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JOSEPH CODY WEAVER

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ARISTOTLE ON THE METABOLIC STATUS OF PERCEPTION

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BY THE COMMITTEE CONSISTING OF

Dr. Neal Judisch, Chair

Dr. Hugh Benson

Dr. Russell Jones

Dr. Stephen Ellis

Dr. Ralph Beliveau

ABSTRACT

According to Aristotle in *De Anima* 2.12, perception occurs when a perceiver receives a perceptible form without its matter. The result is that a percipient is qualitatively altered in a way by its reception of the perceptible form. Typically, instances are qualitative alteration as classified by Aristotle as kinetic changes from contrary to contrary. What I argue from *De Anima* 2.5 is that perceptual alterations are of the atypical variety and are classifiable as instances of metabolic change from contradictory to contradictory, namely as instances of qualitative *generation*. This qualitative generation view, I argue, is not just consonant with what Aristotle says in *Physics* 7.3 about the limitations of alteration based on his four-fold division of the species of the category of quality in *Categories* 8, but also with his views on metabolic and kinetic change in *Physics* 3.1-3 and 5.1-2, alteration in *Generation and Corruption* 1.7, and Aristotle's application of his metabolic doctrines to perception in *De Anima* 3.2. Moreover, as I argue, this view comes with the support of several of the ancient commentators on Aristotle, such as Alexander of Aphrodisias, John Philoponus, and Simplicius of Cilicia. The result is an interpretation of Aristotle's theory of perception which leans decidedly in the direction of Myles Burnyeat's spiritualism rather than Richard Sorabji's literalism, yet without sanctioning the former. Noteworthy features of this work are a detailed and innovative treatment of the metabolic status of the four species of quality with respect to contrariety, a new soft-relative account of quantitative generation in *Physics* 7.3, and a realist reading of *De Anima* 3.2, which draws heavily on Aristotle's single actuality account of agency and patiency in change from *Physics* 3.3.

TABLE OF CONTENTS

INTRODUCTION

Chapter Contents:

- 0.1 Introduction: On the Metabolic Status of Perception
 - 0.2 Dissertation Outline
 - 0.3 Interpretive Approach
 - 0.4 Primary Sources
 - 0.5 Acknowledgments
-

CHAPTER 1: THE COMPOSITE PICTURE OF CHANGE

- 1.1 Introduction: Perception as Change in *De Anima*
 - 1.2 Intertextuality and the Relationship between *Physics* 3.1-3 and 5.1-2
 - 1.3 The Composite Picture of Change: *Physics* 3.1-3 and 5.1-2
 - 1.3.1 *Physics* 3.1-3: Change as Categorical
 - 1.3.2 *Physics* 3.1-3: Change as Incomplete Actuality
 - 1.3.2.1 Two Key Features of Aristotle's Definition of Change
 - 1.3.2.2 The Final Feature of the Account: The *Qua* Clause
 - 1.3.3 *Physics* 3.1-3: Change as Form Transmission
 - 1.3.4 *Physics* 3.1-3: Change as between Agents and Patients
 - 1.3.5 *Physics* 5.1-2: The Five Requirements for Change
 - 1.3.6 *Physics* 5.1-2: The Subject of Change
 - 1.3.7 *Physics* 5.1-2: The Four Logical Species of Change
 - 1.3.8 *Physics* 5.1-2: Μεταβολή, Κίνησις, and the Four Categories of Change
 - 1.3.8.1 The Relationship Between the *Physics* and *De Anima*
 - 1.3.8.2 Limiting Change: The Criterion
 - 1.3.8.3 Limiting Change: Just Substance, Quality, Quantity, and Place
 - 1.3.9 *Physics* 3.1-3 and 5.1-2: Putting it all together
-

CHAPTER 2: PERCEPTION AS CHANGE: THE PROBLEM

- 2.1 Introduction
- 2.2 *De Anima* 2.5 in Context of *De Anima*
- 2.3 In the Beginning: *De Anima* 2.5 416b32-417a20
- 2.4 First and Second Actuality and First and Second Potentiality: The Triple Scheme
 - 2.4.1 The Lack of Contrariety in the Triple Scheme: The Case of Knowledge
 - 2.4.1.1 The First Disjunction: 417b2-12
 - 2.4.1.2 The Second Disjunction: 417b12-16
 - 2.4.1.3 The Knowledge Model: Summing Up
- 2.5 The Triple Scheme Revisited: The Case of Perception
 - 2.5.1 How Perception and Contemplation Differ
 - 2.5.1.1 Corollary 1: Internality and Externality
 - 2.5.1.2 Corollary 2: Voluntary Choice
 - 2.5.1.3 Corollary 3: Agency and Patiency
 - 2.5.1.4 Externality and Agency and Patiency: Returning to the 417a2-9 ἀπορία

- 2.5.2 Perception and the Triple Scheme: A Positive Account
 - 2.6 Conclusion and a Problem
-

CHAPTER 3: PERCEPTION AS CHANGE

- 3.1 Perception and Change: A Restatement of the Problem
 - 3.2 Burnyeat's Metaphysical Reticence: Three Motivations
 - 3.2.1 Burnyeat's Epistemological Motivation
 - 3.2.1.1 Change and Epistemic Security
 - 3.2.1.2 Burnyeat's Epistemological Motivation Again
 - 3.2.2 Burnyeat's Anti-Sorabjian Motivation
 - 3.2.2.1 Positively Characterizing Perception
 - 3.2.3 Burnyeat's Categorical Motivation
 - 3.2.3.1 A Solution from *Physics* 5.1: QG
 - 3.3 The QG Account of Perceptual Change Vindicated?
 - 3.3.1 Two Adjustments and the Task Before Us
-

CHAPTER 4: PERCEPTION AS QG: PROBLEMS AND SOLUTIONS

4.1 Introduction

4.2 The Four Species of Quality in *Categories* 8

4.2.1 Capacities, States, Potentiality, and Actuality

4.2.2 Three More Features: Likeness, Degreedness, and Contrariety

4.2.2.1 The Importance of the Contrariety Question for States and Capacities

4.3 Contrariety in States and Capacities

4.3.1 Why Capacities Cannot Alter

4.3.2 Contrariety in States—Again

4.3.2.1 The Opposition Among States: The Three Sorts in *Categories* 10

4.3.2.1.1 The Opposition Among States: Resolution of Ambiguity

4.3.2.1.2 The Opposition Among States: In Defense of Two Claims

4.3.2.1.3 The Opposition Among States: What the Two Claims Entail for Change

4.3.2.1.4 The Case Mediated Contraries

4.3.2.1.5 Mediated Contraries: An Alternative Analysis

4.3.2.1.6 The Opposition Among States: Conclusion and Implications

4.3.3 Summary and Conclusion

CHAPTER 5: PHYSICS 7.3: ALL THE WAYS QUALITIES CAN CHANGE

5.1 Introduction to *Physics* 7

5.1.1 *Physics* 7.2-3: Alteration and the Contact Thesis

5.1.2 *Physics* 7.3: The Narrowing of Alteration

5.1.2.1 The Dilemma: Either Alteration or QG

5.1.2.1.1 The Case of Shapes and Figures

5.1.2.1.2 What States Are: Perfections and Relatives

5.1.2.1.3 The Case of Bodily States

5.1.2.1.4 Psychic States: Arational and Rational

- 5.1.2.1.5 The Arational, The Rational, and Change
 - 5.1.2.1.5.1 The First Question: What is the ‘New Way’?
 - 5.1.2.1.5.2 The Second Question: Why Embrace the ‘New Way’?
 - 5.1.2.1.5.2.1 Sub-Question One: Parasitic on What?
 - 5.1.2.1.5.2.2 Sub-Question Two: Merely Relative?
 - 5.1.2.1.5.2.3 The Relevant Background
 - 5.1.2.1.5.2.4 Second Question Again: Why the ‘New Way’?
 - 5.1.2.1.5.2.5 The Knowledge Model in Summary
- 5.1.2.2 Summary: *All the Ways Qualities Can Change*

CHAPTER 6: CONFIRMATION, CLARITY, & CONCLUSIONS: PERCEPTION AS QG

- 6.1 A Final Dilemma: Classifying Perception
- 6.2 The Virtue Model or The Knowledge Model? The Curious Case of Perception
 - 6.2.1 A Perceptual Difference?
 - 6.2.2 In Defense of The Virtue Model
 - 6.2.3 The Virtue Model: Three Key Passages and Two Lines of Inquiry
 - 6.2.3.1 Inquiry One: *De Anima* 2.12 on Agency and Patiency in Perception
 - 6.2.3.1.1.1 *De Anima* 2.12 on Form, Matter, and Matterless Form Reception
 - 6.2.3.1.1.2 Conclusion to Inquiry One: The Location of Change
 - 6.2.3.1.1.1.1 A Problem with Matterless Form Reception?
 - 6.2.3.2 Inquiry Two: *De Anima* 3.2 and the Metabolic Status of Perception
 - 6.2.3.2.1 Is ‘One and The Same, but Distinct in Being’ *Contradictory*?
 - 6.2.3.2.2 Is ‘One and The Same, but Distinct in Being’ *Meaningful*?
 - 6.2.3.2.3 The ἀπορία of *Physics* 3.3 and SDD Solution
 - 6.2.3.2.4 *De Anima* 3.2 in the Context of *Physics* 3.3 and SDD Solution
 - 6.2.3.2.4.1 Problem 1: Is Aristotle an Antirealist Concerning Unperceived Perceptibles?
 - 6.2.3.2.4.2 Problem 2: How Are Potential Perceptibles Compatible with Realism?
 - 6.2.3.2.4.3 Problem 3: How Can Perception Both be a Product and a Process Change?
 - 6.2.3.2.5 Conclusion to Inquiry Two: The Metabolic Status of Perception
 - 6.2.4 Conclusion: QG Vindicated

APPENDICES

- APPENDIX 1: A Problem with Matterless Form Reception?
 - APPENDIX 2: The *Physics* 3.3 SDD Solution in *De Anima* 3.2
-

INTRODUCTION

Chapter Contents:

- **0.1** Introduction: On the Metabolic Status of Perception
 - **0.2** Dissertation Outline
 - **0.3** Interpretive Approach
 - **0.4** Primary Sources
 - **0.5** Acknowledgments
-

0.1 Introduction: On the Metabolic Status of Perception

The focus of this dissertation is on the metabolic status of perception for Aristotle. That is, is it the case or is it not that perception is an instance of change according to Aristotle. And if it is, what sort of change would that be? This may seem an odd bit of antiquity to focus upon, and I will be the first to admit that it is rather esoteric. But I also think it is a rather interesting focus given that it combines two things often left separate: Aristotle's natural philosophy or physics and his psychology. Let me explain. According to Aristotle, change is the hallmark feature of all natural things (*Meta.* E.1 1026a13-14). While we would say that natural items are physical or material and perhaps organic, Aristotle would rather we focus on the fact that all natural things increase or decrease in size or quantity; are generated and perish; can change spatial locations in three-dimensions; can gain or lose features such as color, strength, tactile, or odorous qualities; can enter into relationships with other things by being of them, next to them, having them—or just generally change (*Phys.* 1.2 185a12-14). Aristotle, for his part, is less concerned about the *material* natural things are composed of and more concerned with whether or not things change. This sets up a contrast, of course, not so much between what is material or bodily and immaterial or nonbodily, but between what can change and cannot change.¹ This is similar, in a manner, to the analogy of the divided line from Plato, *Republic* 509d-511e. On one

¹ Cf. Christopher Shields, *Aristotle* (New York: Routledge, 2007), 196.

side of the ledger, we find objects like planets, people, and the like for Aristotle, while on the other, we find mathematical entities, universals, and God (*Meta.* E.1 1026a13-16). This was a highly influential distinction which is undoubtedly present in classical theism's insistence on divine immutability.² Non-natural things are unchangeable and necessarily external, not to mention impassible.³ They are even, above nature—*supra naturam*—which Aristotle helps us to distinguish from the natural for the first time.⁴ Classical theism is not Aristotle's theism, to be sure, but neither is it more than a stone's throw away.⁵ Whether one reads patristic or medieval writers, this is the key distinction⁶—and it still has traction today.⁷

On the other hand, Aristotle's was also the paradigm to be overthrown. The “new physics” of Galileo and Descartes was specifically anti-Aristotelian.⁸ Not only was Aristotle's universe geocentric, but his theory of motion lacked impetus and he found vacuums impossible. His theory also failed to put locomotion in the pride of place in his definition, though he does view it as the most fundamental sort of change (*Phys.* 8.7 260a26-b7). Aristotle's theory of

² See e.g., Norman Kretzmann, *The Metaphysics of Theism: Aquinas's Natural Theology in Summa Contra Gentiles* (New York: Oxford University Press, 1997), 236.

³ This distinction is undoubtedly at play in *DA* 3.5 where Aristotle posits such attributes of mind; rational psychic changes are not genuine changes but relative pseudo-changes. As such, even though there is ‘activity’ there is not change. Mind too as a result, partakes in the immutable and eternal. See e.g., Alexander, in *DA* 88.10–16.

⁴ C. S. Lewis, *The Discarded Image: An Introduction to Medieval and Renaissance Literature* (Cambridge, UK: Cambridge University Press, 1964), 38. See too Robert Bartlett, *The Natural and the Supernatural in the Middle Ages* (New York: Cambridge University Press, 2008), 1–16, 29–32.

⁵ Cf. W. D. Ross, *Aristotle's Metaphysics*, vol. 1 (Oxford, UK: Clarendon Press, 1924), cliii.

⁶ See e.g., Athanasius, *De incarnatione dei verbi* 1.3-10; Augustine, *Confessiones* 7.11.17 and *De Civitate Dei* 8.11; Boethius, *De consolazione philosophiae* 3, pr. 12, 5-9, 4, pr. 6, 7-8, and 5. pr. 6, 45; Maximus the Confessor, *Ambiguum* 7.1 1069B, 1072A-C, and 1073B-D; John of Damascus, *Expositio fidei orthodoxae*, 1.2-3; Anselm, *Cur Deus Homo* 1.8; Aquinas, *ST* 1a.9.1-2.

⁷ See e.g., Charles Hartshorne, *Omnipotence and Other Theological Mistakes* (Albany, NY: State University of New York Press, 1984), 8, 39. See too Thomas Weinandy, *Does God Change? The Word's Becoming in the Incarnation*, Studies in Historical Theology (Still River, MA: St Bede's Publications, 1985), 67–100; and Paul Helm, *Eternal God: A Study of God without Time* (New York: Oxford University Press, 1997), 73–94.

⁸ I. Bernard Cohen, *The Birth of a New Physics* (New York: Penguin Books, 1992), 11–23.

change was that which needed to be overthrown in order to inaugurate the new age of science.⁹ It was precisely for this—pushing back very publicly on Aristotle’s theory embraced by the pope at the time, Urban VIII—that Galileo was sentenced to a life of seclusion.¹⁰ Copernicus too had trouble with Aristotle’s theory. Geocentrism had to be true in part because while we certainly undergo change, the heavens do not. In Aristotle’s universe, the earth was at the center not because it was important, but because it was changeable and corruptible (*De Caelo* 2.13 293a15-b15). Once past the boundary of the moon, which is impure because of its contact with the sublunary atmosphere (*Meteor.* 1.3 340b4-341a36), all change but circular motion ceases, as does generation and destruction (*De Caelo* 2.7 289a13-289a34). As such, the farther out one goes the more change in any form decreases and the more perfection and value increases (*De Caelo* 2.13 293b11-15).¹¹ The unmoved mover—that which causes all change but cannot itself change—resides on the outermost part, moving the spheres of the heavens while remaining unmoved, the stars fixed, perfect, and unchangeable as they look down on all the change and corruption below them (*Phys.* 8.10 26b6-9; *Meta.* Λ.7 1072a19-1073a13). On this model—the model from antiquity to Galileo¹²—how does one place the earth in the heavens and the

⁹ See the excellent survey in Ian G. Barbour, *Religion and Science: Historical and Contemporary Issues*, Revised Edition (San Francisco: HarperSanFrancisco, 1997), 3–32. Cf. Lewis, *The Discarded Image*, 13, 219–21. And John Cottingham, *The Rationalists* (New York: Oxford University Press, 1988), 31–32.

¹⁰ For the reasons for Galileo’s prosecution and the evidence (or lack thereof) for his imprisonment, see Maurice A. Finocchiaro, “Myth 8. That Galileo Was Imprisoned and Tortured for Advocating Copernicanism,” in *Galileo Goes to Jail and Other Myths about Science and Religion*, ed. Ronald L. Numbers (Cambridge, MA: Harvard University Press, 2009), 68–78.

¹¹ On value increasing in proportion to divinity for Aristotle, see *Meta.* A.2 983a5: “for what is most divine is most excellent” (Tredennick translation). ἡ γὰρ θεϊοτάτη καὶ τιμιωτάτη.

¹² For a detailed overview of Aristotle’s cosmology, see: D. R. Dicks, *Early Greek Astronomy to Aristotle* (Ithaca, NY: Cornell University Press, 1970), 196–219. For an excellent summary of the Aristotelian-Ptolemaic model, complete with connections to other ancient and even medieval authors, see: Lewis, *The Discarded Image*, 92–121. Cf. too the comments of the late, great historian of science Edward Grant, *God and Reason in the Middle Ages* (New York: Cambridge University Press, 2001), 97–98: “In the ancient and medieval worlds, Aristotle represented the epitome of reason. His ideas, attitudes, and methods permeated and dominated the thought of Western Europe between 1200 and 1650, and perhaps even to 1700. They did so because Aristotle’s works had been made the basis of a medieval university education. Virtually all students studied his works on logic, natural philosophy, and

comparatively perfect sun in the middle, while maintaining that change and corruption occur only there in the universe, in a single place in the heavens, but not at the center? Copernicus did not just have to show that a heliocentric model, appearances to the contrary, could render an accurate account of the movement of the spheres, but that the earth *could* be placed into the heavens without unduly elevating it in status and that the sun could be placed at the center without demoting it.¹³ As C. S. Lewis put it, the value-structure of the universe is the mirrored opposite of its physical-structure: the physical center is the value periphery while the physical periphery is the value center.¹⁴ Strange as all this might sound to us, these were the concerns which had to be addressed *before* a heliocentric view could ever have a hearing.¹⁵ Copernicus did attempt to address them in subtle ways, and Galileo in more open and brash ways which landed him in jail. Descartes, as a result, neglected to publish his first work in 1633, *Le Monde*, because of Galileo's prosecution and the fear of his own.¹⁶ The Aristotelian paradigm was just too strong—scientifically, traditionally, ecclesiastically¹⁷—to be confronted directly, but it was that which had to be overcome in order to inaugurate the age of science.¹⁸

metaphysics. Aristotle's ideas were thus rooted in the curricula of medieval universities where they became the common intellectual property of all educated Europeans."

¹³ Dennis R. Danielson, "The Great Copernican Cliché," *American Journal of Physics* 69, no. 10 (2001): 1031–32.

¹⁴ Lewis, *The Discarded Image*, 58: "The spatial order is the opposite of the spiritual, and the material cosmos mirrors, hence reverses, the reality, so that what is truly the rim seems to us the hub.... The Medieval Model is, if we may use the word, anthropoperipheral. We are creatures of the Margin." Cf. Danielson, "The Great Copernican Cliché," 1031, who quotes this line approvingly.

¹⁵ Danielson, "The Great Copernican Cliché," 1033–34.

¹⁶ Cottingham, *The Rationalists*, 14.

¹⁷ Rodney Stark, *For the Glory of God: How Monotheism Led to Reformations, Science, Witch-Hunts, and the End of Slavery* (Princeton, NJ: Princeton University Press, 2003), 163–65.

¹⁸ James Hannam, *God's Philosophers: How the Medieval World Laid the Foundations of Modern Science* (London: Icon Books, 2011), 304–6, 334–43. Cf. David C. Lindberg, *The Beginnings of Western Science: The European Scientific Tradition in Philosophical, Religious, and Institutional Context, Prehistory to A.D. 1450*, Second Edition (Chicago: The University of Chicago Press, 2007), 364–65.

