotle will examine the characteristic activity of its possessor. When searching for the definition of theoretical wisdom (*sophia*), for example, Aristotle describes the *sophos*—the person who is normally considered wise in theoretical concerns (*Meta.* I.1 982a5-21). When seeking the nature of practical wisdom (*phronêsis*), he consults what is said about the *phronimos*—the practically wise person (*NE* VI.5 114a23-31ff.). The idea is that we can learn about a particular capacity if we investigate the characteristic activity of those said to possess the capacity in question. For presumably the nature of the capacity is manifested in its possessor's characteristic behavior. To better understand what Aristotle thinks about teaching (*didaskalia*), then, we can look to what he says about those who teach.[18] On this point, Aristotle is clear:

---

[17] ἔστι γὰρ ἡ δίδαξις ἐνέργεια τοῦ διδασκαλικοῦ, ἔν τινι μέντοι, καὶ οὐκ ἀποτετμημένη, ἀλλὰ τοῦδε ἐν τῷδε

[18] Looking to teachers will be more informative than, say, looking to learners, since—as Bronstein (2016: 16) points out—there are other types of learning than learning by teaching. Bronstein labels learning by teaching *didactic learning* and both learning by investigation and by discovery as *zetetic learning*. Looking to Aristotle's comments about learning will cannot be guaranteed to provide concrete evidence about teaching, since it will be be unclear whether he means didactic or zetetic learning. The exception is a passage, which Bronstein also cites, from *Meta.* I.9 (992b30-33), where Aristotle discusses what happens in *all* learning. I take up this passage in §§4.2-3.

> **TP-4** Those who teach are those who state the explanations (*tas aitias*) of each thing. (*Meta.* I.2 982a29-30)[19]

Since teachers state explanations, it ought to follow that teach*ing* is the activity of stating explanations—the constitutive component of *epistêmê*, as Aristotle makes plain in the *Posterior Analytics* when he says, "We have *epistêmê* of something whenever we grasp its explanation" (*APo.* I.2 71b30-31)[20]

This passage about what teachers do corresponds to and corroborates the characterization of teaching in TP-2, and it is confirmed by the context of TP-4 in the first book of the *Metaphysics*. Just prior to this passage, Aristotle distinguishes between those who know "the that" (*to hoti*) and those who know "the why" (*to dioti*). He identifies those who grasp *the why* with those who have knowledge and those who only grasp *the that* with those who only have experience (*empeiria*). Aristotle then says that someone's ability to teach is a general indication (*sêmeion*) that they know—rather than merely have experience with—some phenomenon, and thus

---

[19] **οὗτοι γὰρ διδάσκουσιν, οἱ τὰς αἰτίας λέγοντες περὶ ἑκάστου.** *Aitia* can also be translated as "causes," so long as we remember that Aristotle's notion of a cause (*aition*) is much broader than ours. It is for this reason that some scholars provide "explanatory factor" or "reason" as alternative translations. In general, *aitia* denotes the reasons why something is the case, and is therefore synonymous with Aristotle's *to dioti* and *to dia ti*, which translate literally to "the wherefore" and "the because of what." See Barnes (1994: 89). For further discussion of the translation of *aitia*, see Shields (2014: 481) and Reeve (2016: 254).

[20] **αἴτια μὲν ὅτι τότε ἐπιστάμεθα ὅταν τὴν αἰτίαν εἰδῶμεν.** See also the formal definition of *epistêmê* Aristotle gives at *APo.* I.2 71b9-16 (discussed in more detail below).

> **TP-5** that is why we think *technê* is more like *epistêmê* than experience, since [those who have *technê*] can teach, whereas [merely experienced people] cannot. (*Meta.* I.1 981b7-10)[21]

As Aristotle explains earlier in the same chapter, the reason for the closer association between *technê* and *epistêmê* is that craftsmen—like those who have scientific understanding—"know the why, that is, the explanation" (*Meta.* I.1 981a29-30).[22] The upshot for our purposes is this: the reason that the ability to teach is a sign of someone's possessing *epistêmê* is that teaching involves stating *the why—i.e.*, giving explanations—and the ability to state *the why* is an indication that someone has *epistêmê*. Thus, if someone can teach, this is an indication that they have *epistêmê*, because *epistêmê* requires grasping *the why* and teaching involves stating it.

Another passage about teachers, from later Aristotle's *Metaphysics*, will help support and fill in the account I have been developing so far.

> **TP-6** Further, the matter is potentially something because it may come in the form of it—at any rate, when it is actively something, then it is in the form of it. Similarly too in the other cases, even those in which the end is a movement. That is why, just as those who teach think they have delivered the end result (*telos*) when they have shown [their student][23] in activity, nature also does likewise. For if it does not happen in this way, it will be like Pauson's Hermes, since it will even be unclear whether the

---

21 *ὅλως τε σημεῖον τοῦ εἰδότος καὶ μὴ εἰδότος τὸ δύνασθαι διδάσκειν ἐστίν, καὶ διὰ τοῦτο τὴν τέχνην τῆς ἐμπειρίας ἡγούμεθα μᾶλλον ἐπιστήμην εἶναι· δύνανται γάρ, οἱ δὲ οὐ δύνανται διδάσκειν.*

22 *οἱ δὲ τὸ διότι καὶ τὴν αἰτίαν γνωρίζουσιν.*

23 Following Ross (1924: 263). Reeve (2016) follows this suggestion as well.

> *epistêmê* is inside or outside, just as with that figure. For the function is the end, and the activity is in the function, and this is why 'activity' is said of things with reference to the function and extends to the actuality. (*Meta.* IX.8 1050a15-23)[24]

While Aristotle's main concern in this passage is to articulate a point about his metaphysics (that activity is prior to potentiality in both account and substance), the example that he uses to illustrate this point informs us about how Aristotle thinks of the *telos* of teaching: the teacher's task will not be complete until the student has absorbed the teacher's *epistêmê*. It can, however, be difficult to determine whether the student truly possesses the understanding that the teacher has tried to impart. Aristotle invokes Pauson's Hermes here to illustrate the difficulty of trying to determine whether a student really possesses understanding.[25] Apparently, the way Pauson depicts Hermes makes it very difficult to tell whether the god of boundaries (and their transgression) is inside or outside the canvas.[26] According to this passage, the way to determine whether the student truly possesses the *epistêmê* being taught is to have the student activate their newly gained *epistêmê* on their own. The

---

[24] ἔτι ἡ ὕλη ἔστι δυνάμει ὅτι ἔλθοι ἂν εἰς τὸ εἶδος· ὅταν δέ γε ἐνεργείᾳ ᾖ, τότε ἐν τῷ εἴδει ἐστίν. ὁμοίως δὲ καὶ ἐπὶ τῶν ἄλλων, καὶ ὧν κίνησις τὸ τέλος, διὸ ὥσπερ οἱ διδάσκοντες ἐνεργοῦντα ἐπιδείξαντες οἴονται τὸ τέλος ἀποδεδωκέναι, καὶ ἡ φύσις ὁμοίως. εἰ γὰρ μὴ οὕτω γίγνεται, ὁ Παύσωνος ἔσται Ἑρμῆς· ἄδηλος γὰρ καὶ ἡ ἐπιστήμη εἰ ἔσω ἢ ἔξω, ὥσπερ κἀκεῖνος. τὸ γὰρ ἔργον τέλος, ἡ δὲ ἐνέργεια τὸ ἔργον, διὸ καὶ τοὔνομα ἐνέργεια λέγεται κατὰ τὸ ἔργον καὶ συντείνει πρὸς τὴν ἐντελέχειαν.

[25] Scholars have suggested that this painting of Hermes was perhaps a *trompe l'oiel*—an image where it is difficult to tell whether the subject is inside or outside the painting's frame. See Reeve (2016: 468).

[26] Apparently, Pauson enjoyed producing works that fooled the eye. Plutarch and others report a painting of his which looks like a horse galloping, but when turned upside down the same image depicts a horse writhing on its back. Ross (1924: 263-264) cites references to Pauson in ancient texts by Pseudo-Lucian (*Demosth. Encom.* 24), Aelian (*Var. Hist.* xiv. 15) as well as Plutarch (*de Pythiae Orac.* 5.396e). Ross also briefly discusses Alexander of Aphrodias's commentary on this passage, which comments on the Hermes. Aristotle mentions Pauson two other times in his corpus. In his *Politics* (VIII.8 1340a36), Aristotle says that young men should not look at his works. In his *Poetics* (2 1448a6), we receive the reason why they should look away: he represents men as less noble than they are.

implication is that if a student cannot exercise the relevant *epistêmê*, it remains, in effect, "outside" of him.[27] The teacher's *telos*, therefore, is to get the scientific understanding inside the student soul in such a way that the student can activate their *epistêmê* at will.[28]

Aristotle makes a corresponding point in his *De Anima*—in a passage that is often taken to be about the acquisition of a first actuality:[29]

> **TP-7** Hence, leading one who thinks or understands into actuality from potentiality is not teaching, but properly has some other name; whereas the one who, from being in potentiality, learns and receives understanding (*lambanon epistêmê*) from one who is in actuality, and able to teach, either should not be said to be affected or there are two types of alteration, one a change towards conditions of privation and the other towards positive states and a thing's nature. (*DA* II.5 417b9-417b16)[30]

---

27 Compare Reeve: "The point of the analogy is that unless we see a student activate his scientific knowledge [=*epistêmê*] in appropirate circumstances, it will be unclear whether he has it within himself or is merely repeating what he has heard from another" (2016: 468-469).

28 This is one area where Aristotle's notion of teaching echoes Plato's—at least part of the account of teaching that Plato has Socrates expound in the final pages of the *Phaedrus*. For more on this reading of the *Phaedrus*, see Long (2013: 23-25).

29 For a good discussion of the notion of "first actuality" in Aristotle, see Kosman (2013: 63-65). To use Kosman's example: the *capacity* to speak French is a first actuality. The *exercise* of that ability is a second actuality.

30 *τὸ μὲν οὖν εἰς ἐντελέχειαν ἄγειν ἐκ δυνάμει ὄντος* [*κατὰ*] *τὸ νοοῦν καὶ φρονοῦν οὐ διδασκαλίαν ἀλλ' ἑτέραν ἐπωνυμίαν ἔχειν δίκαιον· τὸ δ' ἐκ δυνάμει ὄντος μανθάνον καὶ λαμβάνον ἐπιστήμην ὑπὸ τοῦ ἐντελεχείᾳ ὄντος καὶ διδασκαλικοῦ ἤτοι οὐδὲ πάσχειν φατέον*, [*ὥσπερ εἴρηται*], *ἢ δύο τρόπους εἶναι ἀλλοιώσεως, τήν τε ἐπὶ τὰς στερητικὰς διαθέσεις μεταβολὴν καὶ τὴν ἐπὶ τὰς ἕξεις καὶ τὴν φύσιν.*

How precisely to understand the point Aristotle is trying to make in this chapter is a matter of scholarly debate.[31] But for our purposes, we can note that once again Aristotle draws a connection between teaching and *epistêmê*: didactic learning involves receiving scientific understanding from a teacher—*i.e.*, one who actually possesses the scientific understanding that is being taught. The broader context of the passage lends itself to the following reading as well: that this sort of teaching—of instilling *epistêmê* in a learner—is a paradigmatic case of acquiring a first actuality. When a student has successfully received *epistêmê* from a teacher, that student becomes capable of exercising her newly gained *epistêmê* on their own in the future. When she does so, she activates an acquired capacity—moving, in effect, from a first to a second actuality.[32] Where in TP-6 Aristotle says that teachers test whether students have the *epistêmê* being taught by getting their students to activate the *epistêmê* they are supposed to have acquired, TP-7 makes essentially the same point: teaching is the process whereby students acquire the state (*hexis*) or capacity (*i.e.*, the first actuality) which they will be able to activate—moving from first to second actuality at will.

Another point can be distilled from TP-7 as well: teachers possess the *epistêmê* they intend to teach. Aristotle states this connection between *epistêmê* and teaching much more strongly in his *Physics* when he says,

---

31 See, *e.g.*, Burnyeat (2002), and Heinaman (2007), and Bowin (2011 & 2012).

32 This reading of the passage—as offering an illustration of first vs. second actuality—is also discussed by Shields (2016: 218-219), who responds to some of the concerns raised in the debate between Burnyeat, Heinaman, and Bowin (see above). See also *NE* VII.3 (1146b31-35).

> **TP-8** for teaching follows learning, of which things the one necessarily has *epistêmê*, and the other does not have it. (*Phys.* VIII.5 257a12-14)[33]

Aristotle is in the middle of making a point about how it is impossible for the cause of a change to be changed in the same way that it changes what is changed. He supports his point by appealing to the distinction between teaching and learning: just as it is impossible for someone to learn and teach simultaneously (since the teacher necessarily has *epistêmê* and the learner necessarily lacks it), it is impossible for something to change and be changed in the same way, at the same time, and in the same respect. If the teacher were also a learner (with respect to the same thing, at the same time, and in the same respect), then the teacher would simultaneously both possess and lack *epistêmê* about the same thing (at the same time, *etc.*), but this is impossible. The point for our purposes is this: Aristotle maintains that teachers necessarily possess the *epistêmê* of what they teach. The corresponding point to this point is that students, who necessarily lack *epistêmê* (according to TP-8), receive *epistêmê* from a teacher. This is precisely the point that Aristotle conveys in TP-7 as well.

Two final passages shore up the general point I have been making in this section—that a plethora of passages from throughout Aristotle's corpus establish that, for Aristotle, teaching is the instilling of scientific understanding in a student. These passages confirm that *epistêmê* is taught. The first passage comes from Aristotle's *Prior Analytics*:

> **TP-9** Well then, that *epistêmê* is teachable is clear. (*APr.* II.25 69a25-26)[34]

Aristotle puts the same point more strongly in *NE* VI.3:

---

[33] *τὸ διδάσκον γὰρ συμβαίνει μανθάνειν, ὧν τὸ μὲν μὴ ἔχειν τὸ δὲ ἔχειν ἐπιστήμην ἀναγκαῖον*

[34] *ἡ μὲν οὖν ἐπιστήμη ὅτι διδακτόν, φανερόν*

> **TP-10** every *epistêmê* seems to be teachable, and that about which one can have *epistêmê* to be learnable. (*NE* VI.3 1139b25-26)[35]

While neither of these passages say definitively that *epistêmê* is *all* that is taught, there is very little textual evidence to suggest that anything besides *epistêmê* is taught.[36] By comparison, there is ample evidence to support my claims about how to fill in the blanks of TP-3: that teaching is (i) of *epistêmê* and that (ii) it takes place in the learner's soul.

2.3 Understanding *Epistêmê*

The passages canvassed in §2.2 show that scientific understanding is the end, or *telos* of teaching. While a full accounting of Aristotle's notion of *epistêmê* is beyond the scope of this study, it is important to make sure the basics of his concept are in view. For, as Chapters 3 and 4 will show, *epistêmê* serves as the final cause that determines Aristotle's prescriptions for both the pre-conditions that must be present before teaching can take place (Chapter 3), and the methods that teachers use to instill *epistêmê* in a learner's soul (Chapter 4).

2.3.1 The Basics

Broadly speaking, Aristotle uses *epistêmê* to denote either:

1. a science—*i.e.*, an organized body of knowledge, which is comprised of a set of facts ordered hierarchically according to their explanatory power and ultimately grounded

---

35 ἔτι διδακτὴ ἅπασα ἐπιστήμη δοκεῖ εἶναι, καὶ τὸ ἐπιστητὸν μαθητόν.

36 I address this point in more detail below, in §2.4, and again in Chapter 5.

in definitions that capture science-specific and explanatorily basic first principles (*archai*).

2. the intellectual state (*hexis*) someone is in when they understand such a science—*i.e.*, a settled and unshakable intellectual state wherein someone is (a) convinced of the truth of the foundational principles (*archai*) of the science, (b) apprehends that the explanatory relationships of facts within the science are the correct explanatory relationships of the facts within this science and that these cannot be otherwise[37], and (c) can therefore give a demonstration (*apodeixis*) of the science.

The subjects in which one can have this kind of scientific understanding according to Aristotle are not restricted to what are normally considered "the sciences" today. In general, Aristotle delineates roughly three different branches of science: the theoretical sciences (concerned with necessary truths), the practical sciences (concerned with action), and the productive sciences (concerned with things that are made).[38]

Every science, according to Aristotle, has three general characteristics.[39] First, each science is of one domain of inquiry. Physics, for example, is primarily about change (*kinêsis*), medicine is primarily about health, mathematics is primarily about numbers, and so on. Second, each science

---

37 Whether it is the explanations that hold always or the *explananda* is one of the current controversies in the scholarly literature. See Angioni (2016) for a discussion of this point. I think there is good evidence to suggest that it is the *explanada* which must "hold always" (see, *e.g.*, *NE* VI.3 1139b18-24).

38 For example, cooking and ship-building count as Aristotelian sciences, too. For Aristotle's tripartite division of the sciences, see his *Top.* VI.6 145a15-16 & *Meta.* XI.7 1064a16-19. The theoretical sciences are also broken down into those which concern truths that hold "always," such as astronomy and theology, and those that hold "for the most part," such as the natural sciences, *e.g.*, biology and physics (*Phys.* II.7 198a21-b4 & *Meta.* VI.1 1025b18). I discuss this distinction in more detail in §2.3.2.

39 In this paragraph, I adhere to Shields's description of *epistêmê* (2014: 124-126).

arranges its subject matter into an explanatory order—*i.e.*, it makes plain which facts within a science explain others in that science's purview. The fact, for example, that plant leaves contain chlorophyll explains, at least in part, why they are green, rather than the other way around (they do not have chlorophyll because they are green). Finally, each science adheres to the constraints of logic—specifically, the formal demands placed on syllogistic inference.

Taken all together, these characteristics reveal what is essential about each science and the kind of understanding that one acquires when one possesses a science: someone who possesses scientific understanding is able to offer a scientific explanation of that science's subject matter. A scientific explanation (*i.e.*, an *apodeixis*, the kind of explanation someone with scientific understanding can furnish) must be able to explain each fact within the science until a fact which explains all the rest and admits of no further explanation itself is reached. Aristotle calls these final propositions *archai* (variously translated as "first principles" or "starting-points"). These first principles are the essence-specifying definitions of the subject of the science. A first principle of the science of botany, for example, would be the definition of the vegetative soul—*i.e.*, the capacity for self-nourishment and growth.

So, according to Aristotle, it is only when one's understanding rests upon a proposition which is explanatorily basic and necessarily true that one has scientific understanding of a subject. A scientific explanation of why plant leaves are green, for example, states that it is because they contain chlorophyll. Plant leaves contain chlorophyll, in turn, because they convert carbon dioxide and sunlight into nourishment for themselves. Why do plants nourish themselves on these things? The answer to this question involves stating the definition of plant life: the vegetative soul just is the capacity for self-nourishment and growth.

2.3.2 Two Complications

In the previous section, I laid out the basics of Aristotle's conception of scientific understanding. In this section, I address some complications with his view and some ways these complications have been addressed in the scholarly literature. My main focus will be to address how these complications affect my interpretation of Aristotle on teaching.

1. *Nous vs. Epistêmê*

Someone who has *epistêmê* of a particular science has the capacity (*hexis*) to provide a demonstration (*apodeixis*) of that science, where this demonstration includes a full grasp of the explanation of the facts within the science—all the way down (so to speak) to the explanatorily basic first principles. Sometimes, however, Aristotle will say that the intellectual state that grasps these definitions is not *epistêmê* but *nous*.[40] Recently, Bronstein has argued that *nous* should be understood as a non-demonstrative form of *epistêmê* (2016: 51-58).[41] While I find Bronstein's arguments convincing, I do not ultimately wish to re-litigate the issue here. For, in any case, what is clear from the passages above is that *epistêmê* necessarily involves a grasp of the first principles of a science, "since it is when someone is convinced in a certain way and the starting-points are known to him that he has *epistêmê*." The process of instilling *epistêmê* in a learner, therefore, must include instilling a grasp of the explanatorily basic first principles of the science. Whether this grasp is part of *epistêmê* or an additional cognitive component is largely besides the point. For without such a grasp, the learner

---

40 *E.g., APo.* I.3 72a24-25.

41 *Cf.* Byrne (1997: 170-181).

will not have *epistêmê*. In so far as teaching seeks to instill scientific understanding in a learner, it will also take steps to instill a grasp of the explanatorily basic first principles of the science being taught.

2. *Two types of necessity?*

An essential ingredient of scientific understanding is necessity. According to Aristotle in one passage, the objects that are known by scientific understanding are "by necessity" (*NE* VI.3 1139b18-24). And yet sometimes Aristotle seems to relax this necessity requirement.[42] Some sciences are of what hold "always" while others are of what holds "for the most part" (*epi to polu*). This distinction presents a potential problem for my account: if there are two types of *epistêmê* according to Aristotle, which does he think is fit for being taught? In the two passages where Aristotle offers exacting descriptions of scientific understanding (*APo.* I.2 71b9-16 & *NE* VI.3 1139b31-36), he says that scientific understanding is about *necessary* truths—*i.e.*, what holds always. If scientific understanding is truly only about necessary truths, then teaching—which seeks to instill scientific understanding in students—has a severely limited curriculum, since the only sciences that fit this description are theology and astronomy. Fortunately, one of the teaching passages makes it clear that Aristotle thinks both the sciences that deal with things that hold for the most part *and* those that hold always are fit to be taught:

> **TP-11** that scientific understanding is not of the accidental is clear; for every science is either of what is always or for the most part—for how else could one learn or teach someone else? For a thing must be defined either by what is always [the case]

---

42 *Cf.* Bronstein (2016: 36, n. 29)

> or by what is [the case] for the most part—for example, that honey-water is beneficial to a fever patient for the most part. (*Meta.* VI.2 1027a19-23).[43]

While Aristotle makes it possible to teach both kinds of scientific understanding, he does not do much to illuminate what it means for something to hold "for the most part." The leading interpretation of this term is that "for the most part" indicates a plural quantifier.[44] Precisely how to understand this term in Aristotle is again largely besides the point for this project. What does matter—and what TP-11 shows—is that it is possible to teach not only the sciences about the things that hold always, but also about what holds for the most part, too. Thus, any of the three broad branches of scientific understanding can be taught.

2.3.3 Why Scientific Understanding?

So far, I have sought to prove that the goal of teaching for Aristotle is to instill scientific understanding in the learner's soul. I believe the textual evidence cited above establishes this point. But, it might be asked, *why* is scientific understanding the goal of teaching? Why, in general, does it matter to Aristotle that we grasp *the why* of things? To my knowledge, this is not a question that is addressed in Aristotle scholarship. But it makes sense to ask it in the context of this project.

---

43 *ὅτι δ'ἐπιστήμη οὐκ ἔστι τοῦ συμβεβηκότος φανερόν· ἐπιστήμη μὲν γὰρ πᾶσα ἢ τοῦ ἀεὶ ἢ τοῦ ὡς ἐπὶ τὸ πολύ—πῶς γὰρ ἢ μαθήσεται ἢ διδάξει ἄλλον; δεῖ γὰρ ὡρίσθαι ἢ τῷ ἀεὶ ἢ τῷ ὡς ἐπὶ τὸ πολύ , οἷον ὅτι ὠφέλιμον τὸ μελίκρατον τῷ πυρέττοντι ὡς ἐπὶ τὸ πολύ.*

44 In other words, when Aristotle says that Ss are Ps "for the most part" he intends to convey that "most" Ss are Ps. For a recent overview of the complications involved with understanding Aristotle's "for the most part" concept, see Karbowski (2019: 141-142). For some discussion of the leading interpretations of it, see Barnes (1994: 192-193). Both Barnes and Karbowski ultimately side with Judson (1995) who understands "for the most part" as a plural quantifier. Does this interpretation hold up for the example offered in TP-11? "Most honey-waters are beneficial to a fever patient" does not seem to work, but perhaps the sentence can be modified in the following way, which does: "honey-water is beneficial to most fever patients" (or, alternatively, "most fever patients are benefited by honey water").

Specifically, why should Aristotle make *scientific understanding* (and not some other kind of *gnôsis*) the goal of teaching? Answering this question will help us better understand Aristotle's notion of teaching, and it will address an under-appreciated aspect of Aristotle's conception of *epistêmê*. Ultimately I will suggest that that scientific understanding is the goal of teaching because this type of *gnôsis* is rooted more deeply than other types of knowledge in the student's soul.

In his *Posterior Analytics* Aristotle writes,

> We think we have *epistêmê* of something *simpliciter* (and not in the sophistical way, incidentally) when we think we know of the explanation because of which the object holds that it is its explanation, and also that it is not possible for it to be otherwise. It is plain, then, that to understand is something of this sort. And, indeed, people who do not understand think they are in such condition, and those who do understand actually are. Hence if there is scientific understanding *simpliciter* of something, it is impossible for it to be otherwise. (*APo.* I.2 71b9-16)[45]

As this passage makes clear, an essential component of scientifically understand something is to grasp its explanation. But why should this matter for Aristotle? After all, in a couple of different passages, Aristotle says that when it comes to practical matters, experience—which only knows *the that* without grasping *the why*—seems just as good (if not better in some cases) than scientific

---

45 Ἐπίστασθαι δὲ οἰόμεθ' ἕκαστον ἁπλῶς, ἀλλὰ μὴ τὸν σοφιστικὸν τρόπον τὸν κατὰ συμβεβηκός, ὅταν τήν τ' αἰτίαν οἰώμεθα γινώσκειν δι' ἣν τὸ πρᾶγμά ἐστιν, ὅτι ἐκείνου αἰτία ἐστί, καὶ μὴ ἐνδέχεσθαι τοῦτ' ἄλλως ἔχειν. δῆλον τοίνυν ὅτι τοιοῦτόν τι τὸ ἐπίστασθαί ἐστι· καὶ γὰρ οἱ μὴ ἐπιστάμενοι καὶ οἱ ἐπιστάμενοι οἱ μὲν οἴονται αὐτοὶ οὕτως ἔχειν, οἱ δ' ἐπιστάμενοι καὶ ἔχουσιν, ὥστε οὗ ἁπλῶς ἔστιν ἐπιστήμη, τοῦτ' ἀδύνατον ἄλλως ἔχειν.

understanding (*e.g.*, *Meta.* I.1 981a13-981b9). Yet acquiring scientific understanding is considered an intellectual achievement.

Assume for the sake of argument that two people know that the same statement is true. One person, however, knows just the fact *that* this statement is true, while the other person knows *why* it is true, too. In English, a natural way to contrast these knowledge-states that these two people are in is to say that the person who grasps the explanation of the fact has a *deeper* understanding than the person who merely knows the fact. Here I think the metaphor of the "depth" of one's knowledge nicely reflects two features of Aristotle's notion of *epistêmê* that I think are often overlooked. First, it is possible for the same thing to be known in different ways.[46] Second, it is possible for knowledge of a thing to be more or less firmly in a person's soul. The person who grasps the explanation not only has a deeper knowledge of the same fact—that is to say, the knowledge of that fact is more deeply rooted in their soul.

Aristotle's invocation of the sophists in the passage from *APo.* I.2 above is *apropos* of my point. One reason it is important to have scientific understanding is that having it makes it impossible for one's knowledge to be dislodged by sophistic rhetorical tactics. Consider this passage, from slightly later in *APo* I.2:

> If we are to have scientific understanding through demonstration, we must know the starting-points better and be better convinced of them than of what is being shown, but we must also not find anything more convincing or better known among things opposed to the starting-points, from which a contrary mistaken conclusion may be

---

46 *Cf.* Bronstein (2016, 20-21) & *APo.* I.33.

> deduced, since someone who has unconditional scientific understanding must be incapable of being convinced out of it. (*APo.* I.2 72a37-b4)[47]

Compare this passage with another from the *Topics*:

> [E]very one tries to render as the property of a thing something that belongs to it either naturally,…, or actually,… or specifically,… or without qualification,…, or in virtue of something else,.. or as the primary subject,…or because the thing is in a certain state, as being incontrovertible by argument belongs to one who has scientific understanding (for simply and solely by reason of his being in a certain state will he be incontrovertible by argument), or because it is the state possessed by something, as being incontrovertible by argument belongs to scientific understanding, or because it is partaken of, …, or because it partakes of something else, …. (*Top.* V.5 134a29-134b4).[48]

In both of these passages, Aristotle makes the point that if one has scientific understanding, one is incapable of being convinced out of what they understand. This is not the case if one has mere

---

47 *τὸν δὲ μέλλοντα ἕξειν τὴν ἐπιστήμην τὴν δι᾽ ἀποδείξεως οὐ μόνον δεῖ τὰς ἀρχὰς μᾶλλον γνωρίζειν καὶ μᾶλλον αὐταῖς πιστεύειν ἢ τῷ δεικνυμένῳ, ἀλλὰ μηδ᾽ ἄλλο αὐτῷ πιστότερον εἶναι μηδὲ γνωριμώτερον τῶν ἀντικειμένων ταῖς ἀρχαῖς ἐξ ὧν ἔσται συλλογισμὸς ὁ τῆς ἐναντίας ἀπάτης, εἴπερ δεῖ τὸν ἐπιστάμενον ἁπλῶς ἀμετάπειστον εἶναι.*

48 *ἅπαντες γὰρ ἐπιχειροῦσιν ἀποδιδόναι* [*τὸ*] *ἴδιον ἢ τὸ φύσει ὑπάρχον, καθάπερ ἀνθρώπου τὸ δίπουν, ἢ τὸ ὑπάρχον, καθάπερ ἀνθρώπου τινὸς τὸ τέτταρας δακτύλους ἔχειν, ἢ εἴδει, καθάπερ πυρὸς τὸ λεπτομερέστατον, ἢ ἁπλῶς, καθάπερ ζῴου τὸ ζῆν, ἢ κατ᾽ ἄλλο,καθάπερ ψυχῆς τὸ φρόνιμον, ἢ ὡς τὸ πρῶτον, καθάπερ λογιστικοῦ τὸ φρόνιμον, ἢ ὡς τῷ ἔχειν, καθάπερ ἐπιστήμονος τὸ ἀμετάπειστον ὑπὸ λόγου (οὐδὲν γὰρ ἕτερον ἢ τῷ ἔχειν τι ἔσται ἀμετάπειστος ὑπὸ λόγου), ἢ τῷ ἔχεσθαι,καθάπερ ἐπιστήμης τὸ ἀμετάπειστον ὑπὸ λόγου, ἢ τῷ μετέχεσθαι, καθάπερ ζῴου τὸ αἰσθάνεσθαι (αἰσθάνεται μὲν γὰρ καὶ ἄλλο τι, οἷον ἄνθρωπος, ἀλλ᾽ <ὡς> μετέχον ἤδη τοῦτο αἰσθάνεται), ἢ τῷ μετέχειν, καθάπερ τοῦ τινὸς ζῴου τὸ ζῆν.* Trans., Pickard-Cambridge.

opinion or experience of a fact. If one only knows *that* some fact obtains, then it is possible to be convinced out of it. But if, on the other hand, one scientifically understands the reason why that same fact obtains, it will be impossible, according to Aristotle, for anyone to be persuaded out of their understanding of that fact. Another way to put my point, then, is this: if the task of teaching was to instill "knowledge" (*gnôsis*) in general into a learner's soul, then the best type of knowledge to instill would be scientific understanding, because this is the form of knowledge that, once acquired, is most deeply rooted in the soul.

2.4 Addressing Some Inconsistencies

In the previous sections, I have shown that Aristotle has a consistent notion of teaching, which can be found in a diverse range of texts. But, in some other passages, Aristotle uses "teaching" and its cognates in ways that seem inconsistent with my interpretation. In this section, I explore some of these passages. I do not, however, believe these inconsistencies threaten my claim that Aristotle has a *specific* notion of teaching that runs throughout his works. First, in general, variation within a pattern does not by itself count as evidence against the existence of a fundamental pattern. The teaching passages elucidated above establish a fundamental pattern in the way Aristotle describes and uses 'teaching' and its cognates, so some variation within the way Aristotle uses 'teaching' in his works should not by itself count as evidence against my interpretation.[49] Moreover, once we examine these inconsistencies, it will become apparent that Aristotle did in fact use "teaching" in a remarkably (if not *entirely*) consistent way throughout his texts. Many of the inconsistency passages

[49] Furthermore, as I mentioned in the Introduction it would be unreasonable to demand that Aristotle use 'teaching' in an entirely consistently manner throughout his works. That is too much to expect from Aristotle regarding almost any concept. As §2.3 discussed, even Aristotle's sense of *epistêmê* varies.

(as I shall call them) either come from works that are spurious or can be shown to be consistent with the notion of teaching that I have sketched out above. In this section, I first tackle the most out-of-tune section of inconsistency passages, all of which come from Aristotle's *Historia Animalium*. I then address the smattering of other inconsistency passages strewn across Aristotle's corpus, before concluding with some reflections on the supposedly *prima facie* implausibility and seemingly un-Platonic nature of Aristotle's account of teaching.