Aristotle's physics, thus, is arcane in the sense that it is the old paradigm that got replaced by the new normal science of Copernicus, Galileo, Descartes, and Newton.¹⁹ As such, it is just no longer plausible or interesting *qua* scientific theory, if indeed scientific theories are supposed to aim at verisimilitude or at least work to solve problems we face. But *qua* philosophical theory it is interesting, and for three reasons. First, Aristotle creates a system from the ground up—from first physical principles to the unmoved mover—and addresses everything in between. As an exercise in rational breadth, depth, creativeness, ingenuity, and coherence, it is both fascinating and evocative.²⁰ It is one of most comprehensive and careful exercises in rational system building that one will ever see, and was for this reason dominant, with slight modification, for virtually two millennia.²¹ Scientifically, it matters that it was overthrown and needed to be; philosophically, it matters not. Aristotle's physics is just as fascinating as a fantasy world like *The Lord of the Rings* or *Harry Potter*, and if philosophy can be written about those, then why not here too?²² Though I do think this is the case, I do not merely think this is the case.²³

¹⁹ Barbour, *Religion and Science: Historical and Contemporary Issues*, 27–29. Cf. Lewis, *The Discarded Image*, 13.

²⁰ Cf. e.g., Lewis, *The Discarded Image*, 121: “The human imagination has seldom had before it an object so sublimely ordered as the medieval cosmos.”

²¹ Lewis, 92–102.

²² See, for instance, the comments of Robert Wardy in Stefano Maso, Carlo Natali, and Gerhard Seel, eds., *Reading Aristotle: Physics VII.3: “What Is Alteration?”* (Las Vegas, NV: Parmenides Publishing, 2012), 1: “[Aristotle’s] natural philosophy remains relatively inaccessible, the preserve of adepts and *aficionados*... Such exotic ideas might captivate the antiquarian imagination, but are rightly confined within the museum of philosophical curiosities.”

²³ Another comparison here might be with theological antirealism. Antirealists typically think assertions concerning God either are false, fail to refer, or should be taken noncognitively. Yet, prominent theological antirealist Don Cupitt, is not only an ordained Anglican priest, but he has also founded the Sea of Faith Network which links fellow theological antirealists worldwide with the common purpose “to *explore* and *promote* religious faith as a human creation” (italics mine). See Andrew Moore, *Realism and Christian Faith: God, Grammar, and Meaning* (New York: Cambridge University Press, 2003), 2–5, esp. 3. It would seem that some things are worth exploring—and promoting—even if thought to be false. For a variety of positions similar to those of Cupitt, see Andrew Moore and Michael Scott, eds., *Realism and Religion* (Burlington, VT: Ashgate Publishing Company, 2007).

J. L. Mackie, in the first line of the first page of his 1977 book, *Ethics: Inventing Right and Wrong*, flatly asserts “there are no objective values”²⁴ A good twenty pages later he finally tells us he has embraced ‘error theory’ with respect to ethics.²⁵ Now, of course, a good part of those twenty pages is devoted to clarifying and justifying his position. But the book then continues on for another two-hundred pages, partly devoted to this same task of justifying his *negative* thesis, but partly devoted also to developing his own *positive* view of ethics.²⁶ Why do this given his embrace of error theory? One of his reasons seems to be because of the pervasiveness of ethical phenomena.²⁷ If we do go wrong, reifying and ontologizing when we should refrain, we should take notice of when and where this occurs so as not to replicate the error. But the ubiquity and appeal of the error is not Mackie’s only reason for thinking the subject worth addressing in full. Rather, he also thinks that normative judgements, even if in error at one level, still play an important, functional role in human life.²⁸ How so? Mackie thinks they can be rather useful as “constraints on conduct.”²⁹ That is, even though normative judgements are in error if taken in one way, when put to their proper use they are nevertheless practical and action-guiding.³⁰ These same points, I think, can be readily applied to the

²⁴ J. L. Mackie, *Ethics: Inventing Right and Wrong*, Reprint. Orig. 1977 (New York: Penguin Books, 1990), 15. He clarifies (and enlarges) this statement a few lines later: “The claim that values are not objective, are not part of the fabric of the world, is meant to include not only moral goodness, which might be most naturally equated with moral value, but also other things that could be more loosely called moral values or disvalues—rightness and wrongness, duty, obligation, an action’s being rotten and contemptible, and so on. It also includes non-moral values, notably aesthetic ones, beauty and various kinds of artistic merit” (ibid., 15).

²⁵ Mackie, 35; see too 43, 48-49; cf. 17-18, 20.

²⁶ Mackie, 49, 105-7.

²⁷ Mackie, 17-18, 35.

²⁸ See the discussion of first and second order ethical statements at Mackie, 16.

²⁹ Mackie, 106.

³⁰ See Mackie’s eighth chapter, “Elements of a Practical Morality” (Mackie, 169-200), a very constructive chapter where he finally lays out his positive view: “Morality as I have described it is concerned particularly with the well-being of active, intelligent, participants in a partly competitive life, and the constraints summed up as morality in the narrow sense have been introduced.... as necessary limits on competition for the benefit of all the competitors. This approach would seem to provide for no duties towards non-participants, and to assign no rights to beings who do not need to be drawn into a quasi-contractual scheme, who have no benefits which they are free either to confer upon

contemporary study of Aristotle's physics. Hence, our second reason *qua* philosophical theory Aristotle's physics is interesting is because its errors are both real and ubiquitous—both in the *Corpus* and historically—and it is worth knowing not just *that* it goes wrong but *where* it goes wrong, lest we replicate the error. And thirdly, though factually inaccurate in terms of its accounting of the natural world and its operations, the theory might nevertheless be *useful*. How, though, might Aristotle's physics be useful?

Aristotle's physics touches everything else in his philosophy, not least his metaphysics, philosophy of mind, and ethics, all of which are still very relevant.³¹ One does not just pick up Aristotle's ethics, for instance, without finding themselves entangled in his theory of change. What, for instance, are the virtues, and how does one acquire them? If they are qualities (i.e., 'states', *EN* 2.6 1106a12) and one acquires qualities through alteration—a form of metabolic change for Aristotle—then one is entangled in Aristotle's physical theory which ranges over all change.³² Again, if the dividing line between the natural and non-natural is whether or not a thing

others or to withhold, and no powers to do harm" (ibid., 193). As Mackie concludes: "My hope is that concrete moral issues can be argued out without appeal to any mythical objective values or requirements or obligations or transcendental necessities, but also without appeal to a fictitiously unitary and measurable happiness or to invalid arguments that attempt to establish the general happiness as a peculiarly authoritative end. No doubt my approach could be called, in a very broad sense, a rule utilitarian one, since any specific development of it would be based on some conception of the flourishing of human life, but it would be utilitarianism without its characteristic fictions, and it would be not just a rule-utilitarianism but a rule-right-duty-disposition utilitarianism. It might also be called a rule-right-duty-disposition egoism" (ibid., 199-200).

³¹ See again, Wardy in Maso, Natali, and Seel, 12–13: "Natural philosophy... [is] likely to suffer in comparison with those aspects if Aristotelian metaphysics, ethics, and politics which attract the admiring attention of many contemporary philosophers... [but] it just is not true that Aristotle the stimulating metaphysician and ethical theorist is to be separated off from that historical curiosity, Aristotle the antique natural philosopher... [as the latter's arguments] have manifold potential to catalyze reconsideration of key ontological and moral issues."

³² Chapter 4 treats specifically of the acquisition and/or relinquishment virtue and vice on Aristotle's theory of change, and though we do not suggest any ethical applications there due our narrow focus, the disposition-activity Mono-Function Rule highlighted there clearly suggests a very practical one: namely, that one cannot set out to acquire a virtue without first attempting to relinquish its vice. That is, one must eliminate a contrary vice *before* one can possibly acquire a contrary virtue. This is the classical wisdom embedded in accounts of the 'seven deadly sins' or vices, but were it not for Aristotle's theory of change it is doubtful that guidance of such practical effect would be rendered as either obvious or useful to contemporary audiences. See Rebecca Konyndyk DeYoung, *Glittering Vices: A New Look at the Seven Deadly Sins and Their Remedies*, 2nd edition (Grand Rapids, Michigan: Brazos Press, 2020), 21–29, for the seven deadly vices as the opposites of the seven virtues (four cardinal, three theological); for

can change rather than whether or not it is material, as has been common since Descartes, then all sorts of phenomena and even disciplines must be re-classified and re-sorted—including the operations of the soul and Aristotle’s psychology.³³ For if there change occurs, then therein lies something natural.

Aristotle’s psychology, of course, was not overthrown, and still holds great interest today.³⁴ His hylomorphism, moreover, was embraced by Aquinas and the Western Church so much so that it is still dominant in Catholic circles.³⁵ In many areas, Aristotle is still well regarded.³⁶ Hence, while I know of no neo-Aristotelians with respect to his physics, I know plenty with respect to his philosophy of mind. For unlike many aspects of his physics, Aristotle’s psychology is not just plausible to a degree, but interestingly relevant for just that reason. What if it or something like it is true? This alone makes it worth studying. But if that is so and yet it is also true that Aristotle classifies psychology as *natural*, then to study it in separation from his physics is to make a mistake—and not just a literary or classificatory mistake. One is, in fact, very liable to misread the theory itself. Aristotle’s psychology is, to a great degree, enmeshed and

the necessity of recognizing and removing a vice before acquiring a virtue see *ibid.*, 12-18, esp. 15-16; cf. vii, 30-38 and 218-34.

³³ See e.g., Myles Burnyeat, *A Map of Metaphysics Zeta* (Pittsburgh, PA: Mathesis Publications, 2001), 134 n. 15: “psychology for Aristotle is *part* of physics: see *DA* I 1 with the caveats of *PA* I 1.641a32-b10, *Met.* E1.1026a5-6” (*italics mine*). Cf. Grant, *God and Reason in the Middle Ages*, 94-95. For differences in the dualisms of Aristotle and Descartes of the sort that I am pointing out here, see Joseph Magee, *Unmixing the Intellect: Aristotle on Cognitive Powers and Bodily Organs* (Westport, CT: Greenwood Press, 2003), 1-4, esp. 3.

³⁴ See, for instance, the debate over the contemporary significance of Aristotle’s philosophy of mind in Martha Craven Nussbaum and Amélie Rorty, eds., *Essays on Aristotle’s De Anima* (New York: Oxford University Press, 1995).

³⁵ See e.g., Michael Potts, “Catholic Hylomorphism, Disembodied Consciousness, and Temporary Bodies,” *Proceedings of the American Catholic Philosophical Association* 91 (2017): 171-83. Though hylomorphism is not just the purview of contemporary Catholics. For instance, see David S. Oderberg, “Hylemorphic Dualism,” *Social Philosophy and Policy* 22, no. 2 (2005): 70-99, and, more recently, J. P. Moreland, “In Defense of a Thomistic-like Dualism,” in *The Blackwell Companion to Substance Dualism*, ed. Jonathan J. Loose, Angus John Louis Menuge, and J. P. Moreland (Hoboken, NJ: Wiley-Blackwell, 2018), 102-22.

³⁶ For instance, in a 2013 survey of professional philosophers, Aristotle ranked second behind David Hume on the list of the top twenty non-living philosophers whom university faculty members identified with. See David Bourget and David J. Chalmers, “What Do Philosophers Believe?,” *Philosophical Studies* 170, no. 3 (2014): 476.

entangled with his physics, for Aristotle actually considers it to be a *part* of his physics.³⁷ We *think* one thought and then another. Change, it seems, occurs just there. We *see* one thing and then another. There too is change. In fact, both thinking and perceiving would appear to be special instances of change. If, then, one is attracted to Aristotle's hylomorphism, as am I, and wants to both understand and repurpose for contemporary usage, then it would be prudent to figure out *what* the theory says, *why* the theory says what it says (theoretical commitments), and then *whether* one can make sense of those assumptions on grounds one takes to be plausible today.

This is precisely the place we find ourselves in now with respect to Aristotle's theory of perception. Aristotle says that to perceive something is to receive the form of that thing without its matter. Form reception for Aristotle, is a *change*. If one hopes to grasp what this means and why Aristotle means it in the way that he does, one must do due diligence to Aristotle's physics of which such theories are necessarily a part. And it is with these things in mind that we ask the question we do about the metabolic status of perception. The question itself is not quaint or arcane, but proper and prudent, if we wish to understand Aristotle's psychology. For if perception is a change for Aristotle, then not only must it fall in line with his other physical theorems, but its very character will actually follow from those theorems. This is not so, of course, if perception is not a change. For in such a case, it will be separable from his physical theorems, though adhering to his metaphysical theorems and in its character derivable from them. Such is the case with thought, and thus Aristotle characterizes it in a way like nothing else in the natural realm (*DA* 3.5). If perception and thought are alike, as he often says, does the same hold for perception as well? Or does perception belong to the sublunary realm, admitting of

³⁷ Cf. M. F. Burnyeat, "De Anima II 5," *Phronesis* 47, no. 1 (2002): 78: "Aristotle's psychology is designed to be the crowning achievement of his physics."

change, generation, and corruption as with everything else? And if so, what *sort* of change is it and what should one expect from its operation? What says Aristotle? Again, if one wants to understand Aristotle's theory of perception as do I, then one must explore his judgement concerning the metabolic status of perception, for it is impossible to grasp the one without answering the other.

0.2 Dissertation Outline

It is my position in this dissertation that not only does Aristotle give a positive answer to the question of whether perception counts as a change, but that only *because* he gives this answer that one can understand two further claims he makes concerning perception. First, that perception is an instance of form reception; and second, that in perception, the actuality of the perceptible form is one and the same actuality of the percipient. These are key characterizations of Aristotle's perceptual theory, but they are impossible to explicate without Aristotle's theory of change. Why is that? Because form *reception* just is the patient side of form *transmission*, which just is change; and because of Aristotle's theorem concerning the actuality of agents and patients in change, which is restricted by stipulations he makes due to his unmoved mover, *viz.*, that the actuality of the agent and patient in perception—as with all changes—are one and the same. Aristotle's theory of change, thus, not only helps us to understand his theory of perception, but explains why it takes the shape it does. It also explains why thinking functions as it does. Thinking and perceiving are alike, says Aristotle, but the key difference between them is with respect to their metabolic status. Perception is simultaneously a change and a having changed and is an instance of metabolic qualitative generation, but the same cannot be said for thinking. And this, I argue, has a great effect on the way both psychical phenomena operate.

In order to answer questions about the metabolic status of perception, we must first get clear on Aristotle's theory of change. This we do in chapter 1. As the standard account in *De Anima*, where he treats perception, comes from two key places in the *Physics*, we write of Aristotle's composite account of change. There are eight features of this account and understanding them enables us to see how they are applied in the case of perception.

In chapter 2, we turn to Aristotle's key characterization of the metabolic status of perception found in *De Anima* 2.5. The text is dense and the conclusion difficult; Aristotle seems to want to say that perception is special type of change, a qualitative alteration, but only 'of a sort.' I follow the most influential recent interpretation of this text from Myles Burnyeat, the late and gifted British philosopher.

In chapter 3, we move on to address the motivations behind Burnyeat's characterization of perception in *De Anima* 2.5. Perception is either a change or it is not. Burnyeat thinks Aristotle needs it to be the sort of change he advocates in order for him to ensure the epistemic security Aristotle thinks perception has and for Aristotle be able to classify it appropriately. But the sort of change Burnyeat thinks perception is is not only is not required by the text, it is actually errant. Also errant, is the main alternative to Burnyeat's position, that advocated by Richard Sorabji. There is, in fact, another alternative that neither considered: the Qualitative Generation (QG) account. On this view, the insistence in *De Anima* 2.5 that perception is an 'alteration of a sort' is due to the fact that perception is not a kinetic canonical alteration but rather a metabolic generation, and it gets Aristotle exactly what Burnyeat thinks he needs to ensure the epistemic security of perception as well as to classify it. It also allows for a much more thoroughgoing analysis of perception which allows us to connect it with much else that Aristotle had to say on the matter.

In chapter 4, we move on to examine the details of our proposed QG theory of metabolic change and explore its logic on Aristotle's theory of change. We first explore the category of quality given that Aristotle considers perception to be classifiable as an alteration or a qualitative change. We then apply this to Aristotle's contention that all change is from an opposite and to an opposite, and show how if perception is a qualitative change *specifically* from a contradictory to a contradictory then perception must operate in just the way the QG account suggests based on Aristotle's own metabolic principles.

In chapter 5, we move on to the most thorough treatment of alteration in the entirety of the Aristotelian *Corpus*, *Physics* 7.3. There, Aristotle affirms our QG account with respect to three of the four species of quality, just as we had determined on the basis of Aristotle's own metabolic principles in chapter 4. But he also places two other accounts of qualitative change alongside QG: canonical alteration and relative pseudo-change. Only perceptibles undergo canonical alteration, while capacities, states, and shapes all undergo QG, including arational psychic states and their actualities such as virtue and vice and their exercise in action. We call this 'the virtue model.' Rational psychic states such as thinking, on the other hand, neither alter nor come to be via QG; rather, they undergo mere relative pseudo-change. We call this 'the knowledge model.' As to our question of to which of these models perceptual psychic states and their actualities belong, *Physics* 7.3 does not give us a direct answer. But it does give us *some* indication.

In chapter 6, our final chapter, we turn to the question of to which metabolic models of change Aristotle thinks perception is most akin: 'the virtue model' of QG or 'the knowledge model' of relative pseudo-change? We treat this as a logically exclusive disjunctive argument and engage in two lines of inquiry which we think will yield an answer. First, what is the agent

and what is the patient in instances of perception? Second, what do the agency and patiency roles mean for the direction of the causal arrow in instances of change? What we determine is that, first, perceptibles are agents and percipients patients in perception, which makes it a polar opposite to thinking in this respect. And second, that because of the agency and patiency roles, the causal arrow flows *from* agent perceptible *to* patient percipient, which also makes perception the polar opposite of thinking in this respect too. And finally, that *because* the causal roles and arrows are reversed in perception and thinking, one of Aristotle's physical theorems applies in perception in an important way it cannot apply in thinking, which is what renders them metabolically dissimilar. The conclusion, therefore, is that it is 'the virtue model' rather than 'the knowledge model' to which perception is most metabolically akin. And this entails, of course, that it is indeed QG which applies to the coming to be of perception at its various levels of actuality. We then conclude with a brief summary and a restatement of my thesis.

0.3 Interpretive Approach

A word is in order about the style of engagement with Aristotle I make use of in this dissertation. As interested as I am in the contemporary application of Aristotle's hylomorphism, it is not my purpose here to examine Aristotle's theory for truth or even verisimilitude. That would be another project, perhaps one in contemporary metaphysics, or philosophy of mind or science, using the data of the *Corpus Aristotelicum*. That data, however, must be interpreted—exegeted—in order to be of use, and those interpretations themselves must be assembled and then assessed for coherence, comprehensiveness, intelligibility, etc. This latter is the prior task, and it is this with which I am concerned.

In keeping with this aim, I will not be acting as an Aristotelian critic, nor as an alethic umpire. Again, this is the posterior task. Instead, I will address most philosophical problems as

interpretive problems—the appropriate solution being to bring coherence and intelligibility. This will often be wrought by connecting that which is unclear with that which is clear—either by entailment or implication. In so doing, I am operating on an interpretive version of the ‘principle of charity’ where Aristotle, by default, is given the benefit of the doubt. This is not because I think the Aristotelian *Corpus* to be divinely inspired, or that I take Aristotle to be infallible, or that I take Aristotle’s judgements to be always superior to my own—or anything else of this sort. Aristotle is just as capable of being wrong as anyone else. I do this instead for two reasons. First, this is what most if not all of his ancient and medieval commentators did, and the syntheses wrought by them were highly insightful and fecund. Can it be plausibly said that such were not also Aristotle’s, even embryonically? These syntheses would never have arisen unless such had been assumed—which is good reason for keeping up the game.

Second, I do indeed think Aristotle to have been highly intelligent as evidenced by his writings. If, with a contemporary, I would act on the principle of charity in deference to their intellectual powers—and in humility with respect to my own—why would I not apply the same interpretive criterion here? To fail to do so *just* because Aristotle is ancient while I am modern is mere “chronological snobbery,” to use C. S. Lewis’ phrase.³⁸ Moreover, it would be epistemically defective on my part: if Aristotle is an epistemic peer of manifest and sufficient intellectual power and contentiousness, do I have the epistemic right to controvert his views without sufficient evidence? It would seem that he has epistemic authority over me such that I cannot justifiably do so in the absence of good evidence—such evidence coming from a

³⁸ C. S. Lewis, *Surprised by Joy: The Shape of My Early Life* (New York: Harcourt, Brace & World, Inc., 1955), 207–8: “what I have called my ‘chronological snobbery’... [is] the uncritical acceptance of the intellectual climate common to our own age and the assumption that whatever has gone out of date is on that account discredited. You must find why it went out of date. Was it ever refuted (and if so by whom, where, and how conclusively) or did it merely die away as fashions do? If the latter, this tells us nothing about its truth or falsehood.”

comprehensive reading of the *Corpus*. Hence, without a comprehensive interpretation, I am not within my epistemic rights to controvert. Again, playing alethic umpire is posterior to playing charitable interpreter. Hence, on this matter I side with the sentiment of Simplicius when he says: “I know that it seems rash to speak out contrarily to Aristotle, but until we are able to recognize accurately the explanation of this sort of classification which he makes, we are sufficiently encouraged by the agreement of Eudemus [of Rhodes, Aristotle’s pupil]... and still more by that of Theophrastus [Aristotle’s successor]” (*In phys.* 412.31-34).³⁹ Indeed, one should be slow to disagree with Aristotle, and should be sure of one’s company when doing so.

Third and finally, I think her the greater interpreter who makes the inexplicable explicable or the *prima facie* implausible or fallacious plausible or seemingly verisimilitudinous. Aquinas, for instance, claims it more befitting the goodness and power—and we should add, intelligence—of God as creator to produce good out of evil, especially that of a greater quality, than to merely produce a simpler good from good.⁴⁰ It is on this ground, thus, that God allows (but does not cause) evil. Shall we say any less of interpreters *qua* creators? Shall it not likewise be to their merit if they make good, coherent, insightful sense from that which is evil, difficult, enthymematic, apparently confused, or fallacious? And would such not be more befitting their power, goodness, and intelligence? To play alethic umpire at this stage is to block the attempt before it starts. Better to wait until after the interpretation has been rendered to assess—in a separate project with that focus—than to cut the prior stage short by hasty judgement.

³⁹ J. O. Urmson and Peter Lautner, *Simplicius: On Aristotle Physics 3* (Ithaca, NY: Cornell University Press, 2001), 29. For Simplicius’ Greek, see: Hermann Diels, ed., *Simplicii In Aristotelis Physicorum Libros Quattuor Priores Commentaria*, vol. IX, *Commentaria in Aristotelem Graeca* (Berlin: Academiae Litterarum Regiae Borussicae, 1882), 412: και οίδα μεν ότι προπετές είναι δοκεί το την εναντίον αφιέναι το Αριστοτέλει φωνήν, έως δ αν γνώναι δυνηθώμεν ακριβώς την αιτίαν της τοιαύτης αυτού διατάξεως, αρκούμεθα προς παραμυθίαν τη τε Εδδήμου... και έτι μάλλον τη Θεοφράστου.

⁴⁰ *ST* 1a.22.2.

It is for these reasons that I play sympathetic interpreter. This comes with the risk that the failures will be attributable to me rather than Aristotle, but with the concomitant advantage too, that the successes might be attributable to me as well.

0.4 Primary Sources

In this section I list the works I directly cite without bibliographic data in the footnotes. While these works are also listed in the bibliography, I use them so frequently it is necessary for us to make note of them now. For the Greek text of Aristotle, I have relied exclusively on the critical editions digitized in the *Thesaurus Linguae Graecae*.⁴¹ Many of these texts hail from the *Oxford Classical Texts* series, though not all. And where a newer critical edition was not available, I have relied on Bekker. The reader should assume I have used the pertinent volume for a specific work unless otherwise noted. Though I do make textual suggestions at times in what follows, I always note where I do so and have been faithful to the text otherwise. The volumes in question are:

Bekker, Immanuel. *Aristotelis Opera*. Vol. 1. Berlin: Reimer, 1831.

———. *Aristotelis Opera*. Vol. 2. Berlin: Reimer, 1831.

Bywater, I., ed. *Aristotelis Ethica Nicomachea 1894*. Scriptorum Classicorum Bibliotheca Oxoniensis. Oxford: Clarendon Press, 1894.

Düring, I. *Aristotle's Protrepticus*. Almqvist & Wiksell. Stockholm, 1961.

Jaeger, W., ed. *Aristotelis Metaphysica*. Scriptorum Classicorum Bibliotheca Oxoniensis. Oxford: Clarendon Press, 1957.

Minio-Paluello, L., ed. *Aristotelis Categoriae et Liber De Interpretatione*. Scriptorum Classicorum Bibliotheca Oxoniensis. Oxford: Clarendon Press, 1949.

Mugler, C. *Aristote: De La Génération et de La Corruption*. Paris: Les Belles Lettres, 1966.

Ross, W. D., ed. *Aristotelis Fragmenta Selecta*. Scriptorum Classicorum Bibliotheca Oxoniensis. Oxford: Clarendon Press, 1955.

⁴¹ These digitized version can be found online at <http://stephanus.tlg.uci.edu>.

- , ed. *Aristotelis Physica*. Scriptorum Classicorum Bibliotheca Oxoniensis. Oxford: Clarendon Press, 1950.
- , ed. *Aristotelis Topica et Sophistici Elenchi*. Scriptorum Classicorum Bibliotheca Oxoniensis. Oxford: Clarendon Press, 1958.
- . *Aristotle: De Anima. Edited with Introduction and Commentary*. Oxford: Clarendon Press, 1961.
- . *Aristotle: Parva Naturalia. A Revised Text with Introduction and Commentary*. New York: Oxford University Press, 1955.

Susemihl, F. *Aristotelis Ethica Eudemia*. Leipzig: Teubner, 1884.

As for English translations of Aristotle's works, I have standardly relied on Barnes' *Revised Oxford Translation* for the *Corpus* as a whole:

Jonathan Barnes, ed., *The Complete Works of Aristotle: The Revised Oxford Translation*. 2 Vols. Princeton, NJ: Princeton University Press, 1984.

For select books, however, I have elected for other contemporary translations which I think offer better renderings of the text. Hence, references to the *Corpus* should be assumed to be from Barnes unless from one of these select books such as the *Physics* or *De Anima*, in which case they should be assumed to be from the translations listed below. Many times, I have elected to modify the translation in question for one reason or another. Where I have done so I have noted both the translator's name along with 'modified' in the footnote to make this clear. I have also, at times, utilized a different translation than I have standardly used for a text. I have also made note of this in the footnotes where applicable. The standard texts outside of Barnes are as follows:

Ackrill, J. L. *Aristotle's Categories and De Interpretatione*. Oxford: Oxford University Press, 1979.

Irwin, Terence. *Aristotle: Nicomachean Ethics*. 2nd edition. Indianapolis: Hackett Publishing Company, Inc., 1999.

Maso, Stefano, Carlo Natali, and Gerhard Seel, eds. *Reading Aristotle: Physics VII.3: "What Is Alteration?"* Las Vegas, NV: Parmenides Publishing, 2012.

Reeve, C. D. C. *Aristotle: Metaphysics*. Indianapolis, IN: Hackett, 2016.

———. *Aristotle: Physics*. Indianapolis, IN: Hackett, 2018.

Shields, Christopher. *Aristotle: De Anima*. Clarendon Aristotle Series. New York: Oxford University Press, 2016.

Williams, C. J. F. *Aristotle's De Generatione et Corruptione*. New York: Clarendon Press, 1982.

The non-standard English translation I have on occasion cited are as follows:

Apostle, Hippocrates G., ed. *Aristotle's Physics: Translated with Commentaries and Glossary*. Grinnell, IA: The Peripatetic Press, 1980.

———. *Aristotle's On the Soul: Translation with Commentaries and Glossary*. Grinnell, IA: The Peripatetic Press, 1981.

———. *Aristotle's Nicomachean Ethics*. Grinnell, IA: The Peripatetic Press, 1984.

Bartlett, Robert C., and Susan D. Collins. *Aristotle's Nicomachean Ethics*. Chicago: University of Chicago Press, 2011.

Forster, E. S., and D. J. Furley. *Aristotle: On Sophistical Refutations, On Coming-to-Be and Passing Away, On the Cosmos*. Cambridge, MA: Harvard University Press, 1955.

Hett, Walter Stanley. *Aristotle: On the Soul, Parva Naturalia, On Breath*. Revised Edition. Cambridge, MA: Harvard University Press, 1957.

Reeve, C. D. C., trans. *Aristotle: Nicomachean Ethics*. Indianapolis, IN: Hackett Publishing Company, Inc., 2014.

———. *Aristotle: De Anima*. Indianapolis, IN: Hackett Publishing Company, Inc., 2017.

I draw heavily from the past in this dissertation, especially from Aristotle's ancient commentators such as Alexander (fl. AD 200), Themistius (AD 317-388), Syrianus (d. AD 437), Ammonius (fl. AD 500), Asclepius (d. AD 560/70), Simplicius (AD 480-560), and Philoponus (AD 490-570), as well as from the medieval commentaries of Aquinas (AD 1225-74).⁴² The Greek texts I have employed for these ancient commentators are the critical editions from the

⁴² For a brief overview of the historical situation, pedigree, and contribution of each of these ancient commentators, see: Richard Sorabji, ed., *The Philosophy of the Commentators, 200-600 AD: A Sourcebook*, vol. 1: Psychology (Ithaca, NY: Cornell University Press, 2004), 5–11. For a more detailed analysis of the historical situation of these commentators, see: Richard Sorabji, "The Ancient Commentators on Aristotle," in *Aristotle Transformed: The Ancient Commentators and Their Influence*, ed. Richard Sorabji, 2nd Edition (New York: Bloomsbury Academic, 2016), 1–24.

series *Commentaria in Aristotelem Graeca* and *Supplementum Aristotelicum* published by the Berlin Academy beginning in 1882.⁴³ All references to the Greek text of these works should be referred back to the specific volume question. I have been faithful to the text in all instances. The volumes are as follows:

Bruns, Ivo, ed. *Alexandri Aphrodisiensis Praeter Commentaria Scripta Minora, Quaestiones, De Fato, De Mixtione*. Vol. II.2. *Supplementum Aristotelicum*. Berlin: Academiae Litterarum Regiae Borussicae, 1892.

Busse, Adolf, ed. *Ammonius In Aristotelis Categorias Commentarius*. Vol. IV.4. *Commentaria in Aristotelem Graeca*. Berlin: Academiae Litterarum Regiae Borussicae, 1895.

———, ed. *Ioannis Philoponi (Olim Ammonii) In Aristotelis Categorias Commentarium*. Vol. XIII.1. *Commentaria in Aristotelem Graeca*. Berlin: Academiae Litterarum Regiae Borussicae, 1898.

Diels, Hermann, ed. *Simplicii In Aristotelis Physicorum Libros Quattuor Priores Commentaria*. Vol. IX. *Commentaria in Aristotelem Graeca*. Berlin: Academiae Litterarum Regiae Borussicae, 1882.

———, ed. *Simplicii In Aristotelis Physicorum Libros Quattuor Posteriores Commentaria*. Vol. X. *Commentaria in Aristotelem Graeca*. Berlin: Academiae Litterarum Regiae Borussicae, 1885.

Hayduck, Michael, ed. *Simplicii In Libros Aristotelis De Anima Commentaria*. Vol. XI. *Commentaria in Aristotelem Graeca*. Berlin: Academiae Litterarum Regiae Borussicae, 1882.

———, ed. *Asclepii In Aristotelis Metaphysicorum Libros A-Z Commentaria*. Vol. VI.2. *Commentaria in Aristotelem Graeca*. Berlin: Academiae Litterarum Regiae Borussicae, 1888.

———, ed. *Alexandri Aphrodisiensis In Aristotelis Metaphysica Commentaria*. Vol. I. *Commentaria in Aristotelem Graeca*. Berlin: Academiae Litterarum Regiae Borussicae, 1891.

———, ed. *Ioannis Philoponi In Aristotelis De Anima Libros Commentaria*. Vol. XV. *Commentaria in Aristotelem Graeca*. Berlin: Academiae Litterarum Regiae Borussicae, 1897.

⁴³ For an excellent overview of the history and work of the Berlin Academy, see: Karl Praechter, “Review of the *Commentaria in Aristotelem Graeca*,” in *Aristotle Transformed: The Ancient Commentators and Their Influence*, ed. Richard Sorabji, 2nd Edition (New York: Bloomsbury Academic, 2016), 35–60.

- Heinze, Ricardus, ed. *Themistii In Libros Aristotelis De Anima Paraphrasis*. Vol. V.3. Commentaria in Aristotelem Graeca. Berlin: Academiae Litterarum Regiae Borussicae, 1899.
- Kalbfleisch, Carolus, ed. *Simplicii In Aristotelis Categorias Commentarium*. Vol. VIII. Commentaria in Aristotelem Graeca. Berlin: Academiae Litterarum Regiae Borussicae, 1907.
- Kroll, Guilelmus, ed. *Syriani In Metaphysica Commentaria*. Vol. VI.1. Commentaria in Aristotelem Graeca. Berlin: Academiae Litterarum Regiae Borussicae, 1902.
- Schenkl, Henricus, ed. *Themistii In Aristotelis Physica Paraphrasis*. Vol. V.2. Commentaria in Aristotelem Graeca. Berlin: Academiae Litterarum Regiae Borussicae, 1900.
- Vitelli, Hieronymus, ed. *Ioannis Philoponi In Aristotelis Physicorum Libros Quinque Posteriores Commentaria*. Vol. XVII. Commentaria in Aristotelem Graeca. Berlin: Academiae Litterarum Regiae Borussicae, 1888.
- , ed. *Ioannis Philoponi In Aristotelis Physicorum Libros Tres Priores Commentaria*. Vol. XVI. Commentaria in Aristotelem Graeca. Berlin: Academiae Litterarum Regiae Borussicae, 1887.
- , ed. *Ioannis Philoponi In Aristotelis Libros De Generatione Et Corruptione Commentaria*. Vol. XIV.2. Commentaria in Aristotelem Graeca. Berlin: Academiae Litterarum Regiae Borussicae, 1897.

Most all of these works now have been translated into English through the *Ancient*

Commentators on Aristotle project out of King's College London, directed by Richard Sorabji.⁴⁴

All English citations from the ancient commentators should be assumed to be from the specific volume in question. In cases where I have modified a citation, it has been noted in the footnote along with the translator's name. The volumes utilized are as follows:

- Baltussen, Han, Michael Atkinson, Michael Share, and Ian Mueller. *Simplicius: On Aristotle Physics 1.5-9*. New York: Bloomsbury Academic, 2012.
- Blumenthal, H. J. "*Simplicius*": *On Aristotle On the Soul 3.1-5*. Ithaca, NY: Cornell University Press, 2000.
- Caston, Victor. *Alexander of Aphrodisias: On the Soul: Part I: Soul as Form of the Body, Parts of the Soul, Nourishment, and Perception*. New York: Bloomsbury Academic, 2012.

⁴⁴ The project website may be accessed via the following link: <http://www.ancientcommentators.org.uk>.

- Charlton, William. *"Philoponus": On Aristotle On the Soul 3.1-8*. Ithaca, NY: Cornell University Press, 2000.
- . *Philoponus: On Aristotle On the Soul 2.1-6*. Ithaca, NY: Cornell University Press, 2005.
- . *Philoponus: On Aristotle On the Soul 2.7-12*. Ithaca, NY: Cornell University Press, 2005.
- Cohen, S. Marc, and Gareth B. Matthews. *Ammonius: On Aristotle Categories*. Ithaca, NY: Cornell University Press, 1991.
- Dillon, John, and Dominic O'Meara. *Syrianus: On Aristotle's Metaphysics 13–14*. Ithaca, NY: Cornell University Press, 2006.
- Dillon, John, and Dominic J. O'Meara. *Syrianus: On Aristotle Metaphysics 3-4*. Ithaca, NY: Cornell University Press, 2008.
- Dooley, E. W. *Alexander of Aphrodisias: On Aristotle Metaphysics 1*. Ithaca, NY: Cornell University Press, 1989.
- . *Alexander of Aphrodisias: On Aristotle Metaphysics 5*. Ithaca, NY: Cornell University Press, 1993.
- Edwards, Mark. *Philoponus: On Aristotle Physics 3*. Ithaca, NY: Cornell University Press, 1994.
- Fleet, Barrie. *Simplicius: On Aristotle Categories 7-8*. Ithaca, NY: Cornell University Press, 2002.
- Gaskin, Richard. *Simplicius: On Aristotle Categories 9-15*. Ithaca, NY: Cornell University Press, 2000.
- Hagen, Charles. *Simplicius: On Aristotle Physics 7*. Ithaca, NY: Cornell University Press, 1994.
- Huby, Pamela, and Carlos Steel. *Priscian: On Theophrastus on Sense-Perception with "Simplicius": On Aristotle On the Soul 2.5-12*. Ithaca, NY: Cornell University Press, 1997.
- Lettinck, Paul, and J. O. Urmson. *Philoponus: On Aristotle Physics 5-8 with Simplicius: On Aristotle on the Void*. Ithaca, NY: Cornell University Press, 1994.
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Todd, Robert B. *Themistius: On Aristotle On the Soul*. Ithaca, NY: Cornell University Press, 1996.

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Urmson, J. O. *Simplicius: On Aristotle Physics 5*. Ithaca, NY: Cornell University Press, 1997.

Urmson, J. O., and Peter Lautner. *Simplicius: On Aristotle Physics 3*. Ithaca, NY: Cornell University Press, 2001.

Finally, for Aquinas I have relied on the standard English translations, specifically:

Blackwell, Richard J., Richard J. Spath, and W. Edmund Thirlkel. *Thomas Aquinas: Commentary on Aristotle's Physics*. Revised Edition. Norte Dame, IN: Dumb Ox Books, 1999.⁴⁵

Pasnau, Robert. *Thomas Aquinas: A Commentary on Aristotle's De Anima*. New Haven, CT: Yale University Press, 1999.⁴⁶

For the Latin of Aquinas, which I have cited where I thought pertinent, I have relied exclusively on the critical editions digitized and corrected by the *Aquinas Institute*.⁴⁷ These corrected critical editions are as follows:

Aquinas, Thomas. *Commentaria in Octo Libros Physicorum Aristotelis*. Vol. 2. Sancti Thomae de Aquino Opera Omnia Iussu Leonis XIII P. M. Edita. Rome: Ex Typographia Polyglotta S. C. de Propaganda Fide, 1884.

Aquinas, Thomas. *Sentencia Libri De Anima*. Edited by R. A. Gauthier. Vol. 45.1. Sancti Thomae de Aquino Opera Omnia Iussu Leonis XIII P. M. Edita. Rome/Paris: Commissio Leonina/Librairie Philosophique J. Virm, 1984.

0.5 Acknowledgments

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⁴⁵ Following other scholars, I refer to this throughout as *Expositio libri Physicorum*.

⁴⁶ I refer to this throughout by its Latin title, *Sentencia Libri De Anima*.

⁴⁷ These digitized versions can be found online at <https://aquinas.cc>.

Biola University in 2008 in which the *Nicomachean Ethics* was a central and required reading. At the time, I found Aristotle to be exhilarating and insightful while yet frustrating and confusing, much as I do now—though close study often diminishes both the frustration and confusion (a valid principle of life itself). I am grateful for that introduction to Aristotle by Dr. Horner as well as the life lesson.