2.4.1 Teaching Animals

Near the beginning of *Historia Animalium* IX, Aristotle indicates that animals can be "taught" by human beings and that they can teach one another:

> **TP-12** Certain animals share at once in some learning and teaching, some from each other, some from human beings, these are the ones that have hearing—not just those that hear sounds but those that further perceive the differences between signs (*HA* IX.1 608a17-21) [50]

This claim is substantiated by several similar passages later in the same book. First, on the teaching of animals by humans:

> **TP-13** The tamest and gentlest of all the wild animals is the elephant, for there are many things that it both learns and understands: they are even taught to kneel before

---

[50] *Ἔνια δὲ κοινωνεῖ τινὸς ἅμα καὶ μαθήσεως καὶ διδασκαλίας, τὰ μὲν παρ' ἀλλήλων, τὰ δὲ καὶ παρὰ τῶν ἀνθρώπων, ὅσαπερ ἀκοῆς μετέχει, μὴ μόνον ὅσα τῶν ψόφων, ἀλλ' ὅσα καὶ τῶν σημείων διαισθάνεται τὰς διαφοράς.*

> the king. It has sharp perception and superior understanding in other respects. (*HA* IX.46 630b18-21, trans. Hasper & Yurdin)[51]

> **TP-14** The shepherds teach the flocks to run together after a sudden noise; for if one is caught in a thunderstorm and does not run with the others, it miscarries if it happens to be pregnant. This is why, if there is a sudden noise in the house, they run together out of habit. (*HA* IX.3 610b33-611a2, trans. Hasper & Yurdin)[52]

Then, on animals teaching other animals:

> **TP-15** [A]t first the parents [of baby swallows] will rid the nest of excrement, but, when the young are grown, they teach their young to shift their position and let their excrement fall over the side of the next (*HA* IX.7 612b29-31, trans. Thompson, modified slightly)[53]

The "teaching" mentioned in TP-13 & TP-14—where a human teaches an animal to do something—is surely incongruous with the account I have been defending so far, since it is not possible for animals to possess scientific understanding. Therefore, the kind of teaching that is referenced in TP-13 and TP-14 should not be understood as an intellectual endeavor, but rather as

---

51 Πάντων δὲ τιθασσότατον καὶ ἡμερώτατον τῶν ἀγρίων ἐστὶν ὁ ἐλέφας· πολλὰ γὰρ καὶ παιδεύεται καὶ ξυνίησιν, ἐπεὶ καὶ προσκυνεῖν διδάσκονται τὸν βασιλέα. Ἔστι δὲ καὶ εὐαίσθητον καὶ τῇ συνέσει τῇ ἄλλῃ ὑπερβάλλον.

52 Διδάσκουσι δ' οἱ ποιμένες τὰ πρόβατα συνθεῖν ὅταν ψοφήσῃ· ἐὰν γὰρ βροντήσαντος ὑπολειφθῇ τις καὶ μὴ συνδράμῃ, ἐκτιτρώσκει, ἐὰν τύχῃ κύουσα· διὸ ἐὰν ψοφῇ, ἐν τῇ οἰκίᾳ συνθέουσι διὰ τὸ ἔθος.

53 Καὶ τὴν κόπρον τὸ μὲν πρῶτον αὐταὶ ἐκβάλλουσιν, ὅταν δ' αὐξηθῶσι, μεταστρέφον τας ἔξω διδάσκουσι τοὺς νεοττοὺς προΐεσθαι.

some kind of training, perhaps akin to habituation.[54] TP-15 also describes an instance of teaching, but where one animal teaches another. To make TP-15 fit with the interpretation I have argued for thus far would require us to say parent swallows both possess scientific understanding and transfer it to their young.

One way to deflate the problem posed by these passages would be to point out that there is a long-standing history of doubting the authenticity of Books VII-X of the *HA*.[55] Peck notes in the introduction to the first volume of his Loeb edition of the *HA* several prominent interpreters of Aristotle who doubt the authenticity of these books.[56] Of special note is Jaeger's assessment: "As an example of [post-Aristotelian origin indicated by numerous technical terms foreign to Aristotle] one can point to the un-Aristotelian, spurious books of the *HA*, whose origin in particular cases can still be illuminated more precisely by such study of words."[57] If Jaeger's assessment is accurate, then it turns out that the way Aristotle uses "teaching" in these passages in *HA* IX counts against the authenticity of this part of the *HA* rather than the specificity of Aristotle's notion of teaching. According to this solution, "teaching" is one of those technical terms used by Aristotle, but not by the post-Aristotelian authors.[58]

---

54 This is the conclusion of Hasper and Yudin (2014: 147), though they also claim—just a few pages earlier—that "for Aristotle teaching and explaining go hand in hand" (134), citing some of the same texts that I have above.

55 For an overview of this literature, see Peck's introduction to his Loeb edition of the *HA*, vol. I (1965: liii-lviii)

56 For example, W.D. Ross: "Book X and probably also Books VII, VIII.21-30, and IX are spurious, and date in all probability to the third century B.C." (1923: 12). For an overview of both sides the debate, see Longrigg (1994).

57 Jaeger (1934: 329) quoted in Peck's introduction to the Loeb edition of *HA*, vol. 1 (1965: liv).

58 A similar option is to say that these passages are just an aberration; Aristotle is not being particularly careful with this terminology here, as is often the case in his fact-finding or observational works. Several scholars, including Balme, point out that "A work such as the *H.A.*, which is professedly an assemblage of factual

The problem with this interpretation, however, is that it cannot account for another teaching passage in *HA* I, the authenticity of which no one seriously doubts:

> **TP-16** Many animals share in memory and teaching; but no other creature except human beings can recall the past at will (*HA* I.1 488b25-26).[59]

There is additional evidence that counts in favor of Aristotle holding this view. In *Meta.* I.1, for example, Aristotle mentions the ability of some animals to learn along the lines described in TP-12–16:

> By nature, animals are born possessed of perception. In some of them, memory does not come about from this, but in others it does come about. And on account of this, they are more practically-wise and better at learning than those incapable of remembering; Practically-wise without learning are those who cannot hear sounds (such as the bee and whatever other kind of animal may be like them), whereas those that in addition to memory have this perceptual capacity can learn. (*Meta* I.1 980a20-980b25)[60]

---

information, is of its very nature susceptible to interpolation, and interpolations are naturally more difficult to detect in such a work than in one which sets forth a continuous chain of argument" (Peck 1965: liii.)

59 Καὶ μνήμης μὲν καὶ διδαχῆς πολλὰ κοινωνεῖ, ἀναμιμνήσκεσθαι δ' οὐδὲν ἄλλο δύναται πλὴν ἄνθρωπος. One manuscript, however, for attests to διαδοχῆς instead of διδαχῆς in this passage. See Balme (2002: 60).

60 φύσει μὲν οὖν αἴσθησιν ἔχοντα γίγνεται τὰ ζῷα, ἐκ δὲ ταύτης τοῖς μὲν αὐτῶν οὐκ ἐγγίγνεται μνήμη, τοῖς δ' ἐγγίγνεται. καὶ διὰ τοῦτο ταῦτα φρονιμώτερα καὶ μαθητικώτερα τῶν μὴ δυναμένων μνημονεύειν ἐστί, φρόνιμα μὲν ἄνευ τοῦ μανθάνειν ὅσα μὴ δύναται τῶν ψόφων ἀκούειν (οἷον μέλιττα κἂν εἴ τι τοιοῦτον ἄλλο γένος ζῴων ἔστι), μανθάνει δ' ὅσα πρὸς τῇ μνήμῃ καὶ ταύτην ἔχει τὴν αἴσθησιν. Several translators opt to translated instances of *manthanô* as "teach" in this passage. See, *e.g.*, Reeve (2016).

These comments are echoed in Aristotle *APo.* II.19 and in his *De Sensu* (1 436b18-437a17). The upshot of these comments—from sources the authenticity of which is not disputed—is that animals do indeed seem capable of some sort of didactic learning. The problem is this: if there are two senses of teaching at work in Aristotle—one which applies when animals are involved, either as the teacher or the learner, and another that applies to humans—we seem forced to concede to Curzer's claim, that Aristotle has nothing specific to say about teaching.

My claim is that there is *one* sense of teaching in Aristotle, and that animals can participate in it to the extent that their particular type of soul allows. The comments from *Meta.* I.1 and *De Sensu* 1 bear this out. Some animals are capable of memory and even experience (*empeiria*). They are therefore able to undergo a guided induction of the same sort that human students are capable of by nature. Even the psychologically best-equipped animal, however, cannot move from *empeiria* to *epistêmê* because they lack rational souls. But they can—Aristotle seems to say in these passages—undergo an inductive process of concept formation, which results in a general notion of the sort humans gain through experience as well.[61] On this reading, Aristotle's notion of teaching remains unchanged: it is still the activity of instilling *epistêmê* in a student, but in the case of animals the "student" is only capable of going so far in their didactic learning. They can only form a general concept and apply it in particular circumstances, which is a pre-requisite for *epistêmê* (see §3.4.3), but they do not possess scientific understanding itself.

This solution has the added benefit of not depending on the inauthenticity of *HA* IX.[62] For another way to put my solution is to say that the "teaching" of and by animals *resembles* that done

---

61 Here the notion of experience I am relying on comes from Hasper & Yurdin (2014).

62 Balme had planned to argue in favor of the authenticity of *HA* IX based on his extensive manuscript work (2002: 1), but he unfortunately passed away before he could publish it.

among humans, and this is just what Aristotle says, for example, in the text just prior to TP-15 in *HA* IX: "In a general way in the lives of animals many resemblances to human life may be observed" (*HA* IX.7 612b18-19).[63] This solution also makes this passage from *HA* IX consistent with TP-16 (from *HA* I.1), for it elaborates on Aristotle's claim that animals *take part in* (*koinônei*) memory and teaching.

In summation: the passages where Aristotle uses "teaching" in connection with animals do not threaten the claim that Aristotle has a specific notion of teaching. My claim is that animals can participate in it to the extent that their particular type of soul allows. This reading is supported by both the comments in *Meta.* I.1 and *Sens.* 1 where Aristotle discusses the ability of animals to learn through speech (*logos*). It can account for Aristotle's comment in TP-16, where he says that animals "share in" teaching. I am ultimately ambivalent about whether *HA* IX (and the comments about animal teaching therein) are authentic. On the one hand, I think my study of Aristotle's notion of teaching can fulfill Jaeger's wish to scrutinize the authenticity of these books through the study of technical terms in Aristotle. Since the ways in which "teaching" is used in *HA* IX do not cohere with the notion so predominant elsewhere in Aristotle, perhaps this should count as evidence against the authenticity of this book. But even if *HA* IX turns out to be authentic, this does not threaten my interpretation. For the kinds of teaching indicated by TP-12–16 reflect the fact that animals sometimes exhibit behaviors that resemble or mimic those of human beings.

---

63 Ὅλως δὲ περὶ τοὺς βίους πολλὰ ἂν θεωρηθείη μιμήματα τῶν ἄλλων ζώων τῆς ἀνθρωπίνης ζωῆς

2.4.2 Teaching Music

Musical education is one area of Aristotle's general theory of education which might seem to contradict my interpretation—as the following passage indicates:

> **TP-17** So it is clear from this that music has the power to produce a certain quality in the character of the soul. And if it has the power to do this, we should introduce children to it and educate them in it. And the teaching of music is appropriate to their nature at this stage of life. For because of their age the young do not willingly put up with anything unsweetened with pleasure, and music by its nature is one of the sweeteners. (*Pol.* VIII.5 1340b10-17)[64]

On the one hand, it seems as though Aristotle uses teaching here in a way that is inconsistent with my interpretation. But this apparent inconsistency can be resolved as follows: (1) Aristotle is justifying the teaching of music to children here. (2) He is using teaching in connection with the craft of music in general. (3) Here and throughout *Pol.* VII & VIII, Aristotle consistently uses *paideuein* (to educate or train)—not *didaskein* (to teach)—when discussing the process of educating children in music.

Another passage, from the *Eudemian Ethics*, also discusses the teaching of music:

> **TP-18** Well now: are there not in the soul impulses, some based on reasoning and others based on irrational desire? And are the latter not prior? For if appetitive desire

---

64 *ἐκ μὲν οὖν τούτων φανερὸν ὅτι δύναται ποιόν τι τὸ τῆς ψυχῆς ἦθος ἡ μουσικὴ παρασκευάζειν, εἰ δὲ τοῦτο δύναται ποιεῖν, δῆλον ὅτι προσακτέον καὶ παιδευτέον ἐν αὐτῇ τοὺς νέους. ἔστι δὲ ἁρμόττουσα πρὸς τὴν φύσιν τὴν τηλικαύτην ἡ διδασκαλία τῆς μουσικῆς· οἱ μὲν γὰρ νέοι διὰ τὴν ἡλικίαν ἀνήδυντον οὐθὲν ὑπομένουσιν ἑκόντες, ἡ δὲ μουσικὴ φύσει τῶν ἡδυσμάτων ἐστίν.* Trans, Kraut.

> for the pleasant is natural then it is by nature that everything would proceed towards the good. So assume that some people are naturally gifted (in the manner of singers who do not have knowledge of how to sing). They have a good nature in this sense, and they are impelled without reason in accordance with nature, and they have an appetite for what they should and when they should and as they should. Then these people get things right even if they are in fact foolish and irrational—in the same way as the others will sing well even though they are unable to teach singing. People of this sort, who without reason get things right for the most part, are fortunate. Therefore the fortunate would be so by nature. (*EE* VIII.2 1247b18-28)[65]

This passage is also consistent with my interpretation. For in it Aristotle draws a distinction between those who know (*epistamenoi*) how to sing and those who can sing just because of their natural ability. Those who have natural singing ability cannot teach another person to sing, because—this passage implies—they do not possess *epistêmê* of the craft. This passage is thus a close parallel of TP-5: those who possess *epistêmê* can teach, while those do not cannot.

2.4.3 Implausible & Un-Platonic?

Even if these inconsistency passages have been resolved, perhaps it will be objected that the interpretation that I have put forward in this chapter cannot be correct because it is inconsistent in

---

[65] *ἆρ' οὐκ ἔνεισιν ὁρμαὶ ἐν τῇ ψυχῇ αἱ μὲν ἀπὸ λογισμοῦ, αἱ δὲ ἀπὸ ὀρέξεως ἀλόγου, καὶ πρότεραι αὗται; εἰ γάρ ἐστι φύσει ἡ δι' ἐπιθυμίαν ἡδέος [καὶ ἡ] ὄρεξις, φύσει γε ἐπὶ τὸ ἀγαθὸν βαδίζοι ἂν πᾶν. εἰ δή τινές εἰσιν εὐφυεῖς ὥσπερ οἱ ἄδικοι οὐκ ἐπιστάμενοι ᾄδειν, οὕτως εὖ πεφύκασι καὶ ἄνευ λόγου ὁρμῶσιν, ** ἡ φύσις πέφυκε, καὶ ἐπιθυμοῦσι καὶ τούτου καὶ τότε καὶ οὕτως ὡς δεῖ καὶ οὗ δεῖ καὶ ὅτε, οὗτοι κατορθώσουσι, κἂν τύχωσιν ἄφρονες ὄντες καὶ ἄλογοι, ὥσπερ καὶ εὖ ἔσονται οὐ διδασκαλικοὶ ὄντες. οἱ δέ γε τοιοῦτοι εὐτυχεῖς, ὅσοι ἄνευ λόγου κατορθοῦσιν ὡς ἐπὶ τὸ πολύ. φύσει ἄρα οἱ εὐτυχεῖς εἶεν ἄν.* Trans., Inwood & Woolf.

general with (a) a plausible account of teaching in general and (b) the account of teaching from Aristotle's own teacher, Plato.

While it is not my aim in this dissertation to provide a substantive evaluation of Aristotle's position on teaching, I do not think it can be rejected as implausible on its face. On the contrary, the notion that the aim of teaching is to instill knowledge or understanding in students is quite common. This is, after all, why we administer tests and exams to students—to make sure that they possess the relevant understanding of a subject in such a way that they can activate it independently. One can claim that this *ought not* be the aim of teaching (Friere's objections about the so-called "banking model" of education come to mind), but one can hardly claim that this is an implausible conception of the goal of teaching, precisely because it resembles the dominant model of education—the kind of education that philosophers like Friere and Dewey have fought against.[66]

The same point can actually be made with regard to the second claim—that my interpretation of Aristotle on teaching is un-Platonic.[67] In TP-3 and TP-6, Aristotle is especially concerned to show that in order for teaching to be successful, the *epistêmê* to be imparted must make its way *inside* the student's soul. I submit that in at least this much, Aristotle is following in the footsteps of his own teacher. For we see this same concern expressed quite clearly in Plato's *Phaedrus*, specifically in Socrates' critique of writing (274c-278b). Socrates's main point in relating the myth of Thamus and Theuth is that writing is not a tool for remembering, as Theuth believed, but rather for introducing forgetfulness into the souls of human beings (275a-b). Writing will make

---

66 See Friere (2005 [1971]: Ch. 2) and Dewey (2015 [1938]: Ch. 1).

67 This is a strategy that Burnyeat (1981: 116) uses against Barnes (1969). I discuss their debate in more detail in Chapter 4, but, in brief, Plato sometimes espouses a notion of education wherin the educator does not provide the student with knowledge or understanding, but seeks to convert the student to a new way of seeing. See especially *Rep.* 518c-d; *cf. Symp.* 175e.

humans more forgetful precisely because it keeps the knowledge that is contained in the written text *outside* of the human soul.[68] I think there are other similarities between Plato and Aristotle on teaching as well—for instance, there is also the concern in the same section of the *Phaedrus* that the dialectician find a suitable soul in which to cultivate "discourse accompanied by knowledge (*met' epistêmês logous*: 276e).[69] This is one of the points I discuss in Chapter 3, on Aristotle's comments on the pre-requisites for teaching and didactic learning.

2.5 Conclusion

The passages canvassed in this chapter—collected from a diverse range of texts—show that for Aristotle the *telos* of teaching is to instill scientific understanding (*epistêmê*) in a student's soul. This result accomplishes the following three points: (1) it contradicts the first scholarly thesis, that Aristotle has nothing specific to say about teaching; (2) it supports my core claim, that for Aristotle teaching is the activity of instilling scientific understanding in students; and (3) it establishes the foundation for several additional insights into Aristotle's notion of teaching. Now, with Aristotle's conception of the *telos* of teaching secured, we can proceed to examine the factors that contribute to the achievement of this goal—both the conditions that must be met before teaching can be successful, and the methods by which teaching takes place. I examine these additional aspects of Aristotle's notion of teaching in Chapters 3 and 4 respectively. The study of these aspects of Aristotle's notion of teaching in turn extend and lend further support to my core claim.

---

68 *Cf.* Long (2013: Ch. 1) who shows how this critique is especially pointed at writing's ability to teach expertise in a craft (*technê*).

69 Trans., Nehamas & Woodruff.

Chapter 3:

The Pre-Requisites for Teaching

3.1 Introduction

In the previous chapter, I presented the textual evidence in favor of my interpretation that, for Aristotle, the goal of teaching is to instill scientific understanding (*epistêmê*) in a learner's soul. In this chapter, I explore passages that pertain to the conditions that must be met in order for this goal to be achieved. I call these conditions the pre-requisites for teaching.[70] The main thesis of this chapter is that these pre-requisites for teaching cohere with, support, and elaborate upon the interpretation I developed in Chapter 2.

The most discussed of these pre-requisites in the scholarly literature is *the prior knowledge requirement* (PKR). Most of the treatment of this topic, however, focuses on how it relates to Aristotle's account of learning.[71] I briefly discuss the PKR in connection with Aristotle's notion of teaching (§3.2). I do not seek to challenge the accepted interpretation of this topic, but rather show how it relates to teaching. I then turn to the other pre-requisites for teaching and didactic learning that Aristotle mentions throughout his corpus. These requirements can be bifurcated into two sub-sets: (1) that the teacher must meet in order to teach (§3.3), and (2) that the student must satisfy in order to learn didactically (§3.4). In order to teach, teachers must have (1a) the scientific

---

70 Sometime, in order to avoid tedious repetition, I will refer to these as pre-conditions.

71 Most notably and recently by Bronstein (2016) and Fine (2014). Bronstein does have limited discussion of this teaching by demonstration (2016: Ch. 11§§4-6).

understanding he or she intends to teach, (1b) "the capacity to teach" (*didaskalikê*), and (1c) a student who is capable of receiving his or her scientific understanding. Students, on the other hand, must (2a) possess the ability to listen and retain in memory what they have heard, (2b) be "well-educated" (*pepaideumenos*), and (2c) have experience (*empeiria*) with the subject matter being taught.

3.2 The Prior Knowledge Requirement

The scholarly discussion of the PKR focuses primarily on Aristotle's opening comments in *APo.* I.1:

> **TP-19** All teaching and all learning of an intellectual kind come to be from pre-existent knowledge. (*APo.* I.1 71a1-2)[72]

Perhaps the first thing to note about this opening sentence is that Aristotle is making a very broad general claim, but he is restricting that claim to a specific kind of learning (and, perhaps, teaching)—that "of an intellectual kind" (*dianoêtikê*).[73] It is important that Aristotle make the distinction between intellectual learning and learning of other types, for otherwise he would open up this claim to a

---

[72] Πᾶσα διδασκαλία καὶ πᾶσα μάθησις διανοητικὴ ἐκ προϋπαρχούσης γίνεται γνώσεως.

[73] Scholars who discuss this opening sentence, and the rest of the chapter, tend to focus solely on Aristotle's comments about learning, and they also tend to think that *dianoêtikê* modifies learning only. The syntax of the passage seems to me to make it *possible* that Aristotle also intends for it to modify teaching as well. If it does, this would help explain how Aristotle sometimes uses teaching in a way counter to how I have been arguing for it in this dissertation. The kind of teaching I am interested in describing here is *intellectual* teaching. In the passages where Aristotle uses teaching in way that is inconsistent with the way I interpret him, he may mean non-intellectual teaching—the kind of teaching which is not primarily concerned with thought, but with pointing out to someone that something is the case, or merely teaching them how to do something without mixing that teaching how with any teaching why (*i.e.,* an explanation why, for example, you take this step in the process first, or why you use this material as opposed to another, *et al.*). In what follows, I stick with the tendency in the scholarship to restrict the focus of this passage to learning, since doing so will not hinder my argument, and is on steadier ground. I do not, however, ultimately think that Aristotle meant to make a distinction between intellectual teaching and non-intellectual teaching. Rather, all teaching, for Aristotle, (properly understood) is intellectual, since it aims at instilling *epistêmê.*

problem of infinite regress: one could never acquire any knowledge, because learning it would always require previous knowledge, the learning of which would itself require previous knowledge, and so on. There must be a type of learning, therefore, which does not require prior knowledge.

Bronstein, in his discussion of this passage, correctly notes that *dianoia* typically means 'thought', 'reason', or 'reasoning' and is often contrasted with perception (*aisthêsis*).[74] It is possible, therefore, that the same contrast is meant implicitly here. That this is the contrast Aristotle intends to draw also makes sense in light of Aristotle's comments about what we learn by perception in the *Metaphysics*. The senses do not give us explanations—only the facts: "They do not tell us why anything is so; for instance, they do not tell us why fire is hot, but only that it is hot" (*Meta.* I.1 981b11-13).[75]

We do not need any prior knowledge to learn that fire is hot—this basic fact we can learn just through perception. Indeed, it seems we could *only* learn this fact through perception. While it is possible to tell someone that fire is hot, unless this person knows what "hot" means, they will not really understand what you are saying. And this person will not know what "hot" means without having had direct perception of it. Indeed, this sort of basic prior knowledge is what Aristotle has in mind when he describes the two ways in which we need to have prior knowledge of something before we can learn:

> Previous knowledge is needed in two ways: for sometimes it is necessary to grasp beforehand that something is [true or the case], other times it is necessary to comprehend what the thing being said means, and sometimes both; for example,

---

74 Bronstein (2016: 15-16).

75 *ἀλλ' οὐ λέγουσι τὸ διὰ τί περὶ οὐδενός, οἷον διὰ τί θερμὸν τὸ πῦρ, ἀλλὰ μόνον ὅτι θερμόν.*

> that with respect to everything that it can be either affirmed or denied is true, [it must be assumed] that this is [the case], and of the triangle, that it signifies this, and with respect to the monad, both what it means and that it is; for each of these things is not clear to us in the same way. (*APo.* I.1 71a13-17).[76]

The prior knowledge that Aristotle describes in this passage is of two general types: (i) that something is (*i.e.*, either it exists, or is true, or is the case), and (ii) what something signifies or means; or (iii) sometimes both (i) and (ii).

But (i) and (ii) are not the only candidates for prior knowledge. The way Aristotle discusses prior knowledge in other parts of *APo.* I.1 (and beyond), show that the PKR just means incomplete knowledge of some sort. Aristotle makes this fact plain in his subsequent discussion in the first chapter of the *APo.*, when he says that we can know a triangle in one way, yet lack knowledge of it in another way. We can know the fact that all triangles have angles that are equal to two right angles, and yet be ignorant of whether the figure circumscribed in the square is, in fact, a triangle.

This reading conforms with the first sentence of the *APo.* discussed above, too. The word translated as knowledge there is *gnôsis*, which, for Aristotle is a very broad umbrella terms for a variety of types of knowing, including: perception (*aisthanesthai*) (*e.g.*, that this thing here is white), comprehension (*xunienai*) (*e.g.*, that this means that), assuming (*lambanein*) (*e.g.*, that something is true), grasping (*echein*) (*e.g.*, that this is part of the essence of an object), having *epistêmê* (*epistasthai*)

---

[76] *διχῶς δ' ἀναγκαῖον προγινώσκειν· τὰ μὲν γάρ, ὅτι ἔστι, προϋπολαμβάνειν ἀναγκαῖον, τὰ δέ, τί τὸ λεγόμενόν ἐστι, ξυνιέναι δεῖ, τὰ δ' ἄμφω, οἷον ὅτι μὲν ἅπαν ἢ φῆσαι ἢ ἀποφῆσαι ἀληθές, ὅτι ἔστι, τὸ δὲ τρίγωνον, ὅτι τοδὶ σημαίνει, τὴν δὲ μονάδα ἄμφω, καὶ τί σημαίνει καὶ ὅτι ἔστιν· οὐ γὰρ ὁμοίως τούτων ἕκαστον δῆλον ἡμῖν.*

(*e.g.*, that all triangles have interior angles equal to two right angles), and having *nous* (*e.g.*, of a definition, that this $=_{def}$ that).[77]

The point that Aristotle is making in this opening part of the *Posterior Analytics*, then, is that all teaching and learning of an intellectual kind must begin from one of these forms of *gnôsis*. Left implicit in this chapter, though, is what this intellectual learning must proceed *to*. The goal of such learning (and teaching), I have argued, is *epistêmê*. There is nothing in this passage to disconfirm this reading, and, as we have seen, there is much to fill out this part of Aristotle's picture of didactic learning. But this is not the only requirement for teaching or didactic learning. Though scholars, when discussing pre-requisites of this sort in Aristotle, focus solely on the PKR in this part of the *APo.* as a condition for learning, further scrutiny of Aristotle's works reveals a host of other-preconditions for teaching and didactic learning—both for the teacher and the student.

3.3 For the Teacher

Though most of the scholarly discussion has centered around the PKR for learning (and thus, for students of teachers), there is also a PKR for *teachers*, too. Further investigation of Aristotle's corpus reveals a series of passages where Aristotle says that teachers necessarily have the *epistêmê* they intend to teach. Thus, the PKR for teacher is that they actually possess *epistêmê* of their subject. In this section, I begin by tracing the passages where Aristotle makes these claims, teasing out the implications for his view of teaching from them. I then proceed to discuss two further pre-conditions that teachers must meet in order to teach: the ability to teach (*didaskalikê*) and a student

---

77 Bronstein (2016: 17-18) catalogues and provides textual evidence for the range of terms. The examples used here are all his, too. Bronstein also notes, correctly, that assuming only counts as prior knowledge when it is a true assumption—of the sort that teachers might provide to students at the outset of a demonstration (2016: 17, n. 29).

who can learn. In the next section, I describe the pre-conditions that such students must meet before they are ready to receive a teacher's teaching.

3.3.1 Epistêmê of the Subject to be Taught

Teachers are described by Aristotle as necessarily having the *epistêmê* they intend to teach. This fact about teachers is stated both directly and indirectly by Aristotle. In his *Physics* Aristotle says,

> **TP-7** for teaching follows learning, of which things the one necessarily has *epistêmê*, and the other does not have it. (*Phys.* VIII.5 257a12-14).[78]

Here Aristotle is in the middle of making a point about how it is impossible for the cause of change (*kinêsis*) to also be changed in the same way as it changes something else when it is the cause of change for something else. He illustrates his point with the example of teaching and learning: just as it is impossible for someone to learn and teach simultaneously (since the teacher necessarily has *epistêmê* and the learner necessarily lacks it), it is impossible for something to change and be changed in the same way, at the same time, and in the same respect. If the teacher were also a learner (with respect to the same thing at the same time, and in the same respects), then the teacher would simultaneously *both possess and lack* scientific understanding about the same thing (at the same time and in the same respect), but this, Aristotle thinks, is clearly impossible.[79]

---

[78] τὸ διδάσκον γὰρ συμβαίνει μανθάνειν, ὧν τὸ μὲν μὴ ἔχειν τὸ δὲ ἔχειν ἐπιστήμην ἀναγκαῖον

[79] Here as elsewhere Aristotle uses teaching and learning to exemplify a grander metaphysical concept. The fact that he appeals to this aspect of teaching and learning to illustrate his point indicates that he thinks this aspect of teaching and learning is especially clear. Otherwise, he would not have chosen to use it as an example of his more abstract point.

This might seem like a trivial point to make about teaching—that the teacher must actually understand what he intends to teach (and that the student lack it)—but consider one consequence of this position: Socrates—whom many consider to be not only the teacher of Aristotle's own teacher, Plato, but also perhaps the greatest teacher in the western intellectual tradition—is not, on this definition, actually a teacher at all. For Socrates famously denied having understanding of (most of) the things he talked about.[80] According to Aristotle's way of thinking about this pre-requisite for teaching, we should not actually consider Socrates to be a teacher.[81] This apparently trivial aspect of Aristotle's notion of teaching therefore has some bite. For the requirement that teachers actually have the scientific understanding they intend to teach circumscribes a particular notion of

---

[80] It is not the case, in Plato's dialogues at least, that Socrates denies knowledge of everything. He in fact makes a few claims about what he knows: for example, that to do wrong and disobey one's superior is "wicked and shameful" (*ὅτι κακὸν καὶ αἰσχρόν ἐστιν οἶδα*: *Apol.*, 29b), and to know "the things of love" (*ὃς οὐδέν φημι ἄλλο ἐπίστασθαι ἢ τὰ ἐρωτικά*: *Symp.*, 177d). Despite these few instances, Socrates himself says he has never been a teacher (*ἐγὼ δὲ διδάσκαλος μὲν οὐδενὸς πώποτ' ἐγενόμην*: *Apol.* 33a). Yet neither Socrates' ignorance (whether ironic or sincere) nor his explicit denial of being a teacher has not stopped people from ascribing to Socrates a particular, Socratic, method of teaching. For further discussion of whether in fact Socrates should be considered a teacher, see Kraut (1984: 294-304).

[81] Rather than pour out to students his own teachings, Socrates elicits the opinions of others, often leading them (intentionally or not) into a state of *aporia*. This pedagogical technique is quite different from Aristotle's notion of "teaching." Yet Aristotle's notion of teaching may have a place for the role of *aporia*, and so perhaps he can find a place for Socrates in his thinking about education. At the beginning of *Meta* III.1, Aristotle says that going through the *aporiai* about a topic can, among other things, help (1) make one aware of a difficulty in the subject matter, (2) orient the investigation towards the resolution of the problem, (3) give the investigators an indication of when they have found what they are inquiring into. It is at least possible that teachers use similar techniques to guide students toward acquiring scientific understanding of a subject. In so far as being puzzled is like being tied up in knots (995a31), perhaps this pedagogical technique can be used to motivate students to want to inquire further (with their teacher's help) into the subject. Of course, just tying up students in a state of *aporia* would not count as teaching according to Aristotle's notion of teaching. But it could serve two functions. First, a preliminary motivational tool: so long as it was followed up with the instilling scientific understanding in students, putting students into a state of *aporia* in a manner similar to the Socratic elenchus may be part of Aristotle's notion of teaching. Moreover, in order to discover the first principles of a science, or in order to confirm that proposed first principles really are such, it can be helpful to consider the *aporiai*. While to teach one must possess *epistêmê*, considering the *aporiai* is a path towards *epistêmê*.

teaching—one which excludes certain kinds of pedagogy that other thinkers would ordinarily include in their understanding of the term.[82]

The fact that teachers necessarily possess the scientific understanding they intend to teach is also operative in an important discussion in *NE* X.9. At the end of his *Nicomachean Ethics*, Aristotle is searching for someone who can teach legislative science, since an understanding of this particular science will make people good, "if it is through laws that we become good" (1180b25).[83] Aristotle begins his search with the reasonable supposition that, just as we learn writing from writers and medicine from doctors, and in general we learn an art or a craft from those who practice that art or craft, we perhaps we should look to politicians for instruction in legislative science, since they are the ones who practice it.