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CHAPTER 1: THE COMPOSITE PICTURE OF CHANGE

Chapter Contents:

- 1.1 Introduction: Perception as Change in *De Anima*
 - 1.2 Intertextuality and the Relationship between *Physics* 3.1-3 and 5.1-2
 - 1.3 The Composite Picture of Change: *Physics* 3.1-3 and 5.1-2
 - 1.3.1 *Physics* 3.1-3: Change as Categorical
 - 1.3.2 *Physics* 3.1-3: Change as Incomplete Actuality
 - 1.3.2.1 Two Key Features of Aristotle's Definition of Change
 - 1.3.2.2 The Final Feature of the Account: The *Qua* Clause
 - 1.3.3 *Physics* 3.1-3: Change as Form Transmission
 - 1.3.4 *Physics* 3.1-3: Change as between Agents and Patients
 - 1.3.5 *Physics* 5.1-2: The Five Requirements for Change
 - 1.3.6 *Physics* 5.1-2: The Subject of Change
 - 1.3.7 *Physics* 5.1-2: The Four Logical Species of Change
 - 1.3.8 *Physics* 5.1-2: Μεταβολή, Κίνησις, and the Four Categories of Change
 - 1.3.8.1 The Relationship Between the *Physics* and *De Anima*
 - 1.3.8.2 Limiting Change: The Criterion
 - 1.3.8.3 Limiting Change: Just Substance, Quality, Quantity, and Place
 - 1.3.9 *Physics* 3.1-3 and 5.1-2: Putting it all together
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1.1 Intertextuality and the Relationship between *Physics* 3.1-3 and 5.1-2

Change is a major topic of discussion in the eight books of Aristotle's *Physics*. According to the ancient testimony, internal evidence, and various intertextual references in the *Corpus Aristotelicum* itself, *Physics* as we now possess it is most likely a combination of two separate but conceptually related treatises, labeled by Aristotle as *On Nature* (Περὶ φυσικά) and *On Change* (Περὶ κινήσεως).⁴⁸ The exact place where ancient editors spliced these two treatises together is (and has been) a matter of contention, but the most reasonable view by my lights

⁴⁸ See, e.g., *Phys.* 7.5 257a34-b1 for Περὶ φυσικά and *GC* 1.3 318a3-4 for Περὶ κινήσεως. See also the recent comment of Sebastian Odzuck: "A consensus exists that what we call the *Physics* today consists of at least two originally independent parts: a treatise dealing primarily with the principles of nature and another which focuses on examining the phenomenon of change," Sebastian Odzuck, *The Priority of Locomotion in Aristotle's Physics* (Göttingen: Vandenhoeck & Ruprecht, 2014), 17. See note 12 for a survey of the limited scholarship which has been done on this topic.

seems to be that the division occurs *after* Book 4.⁴⁹ On this view, *On Nature* refers to Books 1-4 while *On Change* refers to Books 5-8.⁵⁰ Why it is that these works were stitched at the seams as it were, is clear to anyone who has read them: both focus heavily on *change*, albeit for different reasons.⁵¹

The reason we mention this division of the *Physics* is because our aim in this chapter is to elucidate what we will call Aristotle's 'composite account of change,' and that account arises primarily from two places in the *Physics* which come from separate treatises, *viz.*, 3.1-3 and 5.1-2.⁵² In addition, there is material in Books 1 and 6-8 of the *Physics* which will become important for us later. While I typically think we ought to assume the compatibility of two separate works of the same writer on the same subject in the absence of evidence to the contrary,⁵³ it is especially incumbent upon us here to ensure that the data coming from two separate works

⁴⁹ For an able defense of this division which was held in antiquity by Nicolaus of Damascus, Porphyry, John Philoponus and more recently by W. D. Ross and C. D. C. Reeve among others, see: Odzuck, 15–24.

⁵⁰ See the persuasive and exacting analysis in Odzuck, 15–31. For copious textual references to these two works which significantly complicate the picture, see W. D. Ross, *Aristotle's Physics. A Revised Text with Introduction and Commentary* (Oxford, UK: Clarendon Press, 1936), 2–3.

⁵¹ Cf. Odzuck, *The Priority of Locomotion in Aristotle's Physics*, 27. "While *On Nature* [books 1-4] primarily deals with change only insofar as it is important in gaining an understanding of nature as the source of the change that things have within them, the treatise *On Change* [books 5-8] aims to develop a general understanding of change as a fundamental phenomenon in the cosmos that is graspable through scientific inquiry."

⁵² While *Physics* 1.7 is of some importance for us in regard to the composite account of change such that it will come up in our discussions, the project is different from that of either *Physics* 3.1-3 or 5.1-2 such that it ends up being of limited utility for us given our aims. In *Physics* 1.7 Aristotle addresses the problem of *how* change is possible without falling into the errors of either Parmenides or the early physicists (see *Phys.* 1.2-4; for this same framing of 1.7, see Sarah Waterlow, *Nature, Change, and Agency in Aristotle's Physics: A Philosophical Study* (Oxford University Press, 1982), 9–10). He does this by introducing his hylomorphism which immediately resolves the problem at hand, but he leaves unanswered the question of *what* exactly change is and how it is to be classified or categorized. These secondary issues are precisely those he takes up in *Physics* 3.1-3 and 5.1-2 respectively, however, recapitulating parts of 1.7 as he goes. Both sections assume the hylomorphic solution posed in 1.7, but only 3.1-3 offers a definition of change and an explanation of the respective roles of agent and patient, while only 5.1-2 offers an exhaustive analysis of the various sorts of change which fall under the specific confines of 3.1-3. It is difficult, therefore, to see just what *Physics* 1.7 could provide us in terms of the composite account which is not already contained in 3.1-3 and 5.1-2. As such, we will largely focus on *Physics* 3.1-3 or 5.1-2, only invoking 1.7 where necessary. For a very similar approach as our own which neglects *Physics* 1.7, see Ruth Glasner, *Averroes' Physics: A Turning Point in Medieval Natural Philosophy* (New York: Oxford University Press, 2009), 109–12.

⁵³ We might call this 'the hermeneutical principle of charity'. On the principle of charity more broadly, see Simon Blackburn, *The Oxford Dictionary of Philosophy*, 3rd Edition (New York: Oxford University Press, 2016), 79.

nevertheless forms a coherent whole.⁵⁴ Assuming that *Physics* 3.1-3 forms an essential part of Books 1-4 and is thus compatible with their content and that the same can be said for *Physics* 5.1-2 with respect to Books 5-8,⁵⁵ let us suggest that if one can show that *Physics* 3.1-3 and 5.1-2 are mutually reliant and even reinforcing, then so is the whole of which they are parts. And let us further suggest that if they are mutually reliant and reinforcing, then they are *ipso facto* conceptually compatible. With this strategy in mind, we now examine four interrelated points which make our case that though they are separate treatises they ought to be read together.

First, Aristotle begins *Physics* 5.1 by making divisions to change without first defining it, only to say twenty-six Bekker lines later that he has “stated earlier what change is” (*Phys.* 5.1 224b10-11).⁵⁶ If Aristotle is not here referring to his definition at *Physics* 3.1 201a10-11 as commentators are generally agreed,⁵⁷ then one is at a loss as to that to which he is referring. This is especially so given the abrupt, non-definitional start of *Physics* 5.1 along with the other references to the *Physics* 3.1 definition given in the culminating portion of *On Change* in Book 8.⁵⁸ Thus, our first point is this: *Physics* 5.1-2 is clearly building on the theoretical framework developed in *Physics* 3.1-3, for if not then *Physics* 5.1-2 is inexplicable. Second, the divisions made in *Physics* 5.1 and defended in 5.2 are not only intimately connected to *Physics* 3.1-3, but if not taken as a whole, leave many things Aristotle says elsewhere about change inexplicable,

⁵⁴ That they do form a coherent whole has undoubtedly been the standard view. See e.g., Ross, *Aristotle's Physics. A Revised Text with Introduction and Commentary*, 3: “Aristotle thought of the whole of the *Physics* as forming a unit.” The exception to this for Ross is *Physics* 7, but we will deal with this book in a later chapter.

⁵⁵ This is undoubtedly the case. *Physics* 3.1-3 presupposes content from Books 1 and 2 and is necessary for the content of Book 4. *Physics* 6 and 7, on the other hand, presuppose content from 5.1-2, and the culmination of the treatise in Book 8 would be impossible without the distinctions made in Book 5. For a narrative account of the contents and interrelations of these Books, see Odzuck, *The Priority of Locomotion in Aristotle's Physics*, 25–31.

⁵⁶ τί μὲν οὖν ἐστὶν ἡ κίνησις, εἴρηται πρότερον.

⁵⁷ See, e.g., Themistius, in *Phys.* 165.19-166.2, 166.6-11, Philoponus, in *Phys.* 510.7-14, Simplicius, in *Phys.* 807.30-808.3, Aquinas, *Expositio libri Physicorum* 5.1.644, Philip. H. Wicksteed and Francis. M. Cornford, *Aristotle: The Physics*, vol. 1, The Loeb Classical Library (Cambridge, MA: Harvard University Press, 1934), 188, Hippocrates George Apostle, *Aristotle's Physics* (Grinnell, IA: The Peripatetic Press, 1980), 269 n. 10, and C. D. C. Reeve, *Aristotle: Physics* (Indianapolis, IN: Hackett, 2018), 282, n. 502.

⁵⁸ See esp. *Physics* 8.1 251a8-10 and 8.5 257a34-b9.

including claims made in *Physics* 3.1-3. For example, Aristotle claims in *Physics* 3.1 that “what changes always does so either with respect to substance, quantity, quality, or place” (200b33-35),⁵⁹ for “there is no change beyond these things” (200b32-33).⁶⁰ The argument for this claim is not advanced until *Physics* 5.1-2 225b5-226a26, however. Thus, if *Physics* 3.1-3 is read in isolation from *Physics* 5.1-2, despite the fact that they were originally written as parts of two separate treatises, then not only can one not make proper sense of *Physics* 5.1-2 (my first point, above), but neither can one make sense of *Physics* 3.1-3. Hence my second point: *Physics* 3.1-3 and 5.1-2 are mutually reinforcing and it is only when taken together that we find anything like a composite account of change implied in both passages.

Third, there is compelling evidence from *Metaphysics* K.9-12 that Aristotle himself takes *Physics* 3 and 5 to comprise his composite account of change. *Metaphysics* K consists of brief summaries of the contents of Books B, Γ, and E of the *Metaphysics*, as well as nearly word-for-word extracts of portions of Books 3 and 5 of the *Physics*.⁶¹ What is most interesting is that the *Physics* extracts from K.9-12 consist of portions of *Physics* 3 and 5 but of no other books of the *Physics*. Hence, K.9 recapitulates *Physics* 3.1-3, K.10 *Physics* 3.4-8 on the infinite, and K.11-12 primarily *Physics* 5.1-2, with a brief segment recapitulating the definitions worked out in *Physics* 5.3-6. Most importantly for our purposes here is the fact that excerpts devoted to change from K.9 and K.11-12 derive *entirely* from *Physics* 3.1-3 and 5.1-2.⁶² W. D. Ross conjectures from the word-for-word treatment “down to the very particles” that it is mostly likely the case that “these

⁵⁹ μεταβάλλει γὰρ αἰεὶ τὸ μεταβάλλον ἢ κατ’ οὐσίαν ἢ κατὰ ποσὸν ἢ κατὰ ποιὸν ἢ κατὰ τόπον. Unless otherwise noted, all translations of the *Physics* come directly from Reeve, *Aristotle: Physics*.

⁶⁰ οὐκ ἔστι δὲ κίνησις παρὰ τὰ πράγματα. Reeve translation, modified.

⁶¹ See Ross, *Aristotle’s Metaphysics*, 1924, 1:xxv.

⁶² Aristotle omits *Physics* 1.7 presumably due to its lack of distinctive content, which aligns precisely with our thinking on the matter as noted above.

exerts were made by Aristotle himself with a view towards a brief course on physical topics.”⁶³ This is surely strong evidence not just that the content from the two Books from separate treatises is mutually reinforcing, but that even Aristotle thought it to comprise a coherent whole of some sort—what we have called here the composite account of change. Fourth and finally, not only is the composite account of change from *Physics* 3.1-3 and 5.1-2 implied in many parts of the corpus,⁶⁴ but most importantly it is implied in *De Anima*, our focus in later chapters. Hence, at *De Anima* 1.3 406a12-13 Aristotle makes a claim concerning the categorization of change which is *only* made in *Physics* 5.1-2 and is omitted in *Physics* 3.1-3.⁶⁵ Moreover, he makes a claim concerning change at *De Anima* 2.5 417a16-17 which is *only* made in *Physics* 3.1-3 and is omitted in *Physics* 5.1-2.⁶⁶ Hence, our final point: in *De Anima* Aristotle is clearly assuming the composite account, not merely that of *Physics* 3.1-3 or 5.1-2. With these things in mind, let us now turn to that composite account as found *Physics* 3.1-3 and 5.1-2.

1.2 The Composite Account of Change: *Physics* 3.1-3 and 5.1-2

Aristotle defines change at *Physics* 3.1 201a10-11 as follows: “change is the actuality of that which potentially is, *qua* such.”⁶⁷ While terse, this definition is also rich in content and broad in application. We here note four features of Aristotle’s account in *Physics* 3.1-3 in which

⁶³ Ross, *Aristotle’s Metaphysics*, 1924, 1:xxvii.

⁶⁴ See, e.g., *De Caelo* 4.3 310a23, *GC* 1.4 319b31, 2.10 336a19, *Meta.* H.1 1042b4, Λ.2 1069b9, etc.

⁶⁵ While the claim in *De Anima* 1.3 406a12-13 will not make much sense at this point in the argument, I provide it now to satiate the reader’s curiosity. The claim is that κίνησις occurs in only three categories (quality, quantity, and place) and consists in four different types of change: increase, decrease, alteration, and locomotion. As for why the category of substance is excluded, see the argument below. That this is indicative of a narrower reading of κίνησις which can only come from the enhancement of *Physics* 3.1-3 via 5.1-2, see Ross, *Aristotle’s Physics. A Revised Text with Introduction and Commentary*, 7–8.

⁶⁶ Once again, the claim at *De Anima* 2.5 417a16-17 will not make much sense at this point in the argument, but I again provide it to satiate the reader’s curiosity. The claim is that κίνησις is an “incomplete actuality.” For details, see below.

⁶⁷ ἡ τοῦ δυνάμει ὄντος ἐντελέχεια, ἣ τοιοῦτον, κίνησις ἐστίν. Hussy translation, modified. For the definition elsewhere in the corpus, see: *Meta.* K.9 1065b15 “the actuality of what is in potentiality, *qua* such, is change (κίνησις)” (Reeve translation, modified). Cf. *Phys.* 8.5 257b8-9: “What is in potentiality proceeds to actuality, and change (κίνησις) is the incomplete actuality of what is changeable” (Reeve translation, modified).

his definition is imbedded. While this will allow us to grasp the content of his definition, it is incomplete insofar as it concerns the composite account of change. Nevertheless, what we gain here will allow us to integrate fairly seamlessly *Physics* 3.1-3 with the additions he makes in *Physics* 5.1-2. Now, for the four features which are as follows: (1) change as categorial, (2) change as both actuality and potentiality, (3) change as form transmission, and (4) change among agents and patients.

1.3.1 *Physics* 3.1-3: Change as Categorial

The first feature of Aristotle's account of change in *Physics* 3.1-3 is that it is intended to be situated among the categories.⁶⁸ For Aristotle, the categories are *more* than mere linguistic classifications.⁶⁹ They are, rather, categories of the most basic kinds of *beings* (τῶν ὄντων, *Cat.* 3 1a20).⁷⁰ In his canonical list in the *Categories*, we find the following list of ten: "Of things said without any combination, each signifies either substance (οὐσίαν)⁷¹ or quantity (ποσόν) or quality (ποιόν) or relative (πρός τι)⁷² or place (ποῦ)⁷³ or time (πότε)⁷⁴ or position (κεῖσθαι) or

⁶⁸ This is very evident in *Physics* 5.1-2 as well as is shown below.

⁶⁹ They may be linguistic categories, but not merely so. As with elsewhere, Aristotle here thinks language is indicative of reality itself. See e.g., *DA* 3.2 426a8-19. See too Shields, *Aristotle*, 47–49.

⁷⁰ Cf. the phrase in *Meta.* Δ.28 1024b13, "categories of being" (κατηγορίας τοῦ ὄντος). Cf. *Meta.* K.9 1065b8, "the categories of being" (τὰς τοῦ ὄντος κατηγορίας). See also *Meta.* Θ.10 1051a34-35: "The terms 'being' and 'non-being' are employed firstly with reference to the categories" (Ἐπεὶ δὲ τὸ ὄν λέγεται καὶ τὸ μὴ ὄν τὸ μὲν κατὰ τὰ σχήματα τῶν κατηγοριῶν).

⁷¹ Elsewhere Aristotle calls a substance (οὐσία) a "this" or τόδε. See, e.g., *Phys.* 3.1 200b35, 201a4, etc. Sometimes this is stylized as τόδε τι, a "this-something" or an individual. See esp., *Meta.* H.1 1042a26-31 and *DA* 2.1 412a6-9 for this meaning.

⁷² While foreign to those of us expecting Aristotle to speak of *relations* as opposed to *relatives*, this 'of' relation is nonetheless precisely what the category is. So, Ackrill: "Aristotle has no noun meaning 'relation'. 'A relative' translates a phrase [πρός τι] consisting of a preposition followed by a word which can function as the interrogative 'what?' or the indefinite 'something'. In some contexts the preposition will be rendered by 'in relation to' or 'related to'" (Akrill, *Aristotle's Categories and De Interpretatione*, 78; cf. p. 98). Cf. the same point made by Cornford in Philip. H. Wicksteed and Francis. M. Cornford, *Aristotle: The Physics*, vol. 2, The Loeb Classical Library (Cambridge, MA: Harvard University Press, 1934), 4.

⁷³ Also τόπος. See, e.g., *Phys.* 3.1 200b34.

⁷⁴ Aristotle also uses χρόνος to refer to time. See e.g., *Cat.* 6 4b20-25.

having (ἔχειν) or action (ποιεῖν) or being acted upon/passion (πάσχειν)” (*Cat.* 4 1b25-27).⁷⁵ As everything that is, presumably, can be classified into one of these categories (κατηγορίαι), change as something parasitic on—or even identical with—items in these categories (e.g., qualities and quantities, etc.) must also be so classified such that it does not itself constitute some eleventh category.⁷⁶ Hence, we find Aristotle saying, “there are just as many kinds of κίνησις

⁷⁵ Τῶν κατὰ μηδεμίαν συμπλοκὴν λεγομένων ἕκαστον ἦτοι οὐσίαν σημαίνει ἢ ποσὸν ἢ ποιὸν ἢ πρὸς τι ἢ ποὺ ἢ ποτὲ ἢ κεῖσθαι ἢ ἔχειν ἢ ποιεῖν ἢ πάσχειν. Barnes translation, modified. Cf. *Top.* 1.9 103b22-23 for the full list again.

⁷⁶ I say this to emphasize Aristotle’s position that any instance of change is “named” (ὀνομάζεται) after that which it is towards, i.e., the terminus or ‘form’ in question (*Phys.* 5.1 224b7-8). Not every commentator, however, took this position. Hence, in the Middle Ages there was a debate over where to classify change with respect to the ten categories given that Aristotle leaves this question unanswered in his chapter on change in the *Categories*, chapter 14. To see what is at stake in terms of ontological categorial analysis, I here summarize key parts of the medieval debate, relying exclusively on a recognized authority on these matters, Anneliese Maier, “The Nature of Motion,” in *On the Threshold of Exact Science: Selected Writings of Anneliese Maier on Late Medieval Natural Philosophy*, ed. Steven D. Sargent (Philadelphia: University of Pennsylvania Press, 1982), 21–39. First, change can be categorized based on the cause or changer, in which case change would be categorized as an instance of the category of action (ποιεῖν). Or second, it can be categorized based on the thing affected or changed, in which case it would be categorized as an instance of the category of being acted upon/passion (πάσχειν). Both of these options, Albert thought Aristotle took in *Categories* 9, a theory we will touch on later. Third, change can be categorized with reference to the goal of the change such that if the goal is a “flow” (*fluxus*) towards a quality like blackness then the change belongs to quality; or if the goal is a “flow” (*fluxus*) towards the quantity of larger then the goal is quantity, etc. If one takes option 3, one must now ask whether this *fluxus* a) belongs to the same category as the goal or “form” (i.e., quantity, quality, relative, etc.), or b) whether it is something in over and above that category. Option 3a is what Albert calls *forma fluens* or “form in a state of flux” and lists Averroes as a proponent of the position along with himself. I myself take this to be Aristotle’s position. Option 3b, on the other hand, Albert calls *fluxus formae* or “flowing of form” and lists Avicenna as its chief proponent. On this latter option, 3b, where we have a “flow of being” (*fluxus entis*), one can either conceive of this *fluxus* either as i) a principle which leads to a categorial result without itself being in a category, or ii) as a category in its own right, the *eleventh* Aristotelian category. Avicenna takes option 3ai, while option 3bii did not gain currency until the 1420s according to Maier, among Scotists such as Francis Meyronnes and William of Alnwick (*ibid.*, 29, 32 n. 20). Hence, on option 3a as embraced by Averroes, Albert, and the Scholastic tradition generally “motion [i.e., kinetic and metabolic change] and the form acquired as a result of it, coincide. Motion does not differ from form with respect to which (*secundum quam*) it occurs; motion and its goal are not only alike in essence, they are actually identical.... Thus for them the equation of motion and its goal (*terminus*) implies immediately and tacitly that motion is equivalent to a succession of distinct, temporary ‘goals’ (*termini*)” (*ibid.*, 29). Or as Cornford puts it, on option 3a “there is no such thing as Change in itself, apart from something that changes” (Wicksteed and Cornford, *The Physics*, 1:194 n. a). On option 3bii, on the other hand, change is “pure successiveness (*res pure successive*) or flux that is not reducible to other categories and must simply be affirmed in its uniqueness” (*ibid.*, 35). That a distinct category called “event” exists in many contemporary ontologies today “in addition to—or perhaps instead of—persisting objects” (E. J. Lowe, *A Survey of Metaphysics* (New York: Oxford University Press, 2002), 214) bears witness to the lasting influence of option 3bii *fluxus formae*, a clear forerunner of this position. For an example of an ontology which includes a category just for events or changes, see *ibid.*, 15-16. For the view that events just *are* changes see *ibid.*, 237-240. And for a discussion of various event ontologies that replace persisting objects with transient changes from Whitehead to Quine and Hartshorne, see *ibid.*, 232-237.

(change^k) and μεταβολή (change^m)⁷⁷ as there are kinds being” (*Phys.* 3.1 201a8-9).⁷⁸ And, in his summary of *Physics* 3.1-3 in *Metaphysics* K.9, “change (μεταβολή) is always in accord with the categories of being” (1065b7-8).⁷⁹ Nevertheless and seemingly without provocation, Aristotle insists that all genuine *change*, though not genuine *being*, occurs in only four of the categories: substance (οὐσία/τόδε), quantity (ποσόν), quality (ποιόν), and place (ποῦ/τόπον). For “there is no change (κίνησις) beyond the things mentioned” (*Phys.* 3.1 200b32-33).⁸⁰ And it is not just here, but this is a stipulation made throughout the corpus.⁸¹ As we will see below, however, the

⁷⁷ The terms κίνησις (change^k) and μεταβολή (change^m) are at times used as synonyms, and at other times as distinct forms of change. The Latin *motum* regularly translates the Greek κίνησις; the Latin *mutation*, on the other hand, regularly translates μεταβολή (see, e.g., Aquinas, *Expositio libri Physicorum*). Traditionally, the former—due to the influence of the Latin translations of Aristotle—was translated into English as “motion,” while the latter was translated as “change.” This is extremely misleading given that *all* change (not just locomotion) is to be cataloged as “motion” on this score (see, e.g., *Cat.* 14 15a14-15), and it creates a bifurcation between κίνησις (“motion”) and μεταβολή (“change”) which is not often called for in the text (see, e.g., *Phys.* 3.1). On the first point concerning the linguistic confusion, cf. Leibniz: “Aristotle’s definition [of κίνησις] is not as absurd as it is thought to be by those who do not understand that for him the Greek κίνησις did not signify what we call ‘motion’ but rather what we would express by the word ‘change,’ which is why he gives it such an abstract and metaphysical definition” (*New Essays on Human Understanding*, Book 3, Chap. 4). Translation from G. W. Leibniz, *Leibniz: New Essays on Human Understanding*, trans. Peter Remnant and Jonathan Bennett (Cambridge University Press, 1996). On the second point see Cornford in Wicksteed and Cornford, *The Physics*, 1934, 2:3 n. c. In keeping with contemporary usage, I will call both “change” (see, e.g., Ursula Coope, “Change and Its Relation to Actuality and Potentiality,” in *A Companion to Aristotle*, ed. Georgios Anagnostopoulos (Malden, MA: Wiley-Blackwell, 2009), 277–291), and will distinguish them if necessary either (1) either by superscription (i.e., μεταβολή = change^m and κίνησις = change^k) as some have done (see, e.g., Lettinck’s practice in Urmson and Lettinck, *Philoponus*) and I have done here, (2) by the compound “μεταβολή change” or “κίνησις change”, (3) simply by the Greek terms, “μεταβολή” and “κίνησις”, or (4) by referring to them as “metabolic change” and “kinetic change”.

⁷⁸ We find the same sort of claims in *Metaphysics* K.9 which, as mentioned previously, consists of a summary of *Physics* 3.1-3. Cf. *Meta.* K.9 1065b7-8 “change^m is always in accord with the categories of being” and 1065b13-14, “there are as many kinds of change^k and change^m as there are of being.” Reeve translation, modified.

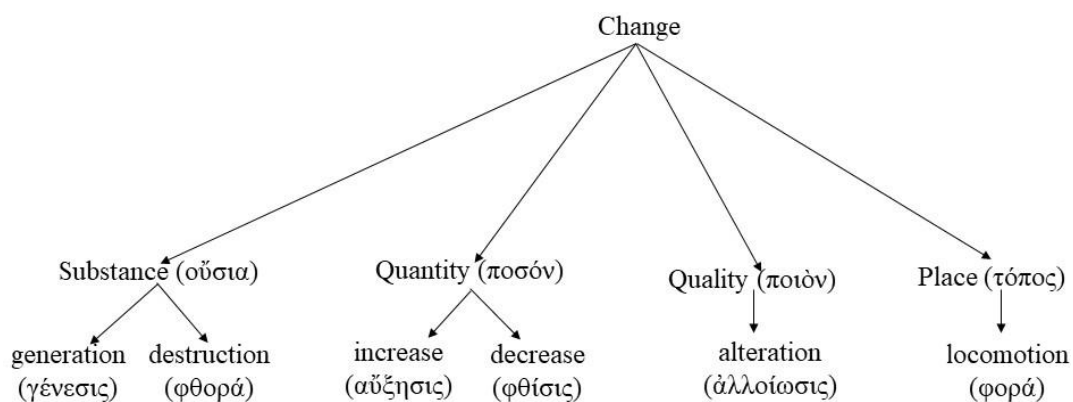
⁷⁹ μεταβάλλει γὰρ ἀεὶ κατὰ τὰς τοῦ ὄντος κατηγορίας.

⁸⁰ οὐκ ἔστι δὲ κίνησις παρὰ τὰ πράγματα. Reeve translation, modified.

⁸¹ See, e.g., *Meta.* H.1, 1042a32-b3, L.2 1069b9ff, *GC* 1.4 319b31ff, etc. Cf. e.g., Richard Sorabji, *Time, Creation, and the Continuum: Theories in Antiquity and the Early Middle Ages* (Ithaca, NY: Cornell University Press, 1983), 410: “Aristotle recognizes only four kinds of change as being changes in the full sense of the word.” These are the *only* “four genuine kinds of change” Aristotle recognizes (411). Cf. W. D. Ross, *Aristotle’s Metaphysics*, vol. 2 (Oxford, UK: Clarendon Press, 1924), 326: “Movement is always in respect of one or other of four categories—substance, quality, quantity, or place.” Cornford in Wicksteed and Cornford, *The Physics*, 1:190: “There are four classes of things that can change or move, and four corresponding kinds of change: (1) of substance, (2) of quality, (3) of quantity, and (4) of place.” (cf. Cornford in Wicksteed and Cornford, *The Physics*, 1934, 2:4). And Maier, “The Nature of Motion,” 22: “Scholastic-Aristotelian philosophy conceives of motion as the transition from potentiality to actuality or vice versa, and it therefore occurs in every formal category in which the distinction between actual and potential being can be made. According to Aristotle, there are four such categories: substance, quantity, quality, and place.” More on this anon.

restriction of change to four of the ten categories is explained in *Physics* 5.1-2, in addition to the introduction of some other distinctions in this regard.⁸²

Immediately after presenting his definition of change in *Physics* 3.1 201a10-11, Aristotle goes on to note further inter-categorical divisions he allows for his four sorts of change (3.1 201a11-16). He is clearer, however, in what was to become the locus classicus for these inter-categorical divisions of change in the Middle Ages in the *Categories*:⁸³ “There are six kinds of change (κίνησις): generation (γένεσις), destruction (φθορά), increase (αύξησις), decrease (φθίσις), alteration (ἀλλοίωσις), change of place (τόπος)” (*Cat.* 14 15a14-15).⁸⁴ These six sorts of change can be cataloged in the four allowed categories of change (i.e., substance, quantity, quality, and place) as follows:



If a change occurs, says Aristotle, it must be one of these. One quick note: Aristotle has been using two terms for “change” interchangeably at this point in the *Physics* (and in the *Categories*): κίνησις and μεταβολή from which we derive the English “kinetic” and “metabolic”. In a move

⁸² Cf. Simplicius’ remarks on this restriction in *Phys.* 3.1 in his commentary on the *Physics*, in *Phys.* 408.15-20: “But it is worth inquiring why... change is in only four kinds of being, substance, quality, quantity and place, and not also in the others.... This distinction was made in the *Categories* and he will take the trouble to demonstrate it in the fifth book of this work [i.e., the *Physics*].” For the *Categories* distinction, see immediately below.

⁸³ See the fascinating discussion of the Medieval debate over these divisions in: Harry Austryn Wolfson, *Crescas’ Critique of Aristotle: Problems of Aristotle’s Physics in Jewish and Arabic Philosophy* (Cambridge, MA: Harvard University Press, 1929), 498–503.

⁸⁴ Κινήσεως δέ ἐστιν εἶδη ἕξ· γένεσις, φθορά, αὐξησις, μείωσις, ἀλλοίωσις, κατὰ τόπον μεταβολή. All translations of the *Categories*, unless otherwise noted, are from Ackrill, *Aristotle’s Categories and De Interpretatione*.

that will become important for us later, he will distinguish them, but importantly, *not* until *Physics* 5.1-2.⁸⁵ For now, it is important to note that the definition we were introduced to at *Physics* 3.1 201a10-11 is the definition for *both* κίνησις and μεταβολή—and in the preceding discussion the terms should be thought of as synonymous. When and how kinetic and metabolic change are to be divided and distinguished will be made clear below.

1.3.2 *Physics* 3.1-3: Change as Incomplete Actuality

The second feature of Aristotle’s account of change in *Physics* 3.1-3 concerns its relation to actuality and potentiality. Aristotle acknowledges how difficult change is to define, noting that change itself is “indefinite” (ἀόριστόν, *Phys.* 3.2 201b24). The reason for this indefiniteness is that change (both κίνησις and μεταβολή) “cannot be posited unconditionally either as a potentiality of beings or as an actuality of them” (*Phys.* 3.2 201b27-29).⁸⁶ Change certainly *is* or *has* being, but in a certain sense change is also about what *is not*—that is, what *will* be but currently is not. When a caterpillar is in its cocoon *becoming* a butterfly—that is, coming to exemplify butterfly properties at the expense of exemplifying caterpillar properties—that necessarily means it is not *yet* a butterfly, as it does not *yet* possess and dispossess the requisite properties. In a sense it both *is* and *is not*. This is what it means for change to be *indefinite* (ἀόριστόν) or as he says at 3.2 201b31-32, an “incomplete actuality” (ἀτελὴς ἐνέργεια).⁸⁷ And

⁸⁵ Hence, even in as late of a passage in *On Nature* as *Physics* 4.10 218b19-20, when speaking on the nature of time in relation to change, Aristotle notes that “it makes no difference to us at present whether we speak of κίνησις or of μεταβολή” (Reeve translation, modified), as he has yet to distinguish them.

⁸⁶ οὔτε εἰς δύνανμιν τῶν ὄντων οὔτε εἰς ἐνέργειαν ἔστιν θεῖναι αὐτήν. Reeve translation, modified. Many translators mark a distinction between ἐντελέχεια (“actuality”) and ἐνέργεια, although I think this is entirely unnecessary. Here I read ἐνέργεια here as “actuality” rather than “activation” (as does Reeve) or “operation” (as does Hussey), a practice we will standardly adopt except in those instances where only “activity” or some other similar word will do for the sake of clarity. For justification for this move see the comment below.

⁸⁷ *Phys.* 3.2 201b31-32: ἢ τε κίνησις ἐνέργεια μὲν εἶναι τις δοκεῖ, ἀτελὴς δέ. Cf. *Phys.* 8.5 257b8-9 for ἀτελὴς ἐντελέχεια. On change occupying this middle state between potentiality and actuality, see *Phys.* 3.1 200b26-27 “Some things, then, are [a] actual only, [b] others potential, [c] others potential and actual.” ἔστι δὲ [τι] τὸ μὲν ἐντελεχεῖα μόνον, τὸ δὲ δυνάμει, τὸ δὲ δυνάμει καὶ ἐντελεχεῖα. Reading τὸ δὲ δυνάμει twice against the OCT but with Reeve, *Physics: Aristotle*, 240 n. 235; while a number of ancient manuscripts and authorities lack the second

this is precisely what Aristotle is trying to capture in his definition: that change is *both* about what is and what is not, while yet still existing or being in its own right.⁸⁸ And this Aristotle does with his hylomorphic language of potentiality and actuality⁸⁹ when he defines change (both kinetic and metabolic) as “the actuality (ἐντελέχεια) of that which potentially is (δυνάμει ὄντος), *qua* such” (3.1 201a10-11).⁹⁰ “*Qua* such” (ἢ τοιοῦτον) is later used interchangeably with “*qua* potential” (ἢ δυνατόν) at 201b5, and thus the definition will be standardly stated by us as “change is the actuality of that which potentially is, *qua* potentially.” Now, obviously, Aristotle cannot define change as an actuality outright. So, as noted above, Aristotle rejects defining change as either pure potentiality or pure actuality (*Phys.* 3.2 201b27-29), as it is instead “indefinite” (ἀόριστόν, *Phys.* 3.2 201b24). Moreover, if he had defined change as a pure

instance (i.e., Π, M, A^b, Alexander, Themistius, Philoponus, Simplicius, and Porphyry), it was present in the Arabo-Latin translation of Averroes and Aquinas (on the latter, see below) which itself came from an ancient Greek textual source with the double reading (see Ross, *Aristotle's Physics. A Revised Text with Introduction and Commentary*, 114). Moreover, *Meta.* K.9 begins with the parallel passage at 1065b5-6, which has the reading in our most ancient manuscript family; see W. Jaeger, ed., *Aristotelis Metaphysica*, Scriptorum Classicorum Bibliotheca Oxoniensis (Oxford: Clarendon Press, 1957), ad loc. As such, Ross postulates that it may be missing in the *Physics* texts because of error or deliberate copyist correction, though he eventually sides against that possibility (Ross, *Aristotle's Physics. A Revised Text with Introduction and Commentary*, 534–35). Nevertheless, we take Reeve's reading as genuine. On this score, to be [a] actual only or [b] potential only is to be something *definite*. But to be [c] *both* actual and potential *simultaneously*—that is precisely what is means to be *indefinite*. Cf. Aquinas, *Expositio libri Physicorum*, 3.1.280, and esp. 285: “To be only in act is one thing, to be only in potency is another thing, and to be a mean between potency and act is third thing. That, then, which is in potency only is not yet moved [changed]. That which is in perfect act is not moved [changed], but has already been moved [changed]. That, therefore, is moved [changed] which is a mean between pure potency and act, which is, indeed, partly in potency and partly in act.... Hence, motion [change] is neither the potency of that which exists in potency, nor the act of that which exists in act. Rather, motion [change] is the act of that which exists in potency, such that its ordination to its prior potency is designated by what is called ‘act,’ and its ordination to further act is designated by what is called ‘existing in potency.’” See also the long passage in Simplicius (*in Phys.* 397.25-401-4) where, with Alexander and Themistius and *against* Porphyry, he argues for the exact same point, ending with “this assumption which divides things into those that are actual and those both actual and potential is of use to him, as I said, towards giving his definition of change” (401.2-4).

⁸⁸ Aristotle introduced us to his hylomorphism in *Physics* 1.7 precisely in order to escape the dilemma of the Eleatics such as Parmenides which stipulated that change must either come from being or nonbeing, “both of which are impossible. For what is cannot come to be, since it already is, while from what is not nothing can come to be” (ἐκ δὲ τούτων ἀμφοτέρων ἀδύνατον εἶναι· οὔτε γὰρ τὸ ὄν γίγνεσθαι (εἶναι γὰρ ἤδη) ἔκ τε μὴ ὄντος οὐδὲν ἂν γενέσθαι, *Phys.* 1.8 190a29-31). He introduces us to it again in his definition. See this supposition of this exact same framing of Aristotle's hylomorphic solution in Waterlow, *Nature, Change, and Agency in Aristotle's Physics*, 9–10.

⁸⁹ See the discussion on *Phys.* 1.7, where hylomorphism is introduced, and its relationship to Aristotle's definition with the respect to the actuality-potentiality distinction below.

⁹⁰ ἢ τοῦ δυνάμει ὄντος ἐντελέχεια, ἢ τοιοῦτον, κίνησις ἐστίν. Hussey translation.

actuality, it would be a false definition. The word “change” is *not* standardly meant by Aristotle to tag the resulting *state* or *product* (say, being red), but the *process* (becoming red) by which the resulting state is achieved, despite his designation of it as an actuality which itself indicates a state or product.⁹¹

While he does occasionally use “change” to refer to the product (e.g., baked bread) rather than the process (e.g., baking bread), this is not his normal practice⁹² except, in some places, in

⁹¹ This is sometimes called “the product puzzle”. See Andreas Anagnostopoulos, “Change in Aristotle’s Physics 3,” *Oxford Studies in Ancient Philosophy* 39 (2010): 33–34. See too L.A. Kosman, “Aristotle’s Definition of Motion,” *Phronesis* 14, no. 1 (1969): 45.