Aristotle, however, quickly dismisses this group as a potential source of teaching on this subject. The reason why politicians cannot be teachers of this science is ultimately because they do not possess *epistêmê* of it. Politicians, he says, have evidently been unsuccessful at teaching legislative science, since those people whom the politicians themselves would most like to see possess this great good—their own children and their friends—have not acquired it (1180b35-1181a9). He therefore concludes that the politicians of his day owed their skill at politics not to a science but rather to a particular sort of experience (*empeiria*: 1131a3). To draw this conclusion, Aristotle's line of thinking relies on the premise that in order to teach something, one must have *epistêmê* (and not merely experience) of what one intends to teach.

---

82 One other consequence of having this as a pre-requisite for teaching and didactic learning is that Aristotle's notion of teaching is directly opposed to Friere's influential critique of "the banking model of education" (2005 [1971]: Ch.2). It is not my intention to defend Aristotle's position here. The first step is to make plain what his position is. Its defense requires an additional work.

83 For more on the role of law in moral education, see Hitz (2012).

Aristotle then turns to the next candidate for a teacher of legislative science, the sophists, who profess to be teachers of politics (*politikê*). As Aristotle explained earlier in the *NE*, legislative science is a sub-field of *politikê* (1180b30-31 & VI.8 1141b24-25), so if sophists teach politics, then they should be teachers of legislative science as well. But Aristotle finds reason to reject their claim, too. Sophists cannot be teachers of legislative science, since they know neither what it is nor what sorts of things it is concerned with (1180a10-14). Aristotle is able to conclude that the sophists do not know what *politikê* is because they rank rhetoric equal or even superior to politics, which they would not do if they had *epistêmê* of political science. For if they had *epistêmê* of political science, they would know that it is the most architectonic science, as Aristotle argued in *NE* I.2.

One further piece of evidence that the sophists do not actually understand legislative science will help us see how someone is taught *epistêmê*—by looking at how someone does *not* learn it. Proof that the sophists do not have *epistêmê* is that they think it is easy to legislate if one collects well-respected laws and selects the best ones (1180a15-1180b6). But according to Aristotle, to think that this is the way to come to understand legislative science is to be confused about how one becomes proficient in a science. We do not become doctors, Aristotle says, by reading doctors' prescriptions (*sungrammata*). This discussion recalls another one from the end of Aristotle's *SE*. Just as politicians do not develop *politikê* from studying laws, nor doctors from studying prescriptions, craftsmen do not become proficient in a craft by seeing many examples of a completed product (*SE* 183b34-184a8). Cobblers, for example, do not become proficient at their craft by studying the many excellently made shoes. Rather, they must acquire the know-how that goes into *the process* of making the shoe itself. This know-how cannot be attained by simply looking at the finished product. Just so, budding politicians cannot become proficient in their science just by studying the laws (the completed products of law-makers), nor medical students by studying prescriptions (the completed

products of doctors). In order to become proficient in a craft, one must acquire the knowledge of how the product is made, and this knowledge can only be acquired by being taught by someone who is in the process of actually making the product. The teacher of a craft can explain how the product is made—an explanation which will include an account of why certain moves are made before others, why certain materials are used at certain times, and so on. So, if laws are the product of politicians, a political science student could not become proficient in politics by reading laws (1181a16-b2). Some other means of acquiring this science must be required. The implication of this passage, then, is that the way to become proficient in political science is to be taught by someone who possesses the relevant *epistêmê*—in this case, legislative science.[84]

To summarize: the reason that this stretch of the *Nicomachean Ethics* is significant for understanding Aristotle on teaching is that here we see Aristotle deploy the same understanding of teaching which we saw him give (albeit briefly) elsewhere in his corpus. Politicians and sophists are rejected as potential candidates for teachers of legislative science on the grounds that they do not actually understand what politics is. In order to exclude these groups from being potential teachers of legislative science, Aristotle must be implicitly relying on the principle that in order to be a teacher of something, one must actually have *epistêmê*—and not merely have experience with—what one intends to teach.

3.3.2 The Capacity to Teach (Didaskalikê)

It is sometimes noted that the most brilliant minds don't always make for the best teachers, so there may be reason to be suspicious if all that Aristotle thinks is required of a teacher is that they have

---

[84] For further discussion of this point, see Chapter 6.

epistêmê of what they would teach. Although Aristotle does not spell out what he means by "the capacity to teach" (*didaskalikê*), he does mention this capacity in a number of passages connected with teaching. In one text discussed earlier, Aristotle says:

> **TP-3** Teaching is the activity of the one who has *the capacity to teach*, and indeed it occurs in someone; it is not cut off, but is of something in someone. (*Phys*. III.3 202b7-8)[85]

Elsewhere, Aristotle mentions the capacity to teach in connection with teaching, too (*DA* II.5 417b10-15; *Meta*. I.1 982b6-7, I.2 982a12-14 & 27-29; *EE* VIII.2 1247b18-28). The passage from *De Anima* is particularly noteworthy, since there Aristotle says that teaching ought to be understood as being done by someone who actually possesses *epistêmê and* has the capacity to teach (TP-8). Here the implication is that these—having *epistêmê* and *didaskalikê*—are two distinct things. But since Aristotle does not describe anywhere in detail what this capacity involves beyond the ability to explain a subject, we are left in the dark about what else this capacity might involve. The way to understand the other components of this capacity, I submit, is to look to some of Aristotle's other comments on teaching—comments which are otherwise unconnected to Aristotle's theory of teaching unless they can be folded into his account of *didaskalikê*.

In his *On the Sophistical Elenchus*, Aristotle says that didactic arguments (*didaskalikoi [logoi]*) are one of the four kinds of *logos* used "in discussion" (*en toi dialegesthai*: 165a38). This description is significant, since it suggests that teaching is meant to be (at least in part) a discussion—a dialogue—between teacher and student. It is not solely a uni-directional lecture where an authoritative teacher

---

[85] ἡ δίδαξις ἐνέργεια τοῦ διδασκαλικοῦ, ἔν τινι μέντοι, καὶ οὐκ ἀποτετμημένη, ἀλλὰ τοῦδε ἐν τῷδε

delivers his *epistêmê* to his student(s). This passage, while by no means definitive, does suggest that the activity of teaching involves a conversation between teacher and student.

Additional passages show that the teacher does not just start lecturing at the student blithely, but should be concerned to make sure that the student has a proper toehold on the starting-point(s) of a didactic argument, and then work through the explanation with them in conversation, making sure the student is following the argument along the way, carrying their conviction in the truth of the teacher's exposition through the different steps of the argument.

This pedagogic stance is shown most clearly in a passage from towards the end of Aristotle's *Topics*. When discussing whether someone in a discussion ought to grant an interlocutor's axiom or proposition (*i.e.*, the starting assumption for the ensuing discussion), Aristotle says that it depends on the goal of the conversation:

> **TP-20** If, then, it is essential not to enhance the difficulty of the problem, he had better grant it; if, on the other hand, it is essential to deduce through premisses that are more familiar, he had better refuse. In other words, one who is trying to learn ought not to grant it, unless it is more familiar; but one who is training should grant it, if he is merely satisfied of its truth. Clearly, then, the circumstances under which such admissions should be claimed are different for a questioner and for a teacher. (*Top.* VIII.3 159a10-14)[86]

---

[86] *εἰ δὲ διὰ γνωριμωτέρων συλλογίζεσθαι, οὐ θετέον. ἢ τῷ μὲν μανθάνοντι οὐ θετέον, ἂν μὴ γνωριμώτερον ᾖ· τῷ δὲ γυμναζομένῳ θετέον, ἂν ἀληθὲς μόνον φαίνηται. ὥστε φανερὸν ὅτι οὐχ ὁμοίως ἐρωτῶντί τε καὶ διδάσκοντι ἀξιωτέον τιθέναι.*

If the goal of the conversation is didactic in nature, then the student who is not convinced of the speaker's starting-point should not grant it, but should instead require the speaker to give an account of their axiomatic pre-supposition such that the student becomes convinced of its truth, either by appealing to prior, more basic principles which explain the speaker's axiomatic statement, or (if no such prior account is possible) by doing something else to convince the student of the axiom's truth.

Understanding the point Aristotle is trying to make here helps us explain some other comments Aristotle makes about teaching that may initially appear puzzling elsewhere. In *Meta* I.2, Aristotle writes the following about one of the suppositions (*hupolêpseis*) that people generally hold about the wise:

> **TP-21** we take it that someone is wiser in any science and a more exact knower of it if he is a better teacher of its causes (*Meta* I.2 982a10-15)[87]

This is most likely the case, I think, because an expert in a science can trace his scientific understanding all the way back to its explanatorily-basic first principles. Equipped with such a systematic and fully worked-out scientific understanding of their subject, the teacher should be able to meet students at any point of their current grasp of the subject to be taught (and they should be able to teach the same extended level of knowledge to the student, too). Furthermore, this ability to hook students into the didactic logos whatever their current grasp is, I take it, part of what Aristotle means when he mentions the *didaskalikê*—the capacity to teach. Teachers, as opposed to those who just have *epistêmê* of their subject—have the ability to meet students where they are at in their current understanding of a subject matter and base their explanations off that initial starting-point. When

---

87 *ἔτι τὸν ἀκριβέστερον καὶ τὸν διδασκαλικώτερον τῶν αἰτιῶν σοφώτερον εἶναι περὶ πᾶσαν ἐπιστήμην*

the student's current level of understanding is the initial starting-point for the teacher's engagement, the transmission of scientific understanding takes on a less objectionable form.

There is further evidence in the texts to suggest that Aristotle thinks that this is part of what it means to be a good teacher. At several points, for example, Aristotle mentions the teacher's recourse to a modified methodology that sometimes needs to be adopted in order to teach someone something. For example, when discussing the definition of starting-points, Aristotle makes reference to the process of learning, which seems to include didactic learning:

> Something is said to be a starting-point if it is: [1] The point in a thing from which we would move first—for example, of a line or of a road there is this starting-point from here, and another from the contrary direction. [2] The one from which each thing would best come to be—for example, even in learning we must sometimes begin not from what is primary, that is, the starting-point of the thing, but from the point from which it is easiest to learn. (*Meta.* V.1 1012b34-1013a2)[88]

Even though Aristotle mentions learning here (not teaching—at least, not explicitly) the point applies to teaching as well. For this is an important point Aristotle often makes: that learning (including didactic learning) takes the student from their current level of apprehension of a subject (what is more familiar to them) and moves them towards what is more familiar in itself.[89]

---

[88] Ἀρχὴ λέγεται ἡ μὲν ὅθεν ἄν τις τοῦ πράγματος κινηθείη πρῶτον, οἷον τοῦ μήκους καὶ ὁδοῦ ἐντεῦθεν μὲν αὕτη ἀρχή, ἐξ ἐναντίας δὲ ἑτέρα· ἡ δὲ ὅθεν ἂν κάλλιστα ἕκαστον γένοιτο, οἷον καὶ μαθήσεως οὐκ ἀπὸ τοῦ πρώτου καὶ τῆς τοῦ πράγματος ἀρχῆς ἐνίοτε ἀρκτέον ἀλλ᾽ ὅθεν ῥᾷστ᾽ ἂν μάθοι·

[89] See, *e.g.*, *Top.* VI.4 (141b3-142a4), *APo.* I.2 (71b33-72a5), *Phys.* I.1 (184a16-21), *DA* II.2 (413a11-12), *Meta.* VII.3 (1029b3-12), and *EE* I.6 (1216b32-39).

Moreover, this same sensitivity to the learner's current level of understanding is on display when Aristotle discusses the use of definitions:

> Absolutely, then, it is better to try to come to know what is posterior through what is prior, inasmuch as such a way of procedure is more scientific. Of course, in dealing with persons who cannot recognize things through terms of that kind, it may perhaps be necessary to frame the account through terms that are familiar to them. Among definitions of this kind are those of a point, a line, and a plane, all of which explain the prior by the posterior; for they say that a point is the limit of a line, a line of a plane, a plane of a solid. One must, however, not fail to observe that those who define in this way cannot show the essence of what they define, unless it so happens that the same thing is more familiar both to us and also without qualification, since a correct definition must define a thing through its genus and its *differentiae*, and these belong to the order of things which are without qualification more familiar than, and prior to, the species.… All such points as this ought to be made very precise, and made use of in the course of discussion as occasion requires. (*Top.* VI.4 141b15-142a13)[90]

---

[90] *Ἁπλῶς μὲν οὖν βέλτιον τὸ διὰ τῶν προτέρων τὰ ὕστερα πειρᾶσθαι γνωρίζειν· ἐπιστημονικώτερον γὰρ τὸ τοιοῦτόν ἐστιν. οὐ μὴν ἀλλὰ πρὸς τοὺς ἀδυνατοῦντας γνωρίζειν διὰ τῶν τοιούτων ἀναγκαῖον ἴσως διὰ τῶν ἐκείνοις γνωρίμων ποιεῖσθαι τὸν λόγον. εἰσὶ δὲ τῶν τοιούτων ὁρισμῶν ὅ τε τῆς στιγμῆς καὶ ὁ τῆς γραμμῆς καὶ ὁ τοῦ ἐπιπέδου· πάντες γὰρ διὰ τῶν ὑστέρων τὰ πρότερα δηλοῦσιν· τὸ μὲν γὰρ γραμμῆς, τὸ δ' ἐπιπέδου, τὸ δὲ στερεοῦ φασι πέρας εἶναι. οὐ δεῖ δὲ λανθάνειν ὅτι τοὺς οὕτως ὁριζομένους οὐκ ἐνδέχεται τὸ τί ἦν εἶναι τῷ ὁριζομένῳ δηλοῦν, ἐὰν μὴ τυγχάνῃ ταὐτὸν ἡμῖν τε γνωριμώτερον ὂν καὶ ἁπλῶς γνωριμώτερον, εἴπερ δεῖ μὲν διὰ τοῦ γένους καὶ τῶν διαφορῶν ὁρίζεσθαι τὸν καλῶς ὁριζόμενον, ταῦτα δὲ τῶν ἁπλῶς γνωριμωτέρων καὶ προτέρων τοῦ εἴδους ἐστίν. …δεῖ μὲν οὖν ἕκαστα τῶν τοιούτων ἐξακριβοῦν, χρῆσθαι δὲ διαλεγομένους πρὸς τὸ συμφέρον.*

As these two texts show, Aristotle is not unsympathetic to the need to modify the way teaching is done in order to get students hooked into the discussion. This sensitivity is again confirmed in a passage from the *De Caelo*:

> **TP-22** Some of those who hold that the world, though indestructible, was yet generated, try to support their case by a parallel which is illusory. They say that in their statements about its generation they are doing what geometricians do when they construct their figures, not implying that the universe really had a beginning but for didactic reasons facilitating understanding by exhibiting the object, like the figure, as in course of formation. (*DC* I.10 279b33-280a11)[91]

Still, there is one passage which should give us pause before building too much into our interpretation of "the capacity to teach":

> **TP-23** Matters of style, however, are a small necessary part in all teaching. For to speak in one way rather than another does make some different in relation to making things clear, although not so great a one; on the contrary, all this is appearance, and appeals to the listener, so no one teaches geometry this way (*Rhet* III.1 1404a8-12)[92]

---

91 Ἤν δέ *τινες βοήθειαν ἐπιχειροῦσι φέρειν ἑαυτοῖς τῶν λεγόντων ἄφθαρτον μὲν εἶναι γενόμενον* δέ, *οὐκ ἔστιν ἀληθής· ὁμοίως γάρ φασι τοῖς τὰ διαγράμματα γράφουσι καὶ σφᾶς εἰρηκέναι περὶ τῆς γενέσεως, οὐχ ὡς γενομένου ποτέ, ἀλλὰ διδασκαλίας χάριν ὡς μᾶλλον γνωριζόντων, ὥσπερ τὸ διάγραμμα γιγνόμενον θεασαμένους*. Trans., J.L. Stocks.

92 *τὸ μὲν οὖν τῆς λέξεως ὅμως ἔχει τι μικρὸν ἀναγκαῖον ἐν πάσῃ διδασκαλίᾳ· διαφέρει γάρ τι πρὸς τὸ δηλῶσαι ὡδὶ ἢ ὡδὶ εἰπεῖν, οὐ μέντοι τοσοῦτον, ἀλλ᾽ ἅπαντα φαντασία ταῦτ᾽ ἐστί, καὶ πρὸς τὸν ἀκροατήν· διὸ οὐδεὶς οὕτω γεωμετρεῖν διδάσκει.*

Even though teachers modify their language somewhat when trying to make something clear to a student, there is a limit to how much modulation will be useful. While teachers can and should modulate their language depending on the student and their background knowledge, teachers should not veer into appealing too much to the listener's sensibilities. While still being an act of transmission from teacher to student, it is not the case, as we can see here, that teachers simply lecture on their scientific understanding—as though having "launched into a remorseless chain of syllogistic deduction" (Burnyeat 1981: 116). Instead, these passages indicate a concern for the teacher to modify the way they teach according to the student's current level of understanding about a subject. This ability, I suggest, is at least part of what "the capacity to teach" consists of for Aristotle.[93]

3.3.3 A Receptive Student

The final pre-requisite for teaching is a student who is capable of receiving a teacher's scientific understanding. We can see by considering the broader context around TP-3. Just prior to this passage, Aristotle arrives at his definition of movement (*kinêsis*) as the actuality of the moveable insofar as it is moveable (*Phys*. III.3 202a14-15). The particular puzzle Aristotle is trying to untangle here is the issue of where the movement takes place. His conclusion: movement is in the moved thing. He reaches this conclusion by first going through the example of teaching and learning.

---

[93] I will have more to say on this subject in Chapter 4 as well, since I think this is also an important part of securing conviction in the student's coming to be convinced of the truth of the starting-points (*archai*) of a science. This is done in large part by sussing out where the student is at in their current level of understanding of some subject, and especially being responsive to the student's probative questions if something the teacher says during their explanation does not make sense to them.

Learning, this passage makes clear, is a kind of movement (*kinêsis*), and it too takes place *in* the learner:

> **TP-3** Teaching is the activity of the one who has the capacity to teach, and indeed it occurs in someone; it is not cut off, but is of something in someone. (*Phys*. III.3 202b7-8)[94]

In order to teach, therefore, a teacher needs a student. Just as movement does not occur without something in which the movement occurs, teaching does not happen in a vacuum.

The final requirement for teachers, therefore—in addition to actually possessing the *epistêmê* they intend to teach and, most likely, a capacity to teach to where students are at in their current level of understanding about a topic—is having students who are capable of receiving their teacher's *scientific understanding*. But just what sort of student does Aristotle think is suitable for this kind of didactic learning? I take up this question in the next section.

3.4 For the Student

There are a number of pre-requisites that a student must meet in order to engage in didactic learning in addition to the PKR. I discuss the textual evidence for each of these in this section in turn.

3.4.1 The Ability to Listen & Remember

Perhaps the most fundamental requirement for didactic learning, according to Aristotle, is the ability to listen and remember what has been said. While this requirement might also seem—like a teacher

---

[94] ἡ δίδαξις ἐνέργεια τοῦ διδασκαλικοῦ, ἔν τινι μέντοι, καὶ οὐκ ἀποτετμημένη, ἀλλὰ τοῦδε ἐν τῷδε

being required to know what they intend to teach—rather obvious, it is important to note that Aristotle pinpoints the faculties of hearing and memory specifically as pre-requisites for didactic learning. The relevant passage is from near the beginning of Aristotle's *Metaphysics* (also discussed in §2.4.1):

> By nature, animals are born possessed of perception. In some of them, memory does not come about from this, but in others it does come about. And on account of this, they are more practically-wise and better at learning than those incapable of remembering; Practically-wise without learning are those who cannot hear sounds (such as the bee and whatever other kind of animal may be like them), whereas those that in addition to memory have this perceptual capacity can learn. (*Meta* I.1 980a20-980b25)[95]

Aristotle also discusses the ability of non-human animals to receive teaching in his *History of Animals*:

> **TP-12** Certain animals share at once in some learning and teaching, some from each other, some from human beings, these are the ones that have hearing—not just those that hear sounds but those that further perceive the differences between signs. (*HA* IX.1 608a17-21)[96]

---

[95] *φύσει μὲν οὖν αἴσθησιν ἔχοντα γίγνεται τὰ ζῷα, ἐκ δὲ ταύτης τοῖς μὲν αὐτῶν οὐκ ἐγγίγνεται μνήμη, τοῖς δ' ἐγγίγνεται. καὶ διὰ τοῦτο ταῦτα φρονιμώτερα καὶ μαθητικώτερα τῶν μὴ δυναμένων μνημονεύειν ἐστί, φρόνιμα μὲν ἄνευ τοῦ μανθάνειν ὅσα μὴ δύναται τῶν ψόφων ἀκούειν (οἷον μέλιττα κἂν εἴ τι τοιοῦτον ἄλλο γένος ζῴων ἔστι), μανθάνει δ' ὅσα πρὸς τῇ μνήμῃ καὶ ταύτην ἔχει τὴν αἴσθησιν.* Several translators opt to translated instances of *manthanô* as "teach" in this passage. See, *e.g.,* Reeve (2016).

[96] *Ἔνια δὲ κοινωνεῖ τινὸς ἅμα καὶ μαθήσεως καὶ διδασκαλίας, τὰ μὲν παρ' ἀλλήλων, τὰ δὲ καὶ παρὰ τῶν ἀνθρώπων, ὅσαπερ ἀκοῆς μετέχει, μὴ μόνον ὅσα τῶν ψόφων, ἀλλ' ὅσα καὶ τῶν σημείων διαισθάνεται τὰς διαφοράς.*

While Aristotle's discussion in these two passages focuses on non-human animals, the same point extends to human beings: as rational animals, a student must be able to take in what they hear from a teacher and retain what they have heard in memory. Aristotle's emphasis on these two faculties further underscores the thesis that teaching, for Aristotle, is a kind of transmission of scientific understanding from teacher to student. For without the ability to hear a teacher's words and remember what has been said, a student will fail to meet the bare minimum requirement for being able to receive a teacher's scientific understanding.

Aristotle's clear stance on the need to be able to hear in order to learn raises some difficult questions. First, Aristotle should have been aware of sign language, since its practice is described as current in Plato's *Cratylus* (422e).[97] There does not seem to be anything *in principle* that would bar someone who was deaf from receiving a teacher's teaching through sign-language. Yet Aristotle seems adamant that students must possess the faculty of hearing. The reason for this appears to be that only sound can capture and convey the kind of symbols that are necessary for communicating ideas. However, Why would Aristotle not have allowed for sign language as a way to teach? Although sign language was practiced in ancient Greece, perhaps it was not developed to a complex enough form to be able to communicate as effectively as speech.

But what about reading? Is it not possible for people (including the deaf) to learn from reading a text? On the one hand, it is possible that reading was not a wide-spread practice in Ancient Greece. But, for those people who could read, why wouldn't they be able to learn from a book? One answer: they could, but this would not be *didactic* learning (see *NE* X.9 1180a15-1180b6). Learning from a teacher is a different kind of learning than learning from a book. When Aristotle says that

---

97 See H-Dirksen L. Bauman (2008: 127-145) for an examination of the sign language in *Crat.*

one must possess the ability to hear in order to learn, implicit in his statement is that this he is speaking about *didactic* learning—learning from a teacher. The same pre-requisite presumably does not apply to zetetic learning, so we should not expect it to apply to learning from a text.

This distinction between learning from a teacher and learning form a book may also be instructive for our understanding of Aristotle's notion of teaching. For if teaching were just a kind of lecture or monologue where a teacher delivers a scientific exposition of some subject, learning from a book and from a teacher would not be so distinct. Instead, this distinction indicates again that the activity of teaching must involve a form of back and forth between student and teacher—the kind of back and forth that Aristotle thinks (based on the state of sign language at his time) was only possible through verbal (*i.e.,* vocal) communication.

3.4.2 Being "Well-Educated" (Pepaideumenos)

According to Aristotle at several points in his corpus, students, in order to be good audience members (*akroatês*), must be accustomed to accepting the appropriate level of exactness in an argument. Aristotle often calls the ability to know how much exactness to expect from an exposition being "well-educated" (*pepaidemenos*). Aristotle's remarks about this requirement have been received primarily as a point about the level of exactness we ought to require in our inquiries into certain subjects, but this same point also applies to those who receive teaching:

> Some people do not accept what someone says if it is not stated mathematically, others if it is not based on paradigm cases, while others expect to have a poet adduced as a witness. Again, some want everything expressed exactly, whereas others are annoyed by what is exact, either because they cannot string all the bits together or because they regard it as nitpicking. For exactness does have something of this

> quality, and so just as in business transactions so also in arguments it seems to have something unfree or ungenerous about it. This is why we should already have been well-educated in what way to accept each argument. (*Meta.* II.3 995a6-14; *cf. NE* I.3 1094b23-26, *PA* I.1 639a3-16, & *EE* I.6 1217a7-10)[98]

Aristotle's general point here is that, when receiving a *logos*, we already need to be "well-educated" enough to know how much exactness we should expect from the person giving that *logos*. Just as we should not expect mathematical precision from a poet, we should not expect poetic license from a mathematician.

According to Aristotle, the well-educated person actually has three abilities:

1. The well-educated know what degree of exactness or precision (*akribeia*) to expect within different domains of inquiry. For example, the well-educated know that standards of proof for a mathematician and a poet are different and treats each accordingly, accepting proofs from a mathematician and from a poet according to the level of precision that can be expected from each subject matter (see *Meta.* II.3 995a12-16; *NE* I.3 1094b14-27; *EE* I.6 1216b40-1217a9).
2. The well-educated know, therefore, when it is appropriate to demand a proof and when it is not; they know, in other words, that it is fruitless to demand a proof of the

---

[98] *οἱ μὲν οὖν ἐὰν μὴ μαθηματικῶς λέγῃ τις οὐκ ἀποδέχονται τῶν λεγόντων, οἱ δ' ἂν μὴ παραδειγματικῶς, οἱ δὲ μάρτυρα ἀξιοῦσιν ἐπάγεσθαι ποιητήν. καὶ οἱ μὲν πάντα ἀκριβῶς, τοὺς δὲ λυπεῖ τὸ ἀκριβὲς ἢ διὰ τὸ μὴ δύνασθαι συνείρειν ἢ διὰ τὴν μικρολογίαν· ἔχει γάρ τι τὸ ἀκριβὲς τοιοῦτον, ὥστε, καθάπερ ἐπὶ τῶν συμβολαίων, καὶ ἐπὶ τῶν λόγων ἀνελεύθερον εἶναί τισι δοκεῖ. διὸ δεῖ πεπαιδεῦσθαι πῶς ἕκαστα ἀποδεκτέον, ὡς ἄτοπον ἅμα ζητεῖν ἐπιστήμην καὶ τρόπον ἐπιστήμης· ἔστι δ' οὐδὲ θάτερον ῥᾴδιον λαβεῖν.*

principle of non-contradiction, since no such proof, derived from better know premises is possible (*Meta* IV.4 1006a5-9).

3. The well-educated also know which sorts of arguments are proper to a subject and which are extraneous; they know, in other words, that an argument about Plato's theory of forms, for example, will not settle a question about what I had for breakfast this morning (*EE* I.6 1217a7-10).

In general, then, on the basis of these three abilities, the well-educated are fair judges of what has been well-said in an argument and what has not (*PA* I.1 639a1-15).[99] What connects all of these characteristics together, I submit, is that these are the abilities a student needs in order to receive scientific understanding from a teacher. Well-educated students will know how to judge when a teacher has explained something in the appropriate amount of detail, given the science being taught. They will also know not to introduce extraneous points, and they will know not to press the teacher for proofs beyond what is capable of being proven—beyond, that is, the first principles of the relevant science. Being well-educated, therefore, is an essential pre-requisite for receiving scientific understanding.[100]

It might sound paradoxical for Aristotle to claim that, in order to be taught, a student must already be well-educated. If the student is already well-educated, what further teaching do they need? According to Aristotle in the opening of the *PA*, being well-educated is contrasted with possessing

---

99 *Cf.* Irwin (1990: 27-29).

100 Aristotle also discusses this requirement by describing how those people who are *not* well-educated (*apepaideumenos*) behave. Such people, according to Aristotle, do not know when an explanation has reached a satisfactory level of depth, and they keep pressing for more explanations—extending the explanation beyond the requirements of the present science (see *Meta.* II.3, IV.4). For my overview of scientific understanding, see §2.3

scientific understanding (*PA* I.1 639a1-15). Teaching, I submit, gets the student who is well-educated in a subject to scientifically understand it. This distinction between being well-educated and being taught further indicates the sophistication of Aristotle's educational vocabulary that English often lacks.

But how does one become well-educated? My account would be subject to a problematic circularity if it was by teaching that one became well-educated. Irwin (1990: 29) suggests that one becomes "well-educated" *via* training in dialectic. Aristotle, on the other hand, says it is by "education" *paideia* (*PA* I.1), which is unilluminating, though at least etymologically appropriate. I submit that one becomes well-educated through experience. In the next section, I first give an overview of Aristotle's notion of experience, and then show how experience—both in the relevant subject matter to be taught, and in arguments—makes one well-educated.

3.4.3 Experience

Plato's Academy was said to have the words "let no one ignorant of geometry enter here" inscribed above its entry-way. Based on the emphasis that Aristotle gives to experience as a pre-requisite for learning, it is easy to imagine Aristotle having the following written in a similarly prominent place in the Lyceum: "let no one without experience enter here."[101] According to Aristotle, experience is perhaps the most important thing that a student needs to have before he can receive teaching. It is explicitly mentioned as one of the pre-requisites for teaching in TP-1. But what is experience? And why should it be what is required for didactic learning?

---

[101] For more on the historical relationship between the Academy and the Lyceum, see Lynch's *Aristotle's School: a Study of a Greek Educational Institution* (1972). For more on Aristotle's school in particular, see Natali's more recent *Aristotle: His Life and School* (2013).

One of Aristotle's most common remarks about teaching is that it happens through "prior knowledge."[102] The general point in these passages is that in order to be taught something new, the student must already be familiar with some aspect of the subject to be taught. Otherwise, the student would not be able to begin to make progress in their learning (*APo.* I.1 71a17-b9).

Often, Aristotle refers to this prior knowledge as the knowledge that something is the case (*APo.* I.1a 12-17, II.1 89b23-31; *NE* I.4 1095b6-7). Knowledge of 'the *that*' can take on a couple of different forms: it can be (1) knowledge that something exists; or it can be (2) knowledge that one thing is predicated of something else. Sometimes (2) can take the form of knowing *what* something is—*i.e.*, knowing its definition.

As Aristotle explains in *APo.* II.1, prior knowledge of some things is a pre-requisite for acquiring additional types of knowledge. First, we need to know *that* something is before we investigate *what* it is (though sometimes we can come to know both *that* and *what* something is at the same time). Additionally, if we know *that* something is the case (*i.e.*, *p* is predicated of *x*), then we can proceed to investigate *why* it is the case (*i.e.*, why *p* is predicated of *x*). Providing the *why*, as we have seen, is what teachers do, but before a student can receive an explanation as to why some fact obtains, the student must first know *that* that fact obtains.

Aristotle also refers to experience as knowledge of 'the *that*' in the opening of his *Metaphysics*: "experienced people know *the that* but do not know *the why*, whereas craftsmen know *the why*, that is, the cause" (*Meta.* I.1 981a28-30).[103] Experience at least provides didactic learners with the requisite

---

102 See., *e.g.*, *APo.* I.1 (71a11-17), *NE* I.4 (1095b2-3), *Top.* VI.4 (141b3-142a4), *Phys.* I.1 (184a16-21), *Meta.* VII.3 (1029b3-12).

103 τοῦτο δ' ὅτι οἱ μὲν τὴν αἰτίαν ἴσασιν οἱ δ' οὔ. οἱ μὲν γὰρ ἔμπειροι τὸ ὅτι μὲν ἴσασι, διότι δ' οὐκ ἴσασιν· οἱ δὲ τὸ διότικαὶ τὴν αἰτίαν γνωρίζουσιν.

background knowledge *that* certain things are the case. The student must already posses some experience—some prior knowledge—that certain things are the case before the teacher can tie explanations to these experiences and convey their understanding of *why* these facts obtain.

It might be pointed out, however, that experience is typically described in Aristotle as knowledge of *general* facts and concepts.[104] This knowledge in turn differs from scientific understanding, which grasps what holds *universally* and "from necessity" (*APo.* I.4-5 *passim*). It is possible, for example, for someone with experience to know *that* all Xs are Ps, yet fail to recognize that all Xs are necessarily Ps precisely *because* of the nature of Xs. It is this latter type of knowledge—a knowledge of the cause of all Xs being Ps—that the scientist possesses and the experienced person lacks. Didactic learning, then, consists of receiving this explanation from a teacher. Thus, even this more specialized interpretation of experience counts in favor of my thesis that teaching is the activity of instilling not just any kind of knowledge, but specifically scientific understanding.[105]

We are now in a position to see how experience makes one well-educated. First, the person with experience in a particular field will have basic familiarity with the *explananda*—the facts to be explained. They will be able to tell which explanations fit with the facts, because they will already be familiar with these facts based on their prior experience. They will therefore be able to know, too, which sorts of considerations are extraneous to the topic under discussion. They will also know,

---

104 Hasper and Yurdin (2014) make the case—convincingly in my opinion—that this interpretation of experience can be squared with the assertion in *Meta* I.1 (981a15-16) that experience is of particulars, not universals. Their solution is to argue that experience is knowledge of *general facts*, but fails to be knowledge of *universals*, in the specialized sense of 'universal' that Aristotle discusses in *APo.* I.4-5. Their thesis: "Experience is knowledge of particulars in that it takes the form of recognition and practical abilities whose exercise essentially involves interacting with particulars. Experience's particularity, interpreted in this way, is compatible with experience's being knowledge of general facts" (2014: 120).