⁹² See, for example, *Phys.* 5.4 228b11–15 where, unsurprisingly, process change is referred to as “incomplete” (ἀτελής) while product change is referred to as “complete” (τέλειος), undoubtedly referring to the actuality in both cases as we will soon see. “Further, [a κίνησις (noun supplied from 228b11)] is also said to be one when it is *complete* (τέλειος), whether in genus, in species, or in substance, and, just as in the other cases, completeness (τέλειον) and wholeness (ὅλον) belong to what is one. Sometimes, though, even an *incomplete* (ἀτελής) [a κίνησις (supplied from 228b11)] is said to be one, but only if it is continuous.” τίς μὲν οὖν κίνησις ἀπλῶς μία, εἴρηται· ἔτι δὲ λέγεται μία καὶ ἡ τέλειος, ἐάν τε κατὰ γένος ἐάν τε κατ’ εἶδος ἢ ἐάν τε κατ’ οὐσίαν, ὥσπερ καὶ ἐπὶ τῶν ἄλλων τὸ τέλειον καὶ ὅλον τοῦ ἐνός. ἔστι δ’ ὅτε καὶ ἀτελής ἢ μία λέγεται, ἐὰν μόνον ἢ συνεχής. It is clear that κίνησις is being used for both the *product* and the *process* of change here. See Simplicius, in *Phys.* 893.12–23: “He adds another, second property of a single change. ‘Complete’ applies not only to the numerically one, which is strictly one, but also to that which is said to be one in genus and in species. For he says that we call a change one more strictly when it is also complete, whether the one taken is so in genus or in species or numerically, which he called ‘in existence.’ For change of place from one place to another is generic, and when this becomes complete, i.e., *when what is moving arrives at that towards which it was tending and the change becomes complete, then we say that it is one*” (italics mine). Note: a change is most strictly *a* change (i.e., one) when it is “complete” and its potential has been *exhausted*. This is clearly κίνησις^ω. What of the “incomplete”? Simplicius continues (894.6–10): “For just as we do not say that something exists *when it is coming to be and it is incomplete in its being*, so also it is not possible to call it one. For we do also call something incomplete one, as we call a seed one and an embryo one, but not as being one man, but as that which it is completely, a single seed because a complete seed, and an embryo likewise. *In general the incomplete is potential*, but what is potentially something can become many things and not this alone” (italics mine). The point here is not a change’s “oneness”, but how κίνησις can be used ambiguously. Cf. *EN* 10.4 1174a19–23: “For every change (κίνησις), such as constructing a building, takes time, and aims at some end, and is complete (τελεία) when it produces the product it seeks, or [in other words, is complete] in this whole time [that it takes]. And in the parts and in the time they are all incomplete (ἀτελεῖς), and they differ in form from the whole and from each other” (Irwin translation, modified). ἐν χρόνῳ γὰρ πᾶσα κίνησις καὶ τέλους τινός, οἷον ἡ οἰκοδομική, καὶ τελεία ὅταν ποιήσῃ οὐ ἐφίεται. ἢ ἐν ἅπαντι δὴ τῷ χρόνῳ ἢ τούτῳ. ἐν δὲ τοῖς μέρεσι καὶ τῷ χρόνῳ πᾶσαι ἀτελεῖς, καὶ ἕτεραι τῷ εἶδει τῆς ὅλης καὶ ἀλλήλων. Complete κίνησις is product change^ω, while incomplete change is a process—the designation “change” is appropriate for both. See too, *Phys.* 6.5 236a7–10, for the same ambiguity with μεταβολή: “But there are two ways of talking about that in which something has first changed (πρώτῳ μεταβέβληκε). On the one hand it may mean the first time at which the change (μεταβολή) is completed (ἐπετελέσθη)—the moment when it is correct to say ‘it has changed’ (μεταβέβληκεν); on the other hand it may mean the first time at which it began to change (μεταβάλλειν).” λέγεται δὲ τὸ ἐν ᾧ πρώτῳ μεταβέβληκε διχῶς, τὸ μὲν ἐν ᾧ πρώτῳ ἐπετελέσθη ἡ μεταβολή (τότε γὰρ ἀληθὲς εἰπεῖν ὅτι μεταβέβληκεν), τὸ δ’ ἐν ᾧ πρώτῳ ἤρξατο μεταβάλλειν. Again, see Simplicius, in *Phys.* 984.7–12: “‘The first’ in which something has changed is spoken of in two ways: that to which what is changing was changing, in which it both has *stopped* from changing and is [in a state of having] changed in it; and also that ‘in which first [what was changing] began’ its change and [the process of] changing is said [to be the first]” (italics,

the case of alteration (ἀλλοίωσις).⁹³ Instead, we should assume that, unless the context calls for it, when Aristotle uses the terms κίνησις or μεταβολή, he is referring to the process of change which his definition attempts to pick out—not the product of that change—despite the common locution for both.⁹⁴ We follow this same practice throughout this present work. Hence, when referring to the process of change (e.g., walking) we use the terms “κίνησις,” “μεταβολή,” “change,” etc. or just “process change.” When, on the other hand, referring to the product of a change (e.g., having walked), then we use the terms “κίνησις^ω,” “μεταβολή^ω,” “change^ω,” etc., or just “product change^ω,” always with the Greek omega (i.e., “ω”) superscript.

But back to our question. Aristotle defines change at *Physics* 3.1 201a10-11 as “the actuality of that which potentially is, *qua* potentially.” How can this definition pick out change as

mine; brackets in original translation). As Simplicius notes a few lines later, “the end of a change is not [itself] a change” (984.17; brackets in original translation). Our point is not to focus on what “first” or “primary” (πρώτῳ) change is supposed to be here, but on the clear ambiguity in the nominative, singular noun μεταβολή in 236a8. When μεταβολή is considered as “complete”, it is a *product* currently at its end, despite the term’s usual reference to a *process* (i.e., “incomplete actuality”). On this point, see too Aristotle’s *Protrepticus*, Fragment 14 in W. D. Ross, ed., *Aristotelis Fragmenta Selecta*, Scriptorum Classicorum Bibliotheca Oxoniensis (London: Oxford University Press, 1955), 49: “The animal that is awake must be called ‘living’ truly and chiefly, and the sleeping one must be called such because of its ability to change [μεταβάλλειν] into the motion [κίνησιν] in reference to which we call it awake—and perceiving some given thing because of this.” This translation is that of George A. Blair, “The Meaning of ‘Energeia’ and ‘Entelecheia’ in Aristotle,” *International Philosophical Quarterly* 7, no. 1 (1967): 104–5, who goes on to comment that Aristotle “uses ‘motion’ (κίνησις) as the synonym for ἐνέργεια, and *not* for the change that precedes this motion (i.e. the transition from potency to activity). Later on Aristotle will use ‘motion’ [κίνησις] to refer to the transition, but then he expressly says that is not motion [κίνησις] [i.e., at *Meta.* Θ.6 1048b28-35]” (ibid., 105). Again, the term can be used to indicate both a process and a product, even if the former dominates.

⁹³ See *Phys.* 7.3 247a3-5: “Virtue (ἀρετή) puts its possessor in a good condition with regard to his proper affections, whereas vice (κακία) puts it in a bad one. So these will not be alterations (ἀλλοιώσεις) either, and neither, then will the losing (ἀποβολαί) or acquiring (λήψεις) of them be.” ἐτι δὲ ἡ μὲν ἀρετὴ εὖ διατίθησι πρὸς τὰ οἰκεῖα πάθη, ἡ δὲ κακία κακῶς. ὥστ’ οὐδ’ αὐταὶ ἔσονται ἀλλοιώσεις· οὐδὲ δὴ αἱ ἀποβολαὶ καὶ αἱ λήψεις αὐτῶν. If the “losing” or “acquiring” of virtue or vice refers to the *process* of loss or acquisition, then to what does “alteration” (ἀλλοίωσις) refer if not the *product*? See Robert Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII* (New York: Cambridge University Press, 1990), 210–11: “We should not lightly conclude that he has fallen into a primitive confusion of *process* with *product*. Perhaps Aristotle has been tempted into an inaccurate broadness of expression by his emphasis on virtues’ and vices’ character as (im)passivity to change.... This is unfortunate, but far preferable to the idea that he really is committed to the crazy notion that states [i.e., products] are somehow changes [i.e., processes]” (italics, mine). So too with ἀλλοίωσις, do we find Aristotle capable of process *and* product usage. For a convincing case that Aristotle does indeed use ἀλλοίωσις to refer to product change see Bernd Manuwald, *Das Buch H Der Aristotelischen “Physik,”* Beiträge Zur Klassischen Philologie 36 (Meisenheim am Glan: Anton Hain Verlag, 1971), 71.

⁹⁴ Generally, we will assume that Aristotle is referring to a *process* rather than a product unless he flags to us that he is employing the non-standard product usage in some way, perhaps with a τις (*DA* 2.5 416b34, *De Somno* 1 454a9), a πως (*Phys.* 7.2 244b11), or some other indicator including broader context.

as something “indefinite,” a *process*, by referring to it as an actuality (ἐντελέχεια or ἐνέργεια) which is a *state*?⁹⁵ Is the definition void of content as some have suggested, or can sense be made of it?⁹⁶ L.A. Kosman, in a now classic article, quite forcefully put forth the traditional interpretation of the definition’s meaning with its insights into the nature of change, an interpretation that centers on the insight that change is an incomplete sort of actuality (*Phys.* 201b31-2).⁹⁷ There are two key features of Kosman’s interpretation worth highlighting here: the sense of actuality and the potentiality for being. Our discussion of both of these points leads us to a third concerning the function of the *qua* clause, which will allow us to finally state Kosman’s view in full.

1.3.2.1 Two Key Features of Aristotle’s Definition of Change

⁹⁵ In *Phys.* 3.1 201a10-11 change is defined in terms of ἐντελέχεια, while at *Meta.* K.9 1065b16 the same definition is given substituting ἐνέργεια. Nothing hangs on this difference as both refer to a *state* of actuality, though we discuss the terms below.

⁹⁶ Edward Hussey, while dissenting from this opinion, notes how “some have called it a piece of mere verbal juggling, empty of real content.” Edward Hussey, *Aristotle’s Physics: Books III and IV* (New York: Oxford University Press, 1983), xiii. Cf. e.g., Descartes who, after quoting the definition in the Latin version of *Rules for the Direction of the Mind*, exclaims, “Do they [who use this definition] not give the impression of uttering magic words which have a hidden meaning beyond the grasp of the human mind? For who can understand these expressions?” *Rules for the Direction of the Mind*, §426 in René Descartes, *The Philosophical Writings of Descartes*, trans. John Cottingham, Robert Stoothoff, and Dugald Murdoch, vol. 1 (New York: Cambridge University Press, 1985), 49. See also, Descartes’ earliest work, the French *The World*: “*Montus est actus entis in potential, prout in potential est.*” For me these words are so obscure that I am compelled to leave them in Latin because I cannot interpret them.” *The World*, §39 in Descartes, 1:93–94. This was not the view of ancient or medieval commentators who typically thought that Aristotle had “marvelously defined change” (Simplicius, in *Phys.* 413.25; cf. Aquinas, *Expositio libri Physicorum*, 3.2.285: “The Philosopher has defined motion most adequately”). Cf. again, Leibniz: “Aristotle’s definition is not as absurd as it is thought to be by those who do not understand that for him the Greek κίνησις did not signify what we call ‘motion’ but rather what we would express by the word ‘change,’ which is why he gives it such an abstract and metaphysical definition” (*New Essays on Human Understanding*, Book 3, Chap. 4).

⁹⁷ Kosman, “Aristotle’s Definition of Motion.” It has a strong historical pedigree, being advanced by numerous Neoplatonic commentators such as Themistius (in *Phys.* 69.8-20), John Philoponus (in *Phys.* 342.10-43.12), and Simplicius (in *Phys.* 413.12-14.14). See also John of Damascus (*Dialectica*, 61), the influential Christian patristic author who uses Aristotle’s theory of change for theological purposes. For the identification of these ancient expositions with L.A. Kosman’s contemporary account (explicated below), see Richard Sorabji, ed., *The Philosophy of the Commentators, 200-600 AD: A Sourcebook*, vol. 2: Physics (Ithaca, NY: Cornell University Press, 2005), 63. This same interpretation can be found in Aristotle’s most influential medieval commentators as well, viz., Aquinas (*Expositio libri Physicorum*, 3.2.285) and Averroes (*Long Commentary on the Physics* III.6). For Kosman’s interpretive continuity with these accounts, see Glasner, *Averroes’ Physics*, 128.

The first point to be made is that “ἐντελέχεια” is indeed properly translated as “actuality”, and thus change must be understood as a *sort* of actuality, albeit incomplete.⁹⁸ Worried about the implications of using “actuality” here in a definition that picks out a process rather than a product, W. D. Ross and James Kostman defend a view which translates ἐντελέχεια at *Physics* 3.1 201a11 as “actualization” rather than “actuality.”⁹⁹ The problem, however, is that this is just not what the term or its synonyms mean.¹⁰⁰ With respect to ἐντελέχεια, Aristotle likely coined the term from the phrase τὸ ἐντελές ἔχων, literally “having an end within” or “having completion/perfection”, which clearly indicates a product or state rather than process.¹⁰¹ As Edward Hussey puts it with respect to the “actualization” translation of the term, “such a sense of *entelecheia* is, however, unparalleled in Aristotle.”¹⁰² The definition *Physics* 3.1 201a10-11 is restated in *Metaphysics* K.9 1065b16 using ἐνέργεια rather than ἐντελέχεια; could this former term refer to a process rather than a state and thereby give us a better grip on the definition? It seems not as ἐνέργεια too is likely an Aristotelian coinage from ἐν- “in” + ἔργειν “to act” and meaning “inward activity” or “inward doing”¹⁰³ which is also indicative of a state.¹⁰⁴ In fact,

⁹⁸ Kosman, “Aristotle’s Definition of Motion,” 40–43.

⁹⁹ See Ross, *Aristotle’s Physics. A Revised Text with Introduction and Commentary*, 537. And James Kostman, “Aristotle’s Definition of Change,” *History of Philosophy Quarterly* 4, no. 1 (January 1987): 3. Following Ross, with whom he consulted for his translation, Cornford makes the same move. See Wicksteed and Cornford, *The Physics*, 1934, 1:190–91; cf. xiii.

¹⁰⁰ We should also note the additional problem that, on such a view, the *qua* clause is rendered meaningless. If change is “the actualization of that which potentially is” as on Ross and Kostman’s view, then what could Aristotle mean by following this with “*qua* potentially”? Of course, what is being actualized is in potentiality, otherwise we would call it an *actuality*.

¹⁰¹ Blair, “The Meaning of ‘Energeia’ and ‘Entelecheia’ in Aristotle,” 101, 110. Cf. Coope, “Change and Its Relation to Actuality and Potentiality,” 280.

¹⁰² Hussey, *Aristotle’s Physics*, 60.

¹⁰³ Blair, “The Meaning of ‘Energeia’ and ‘Entelecheia’ in Aristotle,” 104–10. Aristotle often equates ἐνέργεια with πράξις “doing” (*EN* 1.1 1094a1-6, 1.7 1098a12-14 (cf. 10.7 1177a12), *MM* 1.34 1197a3-10, and *Pol.* 7.3 1325a32). In the *Magna Moralia* 1.34 1197a3-10 he contrasts πράξις (doing) with ποιητικός (acting): the latter acts towards an outer end (a house) not identical with the action (building) while the former acts for an inner end (playing the harp) which is identifiable with the doing itself (harp playing). This is just the sense intended by Blair.

¹⁰⁴ See, e.g., *Meta.* Θ.6 1048a30-35: “Actuality (ἐνέργεια), then, is the existence of the thing not in the way in which we say that it exists potentially (δυνάμει). And we say, for example, that Hermes exists potentially (δυνάμει) in the wood and the half-line in the whole, because it could be abstracted from it, and also we say that even someone who

Aristotle uses them as *exact synonyms* as even Ross notes.¹⁰⁵ Hence, as George Blair—the author of a work engaging in an exhaustive analysis of every instance of the terms in the *Corpus*—argues: “ἐντελέχεια and ἐνέργεια must mean exactly the same thing; and so Aristotle coined two words and then defined them in such a way as to show that he should have coined only one. Nor do the words have different applications; as was pointed out earlier, every single instance of ἐντελέχεια has a use of ἐνέργεια that exactly parallels it.”¹⁰⁶ As such, we will assume both ἐντελέχεια and ἐνέργεια as exact synonyms which always refer to some *state* of actuality, never to a process in their own right.¹⁰⁷ While we use the term ‘actualization’ or ‘actualize’ ourselves in what follows, please note that this is our own locution and not that of Aristotle as the phrasing he uses to refer to that reality is never just a singular term.

Our second point is that, according to Kosman, both the actuality and potentiality mentioned in the definition are for *being* rather than becoming.¹⁰⁸ Robert Heinaman, by contrast,

is not contemplating is a scientific knower if he is capable of contemplating. And by contrast we say that other things exist in actuality (ἐνέργεια).” ἔστι δὲ ἐνέργεια τὸ ὑπάρχειν τὸ πρᾶγμα μὴ οὕτως ὥσπερ λέγομεν δυνάμει· λέγομεν δὲ δυνάμει οἷον ἐν τῷ ξύλῳ Ἑρμῆν καὶ ἐν τῇ ὄλῃ τὴν ἡμίσειαν, ὅτι ἀφαιρεθείη ἄν, καὶ ἐπιστήμονα καὶ τὸν μὴ θεωροῦντα, ἂν δυνατὸς ᾗ θεωρῆσαι· τὸ δὲ ἐνέργεια. Cf. Aristotle’s *Protrepticus*, Fragment 14 (Ross).

¹⁰⁵ Ross, *Aristotle’s Metaphysics*, 1924, 2:245.: “For the most part Aristotle uses the words as exact synonyms.” Notice how Ross hedges with “for the most part” here. He does so because he takes there to be a difference between the adverbial and nominal uses of ἐντελέχεια such that only the adverbial usage is synonymous with ἐνέργεια and refers to “actuality”, while the nominal refers to his special “actualization” (Ross, *Aristotle’s Physics. A Revised Text with Introduction and Commentary*, 537.). On this view specifically, the adverbial usage of ἐντελέχεια or of ἐνέργεια generally would refer to “the *state* of actuality” while the idiosyncratic nominal usage would refer to “the *process* of actualization” (Robert Wisnovsky, *Avicenna’s Metaphysics in Context* (Ithaca, NY: Cornell University Press, 2003), 21–22.). Ross, though, seems flatly wrong to make such a distinction, however. For as Coope has argued, “If Aristotle is using the word here to mean the process of making actual, then he is using it in a way that has no parallel elsewhere in his work. It is unlikely he would alter the meaning of a technical term in this way, especially in a passage that is designed to reveal the connections between change and the metaphysics of potentiality and actuality” (Coope, “Change and Its Relation to Actuality and Potentiality,” 280).

¹⁰⁶ Blair, “The Meaning of ‘Energieia’ and ‘Entelecheia’ in Aristotle,” 110. Cf. Reeve, *Physics: Aristotle*, 198–99 n. 34, for a similar assessment.

¹⁰⁷ Cf. Waterlow, *Nature, Change, and Agency in Aristotle’s Physics*, 183: “Aristotle normally uses ‘ἐνέργεια’ to mean ‘actuality,’ and in that sense a κίνησις, when actual, is an ἐνέργεια.” See too Waterlow, 112–14 on ἐντελέχεια as actuality which designates a state (or end-state) rather than a process.

¹⁰⁸ Kosman, “Aristotle’s Definition of Motion,” 44. See this same view in Themistius (*in Phys.* 70.33-71.5), Philoponus (*in Phys.* 342.10-343.12), (Simplicius (*in Phys.* 414.1-6), Ross, *Aristotle’s Metaphysics*, 1924, 2:326, Maier, “The Nature of Motion,” 23, Waterlow, *Nature, Change, and Agency in Aristotle’s Physics*, 114–16, etc.

defends a novel interpretation of Aristotle's definition of change whereby the actuality Aristotle refers to is the actuality of the potential for changing—or *becoming*.¹⁰⁹ Rather than opting for the initial statement of Aristotle's definition of change in *Physics* 3.1 201a10-11 as canonical as we have, Heinaman opts for the another definition stated at 3.2 202a7-8: "Change is the actuality of the changeable *qua* changeable."¹¹⁰ He then attempts to bring out what he thinks is its intended sense by rewording the definition as follows: change is "the actuality of what potentially changes insofar as it potentially changes."¹¹¹ On this interpretation, the potentiality in question is a potentiality *for change*, not for being (e.g.) red or greater or two miles north. Hence, this is not a potentiality for *being* some quality or quantity but for change *simpliciter*. In fact, the function of the *qua* clause is to pick out just this feature: that the potentiality in question is not the potentiality *to be*, but the potentiality *to change*. As Heinaman puts it, "the potentiality whose actuality is change is specified by Aristotle as a potentiality for change rather than a potentiality for being."¹¹²

Now, one indication that Heinaman has gone astray is that in Aristotle's summary restatement of the discussion from *Physics* 3.1-2 in *Metaphysics* K.9, he repeats his initial definition which we have considered canonical from 201a10-11 nearly verbatim at 1065b16 while utterly neglecting the second definition that Heinaman thinks to be so important. This would be rather odd were he correct, though in all fairness Aristotle does repeat the second definition at *Physics* 8.1 251a9-10.¹¹³ More to the point, however, is the fact that none of the ancient commentators saw Aristotle doing anything more than *clarifying* his first definition with

¹⁰⁹ Robert Heinaman, "Is Aristotle's Definition of Change Circular?," *Apeiron* 27, no. 1 (1994): 25–38.

¹¹⁰ ἡ κίνησις ἐντελέχεια τοῦ κινητοῦ, ἢ κινητόν. Reeve translation, modified.

¹¹¹ Heinaman, "Is Aristotle's Definition of Change Circular?," 25.

¹¹² Heinaman, 37.

¹¹³ Though the point in mentioning it seems to be to *exclude* any change among relatives (see 251a10-17 and 251b7-10), a point which we make below.

the second. For if, as Aristotle says, “there are just as many kinds of change^k and change^m as there are kinds being” (*Phys.* 3.1 201a8-9)¹¹⁴ and “change is the actuality of that which potentially is, *qua* potentially” (201a10-11), then it would seem that for *any* category in which the actuality-potentiality distinction applies there is also change. Given that there is actuality and potentiality in ten categories, then there must also be change in *all ten* categories—despite the fact that Aristotle stipulated just before these passages at 200b32-201a3 that change occurs in *only four* categories, viz., substance, quantity, quality, and place, and despite the fact that he explicitly argues for this position in *Physics* 5.2.¹¹⁵ Hence, it would seem, either a) Aristotle’s definition is wrong or b) his restriction of change to just four categories is wrong. Which is it?¹¹⁶ The ancient commentators routinely took a version of a), holding not that Aristotle’s definition was wrong but too wide—something Aristotle himself saw and acted to correct with his second definition. Alexander puts it this way in Simplicius *ap. in Phys.* 436.26-35:

And it seems, says Alexander, that he now says more clearly what change (κίνησις) is than when he said that it was the actuality (ἐντελέχειαν) of the potential *qua* potential (δυνατού ἢ δυνατόν). For, indeed, while the potential is in all the categories (κατηγορίας) not all the actuality of the potential *qua* potential is change. At any rate relatives (πρός τι) are potential in so far as potentiality becomes actuality, as for example the potentially double becomes actual and there is no necessity for it to be changed, but it does so through that of which it is double being set beside it. In this way it becomes actual from being potential, but it certainly does not change (οὐ μὲν κινεῖται). On the

¹¹⁴ ὥστε κινήσεως καὶ μεταβολῆς ἔστιν εἶδη τοσαῦτα ὅσα τοῦ ὄντος. Reeve translation, modified.

¹¹⁵ *Phys.* 3.1 200b32-201a3. See this same four-category restriction at, e.g., *Meta.* H.1, 1042a32-b3, L.2 1069b9ff, & *GC* 1.4 319b31ff.

¹¹⁶ For this same way of putting the problem which led the second definition, see Sorabji, *The Philosophy of the Commentators, 200-600 AD: A Sourcebook*, 2005, 2: *Physics*:64.

other hand everything, if it is changed in some way, thus comes to actuality from potentiality. In this respect the actuality of the potential *qua* potential is more extensive than is change.¹¹⁷

Relatives do not change says Alexander,¹¹⁸ yet Aristotle's canonical definition suggests they do. In order to block this result, Aristotle clarifies by saying that when we speak of "the actuality of a potentiality, *qua* potentiality", he is referring not to all potentiality but just to those which, upon becoming actual, are said to change.¹¹⁹ Hence, it is not so much "the actuality of that which potentially is *qua* potentially is" as "the actuality of that potentiality which *can* change, *qua* changeable potentiality." Themistius too reads the passage this way (*in Phys.* 75.3-18), as does Philoponus (*in Phys.* 367.28-369.1), and even Simplicius (*in Phys.* 438.2-5)—though the latter disagrees with Aristotle's restriction of change to just four categories, wishing it to at least include relative change as well (*in Phys.* 409.12-22, 412.31-413.1, 437.6-9).¹²⁰

A more serious problem for Hienaman, however, pertains to the logic of the definition on his alternative account. As we have seen, Hienaman thinks the potential referred to in Aristotle's definition is a potential to *become* or *change* into something, rather than to *be* something, pace Kosman. Hence, change is concerned not with the actuality of what is potentially red but with the

¹¹⁷ και δοκεῖ, φησὶν Ἀλέξανδρος, σαφέστερον νῦν λέγειν τί ποτέ ἐστιν ἡ κίνησις ἢ περὶ ὅτε ἔλεγεν αὐτὴν ἐντελέχειαν τοῦ δυνατοῦ ἢ δυνατόν. καὶ γὰρ το μὲν δυνάμει ἐν πάσαις ἐστὶ ταῖς κατηγορίαις; οὐ πάσα δὲ ἡ τοῦ δυνατοῦ ἢ δυνατόν ἐντελέχεια κίνησις ἐστὶ. τα γοῦν πρὸς τι δυνάμει μὲν ἐστὶ, καθὼ δυνάμει ἐνέργεια γίνεται, οἷον οἰπλάσιον δυνάμει οὐκ ἐνέργεια γίνεται, καὶ οὐκ ἀνάγκη αὐτὸ κινεῖσθαι, ἀλλὰ το οὐ διπλάσιον ἐστὶ παρατίθεσθαι αὐτῷ. καὶ οὕτως γίνεται ἐκ τοῦ δυνάμει ἐνέργεια, οὐ μὴν κινεῖται. παν μέντοι εἰ τι κινεῖται, τοῦτο ἐκ τοῦ δυνάμει ἐπὶ το ἐνέργεια παραγίνεται. καὶ κατὰ τοῦτο ἐπὶ πλέον ἀν εἴη ἡ τοῦ δυνατοῦ ἢ δυνατόν ἐντελέχεια τῆς κινήσεως. Urmsion translation, modified.

¹¹⁸ And Aristotle. See, e.g., *Phys.* 5.2 225b10-11, 7.3 246b10-12, & *Meta.* N.1 1088a30-5; cf. Plato, *Theaet.* 155b-c.

¹¹⁹ See this same interpretation of Alexander in Sorabji, *The Philosophy of the Commentators, 200-600 AD: A Sourcebook*, 2005, 2: Physics:64.

¹²⁰ While explicitly noting that he *disagrees* with Aristotle's restriction to just the four categories, he approvingly cites Aristotle's pupil Eudemus who thinks change also occurs in the category of time (*in Phys.* 412.33-34) and Aristotle's successor Theophrastus who thinks change occurs in *all* ten of Aristotle's categories (*in Phys.* 412.34-413.1). For the view that Simplicius likely *miscites* Theophrastus, see Richard Sorabji, *Matter, Space and Motion: Theories in Antiquity and Their Sequel* (Ithaca, NY: Cornell University Press, 1988), 198 n. 58.

actuality of what is potentially *reddening*. Reddening is sort of becoming, and becoming is that to which change is concerned. For Heinaman this entails that there are two sorts of potentialities with two related actualities.¹²¹ Things can (1) *potentially be* and (2) *actually be* as in the case of red, and then things can (1*) *potentially become* and (2*) *actually become* as in the case of reddening. Change is not concerned with the former pair (1)-(2) for Aristotle, but with the latter (1*)-(2*).

Now, the problem with this supposition is that, as we have already seen, change is said to be “indefinite” (ἀόριστόν, *Phys.* 3.2 201b24) or an “incomplete actuality” (ἀτελής ἐνέργεια, *Phys.* 3.2 201b31-32). That is, it “cannot be posited unconditionally either as a potentiality of beings or as an actuality of them” (*Phys.* 3.2 201b27-29).¹²² The reason for this, of course, is that change is an *incomplete* sort of actuality. Now if change were concerned with (1) a potentiality for being then it would make sense to say that an incomplete actuality of e.g., a house *qua* being red is a house becoming red, passing from not-red to red. It is incomplete because during the transition the house’s potential for being red has been only *partially* actualized, being at present incomplete *as an actuality*. But if Heinaman is correct and the potentiality is for a thing’s becoming as on (1*), then to what exactly could this ‘incomplete’ status refer? On his account, a thing must be *either* e.g., (1*) potentially reddening or (2*) actually reddening. In the former case, we have an object with the static potential to become red, whereas in the latter case, we have an object actually becoming red. If we designate the potential state (1*) as ‘complete potentiality’ and the actual state (2*) as ‘complete actuality,’ then what exactly would the middle state of ‘incomplete potentiality’ or ‘incomplete actuality’ be identified with? That is, in what way is change ‘indefinite’? For it would seem that something is either (1*) potentially becoming

¹²¹ Heinaman, “Is Aristotle’s Definition of Change Circular?,” 33.

¹²² οὔτε εἰς δύνανμιν τῶν ὄντων οὔτε εἰς ἐνέργειαν ἔστιν θεῖναι αὐτήν. Reeve translation, modified.

or (2*) actually becoming, there being no middle option. This is not the case, however, if the potentiality in the definition is a (1) potential to *be* as in Kosman’s interpretation. For in such a case, the corresponding actuality would be (2), and there is a middle position *between* (1) potentially being *x* and (2) actually being *x*, viz., (M) *becoming x* which is precisely what change itself is.¹²³ It is not surprising, therefore, that Heinaman makes no mention of change as “indefinite” or “incomplete” at any place in his article,¹²⁴ for this criticism is utterly fatal for his view.¹²⁵

1.3.2.2 The Final Feature of the Account: The *Qua* Clause

We have now established the first two points required for the explication of Kosman’s traditional interpretation of Aristotle’s definition of change: First, that we are speaking of actuality here rather actualization; and second, that the corresponding potentiality and actuality are both for being rather than becoming. Now on the face of it, taking points one and two together seems to give us a problem, for “the actuality of that which potentially is” can be taken in two ways, neither of which picks out a change. Rather, it either picks out (a) something with a potentiality *prior* to its changing (the existence or actuality of something *with* the potentiality to be e.g., red) or (b) something with an actuality *after* it was a potentiality (the existence of something as an actuality which *was* a potentiality e.g., a house which was a pile of wood and brick). The first of these, (a), is a precondition for change, while the latter, (b), is the product of change.¹²⁶ How can Aristotle avoid both and focus on the *transition* from one to the other?

¹²³ See, e.g., *Phys.* 3.1 201b5-7: “It is clear, then, that change^k is this, and that it exists when the actuality itself does, and neither earlier nor later.” ὅτι μὲν οὖν ἐστὶν αὕτη, καὶ ὅτι συμβαίνει τότε κινεῖσθαι ὅταν ἡ ἐντελέχεια ᾗ αὕτη, καὶ οὔτε πρότερον οὔτε ὕστερον, δῆλον. Reeve translation, modified.

¹²⁴ Heinaman, “Is Aristotle’s Definition of Change Circular?”

¹²⁵ See Kosman, “Aristotle’s Definition of Motion,” 44, where he calls interpretations like Heinaman’s a “calumny.”

¹²⁶ See the discussion of both problems in Kosman, 46, 50.

If we pay close attention we can see that Aristotle is using the *qua* clause to add real content to the definition. We have already noted that “*qua* such” (ἢ τοιοῦτον) at 201a11 is used interchangeably with “*qua* potential” (ἢ δυνατόν) at 201b5. What, however, does “*qua* potential” add to the rest of the definition, “the actuality of that which potentially is”? On Kosman’s account, the *qua* clause has two functions. First, if change were merely defined as “the actuality of that which potentially is” then we do not know what exactly Aristotle wants us to focus upon: is it *the individual thing* that can have form or *the form* itself?¹²⁷ This is the (a)-(b) problem from above. Whereas with (a) we are to focus upon the individual thing itself *en toto* with the potential to be, e.g., red, with (b) we are to focus upon the form of red had by the thing. The *qua*-operator solves what without it would be a problem of ambiguity.¹²⁸ It is *qua the potentiality* or form as on (b), not *qua* what has the potentiality as on (a). Aristotle makes this clear at 3.1 201a29-31: “I mean by ‘*qua*’ thus: the bronze is potentially a statue, but yet it is not the actuality of bronze *qua* bronze that it is change.”¹²⁹ If one takes an ordinary chunk of unformed bronze and says of it “That is bronze *qua* bronze”, one is speaking of that chunk of bronze being itself bronze—being in actuality bronze by having all the properties bronze has *as* bronze. If, however, one said of the same unformed chunk of bronze “That is bronze *qua* statue,” one would now say this in reference not to what the unformed bronze actually is, but what it *potentially is*—a statue. Change cannot be “*qua* itself” (i.e., bronze *qua* bronze), for that will always be with respect to its being actual. Change must be, rather, with reference to what is potential, that is, “*qua* changeable” (bronze *qua* potentially a statue) (201a28). Otherwise there would be nothing to

¹²⁷ For this way of putting the problem see Mary Louise Gill, “Aristotle’s Theory of Causal Action in Physics III 3,” *Phronesis* 25, no. 2 (1980): 131.

¹²⁸ See Coope, “Change and Its Relation to Actuality and Potentiality,” 278–79.

¹²⁹ λέγω δὲ τὸ ἢ ὡδί. ἔστι γὰρ ὁ χαλ- κὸς δυνάμει ἀνδριάς, ἀλλ’ ὅμως οὐχ ἢ τοῦ χαλκοῦ ἐντελέχεια, ἢ χαλκός, κίνησις ἐστίν.

change, as the thing in question would already have changed just by being itself and having the properties it has. Hence, through the *qua*-operator Aristotle is having us focus upon the form of something rather than the individual thing that has the form.¹³⁰

All the same, we still have a problem: if we are focusing on a potentiality insofar as it is an actuality as on (b), then this still specifies not a change but the *product* of a change. This takes us back to our question from above: how can Aristotle hone in on the *transition* from potentiality to actuality rather than a product or actuality?¹³¹ This leads us to the second function of the *qua* clause for Kosman. “*Qua* potentiality” does not just focus the definition on the *form* but the form insofar as it is a *potentiality* rather than an actuality. This does not entail that there is no actuality involved in change. As the definition states, “change is the *actuality* of that which potentially is, *qua* potentially.” Actuality is most certainly involved. Rather, it is a certain *sort* of actuality which is still compatible with a potentiality *qua* potentiality. As such, it becomes clear that Aristotle has in mind two ways for a potentiality to be actual: *qua* potentiality and *qua* actuality. Or, as Aristotle puts it, “incomplete actuality” (ἀτελής ἐνέργεια, *Phys.* 3.2 201b31-32)¹³² or “complete actuality” (τέλεια ἐνέργεια).¹³³

¹³⁰ See this same point in Ross, *Aristotle's Metaphysics*, 1924, 2:326; Ross, *Aristotle's Physics. A Revised Text with Introduction and Commentary*, 536; and Wicksteed and Cornford, *The Physics*, 1934, 1:190–91.

¹³¹ Again, this is the worry Ross and Kostman discussed above which led them to translate both ἐντελέχεια and ἐνέργεια as “actualization” rather than “actuality”, a dubious and question-begging move as we saw.

¹³² Cf. *Phys.* 8.5 257b8-9 for ἀτελής ἐντελέχεια.

¹³³ Though the concept is quite prevalent the only genuine instances of the *entire phrase* occur at *EN* 10.4 1174b17 and *EE* 2.1 1219a38-39, the former of which cites (3) second actuality perception as an instance. It also occurs in Iamblichus' citation of Aristotle's lost *Protrepticus* where he is quoted as saying that contemplation (θεωρητική) is an instance of “complete actuality” (B87.1-2). See too *Phys.* 5.4 228b11-15: “Further, [a κίνησις] is also said to be one when it is *complete* (τέλειος), whether in genus, in species, or in substance, and, just as in the other cases, completeness (τέλειον) and wholeness (ὅλον) belong to what is one. Sometimes, though, even an *incomplete* (ἀτελής) [κίνησις] is said to be one, but only if it is continuous.” Cf. *EN* 10.4 1174a19-23: “For every change (κίνησις), such as constructing a building, takes time, and aims at some end, and is *complete* (τελεία) when it produces the product it seeks, or [in other words, is complete] in this whole time [that it takes]. And in the parts and in the time they are all incomplete (ἀτελεῖς), and they differ in form from the whole and from each other” (Irwin translation, modified). See too, *Phys.* 6.5 236a7-10: “But there are two ways of talking about that in which something has first changed (πρώτῳ μεταβέβληκε). On the one hand it may mean the first time at which the change

If we take the painting of a fence from brown to white as an example, the fence would have *already* changed if it were already white. This would be a case of complete actuality or change^o.¹³⁴ What once was a potentiality for the fence (i.e., it could become white) is now an actuality. And complete actualities (i.e., changes^o) are not processes but *states*. A fence, that is in the process of *transitioning* from brown to white, however, is *changing*. And this *process* (not a state) continues until the potentiality in the fence to be white is *exhausted*.¹³⁵ As Aristotle puts it at *Metaphysics* Θ.6 1048b29-33:

For every change (κίνησις) is incomplete (ἀτελής), for example, making thin, learning, walking, building. These are changes (κινήσεις) and are certainly incomplete (ἀτελεῖς). For it is not the case that at the same time one is walking and has taken a walk nor that one is building something and has built it, or is coming to be something and has come to be it, or is being changed (κινεῖται) in some way and has been changed (κεκίνηται) in that way, but they are different, as are one's changing (κινεῖ) and having changed (κεκίνηκεν) something.¹³⁶

A *complete* (τέλεια) actuality or change^o would be a *completed* change—a building *built*, a walk *walked*—a product. But these products are *not* the items he is trying to pick out with his

(μεταβολή) is *completed* (ἐπετελέσθη)—the moment when it is correct to say ‘it has changed’ (μεταβέβληκεν); on the other hand it may mean the first time at which it began to change (μεταβάλλειν).”

¹³⁴ Cf. *Phys.* 5.4 228b11-15.

¹³⁵ See *Phys.* 201b8-15: “It is clear, then, that change is this, and that it exists when the actuality itself does, and neither earlier nor later. For each thing [of this sort] admits of sometimes being actual, sometimes not—for example, the buildable qua buildable. And the actuality of the buildable qua buildable is building. For the actuality is either this—the building—or the house. But when the house exists it is no longer buildable: what is buildable is what is [for] being built. It is necessary, therefore, for building to be the actuality, and building is a sort of change. And the same account also applies in the case of the other changes” (Reeve translation, modified). ἐνδέχεται γὰρ ἕκαστον ὅτε μὲν ἐνεργεῖν ὅτε δὲ μή, οἷον τὸ οἰκοδομητὸν, καὶ ἢ τοῦ οἰκοδομητοῦ ἐνέργεια, ἢ οἰκοδομητὸν, οἰκοδόμησις ἐστίν (ἢ γὰρ οἰκοδόμησις ἢ ἐνέργεια [τοῦ οἰκοδομητοῦ] ἢ ἡ οἰκία· ἀλλ’ ὅταν οἰκία ᾖ, οὐκέτ’ οἰκοδομητὸν ἐστίν· οἰκοδομεῖται δὲ τὸ οἰκοδομητὸν· ἀνάγκη οὖν οἰκοδόμησιν τὴν ἐνέργειαν εἶναι)· ἢ δ’ οἰκοδόμησις κίνησις τις· ἀλλὰ μὴν ὁ αὐτὸς ἐφαρμόσει λόγος καὶ ἐπὶ τῶν ἄλλων κινήσεων.