105 See also *APo.* II.19 (100a5-10).

importantly, which facts are explanatorily basic and admit of no further explanation based on their experience as well. Thus, all of the abilities that a person who is considered well-educated in a specific field is said to have can be derived by their experience with that subject.

But what of the person who is *generally* well-educated—the person who can judge what is well-said in multiple areas of study? This ability, too, is derived from experience—experience in hearing explanations in different subjects. As one receives teaching in multiple areas, one develops a general conception of what a good explanation in a field looks like. This generalization can then be applied to expositions in a wide variety of particular fields. And this pattern—of possessing a general concept under which one can recognize particular instances of that concept—is the same ability that one gains from experience.[106] Thus, one becomes generally well-educated by gaining experience in receiving arguments across multiple domains.

It might be objected that the problematic circularity I mentioned earlier is back. For it seems as though I am claiming that a student needs to be well-educated before being able to receive teaching, yet one becomes well-educated by receiving teaching. Here is where the distinction that Aristotle draws in *PA* I.1 between being well-educated in a specific area versus in general is important. I claim that one becomes *generally* well-educated as a result of receiving teaching in multiple areas. But one can only receive teaching in a *specific* area after one has become well-educated in it. And—I also claim—one becomes well-educated in a *specific* area through experience. The arc of the relationship between experience, being well-educated, and teaching, looks like this: One first gains experience in a particular domain. This experience is what allows one to judge which

---

106 On the identity between the practical and recognitional capabilities gained from experience and by being well-educated, *cf. Pol* III.12 (1282a37) & *Meta* I.1 (981a13-30). Both texts discuss even use the same example of practicing medicine.

conclusions are well-said in an explanation of that topic and which are not—thereby preparing a student for didactic learning. Then, once one has received teaching in a number of different domains, one gains experience *in receiving teaching*. This experience is what makes one *generally* well-educated, which, in turn, prepares one to receive teaching in a much broader range of subjects.

3.4.4 …and Time

In TP-1, Aristotle mentions both experience and time explicitly as pre-requisites for teaching:

> **TP-1** Since virtue, then, is twofold, of thought on the one hand, and of character on the other, while that of thought has both its generation and development mostly from teaching (for which reason it requires experience and time), that of character comes about from habits. (*NE* II.1 1103a14-17)[107]

Later in the *NE* Aristotle says that "it is quantity of time, that produces experience" (*NE* VI.8 1142a15-16).[108] Because of this later claim, it would seem natural to take the "and" (*kai*) between "experience and time" in TP-1 as epexegetical. This may well be the case, but it is possible that Aristotle also meant for time to be an additional requirement for receiving teaching. Also in the *NE* Aristotle indicates that a certain amount of time must pass *after* the student has learned something didactically as well—if the student is to truly digest and absorb the teaching he has received and make it his own:

---

[107] *Διττῆς δὴ τῆς ἀρετῆς οὔσης, τῆς μὲν διανοητικῆς τῆς δὲ ἠθικῆς, ἡ μὲν διανοητικὴ τὸ πλεῖον ἐκ διδασκαλίας ἔχει καὶ τὴν γένεσιν καὶ τὴν αὔξησιν, διόπερ ἐμπειρίας δεῖται καὶ χρόνου, ἡ δ' ἠθικὴ ἐξ ἔθους περιγίνεται*

[108] *πλῆθος γὰρ χρόνου ποιεῖ τὴν ἐμπειρίαν·*

> those who have first learned something string the words together but do not yet know what they have learned, since it must grow to be a natural part of them, and that takes time (*NE* VII.3 1147a21-22)[109]

A student can hear a teacher's exposition of some subject, and they may be able repeat it, but this is only "stringing the words together" as, Aristotle says just after this passage, "talking like actors on a stage" (1147a24). Aristotle recognizes, in other words, that it takes time for the teacher's teaching to be absorbed into the student's soul. The student, having received the lesson of his teacher can (at least in theory, if the student has received it well) repeat what they have learned from their teacher back to them. But this is only the initial step in learning. The second and more important step is for the words to become an organic part of the student's soul (*cf.* TP-6). This process takes time.[110] Time, these passages suggest, is an additional requirement—a *post*-requisite—for didactic learning, which further supports my interpretation of Aristotle's notion of teaching.[111]

3.5 Conclusion

While the scholarly literature has focused on the prior knowledge that one requires in order to learn, in this chapter I have shown how the PKR applies to both the teacher and the didactic learner. For Aristotle, teachers must possess the scientific understanding they intend to teach, and students must

---

109 *καὶ οἱ πρῶτον μαθόντες συνείρουσι μὲν τοὺς λόγους, ἴσασι δ' οὔπω· δεῖ γὰρ συμφυῆναι, τοῦτο δὲ χρόνου δεῖται*

110 *Cf.* also *Phys.* VII.3.

111 Granted, TP-1 discusses intellectual virtues and not scientific understanding specifically. The relationship between *epistêmê* and the other intellectual virtues is complex and I am not able to dive into it here. For additional textual evidence which indicates that time is a post-requisite for acquiring *epistêmê* specifically as well, see *Physics* VII.3 247b1-248a5.

have experience with the subject matter to be taught. But there are additional pre-requisites that teacher and student must fulfill before teaching can take place. The teacher must possess—in addition to scientific understanding—"the capacity to teach" (*didaskalikê*), and a student who is capable of didactic learning. The student, in turn—in addition to having experience with the subject to be taught—must also be able to listen to and remember what their teacher says, and be "well-educated" (*pepaideumenos*) already.[112]

This set of pre-requisites for teaching and learning strongly indicates that Aristotle's is a transfer model of teaching and didactic learning (where knowledgeable teachers pour their knowledge into receptive students). While this model of teaching and learning has received heavy criticism in the last century, it coheres with the interpretation of Aristotle on the goal of teaching that I offered in Chapter 2. A full defense of Aristotle's transfer model is beyond this scope of this study, but I also think Aristotle has the resources to respond to the criticisms of, *e.g.* Friere (2005 [1971]: Ch. 2). A few points are worth noting here. First, Aristotle was aware of alternative conceptions of education. Plato, for example, spells out a vision of education which is not a transfer of knowledge, but a turning of the soul to see in a new way (*Rep.* 518c-d; *cf. Symp.* 175e). There is room to explore why Aristotle advanced a transfer model rather than the conception of education—

---

[112] There is good reason to believe that—even though Aristotle does not mention it specifically—the student's motivation to learn is an additional requirement for didactic learning. The source of a student's motivation to learn appears to arise from desire to know which comes naturally to all human beings (*Meta.* I.1 980a21; *cf. Rhet.* I.11 1371a31-34 & TP-8). Although Aristotle does not say anywhere explicitly that such motivation must be present for learning (didactic or otherwise), it is not unreasonable to suppose that this desire to know must be present in order for a student to learn from a teacher, because such motivation must be present for any kind of human movement (*NE* VI.2 1139a35-36; *cf. DA* III.10 433a22-23). What determines whether one student will have the desire to learn and another not? Or, if all humans desire to know, what blunts one human's natural curiosity and sharpens another's? Perhaps Aristotle's answer is that it is up to an individual's nature. Or perhaps, as I discussed in §3.3.2, it falls to the teacher's capacity to teach to generate this capacity in students. For now, however, this remains an intriguing question—and something worth wondering about.

closer to the modern-day progressive model—voiced by Socrates in this part of the *Republic*. But at least Aristotle knew that there were other options on the table. I think Aristotle, perhaps because of his awareness of this alternative model—did not think that didactic learning was a *purely* passive process. As I discussed in §3.3.2, Aristotle indicates that the student plays at least an *interactive* role with the teacher in the process of receiving their teacher's scientific understanding. According to the passages I discuss in that section, it seems that Aristotle thinks students actively participate in the reception process.[113]

It may also be noted that some passages in Aristotle's works suggest that there is an additional pre-requisite that I have not discussed in this chapter—a virtuous character (*e.g.*, *Pol.* VIII.3 1338b4-5; *cf.* VII.15 1334b12-28). Moreover, the fact that time seems to be required for teaching may seem to count against the claim I made in Chapter 1, that—contrary to the prevailing interpretation—teaching is not a part of habituation. I discuss both of these issues in Chapter 5. But, in brief, a well-trained non-rational soul is a pre-requisite for teaching about virtue because the goal of teaching about virtue for Aristotle is not merely to *know* about virtue, but to *become* virtuous people (*NE* X.9 1179b1ff.; *cf.* II.2 1103b27-29). Moreover, the discussion of time as a post-requirement (§3.4.4) does not suggest that habituation requires teaching—only that teaching may require some habituation.

All together, and with these caveats from the previous paragraph in mind, the passages presented in this chapter confirm and extend the interpretation of Aristotle's notion of teaching that I began in Chapter 2. For the fact that *these* are the pre-requisites for teaching and didactic learning further indicates that the goal of teaching is to instill scientific understanding in students' souls. The

---

113 The word that Aristotle most often uses to describe this reception process is *lambanein* (*e.g.* TP-8), which has (according to the *LSJ*) the fittingly double meaning of "taking" *and* "receiving."

passages examined in this chapter also lend further support to the claim I made in Chapter 1, that despite the prevailing scholarly opinion, Aristotle does possess a specific and consistent notion of teaching. Aristotle's treatment of the methods of teaching extends this line of interpretation. I discuss these passages in Chapter 4.

Chapter 4:

Aristotle's Teaching Methodology

4.1 Introduction

Most of the scholarly discussion regarding Aristotle's notion of teaching focuses on one question: is teaching done by demonstration (*apodeixis*)? Barnes inaugurated the study of this question by arguing for what came to be known as *the positive thesis*: "The theory of demonstration offers a formal account of how an achieved body of knowledge should be presented and taught." (1969: 147).[114] Burnyeat, however, criticizes Barnes' positive thesis by arguing that if demonstration is Aristotle's method of teaching, then he turns out to be both a poor pedagogue and a poor student of Plato: "[S]uppose I am a teacher who must impart to my pupil facts and explanations which are new to him. Does Aristotle think that demonstration from first principles is the way to get him to know what he did not know before? That would be poor pedagogy, and a surprising lapse from the enlightened educational traditions of the Academy" (1981: 116).

---

[114] This is called "the positive thesis" because of its contrast to the negative thesis which Barnes also makes in this paper: "the theory of demonstrative science was never meant to guide or formalise scientific research: it is concerned exclusively with the teaching of facts already won; it does not describe how scientists do, or ought to, *acquire* knowledge: it offers a formal model of how teachers should *impart* knowledge" (1969: 138) Barnes restates this two-part claim later in the same work as follows: "In developing the theory of demonstration and in constructing his notion of a demonstrative science, Aristotle was not telling the scientist how to conduct his research; he was giving the pedagogue advice on the most efficient and economic method of bettering his charges" (147). Barnes notes that his interpretation is not exactly new. Wieland and a number of other scholars had "earlier hints" at this thesis (138, n.70), but Barnes was the first to back it up with argument (138-143).

Of course, it is possible that Aristotle really was a poor pedagogue. Barnes's interpretation can be correct, and Aristotle could have had an impoverished pedagogical theory.[115] Nor must Aristotle agree with Plato (his own teacher) on how to teach. Aristotle founded his own institution of higher education rather than stay in the Academy, so it is certainly possible that Aristotle had a very different didactic methodology. But according to Burnyeat, the positive thesis also ignores other salient points:

> It [the positive thesis] would be contrary also to Aristotle's repeated indications that, so far at least as first principles are concerned, the pupil must be led to them, by non-formal methods, from what is more familiar to him. But it would be only slightly better pedagogical practice, at least in the non-mathematical sciences, if I tried to take my pupil straight to the first principles and, once there, launched into a remorseless chain of syllogistic deduction. That would mean expecting the novice to come to know, for the first time, the theorems of the science on the evidence solely of their having been demonstrated from first principles; I would not concern myself with the evidential support that particular theorems might find closer to the pupil's own experience. But in Aristotle's own treatises he is constantly, one might almost say obsessively, reaching for evidential support from any reputable (*endoxon*) source he can cite. (1981: 116-117)

Burnyeat thus charges Barnes' positive thesis with ignoring *both* the method that Aristotle advises for leading pupils towards first principles of a science *and* what Aristotle himself does in his own

---

115 This is the stance that Bauman (1998) takes.

writings.[116] We should not be so quick, therefore, to answer the question—is teaching done by demonstration?—positively.

Burnyeat's critique was persuasive enough to make most subsequent scholars side with him.[117] However, the positive thesis has recently been making a comeback: Bronstein, for example, claims that "some version of Barnes's positive thesis is correct: students of a science are taught and therefore learn by demonstration (although Barnes may have exaggerated the importance of demonstration in their studies)" (2016: 32).[118] Bronstein argues for a different kind of teaching by demonstration—one which is not a "remorseless chain of syllogistic deduction" but rather a re-ordering of the student's prior knowledge. This version of teaching by demonstration, however, is very nearly identical with Burnyeat's own positive conception of Aristotle's notion of teaching. So, even if some version of the positive thesis is correct, it is not clear what "teaching by demonstration" actually involves.

---

116 I address the relationship between Aristotle's writings and his notion of teaching below, in §4.5.2.

117 See, *e.g.*, Wians (1989). Even Barnes himself offered a partial recantation of his earlier view. In the preface to the 2nd edition of his translation of the *Posterior Analytics*, Barnes writes: "There is no doubt that the notion of teaching was closely connected, in Aristotle's mind, with the notion of demonstrative understanding: this is shown clearly enough by the various texts which I discussed in my original article. But it is absurd to suggests that *APst* [=*APo.*] is merely a treatise on teaching methods; and my references to schoolmasters and their charges—to which several critics took exception—were surely malapropos. Rather, and more generally, *APst* is primarily concerned to investigate how the various facts and theories which practicing scientists discover or construct should be systematically organized and intelligibly presented. The connection with teaching is this: in so far as a teacher is concerned to transmit a body of scientific knowledge, he will best do so by presenting it in a form in which its organization and explanatory coherence are intelligibly revealed" (1993: xxviii-xix).

118 Bauman adopts Barnes' positive thesis almost verbatim. He writes: "Syllogism, at least in its demonstrative variety, is not intended by Aristotle to be used as a method of scientific inquiry and for the discovery of fresh knowledge. Instead, it is an organized means to imparting to students knowledge already won" (1998: 3). Bauman then criticizes Aristotle for thinking that teaching could be conducted by demonstrative syllogism, since "his program encompasses only a part of the knowledge that can be taught" (1998: 2). Bauman thus agrees with both Barnes *and* Burnyeat: Aristotle's teaching is done by demonstration *and* this makes him an poor pedagogue.

The main problem with each of these studies—from Barnes, Burnyeat, and Bronstein—is that none of them makes Aristotle's notion of teaching its central focus. Instead, each uses Aristotle's notion of teaching to support a claim about a different topic: for Barnes, it is Aristotle's theory of demonstration; for Burnyeat, the proper translation of *epistêmê*. Bronstein's focus is on providing an account of the underlying unitary structure of the *Posterior Analytics*. While he discusses learning by many different methods, his study focuses on zetetic learning (learning by inquiry or discovery), and mentions didactic learning (learning from a teacher) only sparingly.[119]

To see the proper place of demonstration in Aristotle's teaching methodology, we need to zoom out from the *APo.* and examine Aristotle's comments specifically about teaching from across his corpus. On the basis of such an examination, I argue for a revised version of the positive thesis—one which absorbs Burnyeat's serious criticisms, and which takes into account Aristotle's multiple comments about teaching beyond the *Posterior Analytics*. As the passages I canvass will show, Aristotle's teaching methodology includes demonstration, but also makes use of induction, definition, and (in special circumstances) analogy. Aristotle's teachers utilize each of these *logoi* in order to achieve the goal of teaching: to instill scientific understanding (*epistêmê*) in a student's soul (Chapter 2). Leveraging this aspect of Aristotle's notion of teaching, it becomes much easier to see what Aristotle means when he says, in multiple passages, that some teaching is by induction and

---

119 Bronstein offers little argumentation in favor of the positive thesis, except to show how we can make better sense of a particularly difficult part of the *Posterior Analytics* (*APo.* I.10 76b3-16, 21-2) if we assume that Aristotle is speaking about a teacher teaching a student, rather than a budding scientist in the process of investigation and/or discovery (see Ch. 11 §§4-6). In fairness, defending the positive thesis is not Bronstein's aim. Bauman (1998) likewise does not provide much in the way of an *argument* for his claim that Aristotle's demonstration is Aristotle's method of teaching (let alone that it is his sole method). Bauman's only argument for viewing teaching as demonstration, so far as I can tell, is that "By keeping the pedagogical purpose of the syllogism in the foreground of the discussion, some dark places in Aristotle's treatise [the *APo.*] are illuminated, or at least made less shadowy" (2).

some by deduction (see *NE* VI.3 1139b25-36 and *APo.* I.1 71a1-9, both discussed below). On my reading of the available textual evidence, induction and definition work in tandem to secure the student's conviction in the starting-points of a science, and teachers use demonstration to prove what follows from them. This account of Aristotle's teaching methodology thus both coheres with, supports, and further extends the interpretation of Aristotle's notion of teaching that I have been building since Chapter 2. First, I provide an overview of my interpretation of Aristotle's teaching methodology. Then, I support this overview by working through specific passages on teaching methods from the teaching passages. I then compare my interpretation to those offered by Barnes, Burnyeat, and Bronstein. I conclude by considering and rejecting some potential objections to my interpretation.

4.2 "As in a stadium racecourse"

An examination of the available textual evidence reveals that there are in fact very few passages where Aristotle discusses specific *logoi* for teaching. But there are a couple of key passages where Aristotle articulates a general teaching methodology. These passages, I will show, cohere with and support the account of the goal of teaching developed in Chapter 2. They also correspond and give shape to the teaching passages where Aristotle does discuss specific methods (*logoi*) of teaching.

Near the beginning of his *Nicomachean Ethics*, Aristotle (invoking Plato) likens arguments (*logoi*) to a racecourse:

> We must not let it escape our notice, however, that arguments leading from starting-points and arguments leading to starting-points are different. For Plato too was rightly puzzled about this and would inquire whether the route was leading from starting-points or to starting-points—as in a stadium racecourse, that of the athletes

> may lead away from the starting-point toward the boundary or in the reverse direction. (*NE* I.4 1095a30-1095b1)[120]

This passage (let us call it "the racecourse passage") anticipates another from later in the *NE*, where Aristotle defines scientific understanding:

> **TP-24** Further, all scientific understanding seems to be teachable, and what can be understood scientifically to be learnable. It is from things already known, however, that all teaching proceeds, as we also say in the Analytics, since some is through induction and some by deduction. Now induction leads to the starting point, that is, the universal, whereas a deduction proceeds from universals. Hence there are starting points from which a deduction proceeds that are not reached by deduction. Hence induction must provide them. Hence scientific understanding is a state affording demonstrations and has the other features included in the definition we give in the Analytics, since it is when someone is convinced in a certain way and the starting-points are known to him that he has scientific understanding. For if they are not better known than the conclusion, it is in a coincidental sense that he will have scientific understanding. Let scientific understanding, then, be defined in this way. (*NE* VI.3 1139b25-36)[121]

---

120 *μὴ λανθανέτω δ'ἡμᾶς ὅτι διαφέρουσιν οἱ ἀπὸ τῶν ἀρχῶν λόγοι καὶ οἱ ἐπὶ τὰς ἀρχάς. εὖ γὰρ καὶ ὁ Πλάτων ἠπόρει τοῦτο καὶ ἐζήτει, πότερον ἀπὸ τῶν ἀρχῶν ἢ ἐπὶ τὰς ἀρχάς ἐστιν ἡ ὁδός, ὥσπερ ἐν τῷ σταδίῳ ἀπὸ τῶν ἀθλοθετῶν ἐπὶ τὸ πέρας ἢ ἀνάπαλιν.*

121 *ἔτι διδακτὴ ἅπασα ἐπιστήμη δοκεῖ εἶναι, καὶ τὸ ἐπιστητὸν μαθητόν. ἐκ προγινωσ-κομένων δὲ πᾶσα διδασκαλία, ὥσπερ καὶ ἐν τοῖς ἀναλυτικοῖς λέγομεν· ἢ μὲν γὰρ δι' ἐπαγωγῆς, ἡ δὲ συλλογισμῷ. ἡ μὲν δὴ ἐπαγωγὴ ἀρχή ἐστι καὶ τοῦ καθόλου, ὁ δὲ συλλογισμὸς ἐκ τῶν καθόλου. εἰσὶν ἄρα ἀρχαὶ ἐξ ὧν ὁ*

Note that while scientific understanding is a state that allows its possessor to *give* a demonstration, this state is not *achieved* by receiving a demonstration.[122] TP-24 informs us that scientific understanding is attained by a combination of "induction" and "deduction." [123]

I submit that the induction and deduction mentioned in this passage (and in TP-19) is Aristotle's shorthand for two processes that he details elsewhere—mostly in the *Organon*, which I discuss below.[124] "Induction" refers to the process by which students come to be convinced of the explanatorily basic starting-point(s) of a science, while "deduction" refers to the demonstrative argument that proceeds from the universals (*i.e.*, the starting-points or first principles). To put this dual movement in the racecourse passage's terms, inductive arguments are those that lead *to* the starting-point, and deductive arguments are those that proceed *from* the starting-point.

My claim, then, is that teachers deploy different *logoi* as necessary in order to instill in students the two components of scientific understanding: (1) a grasp of the indemonstrable first principles of a subject; and (2) an understanding of what follows from those principles. Teachers use induction and definition to generate and secure their students' conviction in the indemonstrable first principles (*i.e.*, starting-points) of a subject.[125] Once students grasp these principles in the form of a

---

συλλογισμός, ὧν οὐκ ἔστι συλλογισμός· ἐπαγωγὴ ἄρα. ἡ μὲν ἄρα ἐπιστήμη ἐστὶν ἕξις ἀποδεικτική, καὶ ὅσα ἄλλα προσδιοριζόμεθα ἐν τοῖς ἀναλυτικοῖς· ὅταν γάρ πως πιστεύῃ καὶ γνώριμοι αὐτῷ ὦσιν αἱ ἀρχαί, ἐπίσταται· εἰ γὰρ μὴ μᾶλλον τοῦ συμπεράσματος, κατὰ συμβεβηκὸς ἕξει τὴν ἐπιστήμην. περὶ μὲν οὖν ἐπιστήμης διωρίσθω τὸν τρόπον τοῦτον.

122 At least, not necessarily. As I explain below, students with the proper prior knowledge could learn by receiving a demonstration from a teacher, but this need not always be the case, and indeed is probably not the case most of the time.

123 This description echoes another all-important passage (*APo.* I.1 71a1-9), where Aristotle also mentions both of these types of *logoi* in connection with teaching.

124 I discuss these passages in §4.3.

125 In some cases, they may use analogy, too (see §4.5.1 below).

definition, teachers proceed to give a demonstration that follows from them. When students possess both (1) and (2) in such a way that they can exercise their newly acquired scientific understanding at will, the instillation process is complete.

4.3 Support from Specific Teaching Passages

Although the passages where Aristotle explicitly discusses specific methods of teaching are few and far between—a natural reading of those passages where he does discuss such *logoi* supports the account I have sketched above. First, in his *On the Sophistical Elenchus*, Aristotle writes:

> **TP-25** There are four kinds of arguments used in discussion: didactic, dialectical, examinational, and eristic. Didactic arguments are those that deduce from the principles appropriate to each subject and not from the opinions held by the answerer (for the learner must be convinced). (*SE* 2 165a38-b3)[126]

We learn two things about Aristotle's notion of teaching from this passage. First, didactic arguments deduce from principles that are appropriate to the subject being taught and not those that are held by the answerer (as with eristic arguments). Second, because didactic arguments proceed from these principles, the learner must find them convincing.[127] But Aristotle leaves it ambiguous how students come to be convinced of these subject-specific principles. My contention is that Aristotle's teaching methodology includes both the type of demonstrative deduction that proceeds from principles

---

126 Ἔστι δὴ τῶν ἐν τῷ διαλέγεσθαι λόγων τέτταρα γένη, διδασκαλικοὶ καὶ διαλεκτικοὶ καὶ πειραστικοὶ καὶ ἐριστικοί· διδασκαλικοὶ μὲν οἱ ἐκ τῶν οἰκείων ἀρχῶν ἑκάστου μαθήματος καὶ οὐκ ἐκ τῶν τοῦ ἀποκρινομένου δοξῶν συλλογιζόμενοι (δεῖ γὰρ πιστεύειν τὸν μανθάνοντα)

127 We also learn that didactic arguments are used "in discussion" — a point that I discuss in §3.3.2.

appropriate to the subject being taught *and* the methods of induction and definition that help secure the student's conviction in these first principles.

A passage from Aristotle's *Eudemian Ethics* lends support to the idea that teaching involves both demonstration and definition, and that there is an order to the teaching process:

> **TP-26** That the goal is cause of the things subordinate to it is made clear by teaching. One explains that each of the subordinate things is good by having first defined the goal, since that for the sake of which is a cause. (*EE* I.8 1218b16-22)[128]

While Aristotle's concern in this passage is to show how a goal (*telos*) can be a cause (*aition*) by being that for the sake of which something is done (*i.e.*, a final cause), TP-26 also indicates that Aristotle thinks that there is an proper order to teaching: a teacher first establishes a definition and then works from that definition to explain what follow from that initial starting-point.[129] If we put together the thought that the starting-points of demonstrations are definitions, the following picture of teaching methodology comes into view: teachers establish the student's conviction in the truth of the definitions of the subject being taught, and then proceed to show what follows from these definitions by giving a demonstrative argument.[130]

---

128 *ὅτι δ' αἴτιον τὸ τέλος τοῖς ὑφ' αὑτό, δηλοῖ ἡ διδασκαλία. ὁρισάμενοι γὰρ τὸ τέλος τἆλλα δεικνύουσιν, ὅτι ἕκαστον αὐτῶν ἀγαθόν· αἴτιον γὰρ τὸ οὗ ἕνεκα.* Trans., Inwood & Woolf, modified slighlty. Inwood & Woolf translate *ἡ διδασκαλία* as "the order of teaching."

129 For a more detailed account of the connection between definition and explanation, see Charles (2010).

130 Moreover, according to Aristotle in the *De Anima*, "the starting point of every demonstration is what a thing is" (*DA* I.1 402b25, trans. Shields). Keep in mind that demonstrations are a special type of deductive argument.

Additional teaching passages also suggest that teaching follows this procedure—of securing a definition and proceeding to show what follows from it *via* a deductive argument. Consider the following passage (discussed already in §3.3.2):

> **TP-20** If, then, it is essential not to enhance the difficulty of the problem, he had better grant it; if, on the other hand, it is essential to deduce through premisses that are more familiar, he had better refuse. In other words, one who is trying to learn ought not to grant it, unless it is more familiar; but one who is training [in dialectic] should grant it, if he is merely satisfied of its truth. Clearly, then, the circumstances under which such admissions should be claimed are different for a questioner and for a teacher. (*Top.* VIII.3 159a10-14)[131]

If the goal of the conversation is didactic, then Aristotle recommends that the student who is not convinced of the teacher's hypothesis should not assent to it. Instead, the student should require the teacher to give an account of his or her claim either by appealing to some other point which the learner finds convincing, or by doing something else to convince the student of the axiom's truth—perhaps by giving an induction or clarifying a definition in some other way.

This point about the student's role in the conversation between teacher and student is emphasized just a few lines later, too. Aristotle's goal is to clarify the nature of dialectical debate, but he does so by contrasting it with didactic discussion:

---

131 *εἰ δὲ διὰ γνωριμωτέρων συλλογίζεσθαι, οὐ θετέον. ἢ τῷ μὲν μανθάνοντι οὐ θετέον, ἂν μὴ γνωριμώτερον ᾖ· τῷ δὲ γυμναζομένῳ θετέον, ἂν ἀληθὲς μόνον φαίνηται. ὥστε φανερὸν ὅτι οὐχ ὁμοίως ἐρωτῶντί τε καὶ διδάσκοντι ἀξιωτέον τιθέναι.*

> **TP-27** Those who teach or learn and those who compete with one another do not have the same aim…for the learner is to always state what he thinks, since no one ever attempts to teach something false. (*Top.*, VIII.4 159a26-30)[132]

These passages show that the teaching process happens by way of an interactive discussion between teacher and student. Students are told to state their honest opinions, and not to merely accept whatever the teacher asserts. The goal of this back-and-forth, I submit, is to secure the student's conviction in the subject-specific first principles. For then the demonstrative argument, showing what follows from these principles, can take place.

Students can come to be convinced of the truth of these principles in several ways:

> We get a theoretical grasp of some starting-points through induction, some through perception, some through some sort of habituation, and others through other means.[133] In each case we should follow the method of inquiry suited to their nature and make very serious efforts to define them correctly. For they are of great and decisive importance regarding what follows. It seems indeed that the starting-point is more than half the whole and that many of the things we were inquiring about will at the same time become evident through it. (*NE* I.7 1098b3-8)[134]

---

132 *οὐ γὰρ οἱ αὐτοὶ σκοποὶ τοῖς διδάσκουσιν ἢ μανθάνουσι καὶ τοῖς ἀγωνιζομένοις, οὐδὲ τούτοις τε καὶ τοῖς διατρίβουσι μετ' ἀλλήλων σκέψεως χάριν· τῷ μὲν γὰρ μανθάνοντι θετέον ἀεὶ τὰ δοκοῦντα· καὶ γὰρ οὐδ' ἐπιχειρεῖ ψεῦδος οὐδεὶς διδάσκειν·*

133 In *APr.* I.30 (46a17-25), Aristotle states that experience with a subject also supplies the principles of that subject. I discuss experience as a pre-requisite for teaching in §3.4.3.

134 *τῶν ἀρχῶν δ' αἳ μὲν ἐπαγωγῇ θεωροῦνται, αἳ δ' αἰσθήσει, αἳ δ' ἐθισμῷ τινί, καὶ ἄλλαι δ' ἄλλως. μετιέναι δὲ πειρατέον ἑκάστας ᾗ πεφύκασιν, καὶ σπουδαστέον ὅπως διορισθῶσι καλῶς· μεγάλην γὰρ ἔχουσι*

Although Aristotle does not mention teaching specifically in this passage, we know already from other passages—*e.g.*, in *NE* VI.3 (TP-24) and *APo.* I.1 (TP-19)—that some teaching does happen by induction. Nothing in the passage above rules out this possibility either. Judging from the way TP-24 and TP-19 describe teaching by induction—as well as how other passages that provide a similar description of induction though not in the context of teaching (*e.g.*, *Top.* I.12 105a10-18)—we can infer that teaching by induction proceeds by presenting the student with many particular cases wherein the same relationship holds, and the enumeration of multiple particular instances wherein the same sort of relationship holds proves that this same relationship also obtains universally.[135] This type of teaching is used to shore up the student's faith in the first principles of the science being taught.

As the passage from NE I.7 above also indicates, definition is an all-important part of the process as well. The implication of this passage seems to be that while an induction—or some sort of inductive process, either by receiving and inductive argument from a teacher, or by perception, experience, or some sort of habituation—can move a student toward a grasp of the universal, it is by translating this universal into a definition that the student grasps the subject-specific first principle. In other words, an induction (or any of the other ways one becomes familiar with the terms of a starting-point) can, if necessary, provide the student with the requisite prior knowledge to find the definition—the first principle—convincing.

According to Aristotle in one teaching passage, definitions define things in terms that are prior and more familiar/better known:

ῥοπὴν πρὸς τὰ ἑπόμενα. δοκεῖ γὰρ πλεῖον ἢ ἥμισυ τοῦ παντὸς εἶναι ἡ ἀρχή, καὶ πολλὰ συμφανῆ γίνεσθαι δι' αὐτῆς τῶν ζητουμένων.

135 Aristotle also thinks that an inductive argument is at least enough to force the one who would argue against it to produce a counter-example (*Top.* VIII.2 157a34-157b1).

> **TP-28** For a definition is rendered in order to come to know the term stated, and we come to know things by taking not any random terms, but such as are prior and more knowable, as is done in demonstrations (for so it is with all teaching and learning); accordingly, it is clear that a man who does not define through terms of this kind has not defined at all. (*Top.* VI.4 141a27-31)[136]

Teaching by definition, then, involves taking the student's prior knowledge, which they will have gained *via* the inductive process, and turning it into a definition. The content of the definition will ring true to the student because of the inductive process that they will have undergone. If the student is already convinced of the starting-points from which a demonstrative argument is to proceed, then he does not require being led through an induction towards the starting-points. Instead, he can sincerely assent to the definition given by the teacher, and the teacher can begin demonstrating what follows from the principle(s) of the science.

This collection of teaching passages shows that the methods of teaching include demonstration, definition, and induction. Compare this result with the following comment from Aristotle in *Meta.* I.9:

> All learning takes place through things of which there is prior knowledge, either of all of them or of some of them, that is, either through demonstrations or definitions (for we must have prior knowledge of the things from which the definition comes

---

[136] *ἐπεὶ γὰρ ὁ ὅρος ἀποδίδοται τοῦ γνωρίσαι χάριν τὸ λεχθέν, γνωρίζομεν δ' οὐκ ἐκ τῶν τυχόντων ἀλλ' ἐκ τῶν προτέρων καὶ γνωριμωτέρων, καθάπερ ἐν ταῖς ἀποδείξεσιν* (*οὕτω γὰρ πᾶσα διδασκαλία καὶ μάθησις ἔχει*), *φανερὸν ὅτι ὁ μὴ διὰ τοιούτων ὁριζόμενος οὐχ ὥρισται.*

> and they must be well-known), and similarly too in the case of learning through induction. (*Meta*. I.9 992b30-33)[137]

Although Aristotle's focus here is on learning, his comment applies to all learning—including learning from a teacher. This result should not be surprising, since it fits seamlessly with the account of the goal of teaching developed in Chapter 2, as well as the general account of teaching described above in §4.2.

4.4 Burnyeat's Positive Thesis and Bronstein's Learning by Demonstration

In §§4.2-4.3, I provided an interpretation of Aristotle's teaching methodology. In contrast to Barnes, my interpretation accounts for the other methods of teaching that Aristotle describes in the *Posterior Analytics* (as well as in additional texts). While I agree with Barnes that for Aristotle teaching is done by demonstration, I also show how this is just one of his teaching methods. Equally as important for Aristotle is the use of induction and definition. In this section, I compare my interpretation to two others that are on offer: Burnyeat's (1981) and Bronstein's (2016).

According to Burnyeat, "Teaching, *didaskalia*, in the sense Aristotle is chiefly interested in, is explanatory illumination, the conveying of understanding" (1981: 120). Burnyeat's main motivation for discussing teaching in this article is to claim that *epistêmê* should generally be translated as "understanding" rather than as "knowledge." He discusses teaching in the context of this article because he thinks this is an area which can help him make his case. So, when Burnyeat says that teaching is "the conveying of understanding", he clarifies what he means in the following way: for

---

[137] *πᾶσα μάθησις διὰ προγιγνωσκομένων ἢ πάντων ἢ τινῶν ἐστί, καὶ ἡ δι' ἀποδείξεως <καὶ> ἡ δι' ὁρισμῶν (δεῖ γὰρ ἐξ ὧν ὁ ὁρισμὸς προειδέναι καὶ εἶναι γνώριμα)· ὁμοίως δὲ καὶ ἡ δι' ἐπαγωγῆς.*

Aristotle, "teaching may also be designed to impart understanding of knowledge, which the pupils already have, or a deeper understanding of a science which they already have some acquaintance with but in an unsystematic way" (117-118). On Burnyeat's reading, Aristotle held that teaching was chiefly the exercise of systematizing the knowledge that students already possessed, but only in a chaotic or unorganized way.

In order to illustrate his way of thinking about Aristotle on teaching, Burnyeat imports the model of an upper-level university course in the sciences:

> …to the extent that Aristotle is moved by an educational interest, one should think of this not in terms of a teacher imparting new knowledge to virgin minds but in terms of an advanced university course in mathematics or biology. The scientist aims to display and share his principled understanding of the field—an enterprise which pre-supposes a good deal of pre-existing knowledge on the part of his audience.[138]

On Burnyeat's reading, the students coming to one of Aristotle's classes for the first time may know already that plant leaves are (typically) green and that they contain chlorophyll, but they do not have these facts arranged in the correct explanatory order. They know the relevant facts, but they do not understand that plant leaves are green *because* they contain chlorophyll. The re-organization of the pupil's pre-existent knowledge of these facts into a systematized, explanatory structure provides the student with understanding—*i.e.*, *epistêmê*. Students enter with a unorganized collection of facts, and they exit with these facts having been structured into the correctly ordered system of explanatory relationships. Teaching, then, is the process of taking facts which students already know, and re-

[138] Burnyeat (1981: 118).

ordering them into the correct explanatory chain of reasoning. Grasping this chain of reasoning furnishes students with *epistêmê*.

But Burnyeat's depiction of Aristotle's teaching requires a great deal of pre-existent knowledge on the part of the learner. In his example, students, in order to be taught, require a knowledge of all (or "a good deal") of the facts within a given science. Such a view of teaching does not seem any more plausible—or to be any better pedagogy—than Barnes's positive thesis. My interpretation, by contrast, allows for teachers to supply their students with new knowledge *via* inductive arguments and by supplying definitions. It is true, as Burnyeat points out, that an induction does not result in *epistêmê*, but it does contribute to securing the student's conviction in the subject-specific first principles, which *is* required for *epistêmê* (TP-24).

Furthermore, Burnyeat's depiction of teaching as the re-structuring of facts already in the student's possession is also the way Bronstein describes one type of learning by demonstration (2016: 39-41). According to Bronstein, a student may possess all of the facts required for a given demonstration, but may not have them in the right order. What *should* be the middle (explanatory) term might appear—in the student's way of thinking—in the major premise, or in the conclusion. Teaching by demonstration involves getting the student to re-structure their premises and conclusion in the right way. If Burnyeat was concerned to prove that demonstration was not Aristotle's method of teaching, then how can Bronstein claim that one way a student learns *by demonstration* is in exactly the way Burnyeat describes? Burnyeat and Bronstein, it seems, have different conceptions of what it means to teach "by demonstration." In Burnyeat's version, teaching by demonstration is when the teacher "launche[s] into a remorseless chain of syllogisitc deduction" (1981: 116). For Bronstein, teaching by demonstration is the kind of re-structuring of the student's understanding of the facts, in the way that Burnyeat's reading recommends. But there is no textual

evidence suggests that this re-structuring is how Aristotle thinks of how giving a demonstration works ordinarily, let alone in a pedagogical context.

Instead, the evidence suggests that for Aristotle a demonstration really is a special sort of deduction. My interpretation coheres with this *prima facie* reading, but it does so in a way that does not fall prey to Burnyeat's main criticism of Barnes—that the positive thesis leaves unexplained how students come to learn the first principles of a science. On my reading, Aristotle's teachers do teach by demonstration—but their doing so is only one part of Aristotle's teaching methodology. At least as important to this process is the kind of teaching that takes place prior to giving a demonstration. This is the process of securing a definition of the principles of the subject at hand, and sometimes, in order to secure such a definition, an induction will be required. Moreover, on my account, Aristotle's teachers do not practice poor pedagogy by launching into "a remorseless chain of syllogistic deduction." As the passages from Aristotle's *Topics* in particular show, Aristotle expects the student to play a much more interactive role in the discussion.

In general, then, teachers use induction and definition to generate and secure their students' conviction in the indemonstrable first principles (*i.e.*, starting-points) of a subject.[139] Once students grasp these principles, teachers demonstrate what follows from them. These *logoi* together get the student to possess the two things that are necessary for scientific understanding: (1) a grasp of the indemonstrable first principles of a subject; and (2) an understanding of what follows from those principles. When students possess both (1) and (2) in such a way that they can activate their scientific understanding on their own, the teacher's task will be complete.

---

[139] In some cases, they may use analogy, too (see §4.5.1 below).

But according to Burnyeat, there is one more thing that students need to be able to exercise their scientific understanding in this way:

> There is such a thing as intellectual habituation as well as moral habituation, and in Aristotle's view both take us beyond mere knowing to types of contemplative and practical activity which are possible only when something is so internalised as to have become one's second nature.[140]

This claim is startling in part because nowhere in Aristotle's texts does he say that there is habituation of the intellect. Instead, Aristotle only mentions this particular educational method in connection with the non-rational part of the soul that can nonetheless listen to reason (see, *e.g.*, TP-1). Even so, Burnyeat's account picks up on something which is far too often overlooked in the discussion of teaching in Aristotle: Aristotle says that it takes time for the student to absorb what he has learned and incorporate it into his soul (§3.4.4). Burnyeat seems right, then, to pick up on this aspect of Aristotle's notion of teaching, but to call this process "intellectual habituation" threatens to blur the lines between the methods of teaching that Aristotle delineates in TP-1. For now, I simply wish to note my broad agreement with Burnyeat on this point. I take up the distinction between teaching and habituation in Chapter 5.

---

[140] Burnyeat (1981: 130).

4.5 Objections

4.5.1 Teaching by Analogy

Throughout this chapter, my strategy has been to focus on the teaching passages where Aristotle mentions different *logoi* in connection with teaching. This process yields the conclusion that for Aristotle teaching is done by induction, demonstration (a special kind of deduction), and definition. But another teaching passage that I not have discussed suggests that Aristotle thinks that teaching also happens by analogy:

> **TP-29** So the puzzle that the followers of Antisthenes and similarly uneducated people used to puzzle over has a certain timeliness, namely, that it is impossible to define the what-it-is (for a definition is a "long story"), although it is actually possible to teach people what *sort* of thing it is. For example, silver—what it is we cannot say, but that it is like tin, we can say. So of one sort of substance there can be a definition and an account, namely, of the compound sort, whether perceptible or intelligible, but of the primary parts of which this is composed, there cannot be any, if indeed the definitional account signifies something [predicated] of something, and one must play the part of matter and the other of shape. (*Meta.* VIII.3 1043b 23-32)[141]

---

[141] *ὥστε ἡ ἀπορία ἦν οἱ Ἀντισθένειοι καὶ οἱ οὕτως ἀπαίδευτοι ἠπόρουν ἔχει τινὰ καιρόν, ὅτι οὐκ ἔστι τὸ τί ἔστιν ὁρίσασθαι (τὸν γὰρ ὅρον λόγον εἶναι μακρόν), ἀλλὰ ποῖον μέν τί ἐστιν ἐνδέχεται καὶ διδάξαι, ὥσπερ ἄργυρον, τί μέν ἐστιν οὔ, ὅτι δ' οἷον κασσίτερος· ὥστ' οὐσίας ἔστι μὲν ἧς ἐνδέχεται εἶναι ὅρον καὶ λόγον, οἷον τῆς συνθέτου, ἐάν τε αἰσθητὴ ἐάν τε νοητὴ ᾖ· ἐξ ὧν δ' αὕτη πρώτων, οὐκέτι, εἴπερ τὶ κατὰ τινὸς σημαίνει ὁ λόγος ὁ ὁριστικὸς καὶ δεῖ τὸ μὲν ὥσπερ ὕλην εἶναι τὸ δὲ ὡς μορφήν.*

It is possible to see how analogy can also serve as a method of teaching by extending this line of thought: if to know *what* something is is the same as to know *why* it is, then to know what something is *like* offers us some insight into what something *is* (and so, by extension, into its cause). Analogy, therefore, to the extent that it offers us insight into what something is, can also act as a method of teaching for Aristotle—at least, under the right circumstances. He makes these circumstances clear in TP-M VIII.3, while arguing against those who hold the opposite view. The reason teaching by analogy is appropriate here is that there are no prior or more familiar terms to appeal to when trying to convey to someone what something simple such as silver is like. Silver, in the example here, has no parts that it can be analyzed into, and so a definition of silver is not possible. Nevertheless, we can still say to someone what silver is like (tin, in the example above), we can and thereby teach them something about silver itself—not what it is exactly, but what sort of thing it is like.

The reason that teaching by analogy should count as a method of teaching (or at least not count against the interpretation I have offered above) is that it follows the same basic principles that the other methods do. It offers insight into what something is, and in doing so informs the student about one of its causes. It also operates along the same lines by offering a kind of explanation of something (in this case, an analogical explanation) in terms of what is more familiar to the student. In this case, the student being taught would be more familiar with the comparison class (here, tin) and so by offering up something for analogical comparison would lend the student a kind of familiarity with the thing to be defined (in this case, silver). Thus, by relying on what is more familiar to the student to teach them something about what is less familiar to them, the method of analogy operates—at least in special circumstances—in the same way as the other methods discussed above.

4.5.2 Aristotle's Texts as Teaching Documents

Aristotle's texts are often considered to be teaching documents of some kind—either his lecture notes, or the notes of his students who attended his lectures. Yet in these texts we do not see Aristotle engaging in the kind of methodology described in this chapter. There are few if any actual demonstrations to be found in any of these works, and only a handful of instances of induction. Much more common is the use of the endoxic method and the examination of *aporiai*.

There are two possible responses to this objection. First, it is possible to attack the objection's premise: for it is not altogether clear *what* Aristotle's texts are. There is some indication that they may have been used in the Lyceum, but the evidence that they were used in connection with Aristotle's lectures is not conclusive. It is therefore possible that what Aristotle does in his texts does not reflect his thinking about teaching. Moreover, there is good evidence to suggest that Aristotle did not think that texts such as these could in principle be used in teaching. In a couple of passages in different works, Aristotle denigrates the ability of writing to instill scientific understanding (*e.g. NE* X.9 181b1-2 & *SE* 183b34-184a8). This attitude toward writing's inability to instill scientific understanding in a learner would be another area where Aristotle is in tune with his own teacher, Plato (see *Phdrs.* 274*ff.*).[142]

Second, I do not wish to deny that the endoxic method nor the examination of *aporiai* may be a part of teaching for Aristotle. Aristotle frequently reminds us that we should test whether the conclusions reached in his texts are in tune with the facts and "the things that are said" (*e.g.*, *NE* I.8 1098b8-10). There is no concrete textual evidence to support the claim that teachers use either of

---

142 *Cf.* Natali: "[T]he Platonic dialogue somehow institutionalized Socratic discussion, and the Aristotelian treatises maintain a dialectical structure and were based on examining the opinions of experts" (2013: 67).

these methods in their teaching. Nevertheless, it is possible that they do. Testing the conclusion of an inductive argument against the other facts that a student knows, or against some of the *endoxa* may very well be a way to secure the student's conviction in the truth of the starting-point of a science. And leading students through the examination of the *aporiai* regarding a certain topic may be a way to motivate them to learn more about it.[143] So, even if these are parts of Aristotle's teaching methodology, they do not therefore contract my core claim, since each can be useful for instilling scientific understanding in the student's soul.[144]

4.5.3 What Aristotle Says vs. What Aristotle Does

It might be also pointed out that Aristotle sometimes makes reference to teaching materials in his writings, such as diagrams and tables.[145] These charts and tables do not convey explanatory understanding, but rather factual information. Does this discrepancy mean that Aristotle did not practice what he preached? Or worse, does it validate Curzer's judgment—that Aristotle has nothing specific to say about teaching?

Aristotle's mention of the use of diagrams and charts can be folded into the account of teaching I offer above. The use of these charts, tables, and diagrams are all ways of displaying organized information in an easily digestible manner. Since teaching for Aristotle is the conveying of scientific understanding, using such teaching tools simply facilitates this process. The charts and tables Aristotle alludes to in his writings should be seen, not as methods of teaching *per se*, but as the

---

143 I discuss the place of each of these methods in the notes to §3.3.2.

144 Indeed, as Natali (2010) shows, Aristotle's efforts to secure a definition of *eudaimonia* in *NE* I may count as an instance of the sort of teaching I have articulated in this chapter.

145 See Natali (2013: 113-119).

instruments of teaching. They are not teaching methods, but teaching tools, designed to aid in the teacher's proper task, conveying scientific understanding through clearly stated and well-reasoned accounts.

4.6 Conclusion

That for Aristotle teaching is done by demonstration (*apodeixis*) was the second of the main scholarly theses which I noted at the beginning of this dissertation (§1.2). On the basis of the textual evidence we possess, it seems clear that Aristotle does think that teaching is done by demonstration, since he says so explicitly in a number of passages. These passages, however, are overshadowed by others where Aristotle says explicitly that teaching is done by deduction and induction. In order to make sense of these different remarks, I have put forward an interpretation of Aristotle's methods of teaching which includes demonstration, but also focuses on the roles of induction and definition in the teaching process. For Aristotle, the methods of teaching are each and all together oriented towards getting the student to a place where they have scientific understanding of the subject they are being taught. Different methods have different roles to play in getting the student to have this sort of knowledge about a topic, but each works together in concert to instill scientific understanding in the student's soul, and thus complete the teacher's *telos*.

Part II: TEACHING & MORAL EDUCATION

In Part I of this dissertation, I argued against two of the three main lines of interpretation in the scholarly literature on Aristotle's notion of teaching:

1. Aristotle has no specific notion of teaching in his works (Chapters 2-4)
2. For Aristotle, teaching is done by demonstration (Chapter 4)

In Part II, I show how my interpretation can be fruitfully applied to debates in Aristotle's ethics. First, I address the third scholarly thesis regarding Aristotle's notion of teaching

3. For Aristotle, habituation is bound up with teaching (Chapter 5)

Then, in Chapter 6, I demonstrate the explanatory power of the interpretation that I have offered in Chapters 1-5 by applying it to one long-standing debate in the literature on Aristotle's moral epistemology—whether Aristotle's *phronimos* possesses a philosophical conception of happiness (*eudaimonia*).

Chapter 5:

Teaching & Habituation

5.1 Introduction

In the previous chapter, I addressed one of the main theses about Aristotle's notion of teaching in the scholarly literature—that for Aristotle teaching is done by demonstration (*apodeixis*). In this chapter, I take up the place of teaching in his theory of moral education. Scholars in this area often claim that habituation (*ethismos*) necessarily involves some teaching. I argue against this view, and for what has been called *the mechanical theory of habituation*. On this theory, generally speaking, habituation is a largely non-rational process by which a moral learner acquires a virtuous character state after several repetitions of that virtuous action.[146] To say that this process is non-rational is to say that it does not involve the exercise of the rational faculties—at least, not directly. To put this more carefully: the mechanical theory of habituation (at least the version of it I wish to defend here) does not aim at training the moral learner's rational faculties. Instead, "habituation" ought to be understood as shorthand for "the process by which repeating an action of a certain sort results in the development of a state of the corresponding sort."

This interpretation of habituation, I claim, makes the most sense of most of the texts that we have from Aristotle about habituation. A prime example is the following, from his *Eudemian Ethics*, where Aristotle says,

---

146 For a recent account, see Jimenez (2016).

> Character exists, as the name signifies, because it develops from habit, and a thing gets habituated as a result of a pattern of conduct that is not innate, by repeated movement of one sort or another, so that it is eventually capable of being active in that way. (*EE* II.2 1220a39-b3)[147]

I shall provide more textual evidence for this view in the course of this chapter, but first it will be worth pointing out why, despite the preponderance of textual evidence, many scholars have opted instead to claim that teaching—of some sort—must be part of the process of habituation.

The reason for this interpretive move is that the mechanical theory of habituation results in the so-called problem of continuity:

> THE PROBLEM OF CONTINUITY: if moral learners become virtuous by performing virtuous actions in a way that is different from how actually virtuous people do them, then it is difficult to see how actions done in that way (*i.e.*, non-virtuously) can contribute to the formation of truly virtuous states of character.

To see how this is a problem for Aristotle, we have to consider how Aristotle's resolves a different problem—or puzzle (*aporia*)—about habituation in *NE* II.4:

> THE PUZZLE: Someone might raise a puzzle, however, about how we can claim that people must do just actions to become just, and temperate ones to become temperate. For if people are doing what is just or temperate, they are already just and

---

147 *ὅτι μὲν τοίνυν ἡ ἠθικὴ ἀρετὴ περὶ ἡδέα καὶ λυπηρά ἐστι, δῆλον· ἐπεὶ δ' ἐστὶ τὸ ἦθος, ὥσπερ καὶ τὸ ὄνομα σημαίνει ὅτι ἀπὸ ἔθους ἔχει τὴν ἐπίδοσιν, ἐθίζεται δὲ τὸ ὑπ'ἀγωγῆς μὴ ἐμφύτου τῷ πολλάκις κινεῖσθαι πώς, οὕτως ἤδη τὸ ἐνεργητικόν.* Trans., Inwood & Woolf.

> temperate, in the same way that if they are doing what is grammatical or musical, they already know grammar or music. (*NE* II.4 1105a17-21)

To resolve this puzzle, Aristotle makes a distinction in the way novices and adepts act. It is possible, Aristotle claims, for someone to produce, for example, a grammatical piece of writing either by luck or on someone else's instruction (*hupothemenon*). What makes someone a grammarian, however, is not merely that he produces a grammatical piece of writing. Give a monkey a typewriter and enough time, eventually (it is said) he could produce a Shakespearean soliloquy. But this does not a grammarian the monkey make. Rather, a grammarian is someone who produces a piece of writing *as a grammarian would*: "And this is to do it in accord with the craft knowledge of grammar that is internal to himself" (*NE* II.4 1105a25).[148] To borrow some terminology from elsewhere in Aristotle's corpus, a grammarian produces a piece of writing as the actualization of an acquired capacity (or potentiality) for so acting—a capacity that he possesses internally and can actualize (given the proper external conditions) at will. The action issues forth from a settled and internalized capacity—in this case, the *technê* of grammar. Something similar (though different in important respects, which I discuss below) happens in the case of practical action: externally, the action of the moral learner and the action of the virtuous person is the same. It is what is going on *internally*—in the agent's soul—that makes all the difference.

According to Aristotle, an agent performs an action virtuously if she satisfies three necessary conditions:

1. she performs the action 'knowingly' (*eidôs*),

---

148 *ἐὰν καὶ γραμματικόν τι ποιήσῃ καὶ γραμματικῶς· τοῦτο δ' ἐστὶ τὸ κατὰ τὴν ἐν αὑτῷ γραμματικήν.*

2. she deliberately chooses the action for its own sake,

3. she does the action from a 'steady' (*bebaiôs*) and 'immovable' (*ametakinêtôs*) state.

The moral learner performs the same action, but she does not do so knowingly, deliberately choosing it for its own sake, nor does the action issue forth from a stable character state. Having established this distinction between the action of the moral learner and the virtuous agent—both perform the same action, but in different manners: the learner does not satisfy criteria 1-3, whereas the virtuous agent does—Aristotle concludes that there is no tension in his view: "So it is correct to say that a person comes to be just from doing just actions, and temperate from doing temperate ones" (*NE* II.4 1105b8-10).

The problem of continuity gives voice to what might seem unsatisfying about Aristotle's solution to this puzzle. How can it be the case that merely practicing an action without simultaneously practicing criteria 1-3 results in an agent that satisfies these three criteria? If we are to interpret Aristotle charitably, we should not maintain that he held a mechanical theory of habituation, when such a theory seems to run into of this difficulty.

Though motivated by charity, many scholars, I argue, have run headlong into misinterpretation.[149] If the outcome of habituation is virtue of character, and to act virtuously necessarily involves acting 'knowingly', then a principle of continuity seems to require that

---

[149] Curzer (2012), Curren (2014), and Kristjánsson (2015) each make a similar point. It is not a coincidence, I think, that the majority of those who forward or defend the mechanical theory in the past do so in commentaries on the *Nicomachean Ethics*. The term "mechanical theory" seems to have originated with Grant's (1885) commentary, but the crux of the interpretation has roots going all the way back to at least the thirteenth century in Aquinas's commentary on the *Nicomachean Ethics*. Grant is followed by Stewart (1892) and Joachim (1951), who, in each of their respective commentaries, maintain the mechanical theory. The fact that the mechanical theory appears most often in commentaries may indicate that careful attention to the text shows that this is Aristotle's view.

habituation must somehow involve training the rational faculties. The underlying thought seems to be that the outcome of a process has to be part of the process, too. This training of the critical faculties that some scholars have thought to be a necessary part of the process of habituation has often been referred to as 'teaching.'[150] These scholars thus make teaching part of the process of habituation which leads to the development of the virtues of character—an interpretation that contradicts the account of teaching I established in Chapter 2 and bolstered in Chapters 3-4. In §5.2, I show how there is good textual evidence to support my claim over the prevailing view. Aristotle consistently maintains that habituation and teaching are two separate processes, each of which works to bring about a different outcome on a different part of the human soul. Once I establish this point, I then show in §5.3 how it is possible to address the problem of continuity without recourse to teaching. Then, in §§5.4-5, I proceed to show how, on my reading, habituation and teaching can work together to develop "full virtue."

5.2 Some Misinterpretations

Most interpreters have taken up what can be called a broadly anti-mechanical stance, which can be characterized as follows: "habituation is not blind, mindless training, but instead involves from the start the cultivation of the learner's perceptive and critical powers."[151] The list of scholars who hold this view is long and comprised of some of the most prominent interpreters in the field, including Burnyeat (1980), Sherman (1989), Broadie (1991), and others. All share the thesis that habituation cannot be for Aristotle the mere mindless repetition of action. In this section, I take aim at those

---

150 *E.g.*, Burnyeat (1980), Sherman (1989), and Broadie (1991)

151 Jimenez (2016: 5).

scholars who attach some sort of teaching to the process of habituation in order to solve the problem of continuity. I support my position by pointing to texts which show that teaching and habituation are distinct methods of moral education which work on (conceptually) separate parts of the soul.

This is a point that is also made by Curzer (2012), who takes up a defense of the mechanical view by appealing to several texts in Aristotle's works where it seems clear that Aristotle held an education in argument, reason, or teaching, to be distinct from an education "in habits." Curzer's primary foil is Burnyeat (1980) who inaugurated the serious study of Aristotle's theory of moral education with his "Aristotle on Learning to Be Good."[152] In this article, Burnyeat delineates a two-step process of moral education, corresponding to the acquisition of 'the that' *(to hoti*) and 'the because' (*to dioti*)—a process which Burnyeat claims that Aristotle describes *NE* I.4:

> For while one must begin from what is familiar, this may be taken in two ways: some things are familiar to us, others familiar without qualification. Presumably, then, what we should begin from is things familiar to us. This is the reason why one should have been well brought up in good habits if one is going to listen adequately to lectures about things noble and just, and in general about political (social) affairs. For the beginning (starting-point) is 'the that', and if this is sufficiently apparent to a person, he will not in addition have a need for 'the because'. Such a person has, or can easily get ahold of, beginnings (starting-points), whereas he who has neither [*sc.* neither 'the that' nor 'the because'], let him hearken to the words of Hesiod:

---

152 See Tachibana (2012) for a good survey of the way Aristotle's theory of education was studied prior to (as well as after) Burnyeat.

> The best man of all is he who knows everything himself,
> Good also the man who accepts another's sound advice;
> But the man who neither knows himself nor takes to hear
> What another says, he is no good at all. (*NE* I.4 1095b2-13)[153]

According to Burnyeat, the first step of moral education is acquiring 'the that', which Burnyeat takes to signify what we come to know about the virtues through habituation—that they are noble or just (1980: 71-72). Burnyeat then derives the following lesson: "It turns out that Aristotle is not simply giving us a bland reminder that virtue takes practice. Rather, practice has cognitive powers, in that it is the way we learn what is noble or just" (72). Habituation, because it affords us a kind of familiarity with the ethical concepts of the noble and the just, has "a cognitive slant" (72). Once the moral learner has this familiarity, he or she can proceed to the next step in their moral education—'the *because*'. The idea is that this initial acquaintance with virtues—an acquaintance which lets the moral learner know first hand that the virtues are noble and just—prepares them with the proper starting points (*archai*) for a subsequent stage of education where the moral learner comes to understand the reason *why* ('the *because*') these virtues are noble or just. According to Burnyeat, moral learners

---

153 *ἀρκτέον μὲν γὰρ ἀπὸ τῶν γνωρίμων, ταῦτα δὲ διττῶς· τὰ μὲν γὰρ ἡμῖν τὰ δ' ἁπλῶς. ἴσως οὖν ἡμῖν γε ἀρκτέον ἀπὸ τῶν ἡμῖν γνωρίμων. διὸ δεῖ τοῖς ἔθεσιν ἦχθαι καλῶς τὸν περὶ καλῶν καὶ δικαίων καὶ ὅλως τῶν πολιτικῶν ἀκουσόμενον ἱκανῶς. ἀρχὴ γὰρ τὸ ὅτι, καὶ εἰ τοῦτο φαίνοιτο ἀρκούντως, οὐδὲν προσδεήσει τοῦ διότι· ὁ δὲ τοιοῦτος ἔχει ἢ λάβοι ἂν ἀρχὰς ῥᾳδίως. ᾧ δὲ μηδέτερον ὑπάρχει τούτων, ἀκουσάτω τῶν Ἡσιόδου·*
οὗτος μὲν πανάριστος ὃς αὐτὸς πάντα νοήσῃ,
ἐσθλὸς δ' αὖ κἀκεῖνος ὃς εὖ εἰπόντι πίθηται. ὃς δέ κε μήτ' αὐτὸς νοέῃ μήτ' ἄλλου ἀκούων
ἐν θυμῷ βάλληται, ὃ δ' αὖτ' ἀχρήιος ἀνήρ. Trans., Burnyeat (1980: 71).

receive this second stage of education by attending Aristotle's lectures (which his written works are possibly derived from or were prepared for).

Burnyeat's interpretation is the seminal work on this topic, and has greatly influenced subsequent interpretations of Aristotle on this topic. My own interpretation will ultimately be similar to his. But Curzer rightly takes Burnyeat to task for jumbling habituation and teaching together in his explanation of how moral learners acquire initially acquire 'the *that*'. According to Burnyeat, the noble and the just do not "admit of neat formulation in rule or traditional precepts" (72). Rather, "It takes an educated perception, a capacity going beyond the application of general rules, to tell what is required for the practice of the virtues in specific circumstances… That being so, if the student is to have 'the *that*' for which the doctrines of Aristotle's lectures provide the explanatory '*because*,' if he is to be starting out on a path which will lead to his acquiring that educated perception, *the emphasis had better be on his knowing of specific actions that they are noble or just in specific circumstances*" (72, my italics). It is a matter of emphasis or degree rather than a strict rule, since such moral learning is necessarily general: "because often, no doubt, moral advice will come to him in fairly general terms; *a spot of dialectic may be needed to bring home to the young man the limitations and imprecision of what he has learned*" (72, my italics). Curzer responds: "But this is teaching. To call it anything else would be misleading" (2012: 322). Burnyeat himself admits that the two-stage process of moral education must involve two different sorts of teaching: one akin to dialectic which helps the moral learner acquire 'the *that*,' the other to help them understand 'the *because*.'[154] Curzer's point is that Burnyeat has tried to smuggle teaching back into the process of habituation, despite the fact that there is no textual evidence to support this position.

---

154 *Cf.* Curzer (2012: 323, n. 13).

There is a similar outcome in Sherman's influential interpretation, though hers is not a two-stage account. In her *The Fabric of Character* (1989), Sherman argues that the development of critical and reflective capabilities *must* be an inherent part of habituation. Specifically, Sherman argues that a necessary part of the process of habituation includes developing the moral learner's capacity to discern when certain situations require a certain response. According to Sherman, the ability to determine when a situation calls for a specific response (and the degree to which that response is warranted) is a critical capacity, which can be developed *via* the guidance of a parent or instructor. Making the development of this critical capacity a necessary part of the process of habituation solves the problem of continuity, since there is no longer a mysterious transformation from externally guided conditioning to internally guided virtuous activity; the critical capacities necessary for full virtue are present in the moral learner all along; they have merely been developed by a kind of moral coaching. Moral education is thus a *continuous* process of developing the inherent critical capacities of the moral learner from an early age with the help of a parent or instructor.

While this interpretation might be able to provide a solution to the problem of continuity, it does so at the expense of preserving textual integrity. Passages from Aristotle's *Nicomachean Ethics* and *Politics* should give us pause before attributing to Aristotle, as Sherman does, the possibility that habituation necessarily involves critical practice, especially when such critical practice, according to Sherman, is trained through "teaching" (1989: 180-181).

One passage worth noting is the one that Curzer also points to in his critique of Burnyeat: "it is clear that one should educate by means of habits before educating by means of reason" (*Pol.* VIII.3 1338b4-5). This is enough to show that Aristotle considers habituation and teaching (which I equate with 'educating by means of reason') to be separate processes. It will be worthwhile to

consider why he thinks this, too. Aristotle details the unfolding of the different parts of the soul in human psychological development in an earlier book of the *Politics*:

> This, first of all, is clear: as in other cases, birth proceeds from a starting-point, and the end that proceeds from a certain starting is the starting-point of another end. Further, reason and intelligence are the end of our nature. Therefore it is by reference to them that one must concern oneself with the birth and development of habits. Second, just as soul and body are two, so too we see that there are two parts of the soul, one that is without reason and another that has reason. And the characteristics of these parts are two in number, of which one is desire and the other intelligence. Now, just as the body comes into being before the soul, so too the part that is without reason comes into being before the part that has reason. That too is obvious. For spirit and wish, and appetite too, are immediately present in children even when they are born, but reasoning and intelligence naturally arise as they develop. That is why attention must be paid first to the body, before the soul; and then to desire. But attention paid to desire must be for the sake of intelligence, and that paid to the body must be for the sake of the soul. (*Pol.* VII.15 1334b12-28)[155]

---

155 *φανερὸν δὴ τοῦτό γε πρῶτον μέν, καθάπερ ἐν τοῖς ἄλλοις, ὡς ἡ γένεσις ἀπ'ἀρχῆς ἐστι, καὶ τὸ τέλος ἀπό τινος ἀρχῆς <ἀρχὴ> ἄλλου τέλους, ὁ δὲ λόγος ἡμῖν καὶ ὁ νοῦς τῆς φύσεως τέλος, ὥστε πρὸς τούτους τὴν γένεσιν καὶ τὴν τῶν ἐθῶν δεῖ παρασκευάζειν μελέτην· ἔπειτα ὥσπερ ψυχὴ καὶ σῶμα δύ' ἐστίν, οὕτω καὶ τῆς ψυχῆς ὁρῶμεν δύο μέρη, τό τε ἄλογον καὶ τὸ λόγον ἔχον, καὶ τὰς ἕξεις τὰς τούτων δύο τὸν ἀριθμόν, ὧν τὸ μέν ἐστιν ὄρεξις τὸ δὲ νοῦς, ὥσπερ δὲ τὸ σῶμα πρότερον τῇ γενέσει τῆς ψυχῆς, οὕτω καὶ τὸ ἄλογον τοῦ λόγον ἔχοντος. φανερὸν δὲ καὶ τοῦτο· θυμὸς γὰρ καὶ βούλησις, ἔτι δὲ ἐπιθυμία, καὶ γενομένοις εὐθὺς ὑπάρχει τοῖς παιδίοις, ὁ δὲ λογισμὸς καὶ ὁ νοῦς προϊοῦσιν ἐγγίγνεσθαι πέφυκεν. διὸ πρῶτον μὲν τοῦ σώματος τὴν ἐπιμέλειαν ἀναγκαῖον εἶναι προτέραν ἢ τὴν τῆς ψυχῆς, ἔπειτα τὴν τῆς ὀρέξεως, ἕνεκα μέντοι τοῦ νοῦ τὴν τῆς ὀρέξεως, τὴν δὲ τοῦ σώματος τῆς ψυχῆς.*

Note Aristotle's point about the distinctions between the appetitive and the rational parts of the soul. In children, the appetitive part of the soul develops before the rational part comes online. Thus, it would be fruitless for habituation to involve the cultivation of the rational faculties, since these faculties are not even present at all times when the appetitive part is operational, too. "[I]t is clear that one should educate by means of habits before educating by means of reason," therefore, because the appetitive part of the soul is operational at a point in time before the development of the rational soul.

Another passage, this time form the *Nicomachean Ethics*, supports the point about the priority of habituation to teaching. It also shows how habituation is required before teaching can be an effective method of moral education. Because the passage is an important one, I quote it at length here:

> **TP-30** Now some people think that it is by nature that we become good, whereas some think that it is by habit and others by teaching. Well, nature's contribution, it is clear, is not up to us, but because of some divine causes is present in those who are truly fortunate. Argument and teaching, on the other hand, surely do not have strength in everyone, but, rather, the soul of the audience must be prepared beforehand through habits to enjoy and hate in a noble way, like earth that is to nourish seed. For someone who lives in accordance with his feelings will not listen to—or, what is more, comprehend—argument that encourages him to turn away. And in a state like that how is it possible to persuade him to change his ways? Moreover, feeling generally seems to yield not to argument but to force. Character,

> then, must in some way be there beforehand and properly suited for virtue, liking what is noble and repelled by what is shameful. (*NE* X.9 1179b4-31)[156]

As Aristotle makes clear earlier in the *NE*, it is the young person who "tends to follow his feelings" (I.3 1095a4-5). So, taking that characterization of the young person together with TP-30, we see that Aristotle effectively excludes the young person from being able to benefit from argument and teaching—at least about ethics. Because feeling is the guiding force in his soul, the young person is incapable of being persuaded to change his ways by reasoned argument. Rather, Aristotle says, the young person's soul must first be prepared "by habits," *and then* their reasoning capabilities can be developed—just as soil first needs to be tilled before a seed can be planted in it.

Further indication that teaching and habituation should be regarded as separate methods of moral education comes from TP-1. The opening of Book II begins with a conclusion, which follows from the outcome of Aristotle's discussion of the different parts of the soul in *NE* I.13. There we learn that there are, roughly speaking, two different parts of the soul: a rational part, and a non-rational part that can nonetheless 'listen to reason.' Aristotle claims that the virtues are defined in accord with this difference: the virtues of thought belong to the rational part of the soul, and the virtues of character to the non-rational-but-nonetheless-able-to-listen-to-reason part (or, more simply, the appetite part). Aristotle then begins Book II as follows:

---

156 *γίνεσθαι δ' ἀγαθοὺς οἴονται οἱ μὲν φύσει οἱ δ' ἔθει οἱ δὲ διδαχῇ. τὸ μὲν οὖν τῆς φύσεως δῆλον ὡς οἱ δ' ἔθει οἱ δὲ διδαχῇ. τὸ μὲν οὖν τῆς φύσεως δῆλον ὡς οὐκ ἐφ' ἡμῖν ὑπάρχει, ἀλλὰ διά τινας θείας αἰτίας τοῖς ὡς ἀληθῶς εὐτυχέσιν ὑπάρχει· ὁ δὲ λόγος καὶ ἡ διδαχὴ μή ποτ' οὐκ ἐν ἅπασιν ἰσχύει, ἀλλὰ δεῖ προδιειργάσθαι τοῖς ἔθεσι τὴν τοῦ ἀκροατοῦ ψυχὴν πρὸς τὸ καλῶς χαίρειν καὶ μισεῖν, ὥσπερ γῆν τὴν θρέψουσαν τὸ σπέρμα. οὐ γὰρ ἂν ἀκούσειε λόγου ἀποτρέποντος οὐδ' αὖ συνείη ὁ κατὰ πάθος ζῶν· τὸν δ' οὕτως ἔχοντα πῶς οἷόν τε μεταπεῖσαι; ὅλως τ'οὐ δοκεῖ λόγῳ ὑπείκειν τὸ πάθος ἀλλὰ βίᾳ. δεῖ δὴ τὸ ἦθος προϋπάρχειν πως οἰκεῖον τῆς ἀρετῆς, στέργον τὸ καλὸν καὶ δυσχεραῖνον τὸ αἰσχρόν.*

> **TP-1** Since virtue, then, is twofold—of thought on the one hand, and of character on the other—while that of thought has both its generation and development mostly from teaching (for which reason it requires experience and time), that of character comes about from habits. (*NE* II.1 1103a14-17)[157]

Putting these opening words together with the closing words *NE* I.13, we receive the following picture of Aristotle's moral psychology and methods of moral education: the virtues of thought, which belong to the rational part of the soul, are cultivated mostly by teaching; the virtues of character, which belong to the appetitive part of the soul, come about through habituation. Teaching and habituation, as this picture shows, are separate processes of moral education each working on (conceptually) separate parts of the human soul.

These passages are sufficient to establish that teaching and habituation are separate processes for Aristotle. Later, I will discuss how I think they can work together to develop full virtue, but first it is necessary to show how the interpretation of habituation I have argued for here—one which is divorced from teaching—can nonetheless avoid the problem of continuity.

5.3 The Problem of Continuity Revisited & Resolved

Much has been made in the scholarly literature about how the moral learner's critical capacities need to be involved in the process of habituation, for otherwise it will be mysterious how someone can, just by repeating an action more or less mindlessly enough times, come to perform an action 'knowingly.' But I think too much has been made of this problem. First, it is unclear what it means

---

[157] *Διττῆς δὴ τῆς ἀρετῆς οὔσης, τῆς μὲν διανοητικῆς τῆς δὲ ἠθικῆς, ἡ μὲν διανοητικὴ τὸ πλεῖον ἐκ διδασκαλίας ἔχει καὶ τὴν γένεσιν καὶ τὴν αὔξησιν, διόπερ ἐμπειρίας δεῖται καὶ χρόνου, ἡ δ' ἠθικὴ ἐξ ἔθους περιγίνεται*

for the virtuous agent to act 'knowingly' (*eidôs*). It seems to me there are two possible meanings, neither of which require training the critical capacities to be part of the process of habituation. Either performing an action 'knowingly' means (a) the agent is aware (*i.e.*, conscious) of the fact that she is acting virtuously; or it means (b) she acts with knowledge of what (for example) justice is. If (a), then all that is required to satisfy this condition is a bare minimum of self-awareness. This kind of self-awareness most likely arises naturally, with time, as the moral learner grows up. If (b), then her own reflection, later on, could provide her with the knowledge of what justice means.

There is some textual evidence to support this reading. Recall T3, where Aristotle discusses the order of human psychological development:

> Now, just as the body comes into being before the soul, so too the part that is without reason comes into being before the part that has reason. That too is obvious. For spirit and wish, and appetite too, are immediately present in children even when they are born, but *reasoning and intelligence naturally arise as they develop.*

It is possible, therefore, for the virtuous person to come to act knowingly not as a part of the process of habituation, but as a natural part of the process of psychological development. As the rational part of the soul comes online it can reflect on the experiences it had through habituation and arrive at acting 'knowingly.'

Another reason to think that this complaint has been overblown is that Aristotle himself significantly downplays this criteria's importance. Whereas in the case of the crafts what matters most is (1) that the technician perform the action 'knowingly,' this matters least of all in the case of practical action. Much more important, according to Aristotle, is criteria (2) and (3):

> Where the various crafts are concerned, these factors do not count, except for the knowing itself. Where the virtues are concerned, however, knowing has little or no strength, whereas the other factors have not just a little but, rather, all the significance, and these are the very ones that come about from frequently doing just and temperate actions. (*NE* II.4 1105a33-b5)[158]

Consider next the second criteria, that the virtuous agent choose the action deliberately and for its own sake. To choose the action deliberately presumably just means to choose it voluntarily—not being forced or by accident. What it means to choose it for its own sake is harder to unpack. Some progress can be made, however, by noting that Aristotle often equates choosing something for its own sake with choosing it for the sake of the noble (*to kalon*). Note, for example, Aristotle's opening comments about the virtue of generosity, where he first makes the general point that, "Actions in accord with virtue are noble and for the sake of what is noble" (*NE* IV.1 1120a23ff). If to choose a virtuous action for its own sake is the same as to choose it for the sake of the noble, then habituation alone is enough to produce this condition, too. For, as we saw in TP-30, habituation is what gets a moral learner to "understand" the noble by having "tasted" it, as well as to be ready to actually receive arguments (*i.e.*, teaching) about how to live well by being "prepared…through habits to enjoy and hate in a noble way," and to "like what is noble and be repelled by what is shameful."

Habituation in the actions that are in accordance with virtue, I suggest, gets the moral learner to apprehend what is truly pleasant about virtuous action. This, too, happens just through repeated actions of a certain sort—in this case, virtuous (that is to say, noble) actions. Repeatedly

---

158 *ταῦτα δὲ πρὸς μὲν τὸ τὰς ἄλλας τέχνας ἔχειν οὐ συναριθμεῖται, πλὴν αὐτὸ τὸ εἰδέναι· πρὸς δὲ τὸ τὰς ἀρετὰς τὸ μὲν εἰδέναι οὐδὲν ἢ μικρὸν ἰσχύει, τὰ δ' ἄλλα οὐ μικρὸν ἀλλὰ τὸ πᾶν δύναται, ἅπερ ἐκ τοῦ πολλάκις πράττειν τὰ δίκαια καὶσώφρονα περιγίνεται.*

performing virtuous actions is what gets the moral novice to eventually "taste" the "true pleasures" of virtuous conduct. This works with virtuous activity just as it does with other, more morally neutral activities, too. Consider a perhaps more familiar example: running. To the novice runner, running does not initially seem pleasant. Indeed, it seems painful. But, given enough repeated attempts at running, the activity of running eventually becomes enjoyable. The right way to think about this transformation, from an Aristotelian point of view, I suspect, is to say that the runner, through habituation, has become properly aware of the inherent pleasures of the activity of running.[159] The novice runner's body is not of such a sort that it can participate in the pleasures of the act of running. Once in the proper condition, however, the inherent pleasure of running became accessible.

Consider also the case of an acquired taste. Gradually, the more you are exposed to a certain type of food, the more you are able to apprehend the inherently pleasant qualities of the food in question. The same process holds, I claim, with the virtues. Initially, acting virtuously is difficult and unlikely to be pleasant. It takes many repeated attempts to come to see—or, in Aristotle's words "taste"—what is truly pleasant about virtuous conduct. But it is just repeated virtuous action that is enough to get the moral learner to 'taste' what is inherently pleasant about noble conduct. Acting for the sake of the noble then becomes less and less difficult, and it becomes inherently desirable to act for the sake of the noble—to choose, in other words, virtuous activity deliberately and for its own sake.

Finally, the third criteria—acting from a steady and immovable character state—is perhaps the easiest to explain by way of a mechanical theory of habituation. It just happens to be the case

---

159 See *NE* X.1-5 for Aristotle's account of the relationship between activities and their corresponding pleasures.

that acting in a certain way repeatedly eventually creates a stable disposition to act in that way in the future. What many interpreters seem to miss is that Aristotle is making an empirical observation. It is just a brute fact about our psychological make-up that the process of repeating a particular action in a certain way eventually produces a corresponding steady state of character from which the same action can issue forth in the future. To seek more explanation beyond this fact about our nature is to ask for more than can reasonably be given. Eventually, enough external exercise of an action of a certain sort will be enough to infuse the inner soul of the agent with the stable state from which these same sorts of actions will issue forth in the future.

5.4 Aristotle's Model of Moral Development — A Different Two-Stage Theory

How does this account of habituation and teaching as separate processes affect our understanding of Aristotle's model of moral development? In this section, I claim that it does two things: first, it provides evidence for a two-stage theory of moral education, where moral learners initially acquire experience of virtuous conduct through habituation, and then, through teaching, apprehend the starting-points of practical action—the definitions of *eudaimonia* and the virtues, as well as what follows from them. The combination of a well-habituated non-rational soul and a well-taught rational soul results in an agent with 'full virtue.' In this section, I sketch out how this two-stage theory works. In §5.5, I go into some more detail about how habituation and teaching work on the different parts of the human soul.

In TP-30, Aristotle makes a potentially surprising claim about poorly habituated people: "For someone who lives in accordance with his feelings will not listen to—or, what is more, comprehend—argument that encourages him to turn away." Considering the grounds for this claim will take us to the next point, that we should subscribe to a two-stage theory of moral education. To

unpack this statement from Aristotle, we need to turn back to the beginning of the *NE* and consider another passage where Aristotle discusses a different feature of habituation—certain kinds of habituation are able to produce a starting-point (*archê*). In *NE* I.7, just after he has finished his famous "sketch" of the human good *via* his function argument, Aristotle returns to a common refrain about his methodology in the *NE*: we should not expect a precise accounting of a subject matter that does not admit of precise accounts. In other words, the realm of *praxis* is too messy—too full of contingencies—to admit of any precise formulations.[160] He then adds one more note about how we should receive his account:

> Nor should we demand the cause [the *aition*—*i.e.*, the explanation] in all cases alike. Rather, in some cases it will be adequate if the fact that they are so has been correctly shown—as it is indeed where starting-points are concerned. And the fact that something is so is a first thing and a starting-point.
>
> We get a theoretical grasp of some starting-points through induction, some through perception, some through some sort of habituation, and others through other means. In each case we should follow the method of inquiry suited to their nature and make very serious efforts to define them correctly. For they are of great and decisive importance regarding what follows. It seems indeed that the starting-

160 For a more detailed discussion of this point, see Irwin (2000) and Karbowski (2019).

> point is more than half the whole and that many of the things we were inquiring about will at the same time become evident through it. (*NE* I.7 1098a34-b6)[161]

Note here the point about how we get a theoretical grasp of some starting-points through habituation. This was Burnyeat's point from T2—that we attain a knowledge of practical starting-points through habituation. Specifically, through being habituated to act in ways that accord with the virtues of character, we acquire a knowledge that certain actions are just or noble or generous, *etc.* Burnyeat's point was that habituation thus has a 'cognitive slant'—this much seems true. What got Burnyeat into trouble, however, was the notion that one sort of teaching—a kind of teaching through dialectic which has no textual basis—was involved in habituation.

But, with the interpretation of teaching I developed in Chapter 1 in mind, it is possible to derive a two-stage theory of moral education without mixing teaching and habituation together in the way that Burnyeat did. Judging from the texts as we have them, the first stage of moral education involves deriving the starting-points of practical action through being habituated to perform actions that are in accordance with virtue. The process of repeating these actions eventually engenders the moral learner with the experience of what it is like to act virtuously. It is this experience that the moral learner can reference when someone references "noble" actions and uses this term in their definition of virtuous action. Someone who has no experience of what it is like to act nobly will simply not understand what is being said when someone uses this term. The content

---

[161] *οὐκ ἀπαιτητέον δ' οὐδὲ τὴν αἰτίαν ἐν ἅπασιν ὁμοίως, ἀλλ' ἱκανὸν ἔν τισι τὸ ὅτι δειχθῆναι καλῶς, οἷον καὶ περὶ τὰς ἀρχάς· τὸ δ' ὅτι πρῶτον καὶ ἀρχή. τῶν ἀρχῶν δ' αἱ μὲν ἐπαγωγῇ θεωροῦνται,αἱ δ' αἰσθήσει, αἱ δ' ἐθισμῷ τινί, καὶ ἄλλαι δ' ἄλλως. μετιέναι δὲ πειρατέον ἑκάστας ᾗ πεφύκασιν, καὶ σπουδαστέον ὅπως διορισθῶσι καλῶς· μεγάλην γὰρ ἔχουσι ῥοπὴν πρὸς τὰ ἑπόμενα. δοκεῖ γὰρ πλεῖον ἢ ἥμισυ τοῦ παντὸς εἶναι ἡ ἀρχή, καὶ πολλὰ συμφανῆ γίνεσθαι δι' αὐτῆς τῶν ζητουμένων.* For additional discussion of the second paragraph of this passage, see §4.3.

of the referent to which this term applies will be empty in the deficiently habituated moral learner. The second stage of moral learning, where one acquires well-reasoned accounts of what it means to live well, necessarily requires prior knowledge of the terms that such teaching references. Once the well-habituated moral learner receives from a teacher the accounts of why virtuous actions are good, and has internalized these reasonings in their soul, then they acquire full virtue.

5.5 Teaching & Intellectual Virtue

As we saw earlier, Aristotle divides the soul into two parts: a rational part and a non-rational part (*NE* I.13). The virtue of each part is brought about by a different method of moral education. Habituation, I have argued, is the repetition of an action of a certain sort. It gets the non-rational part of the soul that can nonetheless 'listen to reason' to desire to do what is noble. I have also argued that this process of moral education need not involve reason—at least, not beyond the rational capacities that develop naturally in us as we grow up.

The virtues of thought, Aristotle says, are cultivated by teaching. If teaching is not responsible for training our critical capacities, how does it cultivate intellectual virtue? This is the question I turn to in this section. To start out on an answer, consider Aristotle's general definition of virtue in NE II.6:

> [E]very virtue, regardless of what thing it is the virtue of, both completes the good state of that thing and makes it perform its function well. (*NE* II.6 1106a15-17)[162]

---

[162] *πᾶσα ἀρετή, οὗ ἂν ᾖ ἀρετή, αὐτό τε εὖ ἔχον ἀποτελεῖ καὶ τὸ ἔργον αὐτοῦ εὖ ἀποδίδωσιν*

To ascertain the way in which teaching cultivates intellectual virtue, we should look to the function of the rational part of the soul. Just like the non-rational part, the rational part of the soul can be divided into two sub-parts as well. The division, Aristotle explains in *NE* VI.1, accords with the kinds of starting-points with which each is concerned:

> Let us take it that there are two parts that have reason—one through which we get a theoretical grasp on those beings whose starting-points do not admit of being otherwise and one through which we do so on those that do admit of being otherwise, since where beings differ in kind, parts of the soul that differ in kind are naturally suited to each of them, since it is on the basis of a certain similarity and kinship that they have knowledge. (*NE* VI.1 1139a6-11)[163]

The first part, which grasps the unchanging starting-points, is "the scientific part" (*to epistemonikon*). The second part, which grasps starting-points that can be otherwise, is "the rationally calculative part" (*to logistikon*). Aristotle is quick to mention that the the rationally calculative part is also the part in charge of deliberation, "For deliberating is the same as rationally calculating, and no one deliberates about what does not admit of being otherwise" (*NE* VI.1 1139a12-13).[164] Aristotle concludes *NE* VI.2 as follows:

---

163 *καὶ ὑποκείσθω δύο τὰ λόγον ἔχοντα, ἓν μὲν ᾧ θεωροῦμεν τὰ τοιαῦτα τῶν ὄντων ὅσων αἱ ἀρχαὶ μὴ ἐνδέχονται ἄλλως ἔχειν, ἓν δὲ ᾧ τὰ ἐνδεχόμενα· πρὸς γὰρ τὰ τῷ γένει ἕτερα καὶ τῶν τῆς ψυχῆς μορίων ἕτερον τῷ γένει τὸ πρὸς ἑκάτερον πεφυκός, εἴπερ καθ' ὁμοιότητά τινα καὶ οἰκειότητα ἡ γνῶσις ὑπάρχει αὐτοῖς.*

164 For more discussion of this passage, see §6.4.2 below.

> Of both of the parts that involve understanding, then, the function is truth. So the states in accord with which each most *alêtheusei* are, in both cases, their virtues. (NE VI.2 1139b12-13)[165]

Most translators have opted to translate *alêtheusei* as "grasp the truth." But the *LSJ* cites a different primary meaning of this word: "to speak the truth." This usage occurs frequently in Aristotle as well.[166] The focus on the notion of speaking the truth is an intriguing one, for it fits well with Aristotle's other comments regarding the intellectual virtues. This reading is also supported by what Aristotle says in *NE* VI.3:

> Let the states by which the soul *alêtheusei* by way of assertion and denial be five in number: craft knowledge, scientific understanding, practical wisdom, theoretical wisdom, and understanding. (*NE* VI.3 1139b14-17)[167]

The inclusion of "by way of assertion and denial" indicates that Aristotle is talking about a kind of speaking here. This is important to note because it lines up well with what Aristotle says about the effect of habituation on the non-rational part of the soul back in *NE* I.13. While the vegetative part of the soul does not share in reason at all, according to Aristotle, the other part of the non-rational soul—the appetitive part—"shares in reason in a way" (1102b15-16). To clarify his meaning here, Aristotle uses imagistic language to characterize both the appetitive part of the soul and its

---

165 *ἀμφοτέρων δὴ τῶν νοητικῶν μορίων ἀλήθεια τὸ ἔργον. καθ' ἃς οὖν μάλιστα ἕξεις ἀληθεύσει ἑκάτερον, αὗται ἀρεταὶ ἀμφοῖν.*

166 See especially *Meta.* XI.5 1064a16-19 & *Top.* V.4 132a27-132b19. This usage also occurs in *APo.* II.19 (100b5-17)

167 *ἔστω δὴ οἷς ἀληθεύει ἡ ψυχὴ τῷ καταφάναι ἢ ἀποφάναι, πέντε τὸν ἀριθμόν· ταῦτα δ' ἐστὶ τέχνη ἐπιστήμη φρόνησις σοφία νοῦς*

relationship to the rational part. First, he likens the appetitive part to a "paralyzed" (*paralelumenon*) limb, which disobeys the intended movements of its owner:

> For just as with paralyzed parts of the body (when their owners deliberately choose to move them to the right, they do the contrary and move off to the left), so it is in the case of the soul as well, since the impulses of people who lack-self-control are in contrary directions. …But presumably we should … acknowledge that in the soul as well there is something besides reason, opposing it, and going against it. (*NE* I.13 1102b18-25)[168]

Still, says Aristotle, this part can listen to and obey reason: "It has reason," Aristotle explains, "in the way we are said to 'have the reason' of our fathers and friends and not in the way we are said to have that of mathematics" (I.13 1102b31-33). The distinction Aristotle draws here—again relying on suggestive, metaphorical language—means that the appetitive part of the soul "has reason" in the following way: it can act in accordance with the dictates of what something external prescribes to it; it does not conduct its own, internal operations of reasoning. It acts (to bring in a distinction Aristotle will make later, in *NE* VI.13) in accord with reason, but it does not involve reason. The appetitive part of the soul thus "shares" in reason by being able to listen to it and follow what it says it should do, in the same way that a child can "have the reason" of his father or friend when he follows his prescriptive advice.

---

168 *ἀτεχνῶς γὰρ καθάπερ τὰ παραλελυμένα τοῦ σώματος μόρια εἰς τὰ δεξιὰ προαιρουμένων κινῆσαι τοὐναντίον εἰς τὰ ἀριστερὰ παραφέρεται, καὶ ἐπὶ τῆς ψυχῆς οὕτως· ἐπὶ τἀναντία γὰρ αἱ ὁρμαὶ τῶν ἀκρατῶν. ἀλλ' ἐν τοῖς σώμασι μὲν ὁρῶμεν τὸ παραφερόμενον, ἐπὶ δὲ τῆς ψυχῆς οὐχ ὁρῶμεν. ἴσως δ' οὐδὲν ἧττον καὶ ἐν τῇ ψυχῇ νομιστέον εἶναί τι παρὰ τὸν λόγον, ἐναντιούμενον τούτῳ καὶ ἀντιβαῖνον. πῶς δ' ἕτερον, οὐδὲν διαφέρει.*

The appetitive part of the soul, Aristotle then says, can be more or less obedient to reason, too. The more obedient the appetitive part is, the better aligned it is with reason's prescriptions:

> T14 But this part apparently …is obedient to the reason of a self-controlled person. Furthermore, that of a temperate and courageous person, presumably, listens still better, since there it chimes with reason in everything. (*NE* I.13 1102b26-28)[169]

In the case of the self-controlled person, the appetitive part still needs to be brought (somehow) to listen what reason prescribes. The weak-willed person, by contrast, cannot bring their appetitive part to follow what reason says it is best to do. For the person who possesses the virtues of character (such as temperance and courage), the appetitive part is in complete agreement with what the rational part says it is best to do. There is no disharmony between the two parts, such that reason has to wrangle the appetitive part into doing the right thing (as the self-controlled person can do successfully, the weak-willed person unsuccessfully). Instead, the appetitive part of the virtuous person literally "speaks with the same voice" (*homophonei*) as reason in all things.

We can compare this description fruitfully to what Aristotle says about temperance at the end of *NE* III:

> So if the appetitive element is not obedient and subordinate to the ruling element, it will grow and grow. For the desire for pleasure is insatiable and, from indiscriminate sources in someone who lacks understanding and the activity of appetite, causes its congenital tendency to grow, and if the appetites are large and intense, they even

---

169 *πειθαρχεῖ γοῦν τῷ λόγῳ τὸ τοῦ ἐγκρατοῦς—ἔτι δ' ἴσως εὐηκοώτερόν ἐστι τὸ τοῦ σώφρονος καὶ ἀνδρείου· πάντα γὰρ ὁμοφωνεῖ τῷ λόγῳ.*

> knock out rational calculation. That is why they should be moderate and few and not oppose reason in any way (this is the sort of thing we call "obedient" and "disciplined") and just as a child should live in accord with the commands of his tutor (*paidagôgos*) so the appetitive element too should be in accord with reason. Hence a temperate person's appetitive element should be in harmony (*sumphonei*) with reason. For the target of both is what is noble, and a temperate person has an appetite for the things he should and in the way and when he should, which is just what reason, for its part, prescribes. (*NE* III.9 1119b7-18)[170]

Here we see, in Aristotle's discussion of a particular virtue of character, the way in which thought and desire work together: the temperate person desires what is noble and acts according to what reason says to do. Note that of *phronesis* in particular, Aristotle says that it is prescriptive: "practical wisdom is prescriptive, since what should be done or not is its end" (*NE* VI.10 1143a8-9).[171] My contention is that reason's prescriptions come to be correct as a result of receiving teaching. By conveying well-reasoned accounts about the nature of the good life, the teacher imbues the moral learner with the correct reason, which the learner can then reference in their own deliberative

---

[170] *εἰ οὖν μὴ ἔσται εὐπειθὲς καὶ ὑπὸ τὸ ἄρχον, ἐπὶ πολὺ ἥξει· ἄπληστος γὰρ ἡ τοῦ ἡδέος ὄρεξις καὶ πανταχόθεν τῷ ἀνοήτῳ, καὶ ἡ τῆς ἐπιθυμίας ἐνέργεια αὔξει τὸ συγγενές, κἂν μεγάλαι καὶ σφοδραὶ ὦσι, καὶ τὸν λογισμὸν ἐκκρούουσιν. διὸ δεῖ μετρίας εἶναι αὐτὰς καὶ ὀλίγας, καὶ τῷ λόγῳ μηθὲν ἐναντιοῦσθαι—τὸ δὲ τοιοῦτον εὐπειθὲς λέγομεν καὶ κεκολασμένον—ὥσπερ δὲ τὸν παῖδα δεῖ κατὰ τὸ πρόσταγμα τοῦ παιδαγωγοῦ ζῆν, οὕτω καὶ τὸ ἐπιθυμητικὸν κατὰ τὸν λόγον. διὸ δεῖ τοῦ σώφρονος τὸ ἐπιθυμητικὸν συμφωνεῖν τῷ λόγῳ· σκοπὸς γὰρ ἀμφοῖν τὸ καλόν, καὶ ἐπιθυμεῖ ὁ σώφρων ὢν δεῖ καὶ ὡς δεῖ καὶ ὅτε· οὕτω δὲ τάττει καὶ ὁ λόγος. ταῦτ' οὖν ἡμῖν εἰρήσθω περὶ σωφροσύνης.*

[171] *ἡ μὲν γὰρ φρόνησις ἐπιτακτική ἐστιν· τί γὰρ δεῖ πράττειν ἢ μή, τὸ τέλος αὐτῆς ἐστίν·*

decision-making. Thus, teaching cultivates the virtues of thought by helping perform its function—truth—well.[172]

5.6 "Virtue teaches correct belief"

One teaching passage, which has caught the attention of scholars from Barnes (1969) to Moss (2012), seems to contradict the argument I have been drawing throughout this chapter and indeed throughout Part I:

> **TP-31** A person who lacks self-control is the sort who pursues bodily pleasures that are excessive and contrary to the correct reason but not because he is persuaded that he should. An intemperate person, on the other hand, is persuaded, because he is the sort of person to pursue them. So a person who lacks self-control is easily persuaded to change; an intemperate one isn't. For virtue preserves the starting-point, whereas depravity ruins it, and in actions the end for which we do them is the starting-point, just as hypotheses are in mathematics. Reason, then, does not teach the starting-points either in the case of mathematics or in the present one. Instead, it is virtue, whether natural or habituated, that teaches correct belief about the starting-point. A person of that sort is temperate and his contrary intemperate. (*NE* VII.8 1151a11-20)[173]

---

172 For a recent study of the notion of practical truth, with which I am in broad agreement, see Olfert (2017)

173 *ἐπεὶ δ' ὃ μὲν τοιοῦτος οἷος μὴ διὰ τὸ πεπεῖσθαι διώκειν τὰς καθ' ὑπερβολὴν καὶ παρὰ τὸν ὀρθὸν λόγον σωματικὰς ἡδονάς, ὃ δὲ πέπεισται διὰ τὸ τοιοῦτος εἶναι οἷος διώκειν αὐτάς, ἐκεῖνος μὲν οὖν εὐμετάπειστος, οὗτος δὲ οὔ· ἡ γὰρ ἀρετὴ καὶ μοχθηρία τὴν ἀρχὴν ἣ μὲν φθείρει ἣ δὲ σῴζει, ἐν δὲ ταῖς πράξεσι τὸ οὗ ἕνεκα ἀρχή, ὥσπερ ἐν τοῖς μαθηματικοῖς αἱ ὑποθέσεις· οὔτε δὴ ἐκεῖ ὁ λόγος διδασκαλικὸς*

Now, however, keeping the argument from §5.4 in mind, we are in a position to address this passage. First, it is important to pay attention to Aristotle's Greek. First, the "reason" that is not instructive of the starting-points of mathematics is, I suggest, shorthand for *syllogistic* reasoning. Second, though Reeve's translation says that virtue…*teaches* correct belief," a more accurate rendering of the text is that virtue *is instructive* (*didaskalikos*)… of correct belief." The difference matters. As we have seen already (in *NE* I.7), Aristotle thinks that we become familiar with some starting-points through a sort of habituation, but it still matters how we define these starting-points. I take Aristotle to be saying here that virtue supplies the well-habituated moral learner with the reference points that a teacher will be able to draw upon when supplying the student with the definition of *eudaimonia*, which will form the starting-point for a demonstration.

5.7 Conclusion

In conclusion, the main point I have made in this Chapter is that teaching and habituation are separate processes of moral education, each working on (conceptually) separate parts of the human soul. The upshot of this discussion is a better understanding about the nature of teaching—especially with respect to the role it plays in moral education. Another potential upshot is a better understanding of the other aspects of moral education, too. I have shown how properly understanding what teaching means for Aristotle helps support the mechanical theory of habituation, and, in turn, how the mechanical theory can handle the problem of continuity, highlight some neglected features of Aristotle's account of intellectual virtue, and support a two-stage model of moral education that preserves the notion of teaching developed in Part I.

τῶν ἀρχῶν οὔτε ἐνταῦθα, ἀλλ' ἀρετὴ ἢ φυσικὴ ἢ ἐθιστὴ τοῦ ὀρθοδοξεῖν περὶ τὴν ἀρχήν. σώφρων μὲν οὖν ὁτοιοῦτος, ἀκόλαστος δ' ὁ ἐναντίος.

Chapter 6:

Teaching The Practically Wise Person

6.1 Introduction

What does Aristotle's practically wise person (*phronimos*) know? According to the Grand End view, the practically wise person has a fully articulated and well-reasoned grasp of the human good, which he uses as a lodestar in his decision making.[174] Crucially, when pressed to justify a particular decision, the Grand End's *phronimos* can trace his justification to his blueprint of the universal human good.[175] Another line of scholarship opposes this Grand End view with a Ground Level account.[176] The Ground Level view argues that the practically wise person does not require a lofty, philosophical conception of happiness to make good decisions, and it would be uncharitable to saddle Aristotle with such a "starkly implausible" account.[177]

The interpretation of Aristotle's notion of teaching from Part I can adjudicate this long-standing debate. Since practical wisdom is one of the intellectual virtues, and the intellectual virtues are cultivated mostly by teaching (TP-1), we can determine what the practically wise person knows if we examine the way Aristotle thinks people become practically wise by being taught.

---

174 Some examples of scholars who hold this view are Kraut (1989), Reeve (1992), and Irwin (2000).

175 See Kraut: "What is essential to the Grand End view is a thesis about the justification of decisions: if a person of practical wisdom is asked to state his reasons for making a decision, then the full justification must begin with a substantive and correct conception of happiness" (1993: 362).

176 The main proponent of this view is Sarah Broadie (1991), and so I focus on her argument in this paper. Others have taken similar stances to her as well. See, e.g., McDowell (1996) and Vasiliou (1996). While Broadie uses the term "ground-level," Inglis (2014) labels this line of scholarship the Ground Level view.

177 Broadie (1991: 202).

Others have provided defenses of the Grand End view before, but examining Aristotle's account of teaching is an especially promising way to settle this debate.[178] Broadie, who is generally taken to be the chief proponent of the Ground Level view, recognizes correctly (and in contrast to many other Aristotle scholars) that teaching cultivates practical wisdom. The problem according to her, however, is that, "[t]he purpose and methods of the teaching that develops the virtues of intellect must remain obscure as long as it is not stated what sorts of things are taught" (1991: 73). Even if much of what Aristotle means by "teaching" remains opaque, we can glean enough from his texts to know at least what is taught. Once we ascertain what is taught, we will have a window into what sorts of things the practically wise person knows by being taught.

In what follows, I rely on the work done in Chapter 2 to show that for Aristotle what is taught is scientific understanding (*epistêmê*). Scientific understanding, in turn, necessarily involves a reasoned and articulated grasp of the explanatorily basic principle of a subject (§2.3). Since teaching instills scientific understanding, and since practical wisdom is cultivated by teaching, it follows that the practical wisdom that results from teaching includes a reasoned and articulated grasp of the explanatorily basic principle of *its* subject—practical action. Since happiness (*eudaimonia*) is the explanatorily basic principle of practical action, the person of practical wisdom will possess a well-reasoned grasp of this concept. This argument, derived from my interpretation of Aristotle's notion of teaching, therefore supports the Grand End view.

After setting out Broadie's account of practical wisdom and teaching in more detail, I present my interpretation of Aristotle on what is taught. I then consider three responses that the proponent of the Ground Level view could offer: (1) that my interpretation of Aristotle's account of

---

178 See especially Kraut (1993) and Inglis (2014).

teaching is inaccurate, since Aristotle sometimes uses "teaching" in a way that is incompatible with my claims; (2) that Aristotle says explicitly in *NE* VI.5 that practical wisdom is not scientific understanding because they each have different content, and (3) that scientific understanding is not the same as practical wisdom because each involves fundamentally different cognitive operations. I take up and reject each of these responses in turn. In the end, what is left is an account of how Aristotle's notion of teaching supports the Grand End view.

6.2 Broadie on Teaching & Practical Wisdom

The general lack of scholarship on teaching in Aristotle seems to support Broadie's assessment, mentioned above, that Aristotle's notion of teaching "remains obscure."[179] But Broadie's work is noteworthy precisely because she offers a specific interpretation of Aristotle's notion of teaching. Her account, however, is tinted by her ground-level account of practical wisdom. Rather than use Aristotle's account of teaching to figure out what the *phronimos* knows, Broadie uses her particular (and contested) interpretation of what the *phronimos* knows to reverse engineer Aristotle's account of teaching.

As mentioned above, Broadie offers a "ground-level" account of practical wisdom: her practically wise person does not require a blueprint of the human good to make good decisions. Rather, his decisions are just concerned with how to achieve proximate goals in a way that does not violate his other commitments. As Broadie says, "The 'How' of this agent's deliberation is not purely causal; it means 'What way is there for me to pursue and attain O [the object of my desire] in this situation so that the pursuit and attainment would be acceptable in terms of all else that

---

[179] Recall Curzer: "As usual, what is clear is quite general, specifics are frustratingly absent…Aristotle leaves the nature of teaching unspecified, as will I" (2012: 351).

matters?"' (1991: 239). Since her practically wise person's other concerns are those that any well-brought up person would share, she can thus explain her decisions to others as follows: "The deliberator explains his choice of A by saying, *e.g.*, 'I wanted O, and this was the situation, but at the same time it was important not to jeopardize P"' (1991: 248). This *phronimos* thus has no need for a Grand End in order to act well, and when pressed to account for some decision, she can offer an analysis of why this action was good in this situation relative to the other things she, along with any other well-raised person, considers choice-worthy.

Broadie's account of how teaching develops practical wisdom then tracks her way of thinking about what the practically wise person knows and how he explains his decisions:

> In the case of practical wisdom, [teaching] does not mean through formal instruction but through explaining: having it explained to you why another's choice was a good one or not, and being shown how one's own failed to take into account something relevant. From this the learner learns more about what relevances to look out for, and also the general habit of looking out for more relevances.[180]

On her view, teaching practical wisdom consists of furnishing a student with explanations of why some choice was good or bad, but this explanation bottoms out in an account of the ethically salient factors of a particular situation—not an account of the human good. By explaining to moral learners what "relevances" make a particular decision good or bad, Broadie's teachers of ethics train students to discern for themselves what is ethically salient in a particular situation. Carried out over enough

---

[180] Broadie (1991: 253).

cases, this teaching eventually instills a "general habit" in students of picking out what is ethically relevant in the learner's own situation-specific choices in the future.

But Broadie's own account of what Aristotle means by teaching should have pointed her toward a different conclusion. Earlier in her work she says, for example, that "reason-giving is not only part of the result at which teaching aims, it is essential to the method of teaching" (1991: 73). But in the absence of apprehending what Aristotle considers the proper content of teaching, Broadie combines her observation that teaching is responsible for cultivating practical wisdom with her particular interpretation of practical wisdom to derive an interpretation of what is taught when someone is taught to be practically wise. In the following section, I take the opposite approach. Rather than rely on a particular interpretation of practical wisdom to derive teaching's proper content, I interrogate Aristotle's comments about teaching to generate insight into what the practically wise person knows.

6.3 Aristotle on What is Taught

My main concern in this section is to focus on responding to Broadie's claim that we cannot know what is taught. I go over some of the key texts which address this issue.[181] The quickest way to gain a better understanding of what Aristotle thinks of teach*ing* is to look to what he says about teach*ers*. On this point, Aristotle is clear:

---

[181] For a more detailed account, see Chapter 2.

> **TP-4** Those who teach are those who state the explanations (*tas aitias*) of each thing. (*Meta.* I.2 982a29-30)[182]

Since teachers state the explanations (*aitia*) of each thing, then teach*ing* ought to involve stating the explanations of each thing. What is taught, then, is the reason(s) why some fact obtains. But since teaching, according to Broadie, is also a kind of explaining, TP-4 could vindicate either the Grand End or the Ground Level view. We therefore need to know more about what sort of explanations teachers give. We can begin with the passage where Aristotle comes closest to offering a definition of teaching in his works. Near the beginning of his *Rhetoric*, Aristotle says:

> **TP-2** An account in accordance with scientific understanding is [characteristic of] teaching. (*Rhet.* I.1 1355a26)[183]

In this passage, Aristotle characterizes teaching as an account (*logos*) in accordance with scientific understanding (*epistêmê*). To better understand what sort of explanations are involved in teaching, we can look to what Aristotle means by scientific understanding.[184]

Speaking generally, scientific understanding for Aristotle is either (a) a systematically organized body of knowledge, or (b) the intellectual state of someone who possesses this sort of knowledge.[185] The subjects in which one can have scientific understanding according to Aristotle are not restricted to what are normally considered "the sciences" today. Rather, Aristotle delineates

---

182 οὗτοι γὰρ διδάσκουσιν, οἱ τὰς αἰτίας λέγοντες περὶ ἑκάστου.

183 διδασκαλίας γάρ ἐστιν ὁ κατὰ τὴν ἐπιστήμην λόγος.

184 For a more detailed account, see §2.3.

185 In this paragraph the next two, I follow Shields's description of *epistêmê* (2014: 124-126).

roughly three different branches of science: the theoretical (concerned with necessary truths), the practical (concerned with action), and the productive (concerned with things that are made).[186]

Every science, according to Aristotle, has three general characteristics. First, each science is of one domain of inquiry. Physics, for example, is primarily about change (*kinesis*); medicine is primarily about health, and mathematics is primarily about numbers, and so on. Second, each science arranges its subject matter into an explanatory order—*i.e.*, it makes plain which facts within a science explain others in that science's purview. The fact, for example, that plant leaves contain chlorophyll explains, in part, why they are green, rather than the other way around (they do not have chlorophyll because they are green). Finally, each science adheres to the constraints of logic—specifically, the formal demands placed on syllogistic inference.

Taken all together, these characteristics reveal what is essential about each science and the kind of knowledge that one acquires when one possesses a science: someone with scientific understanding is able to offer a fully worked out explanation of some subject matter. A scientific explanation—the kind of explanation someone with scientific understanding can furnish—must be able to explain each fact until a fact which explains all the rest and needs no further explanation itself is reached. It is not enough for a scientific explanation to state that plants are green because they contain chlorophyll. According to Aristotle, it is only when our knowledge obtains a proposition which is explanatorily basic and necessary that we have scientific understanding of some subject.[187] A scientific explanation of why plants are green, therefore, also needs to explain that plants need chlorophyll, in turn, to nourish themselves on carbon dioxide and sunlight, and plants

---

186 For Aristotle's tripartite division of the sciences, see his *Top.* VI.6 145a15-16 & *Meta.* XI.7 1064a16-19.

187 *Cf.* Shields: "we have [scientific] knowledge only when we have grasped what is explanatorily basic and necessary in a given domain of inquiry" (2014: 126).

need to nourish themselves because they are living beings, and all living beings need nourishment in order to live. This final proposition grounds all the rest. It is necessary, too, since an essential part of being alive is needing nourishment.[188] Grasping this final, fundamental proposition—*i.e.*, the first principle—on which all other propositions in a particular science are based is therefore an essential part of what it is to have scientific understanding of some subject.[189]

This initial sketch of teaching garnered from TP-4 and TP-2—as fundamentally about conveying scientific understanding—is supported by several other comments in Aristotle's works.[190] One especially relevant teaching passage canvassed in Chapter 2, however, comes from Aristotle's *Prior Analytics*:

TP-9 Well then, it is clear that scientific understanding is taught. (*APr.* II.25 69a25-26)[191]

While Aristotle does not say in TP-9 that scientific understanding is *the only thing* that is taught, it is at least clear, for Aristotle, that it is taught. Moreover, TP-10 states that every science (*epistêmê*) is teachable. Further texts fill in this view. According to Aristotle, teachers necessarily possess the scientific understanding they intend to teach (TP-7; *cf. NE* X.9 1180b35-1181a9). Students, in turn, learn by "receiving" a teacher's scientific understanding (TP-8). And, finally, the goal (*telos*) of

---

188 There is one wrinkle in this definition for Aristotle, however. Aristotle thinks that God is alive (*Meta.* XII.7 1072b25-31), yet his God does not have a vegetative soul. So, properly speaking, all *mortal* living beings need nourishment.

189 Aristotle also indicates how one comes to acquire this most basic fact. In short, he says it is by "induction" (*APo.* II.19 *cf. NE* VI.3). Induction is also a form of teaching, according to Aristotle (see *APo.* I.1, *NE* VI.3, *et al.*).

190 Again, see Chapter 2.

191 *ἡ μὲν οὖν ἐπιστήμη ὅτι διδακτόν, φανερόν*

teachers is to instill their scientific understanding in their students's soul (TP-6; *cf.* TP-3).[192] This collection of texts provides a diverse and substantial body of evidence that teaching does not result in the production of a "general habit," as Broadie claims, but in the student's possession of scientific understanding.

Since teaching, as these texts show, aims at instilling scientific understanding in students, and since scientific understanding grasps the explanatory basic and necessary principle of a subject, it follows that those who have been taught possess a grasp of the explanatorily basic and necessary principle of the subject which they have been taught. Since teaching is, according to Aristotle, mostly responsible for generating and developing the intellectual virtues (recall TP-1), and since practical wisdom is one of the intellectual virtues, it should follow that the practically wise person has a grasp of the explanatorily basic and necessary principle of practical action. That is to say, the person of practical wisdom possesses a substantive conception of the human good and can trace his or her justification of a decision back to this Grand End.

6.4 Ground Level Objections

6.4.1 Teaching is Not Conveying Scientific Understanding

The first way the proponent of the Ground Level view can object to this argument is to point out that Aristotle sometimes uses "teaching" in a way that is incongruous to the interpretation I offer above. For additional support for the interpretation that teaching is the activity of scientific understanding, see Part I of this dissertation, especially Chapter 2. The texts presented in that Part

---

192 See also: *Meta.* I.1 (981b5-10), I.2 (982a12-14); II.2 (994a26-27); VI.2 (1027a20-23); *NE* VI.3 (1139b25-26), IX.1 (1164a22-26); *EE* VII.10 (1243b15-27); *Pol.* I.7 (1255b20-30), I.13 (1260b1-6).

should be enough to convince the skeptic at least that what is taught is scientific understanding. For the consideration of specific objections that can be raised against my interpretation, see §§2.4 & 4.5.

6.4.2 Practical Wisdom is Not a Science

The Ground Leveler's second objection comes from firmer textual evidence. The argument I give above (conclusion of §6.3) relies on the loose identification, or at least the compatibility, of scientific understanding and practical wisdom. However, Aristotle explicitly denies this connection in *NE* VI.5. After establishing that practical wisdom is a specific kind of deliberation, Aristotle writes:

> But nobody deliberates about things that cannot be otherwise or about things that do not admit of being done in action by himself. So, since scientific understanding involves demonstration, and the things whose starting-points admit of being otherwise cannot be demonstrated (for all of them also admit of being otherwise) and it is not possible to deliberate about what holds by necessity, practical wisdom cannot be either scientific understanding or craft knowledge—not scientific understanding because what is doable in action admits of being otherwise, not craft knowledge because action and production differ in kind. Hence the remaining possibility is for practical wisdom to be a true state involving reason, a practical one, concerned with what is good or bad for a human being. (*NE* VI.5 1140a31-b6) [193]

[193] *βουλεύεται δ' οὐθεὶς περὶ τῶν ἀδυνάτων ἄλλως ἔχειν, οὐδὲ τῶν μὴ ἐνδεχομένων αὐτῷ πρᾶξαι. ὥστ' εἴπερ ἐπιστήμη μὲν μετ' ἀποδείξεως, ὧν δ'αἱ ἀρχαὶ ἐνδέχονται ἄλλως ἔχειν, τούτων μή ἐστιν ἀπόδειξις (πάντα γὰρ ἐνδέχεται καὶ ἄλλως ἔχειν), καὶ οὐκ ἔστι βουλεύσασθαι περὶ τῶν ἐξ ἀνάγκης ὄντων, οὐκ ἂν εἴη ἡ φρόνησις ἐπιστήμη οὐδὲ τέχνη, ἐπιστήμη μὲν ὅτι ἐνδέχεται τὸ πρακτὸν ἄλλως ἔχειν, τέχνη δ' ὅτι ἄλλο τὸ γένος πράξεως καὶ ποιήσεως. λείπεται ἄρα αὐτὴν εἶναι ἕξιν ἀληθῆ μετὰ λόγου πρακτικὴν περὶ τὰ ἀνθρώπῳ ἀγαθὰ καὶ κακά.*

Practical wisdom and scientific understanding are concerned with fundamentally different objects: things that never change, and things that admit of being otherwise. Therefore, according to Aristotle in this passage, practical wisdom cannot be scientific understanding. A fundamental presupposition of my argument seems false.

This problem can also be overcome by applying careful interpretive attention to the context of this passage. In *NE* VI, Aristotle is being careful to delineate the different intellectual virtues, *i.e.*, the "states by which the soul speaks the truth by way of assertion and denial" (*NE* VI.2 1139b15-17).[194] He therefore offers, in *NE* VI.3, his most exacting and authoritative definition of scientific understanding:

> Now what scientific understanding is, will be evident from the following, *if one is to speak in an exact way* and not be guided by mere similarities. For we all suppose that what we know scientifically does not at all admit of being otherwise, whereas, in the case of things that do admit of being otherwise, whenever they fall outside our theoretical grasp it escapes notice whether they hold or not. Hence what admits of being known scientifically is by necessity. Hence it is eternal. For the things that are unconditionally necessary are all eternal, and eternal things cannot come to be or pass away. (*NE* VI.3 1139b18-24)[195]

---

194 *ἔστω δὴ οἷς ἀληθεύει ἡ ψυχὴ τῷ καταφάναι ἢ ἀποφάναι, πέντε τὸν ἀριθμόν· ταῦτα δ' ἐστὶ τέχνη ἐπιστήμη φρόνησις σοφία νοῦς.*

195 *ἐπιστήμη μὲν οὖν τί ἐστιν, ἐντεῦθεν φανερόν, εἰ δεῖ ἀκριβολογεῖσθαι καὶ μὴ ἀκολουθεῖν ταῖς ὁμοιότησιν. πάντες γὰρ ὑπολαμβάνομεν, ὃ ἐπιστάμεθα, μηδ' ἐνδέχεσθαι ἄλλως ἔχειν· τὰ δ' ἐνδεχόμενα ἄλλως, ὅταν ἔξω τοῦ θεωρεῖν γένηται, λανθάνει εἰ ἔστιν ἢ μή. ἐξ ἀνάγκης ἄρα ἐστὶ τὸ ἐπιστητόν. ἀίδιον ἄρα· τὰ γὰρ ἐξ ἀνάγκης ὄντα ἁπλῶς πάντα ἀίδια, τὰ δ' ἀίδια ἀγένητα καὶ ἄφθαρτα.*

When Aristotle contrasts scientific understanding and practical wisdom just two chapters later, he is still working with this exacting sense of scientific understanding, not the more general sense of scientific understanding that he often uses elsewhere in his works.

As noted above, Aristotle uses the term "science" (*epistêmê*) to delineate different fields of inquiry (*Top.* VI.6 145a15-16 & *Meta.* XI.7 1064a16-19). The theoretical sciences deal with what is necessary, but Aristotle also includes the natural sciences in this category, even though these sciences deal with subjects that hold "only for the most part" (*Phys.* II.7 198a21-b4 & *Meta.* VI.1 1025b18). The way to understand this is to recognize that Aristotle has both a strict and a loose sense of what counts as "necessary." In the strict sense, what is necessary is the things that hold always—the eternal and unchanging realities. The strictly theoretical sciences study these. In the loose sense, however, the things that hold usually and regularly—the subjects of the natural sciences—are stable enough to be considered necessary in a loose sense, too. These virtually necessary entities are what Aristotle is excluding from his careful definition of scientific understanding in *NE* VI.3. Given this understanding of the broader context of *NE* VI, it remains possible that Aristotle considers practical wisdom a science in the looser sense—*i.e.*, as concerned with things that hold only for the most part.

But immediately following the passage above from *NE* VI.3 where Aristotle gives his exacting account of scientific understanding, Aristotle makes the connection between teaching and this more exact kind of scientific understanding explicit. He says, "Further, all scientific understanding seems to be teachable, and what can be known scientifically to be learnable" (*NE* VI.3 1139b25-26).[196] This connection may indicate that only the strictly necessary sciences are

---

196 ἔτι διδακτὴ ἅπασα ἐπιστήμη δοκεῖ εἶναι, καὶ τὸ ἐπιστητὸν μαθητόν.

taught.[197] If so, then the sense of teaching I ascribe to Aristotle above cannot be the way he thinks we cultivate practical wisdom.

Elsewhere, however, Aristotle includes the looser sense of scientific understanding in his definition of this term, *and* he connects teaching and this looser sense of scientific understanding:

> **TP-11** that scientific understanding is not of the accidental is clear; for every science is either of what is always or for the most part—for how else could one learn or teach someone else? For a thing must be defined either by what is always [the case] or by what is [the case] for the most part—for example, that honey-water is beneficial to a fever patient for the most part. (*Meta.* VI.2 1027a19-23).[198]

Scientific understanding, then, can also be about what holds "for the most part"—*i.e.*, not always, but usually, and both senses of scientific understanding should be understood to be the proper content of teaching. Teaching is therefore fundamentally about conveying a knowledge of explanatorily basic and "necessary" principle of some subject matter, and this principle can hold either always or for the most part.

Aristotle's comments in *Meta.* I.1 about the relationship between teaching and technical expertise (*techne*) also vindicate my claim that teaching can be about things that hold only for the most part:

---

197 However, since Aristotle refers to *all* scientific understanding, perhaps he means to include even the scientific understand of what holds for the most part, too.

198 *ὅτι δ'ἐπιστήμη οὐκ ἔστι τοῦ συμβεβηκότος φανερόν· ἐπιστήμη μὲν γὰρ πᾶσα ἢ τοῦ ἀεὶ ἢ τοῦ ὡς ἐπὶ τὸ πολύ—πῶς γὰρ ἢ μαθήσεται ἢ διδάξει ἄλλον; δεῖ γὰρ ὡρίσθαι ἢ τῷ ἀεὶ ἢ τῷ ὡς ἐπὶ τὸ πολύ , οἷον ὅτι ὠφέλιμον τὸ μελίκρατον τῷ πυρέττοντι ὡς ἐπὶ τὸ πολύ.*

> **TP-5** that is why we think *technê* is more like *epistêmê* than experience, since [those who have *technê*] can teach, whereas [merely experienced people] cannot. (*Meta.* I.1 981b7-10)[199]

Technical expertise is one of the intellectual virtues listed in *NE* VI.2 and given a fuller description in VI.4. It involves, according to Aristotle, a knowledge of universals (*Meta.* I.1 981a16) and of "the reason why" (*to dioti*)—a term that Aristotle identifies with "explanation" (*aitia*). Yet the craftsperson produces the very things he has knowledge of, so the object(s) of his knowledge cannot be strictly necessary. They are contingent precisely on his production of them, yet Aristotle says that the person with craft knowledge can teach. Since he can teach, he therefore possesses the knowledge he intends to teach, and this knowledge consists of a grasp of the explanatorily basic principle of his particular type of science—a science concerned with producing things that hold "for the most part."

The reason it is important to drive this point home—that science, and so teaching, can be about subjects that hold "only for the most part" (*epi to polu*) —is that the subject Aristotle concerns himself with in the *Nicomachean Ethics* holds "for the most part," too (*NE* I.3 1094b21). This means that what the *NE* is ultimately about—*i.e.*, the human good—can be taught.[200] If it can be taught, and if this is what the person with practical wisdom knows, then practical wisdom should be understood to be teachable, too. Since the subject of practical wisdom can be taught, and since teaching involves conveying scientific understanding (understood as a systematized body of knowledge, which, crucially, includes a grasp of the explanatorily basic principle of its subject), then the person with practical wisdom should be understood to possess the explanatorily basic principle

---

199 *ὅλως τε σημεῖον τοῦ εἰδότος καὶ μὴ εἰδότος τὸ δύνασθαι διδάσκειν ἐστίν, καὶ διὰ τοῦτο τὴν τέχνην τῆς ἐμπειρίας ἡγούμεθα μᾶλλον ἐπιστήμην εἶναι· δύνανται γάρ, οἱ δὲ οὐ δύνανται διδάσκειν.*

200 For a volume of essays broadly sympathetic to this position, see Henry & Nielsen (2015). See also Karbowski (2019).

of his systematized body of knowledge—*i.e.*, a knowledge of the human good of the sort we find discussed in the *Nicomachean Ethics*.

6.4.3 Understanding is Not Deliberating

But even if both scientific understanding and practical wisdom can be of things that hold for the most part, the Ground Leveler can still point out that these two intellectual states involve fundamentally different cognitive operations. Knowing scientifically is not the same as deliberating well. Indeed, Aristotle makes exactly this point in *NE* VI.9. So, even if scientific understanding and practical wisdom are both about things that hold for the most part and are capable of being taught, even this is not enough to show that the notion of teaching I argue for is what Aristotle means when he says that teaching cultivates practical wisdom.

However, I have already made clear that in *NE* VI Aristotle is working with a strict sense of necessity to define the content of what is known scientifically. It is true that no one deliberates about what is *strictly* necessary, but Aristotle elsewhere says there is room for deliberation in those sciences that have not been completely worked out:

> There is no deliberation, however, where sciences that are both exact and self-sufficient are concerned—where writing the letters of the alphabet is concerned, for example, since we have no hesitation about what way to write them. We do deliberate, however, about those things that come about through ourselves but not always in the same way (for example, about the things that medicine or moneymaking deals with). And we deliberate more about navigation than about athletic training, insofar as navigation has been less exactly worked out. Further, deliberation is involved in a similar way where the rest are concerned but more where crafts are concerned than sciences, since we are more hesitant about them.

> Deliberation is found, then, in the sphere of what holds for the most part but where it is unclear what way things will turn out and where there is an element of indefinability. (*NE* III.3 1112a34-b11)[201]

According to this passage, scientific understanding of the things that hold for the most part is not incompatible with deliberation. A doctor, for example, deliberates about how best to bring about health in a particular patient by relying on her medical expertise. The doctor's medical knowledge is of what holds for the most part (what is healthy is usually, but not always, the same thing for human beings), and she relies on her knowledge of medicine in order to determine what would bring about health in a particular patient. The sphere of practical action is similar. It too is "of what holds for the most part but where it is unclear what way things will turn out and where there is an element of indefinability." There need not by any incompatibility, therefore, between having scientific understanding and deliberation. There is instead room for the practically wise person to have scientific understanding of the human good and use it in her deliberations about how best to operate in the sphere of practical action.

But perhaps the practically wise person's justification of her decision differs from the scientist's explanation of a phenomenon. This objection relies on an apparent distinction between different types of reason-giving: to justify something is not the same as to explain it.[202] Aristotle's

---

201 *καὶ περὶ μὲν τὰς ἀκριβεῖς καὶ αὐτάρκεις τῶν ἐπιστημῶν οὐκ ἔστι βουλή, οἷον περὶ γραμμάτων* (*οὐ γὰρ διστάζομεν πῶς γραπτέον*)*· ἀλλ' ὅσα γίνεται δι' ἡμῶν, μὴ ὡσαύτως δ' ἀεί, περὶ τούτων βουλευόμεθα, οἷον περὶ τῶν κατ' ἰατρικὴν καὶ χρηματιστικήν, καὶ περὶ κυβερνητικὴν μᾶλλον ἢ γυμναστικήν, ὅσῳ ἧττον διηκρίβωται, καὶ ἔτι περὶ τῶν λοιπῶν ὁμοίως, μᾶλλον δὲ καὶ περὶ τὰς τέχνας ἢ τὰς ἐπιστήμας· μᾶλλον γὰρ περὶ ταύτας διστάζομεν. τὸ βουλεύεσθαι δὲ ἐν τοῖς ὡς ἐπὶ τὸ πολύ, ἀδήλοις δὲ πῶς ἀποβήσεται, καὶ ἐν οἷς ἀδιόριστον.*

202 For additional discussion of this point regarding Aristotle's notion of explanation, see Irwin (1990: 540, n. 24) and Barnes (1994: 89-90).

notion of *aitia*, however, is broad enough to encompass both types of reason-giving. When the practically wise person justifies a decision, she does so by offering an account of the reasons (*aitia*) for her decision. Likewise, when the botanist is asked to explain why plant leaves are green, her explanation will generally take the form of an account of the reasons why this fact obtains. Just so, when a doctor explains why a particular course of treatment is necessary: she does so by offering an account of the reasons for her medical opinion. Each person (the doctor, the botanist, and the *phronimos*) articulates the *aitia* of the relevant phenomenon—whether it is a particular course of treatment, a particular fact about the natural world, or a particular decision. In this way, the practically wise person's justification is the same as the scientist's or the craftsperson's explanation: each articulates a well-reasoned account that is ultimately derivable from their grasp of the explanatorily basic principle of their subject.

6.5 Conclusion

I have argued that Aristotle's notion of teaching (*didaskalia*) supports the Grand End view. The Ground Level view goes awry, I suggest, because it lacks a sufficient account of Aristotle's comments about what is taught.[203] But we can in fact understand what Aristotle considers to be the proper content of teaching. In §6.3 of this paper, I re-supplied the ample textual evidence (presented originally in Chapter 2) that shows that what is taught is scientific understanding (*epistêmê*). Since scientific understanding necessarily includes a grasp of the explanatorily basic principle of a subject, the teaching that is primarily responsible for cultivating the intellectual virtues—including practical

[203] Recall Broadie: "The purpose and methods of the teaching that develops the virtues of intellect must remain obscure as long as it is not stated what sorts of things are taught" (1991: 73).

wisdom—ought to include a grasp of such a principle, too. The person who has become practically wise as a result of teaching therefore grasps the explanatorily basic principle of action.

Each of the Ground Leveler's objections to this argument fails. Aristotle does explicitly state in *NE* VI.5 that scientific understanding is only of what is *necessary*, and that no one deliberates about what is necessary. But Aristotle has both a strict and a loose sense of what counts as necessary. Strictly necessary things "hold always," while loosely necessary things "hold only for the most part." When he denies that scientific understanding and practical wisdom are of the same things in *NE* VI.5, Aristotle is working with the strict sense of necessity. Elsewhere, however, Aristotle says that scientific understanding can be about things that are necessary in the loose sense, and that these things can be taught (TP-11). Since the subjects of the *Ethics* hold "only for the most part" (*NE* I.3 1094b21), they can be taught, too.[204]

Finally, the Ground Leveler can object that even though ethics may be teachable, scientific understanding and practical wisdom involve fundamentally different cognitive operations. In response, I showed how Aristotle maintains that there is room for deliberation "in the sphere of what holds for the most part but where it is unclear what way things will turn out and where there is an element of indefinability." Just as a doctor deliberates about how best to bring about health in a particular patient by relying on her medical expertise, the person of practical wisdom relies on her knowledge about the human good in her deliberations about how to act well in the realm of practical action. The person of practical wisdom can have scientific understanding of ethics and still deliberate about how to apply her knowledge in action. Furthermore, the practically wise person's

---

[204] A final objection that the Ground Leveler might raise is that it is not the practically wise person who is Aristotle's intended audience, but rather the politician (*politikos*). This line of criticism, however, has been addressed sufficiently elsewhere: see, *e.g.*, Kraut (1993) and Inglis (2014).

justification of a particular decision does not differ from the scientist's explanation of some fact, or the doctor's explanation of her medical opinion—each offers a well-reasoned account that is ultimately derivable from their grasp of the explanatorily basic principle of their respective field of expertise.

There are, of course, other aspects of practical wisdom that are not taught. Character virtue, for example, is also required in order to have practical wisdom, but the virtues of character are not instilled by teaching (Chapter 5). I do not claim that the scientific understanding someone receives from a teacher of ethics is *sufficient* to make them practically wise—only that it is necessary. Still, we can learn what the person who has practical wisdom knows from Aristotle's comments on teaching. From the fact that (1) practical wisdom is one of the intellectual virtues, (2) the intellectual virtues are "generated and developed mostly by teaching" (TP-1), and (3) teaching aims at instilling scientific understanding, which fundamentally includes a knowledge of the explanatorily basic principle of a subject, it follows that (4) the person who has been taught ethics possesses the explanatorily basic principle of action. This aspect of Aristotle's account of teaching thus supports the Grand End view.

Part III: NEO-ARISTOTELIAN EDUCATIONAL THEORY

In Parts I & II, my focus was on interpreting Aristotle's notion of teaching and using that interpretation to intervene in debates in Aristotle scholarship. In this third and final Part, I demonstrate how my interpretation of teaching can prove fruitful for contemporary Neo-Aristotelian educational theorists.

Chapter 7:

Aristotelian Teaching & the Paradox of Moral Education

7.1 Introduction

In the Introduction to this dissertation (§1.1) I noted that the contemporary scholarship on moral education laments the fact that Aristotle does not articulate a notion of teaching (*didaskalia*) in his works.[205] Without an account of Aristotelian teaching, contemporary educational theorists have lacked a source of information from which they can draw, as they have done with Aristotle's comments on habituation and the education of character. It is my hope that much of what I have argued in the previous chapters of this dissertation can fill in that gap and serve as a starting-point for their efforts. In this chapter, I spell out the landscape of contemporary educational theory and show where Aristotle's notion of teaching can be applied to fill in the gaps. I choose one problem—called "the paradox of moral education"—and show how Aristotle's notion of teaching can resolve it.

7.2 Neo-Aristotelian Moral Education & Teaching

In recent decades, increasing numbers of philosophers of education have looked to Aristotle for help with forming their own theories of moral education. One reason they have called upon Aristotle is his insistence on educating not only the minds of moral learners, but also their character—a subject which many theorists felt was sorely missing from the discussion. Aristotle's

---

[205] See especially Kristjansson (2015) and Carr & Steutel (2013: 241-255).

two-part educational theory corresponds to his division of the human soul into rational and non-rational parts. According to Aristotle, the non-rational part of the human soul is further divisible into two more parts: one which is still "obedient" to reason, and another which is not (*NE* I.13). The education of the non-rational-yet-obedient part of the soul is accomplished *via* habituation (*ethismos*), the process by which a moral learner acquires a virtue after several repetitions of that virtuous action (*EE* II.2 1220a39-b3; *cf. Pol.* VII. 13 1332b1-11). This process of habituation is the aspect of Aristotle's theory that most Neo-Aristotelian moral educators have tended to focus on, in part because of their desire for a coherent theory of character education. However, in Book VI of the *Nicomachean Ethics*, Aristotle insists that in order to have "full virtue" the moral learner must also acquire practical wisdom (*phronêsis*) (NE VI.13 1144b1-16). *Phronêsis* is the intellectual virtue that allows a moral agent to deliberate well about what to do and belongs to the rational part of the soul. Since it is an intellectual virtue, *phronêsis* is acquired, according to Aristotle, "mostly through teaching" (TP-1). Yet neither today's moral educators have sufficiently addressed the question: how does Aristotle think *phronêsis* is taught?

In his *Aristotelian Character Education* (2015), Aristotle scholar and philosopher of education Kristján Kristjánsson laments this lack of scholarship:

> Here is the mystery. Whereas most Aristotle-inspired approaches to moral education highlight the early habituation phase of development, they rarely have much to say about the ultimate goal of cultivating fully-fledged phronêsis. Given Aristotle's own uncompromising stance, one would expect library shelves to be stacked with books

> on 'educating for phronêsis.' However, I have yet to find a single book, or even a single journal article that gives pride of place to phronêsis education.[206]

On the one hand, this state of affairs is indeed mysterious because of Aristotle's insistence that "full virtue does not come into being without *phronêsis*" (*NE* VI.13 1144b16).[207] On the other hand, perhaps this state of affairs is not so mysterious after all, for as was noted above, the development of *phronêsis* takes place "mostly through teaching," yet there has been even less scholarship on the subject of teaching in Aristotle than on the education of *phronêsis*.

While Kristjánsson is correct that no work has been done on educating for *phronêsis* in Neo-Aristotelian scholarship, this is not the case in scholarship on Aristotle's ethics. On the contrary, Aristotle's theory of moral education—including educating for *phronêsis*—is perhaps one of the most popular topics in ancient Greek philosophy. Kristjánsson is aware of this work, but when he proceeds to assess the scholarship on this topic, he notes two major problems with it. First, Aristotle is too vague on this topic to provide any guidance: "looking for guidance in Aristotle's own texts on how *phronêsis* can be taught is like looking for wool in a goat's house" (2015: 86). Part I of this dissertation has shown how we can find in Aristotle's corpus a specific, coherent, and consistent notion of teaching. Part II then showed how this interpretation works within Aristotle's general theory of moral education. These two Parts together, then, show that there is, in fact, wool to be found in the goat's house.

But according to Kristjánsson, no matter how one wishes to interpret Aristotle on this topic, any exegesis is subject to a second problem, which he calls "the paradox of moral education"

---

206 Kristjansson (2015: 85)

207 *ἡ κυρία* [*ἀρετή*] *οὐ γίνεται ἄνευ φρονήσεως*.

(PME). In the remainder of this chapter, I show how the notion of Aristotelian teaching that I have laid out in this dissertation can help Neo-Aristotelian educational theorists address this so-called paradox. First, in §7.3, I explore in more detail what, exactly, is supposed to be paradoxical about the PME, since the literature on this topic has not settled on an exact, consistent formulation of the problem. Implicit in the PME, I claim, are two distinct yet related charges, which I call (1) the internal incoherence problem (§7.4), and (2) the democracy problem (§7.5). Along the way, I show how Aristotle's notion of teaching helps solve both of these charges.

7.3 The Paradox of Moral Education

Miller, in the most recent discussion of the paradox of moral education, calls the PME "possibly the most serious objection, the one potentially undermining of Aristotle's whole ethical system" (2016: 28). He then proceeds to characterize the PME as follows:

> The long-standing charge is that not only is character training authoritarian and anti-democratic (Kristjánsson 2007: 31), the very notion that virtue (and hence moral knowledge and understanding) can be habituated is nonsensical; that mindless conditioning in the form of habituation, and reasoned reflection or deliberation in the form of *phronêsis*, are antithetical to each other. (2016: 28)

Miller's way of framing the PME captures the general thrust of the way it has been formulated in the past—but there has been considerable variation in the details of how scholars have articulated this "long-standing charge." Peters, who initially coined the phrase in 1963, describes it this way:

> On the one hand there is an emphasis on habit, tradition and being properly brought up; on the other hand there is emphasis on intellectual training, and on the

> development of critical thought and choice. Indeed Aristotle attempted to combine both, but was led into a paradox about moral education which resulted from his attempt to stress the role both of reason and of habit.[208]

Since Peters' article, there has been no formal articulation of the so-called paradox. I say "so-called" because it is not entirely clear how this is a formal *paradox*—*i.e.*, a series of plausible premises that lead to an implausible conclusion. At least, no scholar that I am aware of has framed the PME this way. Curren comes closest, though he writes of a "paradox of progressive morality," which would more accurately be described as an *argumentum cornutum* (2000: 209). Yet scholars neither seem to agree on how to refer to the PME, nor on how to formulate its content. Some call it a paradox, others a problem, an objection, or a charge. Some focus on how Aristotle's program is morally unjustifiable, others on how it seems psychologically impossible.

Some scholars focus on both. Kristjansson, in an article devoted specifically to discussing the PME, frames the PME as two distinct yet related paradoxes (2006: 102). The statement of each paradox invokes a concern about how Aristotle's program will respect a moral learner's autonomy, although he does not clarify what he means by this concept (*cf.* Kristjansson 2014: 63-64). I discuss Kristjansson's formulation of the problem below. But, ultimately, I follow Miller's articulation of the PME for two reasons: (1) it refers to the PME as an objection or charge—a label I agree with, and (2) he frames the problem in terms that are more or less applicable to Aristotle—*i.e.*, it avoids framing the problem in terms of autonomy. I suggest below, however, it is a nebulous conception of autonomy that motivates the democracy problem.[209]

---

[208] Peters (1981 [1963]: 45).

[209] On whether autonomy really is anachronistic to Aristotle, see Irwin (2011).

As I see it, there are two basic charges or objections leveled at Aristotle by the PME:

1. Aristotle's program of moral education is *internally incoherent*, because Aristotle's method of habituation cannot seem to accomplish the stated goal of his program of moral education: the cultivation of *phronêsis*.
2. Aristotle's program of moral education is *morally/politically unjustifiable*, because it is anti-democratic—which is to say, it violates the moral learner's autonomy, where "autonomy" is (often implicitly) understood to mean genuine access to alternative conceptions of the good.[210]

Call (1) the internal incoherence problem, and call (2) the democracy problem. It is important to note where, specifically, each charge is attacking. The internal incoherence problem is attacking Aristotle's program from the inside. The way to defend against (1), therefore, is to garner a better interpretation of Aristotle. The democracy problem attacks the substance of Aristotle's program as a whole. To defend against (2) therefore requires a substantive critical evaluation of Aristotle's thinking about education. I will not mount a full defense of either charge in this chapter. Much of the solution to (1) can be found by looking back to the previous chapters of this dissertation. Some of the solution to (2), by contrast, is forward-looking, pointing beyond the scope of my work here. Even so, we can advance towards a resolution of (2) by using the notion of teaching developed in Part I.

---

[210] See the child's right to an open future, see Feinberg (1992). On this way of understanding the problem see especially Curren (2000: 205-206). I discuss this literature in more detail below.

7.4 The Internal Incoherence Problem

The internal incoherence problem claims that Aristotle's notion of habituation (*ethismos*) cannot accomplish the stated goal of his program of moral education—the cultivation of *phronêsis*. Indeed, habituation seems completely *antithetical* to the goal of educating moral learners to possess and be able to exercise the intellectual virtue of practical wisdom. How can a largely mindless process of conditioning lead to the agent's ability to conduct their own lives actively with practical wisdom? Whatever else practical wisdom is supposed to be, it is at least an agent's ability to deliberate well and make good choices largely by themselves. How can this state be generated by a process of education that is largely mindless—where the moral learner is mostly passive?

The short version of a response to this problem is that it has misunderstood Aristotle's program of moral education. The internal incoherence charge would indeed be a problem if habituation was Aristotle's sole method of cultivating *phronêsis*. But as TP-1 makes clear, Aristotle thinks that there are at least two methods of education, each of which corresponds to a particular part of the human soul that can be educated. Habituation is the method of education which aims to train the non-rational part of the soul that can still be obedient to the prescriptions of reason and, in doing so, bring about the virtues of character. Teaching, by contrast, cultivates of the virtues of thought that belong to rational part of the soul. Since practical wisdom is a virtue of thought, we should expect Aristotle to respond to this part of the PME by denying the charge's presupposition—that habituation is responsible for cultivating *phronêsis*. Rather the virtues "of thought are generated and developed mostly from teaching" (TP-1). It would therefore be a mistake to charge Aristotle with the problem of internal incoherence on the basis of thinking that habituation is solely responsible for achieving the goal of moral education. As Parts I & II have

shown, Aristotle has a notion of teaching and it works in tandem with habituation to develop practical wisdom.

7.5 The Democracy Problem

The second charge within the PME attacks Aristotle's goal of moral education. The democracy problem claims that Aristotle's system is morally and politically unjustifiable, because it is authoritarian and anti-democratic. The strongest and most specific versions of this charge cash out this particular objection in terms of violating the learner's autonomy, where "autonomy" is understood to mean genuine access to alternative conceptions of the good. Since the goal of Aristotle's program is to instill a particular conception of the good in moral learners, and it begins this process at a time before learners can critically reflect on the conception of the good that they are being trained to adopt, Aristotle's program is anti-democratic, because it forecloses a child's options—or, to put it another way, it violates that child's right to an open future.[211]

Unlike the problem of internal incoherence, however, this charge accurately captures Aristotle's thought. Aristotle believes the goal of moral education is to instill a particular conception of the good in moral learners, and that he thinks this process ought to begin when a child is at a young age. Consider the following pair of passages from the early chapters of *NE* II:

> In a word, then, states come about from activities that are similar to them. That is why the activities must exhibit a certain quality, since the states follow along in accord with the differences between these. So it makes no small difference whether

---

211 For the paradigmatic account of educating for democracy, see Gutmann (1999).

> people are habituated in one way or in another straight from childhood; on the contrary, it makes a huge one—or rather, *all* the difference. (*NE* II.1 1103b21-25)[212]

> Virtue of character is concerned with pleasures and pains. Indeed, it is because of pleasure that we do base actions and because of pain that we abstain from doing noble ones. That is why we must be brought up in a certain way straight from childhood, as Plato says, so as to enjoy and be pained by the things we should, since this is what the correct education is. (*NE* II.3 1104b9-13)[213]

The charge, then, cannot be resolved on the grounds that it misinterprets Aristotle's goal of moral education. But the democracy problem contains within itself a presupposition which can be challenged: that autonomy is the goal of moral education. As I mentioned above, the democracy problem (often implicitly) understands "autonomy" as genuine access to options. A moral learner is rendered heteronomous, then, when she is denied genuine access to alternative conceptions of the good. But there are two problems here. First, there are other—and equally legitimate—ways to conceptualize autonomy. Genuine access to alternatives is just one option. There are at least two others, including (2) autonomy as responsiveness to reasons, and (3) autonomy as the ability to justify one's sincerely held beliefs.[214] As far as I can tell, there is no clear explanation or argument given for why those who level the PME against Aristotle's theory privilege one of these conceptions

---

212 *ἐκ τῶν ὁμοίων ἐνεργειῶν αἱ ἕξεις γίνονται. διὸ δεῖ τὰς ἐνεργείας ποιὰς ἀποδιδόναι· κατὰ γὰρ τὰς τούτων διαφορὰς ἀκολουθοῦσιν αἱ ἕξεις. οὐ μικρὸν οὖν διαφέρει τὸ οὕτως ἢ οὕτως εὐθὺς ἐκ νέων ἐθίζεσθαι, ἀλλὰ πάμπολυ, μᾶλλον δὲ τὸ πᾶν.*

213 *διὰ μὲν γὰρ τὴν ἡδονὴν τὰ φαῦλα πράττομεν, διὰ δὲ τὴν λύπην τῶν καλῶν ἀπεχόμεθα. διὸ δεῖ ἦχθαί πως εὐθὺς ἐκ νέων, ὡς ὁ Πλάτων φησίν, ὥστε χαίρειν τε καὶ λυπεῖσθαι οἷς δεῖ·ἡ γὰρ ὀρθὴ παιδεία αὕτη ἐστίν.*

214 For a more detailed discussion of these conceptions of autonomy, see Ebels-Duggan (2014).

of autonomy over another. Nor, for that matter, does there seem to be any argument in favor of taking educating for autonomy as genuine access to alternatives to be the true goal of moral education. On the contrary, this premise—that the autonomy (construed loosely as individual freedom and more specifically as having genuine access to alternatives) is the true aim of education—is merely assumed. In other words, the democracy problem is only a problem *if* one already subscribes to the idea that the goal of moral education is cultivating a student's individual freedom. One option for the Neo-Aristotelian, then, is to double-down on their Aristotelianism, challenge this implicit premise, and argue instead that the goal of moral education is actually the completion of the human being.[215]

If this strategy seems too radical, another may be to accept that autonomy is the goal of moral education, but challenge the assumption that autonomy means having genuine access to alternatives. As I mentioned above, there are two further possible conceptions of autonomy—as responsiveness to reasons, and as the ability to justify one's sincerely held beliefs. As I have discussed in Chapter 6, teaching supplies the practically wise person with the ability to justify their decisions. The debate, therefore, ought not be about whether Aristotle's system of moral education violates a moral learner's autonomy. For if we accept this conception of autonomy—as the ability to justify one's sincerely held beliefs—then Aristotelian teaching actually strengthen's the moral learner's autonomy. A prior debate needs to be had, therefore, about which conception of autonomy ought to constitute the goal of moral education.

---

[215] For one approach to such an argument, see my "Dewey, Aristotle, and Education as Completion" (2019).

7.6 Conclusion: Answering Socrates' Question

But perhaps now it seems this discussion has moved too far from Aristotle and the context in which he constructed his ethical system. Recall how one of the reasons I sided with Miller's formulation of the PME was that it expressed the problem in terms that were not anachronistic to Aristotle. Another version of the democracy problem comes from Socrates *via* Bernard Williams. According to Williams, Aristotle's program of moral education effectively shuts students off from asking Socrates's question, "How ought I live?" and answering it for themselves.

One way to respond to this framing of the democracy problem is to say that Aristotle would, at least in principle, be able to *answer* Socrates' question. Socrates questioned his interlocutors not just for the sake of asking questions, but in order to see who could give him answers. I am claiming that Aristotle would be able to answer Socrates, and, in doing so, teach him. This consideration brings us back to the question of whether the conception of the good is indeed an open question. If "what is the good life for a human being?" is an open question, then the Socratic challenge (and the democracy problem) constitutes the basis for an appropriate challenge to Aristotle's view. But if it is *not* an open question, then it makes little sense to construct an educational program as though it is. In other words, the democracy problem points us in the direction of a prior question: what is the good for human beings? The democracy problem presumes that this is an open question, and so each person should have the freedom to answer it for themselves. Aristotle tailored his educational system from an entirely different starting-point—the idea that there is a single, definable, and knowable good for human beings. So, for the PME to really count against Aristotle's educational program, we first need to settle whether there is such a thing as the human good. A full discussion

of this point is clearly beyond the scope of this dissertation, but it is an area where Aristotle can help us as well.[216]

[216] *Cf.* Kristjánsson (2006: 119).

Chapter 8:

Conclusion

8.1 Summary

In §1.2, I noted the three main lines of interpretation that scholars have taken when it comes to Aristotle's notion of teaching. They are: (1) that Aristotle has no specific notion of teaching to speak of; (2) that his notion of teaching is carried out by demonstration; and (3) that teaching is a necessary part of the process of habituation. My core claim, by contrast, is that for Aristotle, teaching is the activity of instilling scientific understanding in the souls of students. In Chapter 2, I showed how my interpretation of Aristotle on the *telos* of teaching was supported by a large collection of passages, found across a wide range of Aristotle's texts. This chapter corrected thesis (1) by showing that Aristotle does indeed have a specific notion of teaching: it aims at instilling scientific understanding (*epistêmê*) in a student's soul. Chapters 3 and 4 showed how not only is Aristotle's notion of teaching specific, it is also consistent: the teaching passages which focus on the pre-requisites for teaching (Chapter 3) and the methods of teaching (Chapter 4) both cohere with, support, and extend the interpretation initiated in Chapter 2.

Chapter 4 also corrected thesis (2). The central debate in this line of scholarship is whether Aristotle's teaching methodology includes demonstration (*apodeixis*). I have argued that it does, but it also includes induction and definition (and, in special circumstances, analogy). I then addressed thesis (3) in Chapter 5, where I argued that for Aristotle habituation and teaching are distinct methods of education which operate on conceptually separate parts of the human soul: habituation

trains the non-rational (appetitive) part of the soul, while teaching cultivates the virtues of the rational part. Chapter 5 also began to show how the interpretation of Aristotle on teaching developed in Part I can address debates in Aristotle's theory of moral education. In Chapter 5, I showed how my interpretation of Aristotle on teaching, contrary to the prevailing view, supports the mechanical theory of habituation. Chapter 6 then drew from the work of Chapter 2 to provide a new defense of the Grand End view.

Finally, in Part III, I applied my interpretation of Aristotle's notion of teaching to the current landscape in contemporary Neo-Aristotelian educational theory. Since the literature in this field also subscribes to thesis (1), much of my contribution to this area of study consists of re-asserting the work from Parts I & II. Aristotle does have a specific notion of teaching, which scholars will be able to draw upon in contemporary educational theory, much as they have done with Aristotle's prescriptions for the education of the virtues of character through habituation. But Chapter 7 also showed how my interpretation of Aristotle on teaching can address one of the most pressing objections that Neo-Aristotelian moral educators face today—the paradox of moral education. I have argued that Aristotelian education can overcome the two charges that are implicitly contained within this paradox when we recognize the proper place of teaching in Aristotle's educational program.

8.2 Prospects for Future Work

Even though much progress has been made, there is still more work that can be done interpreting and applying Aristotle's notion of teaching. One teaching passage that I have not included in the previous chapters of this dissertation is as follows:

> **TP-32** What is good has many senses, the same number of senses as what exists has. As we have discussed elsewhere, what exists signifies what a thing is, or quality, or quantity, or time, as well as what consists in undergoing change or causing change. What is good is found under each of these headings. Under substance we find intellect and god, under quality justice, under quantity due measure, under time the right moment, in the realm of change, what teaches and what is taught. (*EE* I.8 1217b 25-34)[217]

To my knowledge, scholars have not examined this passage before. By contrast, the corresponding passage from the *NE* has received plenty of attention.[218] But how should we take Aristotle's claim at the end of TP-32 that "in the realm of change" the good is "what teaches and what is taught"? Why is *this* the good in this category?

Throughout this dissertation, I have made reference to several teaching passages where Aristotle uses teaching as an example illustrate loftier philosophical concepts. Most of the time, Aristotle uses teaching in connection with points about his metaphysics—in particular about the relationship between agent and patient or between actuality and potentiality (see, *e.g.*, TP-3, TP-6, TP-7, TP-8). These passages reveal that Aristotle thinks teaching and learning are a kind of change (*kinesis*). One way to take Aristotle's claim in TP-32, I suggest, is that teaching is the good in the category of change because it is *the best kind* of *kinesis*. Why best? Because, as we have seen in other

---

[217] *πολλαχῶς γὰρ λέγεται καὶ ἰσαχῶς τῷ ὄντι τὸ ἀγαθόν. τό τε γὰρ ὄν, ὥσπερ ἐν ἄλλοις διῄρηται, σημαίνει τὸ μὲν τί ἐστί, τὸ δὲ ποιόν, τὸ δὲ ποσόν, τὸ δὲ πότε, καὶ πρὸς τούτοις τὸ μὲν ἐν τῷ κινεῖσθαι τὸ δὲ ἐν τῷ κινεῖν, καὶ τὸ ἀγαθὸν ἐν ἑκάστῃ τῶν πτώσεών ἐστι τούτων, ἐν οὐσίᾳ μὲν ὁ νοῦς καὶ ὁ θεός, ἐν δὲ τῷ ποιῷ τὸ δίκαιον, ἐν δὲ τῷ ποσῷ τὸ μέτριον, ἐν δὲ τῷ πότε ὁ καιρός, τὸ δὲ διδάσκον καὶ τὸ διδασκόμενον περὶ κίνησιν.* Trans., Inwood & Woolf.

[218] Most notably by Kosman (1968), MacDonald (1989), Shields (1998), and Ward (2007).

teaching passages as well (most notably TP-1), teaching is responsible for cultivating the intellectual virtues. Recall that the exercise of these virtues constitutes the complete actualization of the human good, and can, in certain moments, allow the human to participate in the kind of thinking that Aristotle's god exercises always. Perhaps, then, Aristotle thinks teaching is the activity that is most responsible for the complete actualization of the human being—the human being as active contemplator, a participator in divine contemplation. It is, in other words, the best kind of change, because it is the one that brings about the best, most complete, end.

If this suggestion is correct, it can help us understand Aristotle's meaning in TP-32 as a whole, as well as the similar passages in *NE* I.6 and the *Categories*. A full treatment of this topic is beyond the scope of this conclusion, since it requires an examination of these other passages and a critical study of the other interpretations of them. But my brief discussion of TP-32 here serves as an example of additional avenues of research that are possible now that an interpretation of Aristotle's notion of teaching has been secured.

References

Balme, D.M. (2002). *Aristotle: Historia Animalium Volume 1 Books I-X: Text*. Edited by D.M. Balme, prepared for publication by Allan Gotthelf. Cambridge: Cambridge University Press.

Barnes, Jonathan. (1969). "Aristotle's Theory of Demonstration." *Phronesis* 14 (2): 123-152.

_____. (1984). *The Complete Works of Aristotle*: *The Revised Oxford Translation*. Vols. 1-2. Princeton: Princeton University Press.

Bauman, H-Dirksen L. (2008). "On the Disconstruction of (Sign) Language in the Western Tradition: A Deaf Reading of Plato's *Cratylus*." In *Open Your Eyes: Deaf Studies Talking*, edited by H-Dirksen L. Bauman, 127-145. Minneapolis, MN: University of Minnesota Press.

Bauman, Richard W. (1998). *Aristotle's Logic of Education*. New York: Peter Lang.

Bowin, John. (2012). "Aristotle on 'First Transitions' in *De Anima* II 5" *Apeiron* 45 (3): 262-282.

_____. (2011). "Aristotle on Various Types of Alteration in *De Anima* II 5" *Phronesis* 56 (2): 138-161.

Broadie, Sarah. (1991). *Ethics with Aristotle*. Oxford: Oxford University Press.

Bronstein, David. (2016). *Aristotle on Knowledge and Learning: The Posterior Analytics*. Oxford: Oxford University Press.

Burnyeat, Myles. (2011). "*Epistêmê*" in *Epistêmê, Etc.: Essays in Honor of Jonathan Barnes*, edited by Ben Morison and Katerina Ierodiakonou. Oxford: Oxford University Press, pp. 3-29.

_____. (2002). "*De Anima* II 5" in *Phronesis* 47 (2): 28-90.

_____. (1981). "Aristotle on Understanding Knowledge." In *Aristotle on Science: The Posterior Analytics*, edited by Enrico Berti, 97-139. Padova: Editrice Antenore.

_____. (1980). "Aristotle on Learning to Be Good." In *Essays on Aristotle's Ethics*, edited by Amélie O. Rorty, 69-92. Los Angeles, CA: University of California Press.

Byrne, Patrick H. (1997). *Analysis and Science in Aristotle.* Albany, NY: State University of New York Press, Albany.

Carr, David & Jan Steutel. (1999). "The Virtue Approach to Moral Education: Pointers, problems and prospects." In their *Virtue Ethics and Moral Education,* 241-255. London: Routledge.

Charles, David. (2010). "Definition and explanation in the Posterior Analytics and Metaphysics" in *Definition in Greek philosophy*, ed. David Charles, 286–328. Oxford: Oxford University Press.

Cochran, William B. (2019). "Dewey, Aristotle, and Education as Completion." *Philosophy of Education 2018* (1): 669-682.

Crivelli, Paolo. (2004). *Aristotle on Truth.* Cambridge: Cambridge University Press.

Curren, Randall. (2014). "Motivational Aspects of Moral Learning and Progress." In *Journal of Moral Education* 43 (4): 484-499.

_____. (2000). *Aristotle on the Necessity of Public Education*. Lanham, Md.: Rowman & Littlefield.

Curzer, Henry. (2012). *Aristotle and the Virtues*. Oxford: Oxford University Press.

Dewey, John. (2015 [1938]). *Experience & Education.* New York: The Free Press.

Ebels-Duggan, Kyla. (2014). "Educating for Autonomy: An Old-fashioned View" *Social Philosophy and Policy* 31 (1): 257-275.

Feinberg, Joel. (1980). "The Child's Right to an Open Future." Republished in *Philosophy of Education: An Anthology* (2007), edited by Randall Curren, 112-123. Oxford: Blackwell.

Fine, Gail. (2014). *The Possibility of Inquiry: Meno's Paradox from Socrates to Sextus*. Oxford: Oxford University Press.

Friere, Paolo. (2005 [1971]). *The Pedagogy of the Oppressed.* 30th Anniversary Edition. New York, NY: The Continuum International Publishing Group Inc.

Grant, Alexander. (1885). *The Ethics of Aristotle.* 4th Edition. London: Longmans, Green, and Co.

Gutmann, Amy. (1999). *Democratic Education*. Princeton: Princeton University Press.

Hitz, Zena. (2012). "Aristotle on Law and Moral Education" *Oxford Studies in Ancient Philosophy* 41: 263-306.

Inglis, Kirsten. (2014). "Philosophical Virtue: In Defense of the Grand End." In *The Cambridge Companion to Aristotle's* Nicomachean Ethics. Edited by Ronald Polansky. New York: Cambridge University Press.

Joachim, H.H. (1951). *Aristotle: The Nicomachean Ethics.* Edited by D.A. Rees. Oxford: Clarendon Press.

Hasper, P.S., and J. Yurdin. (2014). "Between Perception and Scientific Knowledge: Aristotle's Account of Experience." *Oxford Studies in Ancient Philosophy* 47: 120-150.

Henry, David & Karen Margarethe Nielsen, Eds. (2015). *Bridging the Gap between Aristotle's Science and Ethics.* Cambridge: Cambridge University Press.

Irwin, T.H. (2011). "Continuity in the History of Autonomy.*" Inquiry* 54 (5): 442-459.

_____. (2000). "Ethics as an Inexact Science: Aristotle's Ambitions for Moral Theory." In *Moral Particularism.* Edited by Hooker & Little, 100-129. Oxford: Clarendon Press.

_____. (1990). *Aristotle's First Principles.* Oxford: Clarendon Press.

Jaeger, Werner. (1934). *Aristotle: Fundamentals of the History of His Development*. Trans. by Richard Robinson. Oxford: Oxford University Press.

Jimenez, Marta. (2016). "Aristotle on Becoming Virtuous by Doing Virtuous Actions." *Phronesis* 61: 3-32.

Judson, Lindsay. (1995). "Chance and 'Always or For the Most Part' in Aristotle." In *Aristotle's Physics: A Collection of Essays*, edited by Lindsay Judson, 73-99. Oxford: Clarendon Press.

Karbowski, Joseph. (2019). *Aristotle's Method in Ethics: Philosophy in Practice*. Cambridge: Cambridge University Press.

Kosman, L.A. (2013). *The Activity of Being: An Essay on Aristotle's Ontology*. Cambridge, MA: Harvard University Press.

_____. (1973). "Understanding, explanation, and insight in Aristotle's Posterior Analytics." In *Exegesis and argument*, ed. E.N. Lee, A.P.D. Mourelatos, and R.M. Rorty, 374–392. Assen: Van Gorcum.

_____. (1968). "Predicating the Good." *Phronesis* 13 (2): 171-174

Kraut, Richard. (2012). "Aristotle on Becoming Good: Habituation, Reflection, and Perception." In *The Oxford Handbook of Aristotle*, edited by Christopher Shields, 529-557. Oxford: Oxford University Press.

_____. (1998). "Aristotle on Method and Moral Education." In *Method in Ancient Philosophy*, edited by Jyl Genztler, 271-290. Oxford: Oxford University Press.

_____. (1993). "In Defense of the Grand End." *Ethics* 106 (2): 361-374

_____. (1989). *Aristotle on the Human Good*. Princeton, NJ: Princeton University Press.

_____. (1984). *Socrates and the State*. Princeton, NJ: Princeton University Press.

Kristjánsson, Kristján. (2015). *Aristotelian Character Education*. New York, NY: Routledge.

_____. (2014). "There is something about Aristotle: The Pros and Cons of Aristotelianism in Contemporary Moral Education" *Journal of Philosophy of Education* 4 (1): 48-68.

_____. (2007). *Aristotle, Emotions, and Education*. Burlington, VT: Ashgate Publishing Company.

_____. (2006). "Habituated Reason: Aristotle and the 'paradox of moral education.'" *Theory and Research in Education* 4 (1): 101–122.

Lesher, J.H. (2001). "On Aristotelian *Episteme* as 'Understanding'."*Ancient Philosophy* 21: 45-55.

Long, A.G. (2013). *Conversation and Self-Sufficiency in Plato.* Oxford: Oxford University Press.

Longrigg, James. (1994). "Aristotle's *History of Animals*." *The Classical Review*, New Series 44 (1): 26-27

MacDonald, Scott. (1989). "Aristotle on the Homonymy of the Good." *Archiv für Geschichte Philosophie.*

McDowell, John. (1996). "Deliberation and Moral Development in Aristotle." In *Aristotle, Kant, and the Stoic: Rethinking Happiness and Duty*, edited by Stephen Engstrom and Jennifer Whiting, 19-35. Cambridge: Cambridge University Press.

Miller, Alistair. (2016). *A New Vision of Liberal Education: The good of the unexamined life.* New York, NY: Routledge.

Moss, Jessica. (2012). *Aristotle on the Apparent Good.* Oxford: Oxford University Press.

Natali, Carlo. (2013). *Aristotle: His Life and School*, edited by D.S. Hutchinson. Princeton: Princeton University Press.

_____. (2010). "*Posterior Analytics* and the Definition of Happiness in *NE* I." *Phronesis* 55 (4): 304-324.

Olfert, C.M.M. (2017). *Aristotle on Practical Truth*. Oxford: Oxford University Press.

Pearson, Giles. (2012). *Aristotle on Desire*. Cambridge: Cambridge University Press.

Peck, Arthur. (1965). *Aristotle: Historia Animalium,* Vol. 1. Cambdridge, MA: Harvard University Press.

Peters, Richard S. (1981). "Reason and Habit: The Paradox of Moral Education." In his *Moral Development and Moral Education*, 45-60. London: George Allan & Unwin.

Pfeiffer, Christian. (2019). *Aristotle's Theory of Bodies*. Oxford: Oxford University Press.

Reeve, C.D.C. (2016). *Aristotle: Metaphysics.* Indianapolis, IN: Hackett Publishing Company.

_____. (2014). *Aristotle: Nicomachean Ethics.* Indianapolis, IN: Hackett Publishing Company.

Ross, W.D. (1924). *Aristotle's Metaphysics: A Revised Text with Introduction and Commentary,* 2 Vols. Oxford: Clarendon Press.

_____. (1923). *Aristotle*. London: Methuen & Co.

Sherman, Nancy. (1989). *The Fabric of Character: Aristotle's Theory of Virtue*. Oxford: Oxford University Press.

Shields, Christopher. (2016). *Aristotle: De Anima.* Oxford: Clarendon Press

_____. (2014). *Aristotle*. 2nd Edition. New York: Routledge.

_____. (1999). *Order in Multiplicity: Homonymy in the Philosophy of Aristotle*. Oxford: Clarendon Press.

Spangler, Mary Michael. (1998). *Aristotle on Teaching*. Lanham, Md.: University of America Press.

Stewart, J.A. (1982). *Notes on the Nicomachean Ethics of Aristotle*. Oxford: Clarendon Press.

Tachibana, Koji. (2012). "How Aristotle's Theory of Education has been Studied in our Century." *Studida Classica* 3: 21-67.

Vasiliou, Iakonos. (1996). "The Role of Good Upbringing in Aristotle's Ethics." *Philosophy and Phenomenological Research* 56 (4): 771-797.

Ward, Julie K. (2008). *Aristotle on Homonymy: Dialectic and Science*. Cambridge: Cambridge University Press.

Wians, William. (1989). "Aristotle, Demonstration, and Teaching." *Ancient Philosophy* 9: 245–253.

Williams, Bernard. (1985). *Ethics and the Limits of Philosophy*. Cambridge, MA: Harvard University Press.