¹³⁶ πᾶσα γὰρ κίνησις ἀτελής, ἰσχυασία μάθησις βάδισις οἰκοδόμησις· αὗται δὲ κινήσεις, καὶ ἀτελεῖς γε. οὐ γὰρ ἅμα βαδίζει καὶ βεβάδικεν, οὐδ’ οἰκοδομεῖ καὶ ὠκοδόμηκεν, οὐδὲ γίγνεται καὶ γέγονεν ἢ κινεῖται καὶ κεκίνηται, ἀλλ’ ἕτερον, καὶ κινεῖ καὶ κεκίνηκεν. Reeve translation, modified.

definition, nor in his general discourses on change where he is most usually referring to process change. Rather, it is when e.g., the fence is *being painted* that its potential for whiteness is actual. During the painting it is no longer a dormant potential as it was, but a potential in the *process* of becoming completely actual. The potential, insofar as it is a potentiality and not an actuality and exhausted, is *actual*. If the potentiality is dormant, it is a state, not a process. If the potentiality is completely actual, it is no longer a potentiality but an actuality, and is also a state. Thus, what comes *both before and after* change is not a process but a state.¹³⁷ But if the potentiality is actual insofar as it is *still a potentiality*, it is a process and not a state. And this is change.¹³⁸ It is the acquiring of a form (actuality) by a thing before the form is *fully* acquired.¹³⁹ These differences can be set out as follows:

Incomplete Actuality

to *become* *x*

actualized *potentiality* for *x*

an *exhausting* potential

a process (*becoming*)

Complete Actuality

to *be* *x*

actualized *actuality* of *x*

an *exhausted* potential

a state (*being*)

¹³⁷ We might call the state that comes *before* a change “change^o”, just as we have called the state that comes *after* a change “change^u”, but I do not think this is necessary. First, while some people—Aristotle included—*do* call change products “changes” (i.e., changes^u), no one ever does this with what comes *before* a change. Moreover, what comes before a change is never called an actuality of any sort (whether complete or incomplete), whereas change products *are* called *complete* actualities (again, see *Phys.* 5.4 228b11-15). Hence, while one might call the state prior to a change a change^a and posterior to a change a change^u, I will only so designate the latter for the reasons mentioned.

¹³⁸ See Kosman, “Aristotle’s Definition of Motion,” 54: “The expression ‘the actuality of the buildable’ can mean building or the product of building, i.e., the house. But by the time the house is there, the buildable has been actualized in such a way that it is no longer buildable. It is, on the contrary, when the buildable is being built that it is most fully manifesting itself as actually buildable. Therefore the actuality of the buildable *qua* buildable that is, the constitutive actuality of being buildable, must be the *process* of building.” Cf. Ross, *Aristotle’s Physics. A Revised Text with Introduction and Commentary*, 536: “Every movement is a realization-of-a-potentiality which is a stage on the way to a further realization of potentiality, and only exists while the further potentiality is not yet realized. Hence it is ἀτελής (b32), and, though in a sense an ἐνέργεια, is distinct from an ἐνέργεια in the narrower sense in which ἐνέργεια implies that no element of δύναμις is present at all.” Cf. Burnyeat, “De Anima II 5,” 42–43.

¹³⁹ Cf. *Phys.* 3.3 201b31-33, 8.5 257b7-8.

to be changing

to have *already* changed

change

change⁶⁰

Change is something that is *both* potential and actual for Aristotle—an incomplete actuality.¹⁴⁰

And Kosman’s account rightly captures just this as we have shown. As such, not only is it a rehearsal of the traditional account but it is undoubtedly the most widely accepted current interpretation as well.¹⁴¹

1.3.3 *Physics* 3.1-3: Change as Form Transmission

In *Physics* 1.1-5, Aristotle had set out to discover the principles (ἀρχαὶ) of nature (φύσις). As Aristotle puts it in his philosophical lexicon in *Metaphysics* Δ, “it is common to all principles (ἀρχῶν) to be the first thing from which something either exists or comes into being or becomes known” (*Meta.* Δ.1 1013a17-19).¹⁴² Hence logical principles are premises because conclusions come from them. And so it is with the principles of nature or physics (φύσις)—natural things and their features must come from them. As natural things are indisputably those things which are subject to change (*Meta.* E.1 1026a14-15, *Phys.* 1.2 185a12-14), the ἀρχαὶ or principles of nature must allow for change. Due to this restriction, Aristotle determines in *Physics* 1.6 that the ἀρχαὶ must *at least* be opposites (ἀντικείμενα) or contraries (ἐνάντια), which are two in number.

Opposites come in pairs, such as black and white or up and down.¹⁴³ It is these pairs, according

¹⁴⁰ See e.g., *Phys.* 3.2 201b31-32, *Phys.* 8.5 257b8-9, *Meta.* Θ.6 1048b29-36, K.6 1066a20-22 NE 10.3 1173a29-31, DA 2.5 417a16-17, etc.

¹⁴¹ It would be difficult to provide a complete list of those who embrace the account. A partial list of important interpreters, however, is manageable: Edward Hussey (Hussey, *Aristotle’s Physics*, 60); Sarah Waterlow (Waterlow, *Nature, Change, and Agency in Aristotle’s Physics*, 112-121 ad loc); Mile Burnyeat (Burnyeat, “De Anima II 5,” 42 n. 37); Richard Sorabji (Sorabji, *The Philosophy of the Commentators, 200-600 AD: Physics*, 63-64); Ronald Polansky (*Aristotle’s De Anima: A Critical Commentary* (New York: Cambridge University Press, 2007), 13 n. 15); Ursula Coope (Coope, “Change and Its Relation to Actuality and Potentiality,” 282); and Christopher Shields (Shields, *Aristotle: De Anima*, 215-16).

¹⁴² πασῶν μὲν οὖν κοινὸν τῶν ἀρχῶν τὸ πρῶτον εἶναι ὅθεν ἢ ἔστιν ἢ γίγνεται ἢ γινώσκεται.

¹⁴³ See, e.g., *Physics* 1.6 189a17-19. Cf. *Meta.* Δ.10 1018a20-b8 and I.4 1055a3-b29. Aristotle defines contraries at *Meta.* Δ.10 27-28 as “the most different of the things in the same genus.” καὶ τὰ πλεῖστον διαφέροντα τῶν ἐν τῷ αὐτῷ γένει.

to Aristotle, which make change possible (1.5 188a31-b8). If there were only one principle of physics, change would of necessity be impossible (1.2 184b25-185a1). So, Aristotle reasons, if change is real then there must be at least two—which is what he concludes in *Physics* 1.6. But, if change is real as Aristotle assumes, then what is it that changes? That is, what is the change *in* or *of*? This is the question he turns to in 1.7, concluding that for all opposites—which he terms in 1.7 as “privation” (στέρησις) and “form” (εἶδος)—they must operate on something underlying, *some subject* which has or possesses them.¹⁴⁴ This he terms “matter” and specifies as a *substance*

¹⁴⁴ This is the classical interpretation of *Physics* 1.7, which is still the dominate view. See e.g., Simplicius in *Phys.* 406.28-30: “The commentators accept that form and privation are not mentioned with respect to substance alone, but also with respect to quantity, quality and place.” See too Ross, *Aristotle’s Physics. A Revised Text with Introduction and Commentary*, 22: “All change, then, proceeds from a supposite and an opposite; its general formula is ‘x qualified as not-a becomes x qualified as a’, and thus involves the three factors x, non-a, a.” And Kosman, “Aristotle’s Definition of Motion,” 47: “all change is from something which, though numerically one, may be considered either as the privation from which the change occurs, or as the subject which changes” (italics mine). And Sorabji’s introduction in Han Baltussen et al., eds., *Simplicius: On Aristotle Physics 1.5-9* (New York: Bloomsbury Academic, 2012), 3: “[Aristotle] reaches the conclusion that *all* natural change involves the passage from one contrary, the privation of form, to another, the form or its possession. But something must underlie privation and form in order to be acted on by them and in order to provide a subject that will possess in turn the contrary attributes. We need only one such underlying thing, matter, if there is only one pair of contraries” (italics mine). Cf. also Aquinas, *Expositio libri Physicorum* 1.13.112-119, Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 158 n. 10, William Charlton, ed., *Aristotle: Physics: Books I and II* (Oxford, UK: Oxford University Press, 1992), 70, and Frank A. Lewis, “Form and Matter,” in *A Companion to Aristotle*, ed. Georgios Anagnostopoulos (Malden, MA: Wiley-Blackwell, 2009), 164–67. The reason privation (στέρησις) continues to be a factor is that Aristotle thinks it necessary to explain non-substantial forms of coming to be by “analogy” (ἀναλογία, 191a8) with substantial coming to be (191a7-12). Hence, if three principles underly one, so do they the other; and if the three principles are matter, form, and privation on one, so are they on the other—even as they are disanalogous kinds of change (i.e., substantial and non-substantial). Cf. Simplicius in *Phys.* 193.33-35: “Well, it is clear from what follows that the contrariety he intends to assume is that of form and privation. And that exists not only in substance but in *every* category that allows of change” (italics mine). A rather idiosyncratic interpretation of *Physics* 1.7 has been elucidated by Marc Cohen where privation (στέρησις) is taken *only* to apply in instances of substantial generation, whereas instances of genuine change in the other categories (i.e., alteration, locomotion, and increase/decrease) do not invoke privation: “Whereas the three ingredients of accidental change [i.e., alteration, locomotion, and increase/decrease, see p. 206] are a substance and a pair of contraries, the three ingredients of substantial change are matter, form, and privation.” S. Marc Cohen, “Alteration and Persistence: Form and Matter in the *Physics* and *De Generatione et Corruptione*,” in *The Oxford Handbook of Aristotle*, ed. Christopher Shields (New York: Oxford University Press, 2012), 211. Cohen’s views would not be worth mentioning were his essay not so prominently placed in Shield’s *Oxford Handbook*, but as the quotations from above show, we must note that his position is highly idiosyncratic. See, for instance, the detailed analysis of *Physics* 1.7 in Sorabji’s introduction in Baltussen et al., *Simplicius: On Aristotle Physics 1.5-9*, 1–12, esp. 3–4 & 7–8. Cohen is, moreover, even contradicted by other prominent authors in the same volume; for instance, Edward Hussey, “Aristotle on Earlier Natural Science,” in *The Oxford Handbook of Aristotle*, ed. Christopher Shields (New York: Oxford University Press, 2012), 21: “The real significance of the apparently universal use of opposites as principles lies in the tripartite schema: substrate-privation-form; and the significance of the tripartite schema derives, not from its use by any theorist, but from its success in giving a coherent account of what is common to *all* cases of ‘becoming’, as shown in

(οὐσία) or a *this* (τόδε). And it is the “this” that changes by gaining or losing opposites. To use a common example, take a man who changes from pale to red upon getting a sunburn. Pale (the privation of red as its contrary)¹⁴⁵ does not change when it is lost, nor does red (the form) change when it is gained.¹⁴⁶ Rather, *the man* changes when he loses the quality of pale and gains the quality of red. The principles of nature, thus, are three in number: matter (this, substance), privation (an opposite), and form (an opposite).¹⁴⁷ This is Aristotle’s hylomorphic solution to the problem of change, and it is imbedded in his very definition of change, as we saw in the form of the actuality-potentiality distinction.¹⁴⁸ For on his developed view, matter is potentiality and

I 7” (italics mine). See too Michael J. Loux, “Substances, Coincidentals, and Aristotle’s Constituent Ontology,” in *The Oxford Handbook of Aristotle*, ed. Christopher Shields (New York: Oxford University Press, 2012), 380–86, esp. 385; cf. 399 n. 21.

¹⁴⁵ See Simplicius, in *Phys.* 198.23–27 “For everything has both a form and also a privation, which is the absence of that form to which it naturally changes. A white body has the form white and the privation of black, to which it naturally changes. And this would be characteristic of a truly principal contrariety.” We discuss this so-called “principle of opposition” (198.35) with respect to contraries in great detail in chapter 4.

¹⁴⁶ It is worth noting here that form and privation are *relative* to one another such that a privation is always a lack of some form, and a form the positive reality of a given privation. See e.g., Charlton, *Physics*, 70: “The general view of commentators is that an Aristotelian form is an entity the natural expression for which is an abstract noun or equivalent phrase... Aristotle’s generic expression for the opposite from which change takes place is an abstract noun, ‘the lack’, *steresis*.” Cf. Simplicius in *Phys.* 198.24–29. That said, red and pale (e.g.) are not really in a privation/form relation as Aristotle seems to indicate here. Rather, the true privation of red would be *not-red* as we make clear in a later chapter.

¹⁴⁷ *Phys.* 1.7 191a20–21: “But that the starting-points (ἀρχαί) are three, in what way they are three, and what kind each of them is, is clear” (Reeve translation, modified). ἀλλ’ ὅτι αἱ ἀρχαὶ τρεῖς καὶ πῶς τρεῖς, καὶ τίς ὁ τρόπος αὐτῶν, δηλον. Cf. *Meta.* Λ.2 1069b32–34: “The causes, then, are three, and the starting-points three, two of them are the contraries, of which one is the account and the form and the other the lack, and the third the matter.” τρία δὴ τὰ αἴτια καὶ τρεῖς αἱ ἀρχαί, δύο μὲν ἡ ἐναντίωσις, ἥς τὸ μὲν λόγος καὶ εἶδος τὸ δὲ στέρησις, τὸ δὲ τρίτον ἡ ὕλη. This is not to say that all natural objects are *composed* of just three principles. Rather, natural objects are substances and substances or subjects are characterized elsewhere, specifically *Categories* 4–6 and *Meta.* Z. Rather, what Aristotle is specifying here is what features *an entity* must possess in order to change—and these features are 1) it must be a substance or a “this” (see *Categories* 4—only substances can receive contraries) and it must be characterizable in terms of 2) privation and 3) form (i.e., in terms of opposites) upon the occurrence of change. 1) is *not* sufficient, for if it were then all substances would be capable of change—something Aristotle thinks is manifestly false. See *Meta.* E.1 1024a and L.1, *Physics* 8.5, etc. Some substance, such as the divine, cannot change in principle.

¹⁴⁸ See e.g., *Meta.* Λ.2 1069b15–18: “Everything changes from what is potentially to what is actually—for example, from what is potentially white to what is actually white, and similarly in the case of growth and withering.” μεταβάλλει πᾶν ἐκ τοῦ δυνάμει ὄντος εἰς τὸ ἐνεργείᾳ ὄν (οἷον ἐκ λευκοῦ δυνάμει εἰς τὸ ἐνεργείᾳ λευκόν, ὁμοίως δὲ καὶ ἐπ’ αὐξήσεως καὶ φθίσεως).

form actuality.¹⁴⁹ And privation of the opposite contrary of a form accompanies every form.¹⁵⁰

What Aristotle fails to mention in his *Physics* 1.7 account, however, is where form comes

from.¹⁵¹ In *Physics* 3.2 Aristotle clears the matter up: *all forms come from other forms*. Or, put

another way, all forms come from *things* which positively possesses those forms and can

transmit them. Aristotle puts the point this way at 202a9-12:

That which produces change (τὸ κινουῦν) will always (ἀεὶ) carry some *form* (εἶδος), either ‘this’ (τόδε) or ‘of such a kind’ (τοιόσδε) or ‘so much’ (τοσόνδε), which will be the principle of (ἀρχὴ), and responsible for (αἷτιον), the change (κινήσεως), when it produces change (κινῇ)—e.g. what is actually (ἐντελέχεια) a human being makes (ποιεῖ), out of which is potentially (δυνάμει) a human being, a human being.¹⁵²

¹⁴⁹ Aristotle’s characteristic term for actuality (ἐντελέχεια or ἐνέργεια) is “form” (εἶδος), while for potentiality (δύναμις) he prefers “matter” (ὕλη). See, most famously, *DA* 2.1 412a9-10: “Matter is potentiality, while form is actuality” (ἔστι δ’ ἡ μὲν ὕλη δύναμις, τὸ δ’ εἶδος ἐντελέχεια). Cf. *De Caelo* 1.9 278a14-15, *GC* 2.9 335b6, *DA* 2.3 414a16-17, *Meta.* Δ.8 1017b25-26, H.1 1042a27-28, and I.1 1052a22-23. See too John I. Beare, *Greek Theories of Elementary Cognition: From Alcmaeon to Aristotle* (Oxford: Clarendon Press, 1906), 220: “The distinction between matter and form is allied to the distinction between potentiality (δύναμις) and actuality (ἐνέργεια, ἐντελέχεια), also of capital importance in Aristotle.” See too R. D. Hicks, *Aristotle De Anima* (Cambridge, UK: The University Press, 1907), 306: “μορφὴν καὶ εἶδος. By these two terms Aristotle indicated his formal cause, which is always correlative to matter, determining and actualising matter which would otherwise, or in itself, be indefinite and potential.” We speak of this in much more detail in Appendix 1. See *Phys.* 1.8 191b27-29 where Aristotle says of his tripartite substrate-privation-form schema for avoiding Parmenides’ dilemma with respect to change, that “this, then, is one way [of resolving the puzzle], but there is another in that the same things can be said either with respect to potentiality (δύναμιν) or with respect to actuality (ἐνέργειαν). But this has been discussed with more exactness elsewhere” (Reeve translation, modified). εἷς μὲν δὴ τρόπος οὗτος, ἄλλος δ’ ὅτι ἐνδέχεται ταῦτα λέγειν κατὰ τὴν δύναμιν καὶ τὴν ἐνέργειαν· τοῦτο δ’ ἐν ἄλλοις διώριται δι’ ἀκριβείας μᾶλλον.

¹⁵⁰ *Phys.* 1.7 191a4-7. Cf. Simplicius, in *Phys.* 193.31-194.1: “Well, it is clear from what follows that the contrariety he intends to assume is that of form and privation. And that exists not only in substance but in every category that allows of change. Whiteness, for example, is sometimes present in a substratum, sometimes absent, and when it is present, the form of whiteness is said to be present in it, and when it is absent, privation is. And likewise for the other categories.”

¹⁵¹ This is despite the fact that Aristotle is trying to *avoid* the Parmenides problem of invoking nonbeing when speaking of change since it would entail the impossibility that something come from nothing. See *Physics* 1.3. Cf. Loux, “Substances, Coincidentals, and Aristotle’s Constituent Ontology,” 380. Nevertheless, Aristotle here tells us about forms and *that* they come to be without also telling us *where* they come from or *how* they can come to be without invoking *generatio ex nihilo*.

¹⁵² εἶδος δὲ ἀεὶ οἴσεται τι τὸ κινουῦν, ἥτοι τόδε ἢ τοιόνδε ἢ τοσόνδε, ὃ ἔσται ἀρχὴ καὶ αἷτιον τῆς κινήσεως, ὅταν κινῇ, οἷον ὁ ἐντελέχεια ἄνθρωπος ποιεῖ ἐκ τοῦ δυνάμει ὄντος ἀνθρώπου ἄνθρωπον. See this same principle elsewhere in the *Corpus* at, e.g., *Phys.* 8.5 257b7-10, *Meta.* A.1 993b23-27, *APo.* 1.2 72a29-30. See too the account of it in Hussey, *Aristotle’s Physics*, xv–xvi. See also A.C. Lloyd, “The Principle That the Cause Is Greater than Its Effect,”

We might call this Aristotle’s prior actuality principle: all actuality comes from some prior actuality. Actuality is a form, so all form comes from some prior form. As Aristotle clearly states the principle in *De Anima* 3.7, “everything (πάντα) which comes to be does so from something existing in actuality (ἐντελεχείᾳ)” (431a3-4).¹⁵³ On this prior actuality principle, not only can something not come from nothing (cf. *Phys.* 1.8 191a30), but neither can a cause or agent give what it does not have. But we can flip this around too. Not only does all actuality come from prior actuality, but all instances of actuality coming to be must come from some prior potentiality.¹⁵⁴ Let us call this the prior potentiality principle and illustrate both principles with an example. A fire melts ice by transferring the form of heat—which it has—to the ice which had the opposite or contrary form of cold. A *cold* fire, were there such a thing, could not heat *cold* ice. The form (heat) can *only* be transferred from agent to patient *if* the agent has it *in actuality*. This is due to the prior actuality principle. A fire cannot, however, make the ice red or yellow despite the fact that the fire is actually yellow or red. For while the ice is *receptive* to the fire’s heat, as a transparent entity the ice is not so receptive to the fire’s color. Nor can it be as ice does not have the potentiality to be colored in that way. This is due to the prior potentiality principle.

Phronesis 21, no. 2 (1976): 147, who calls this the “transmission theory of causation,” saying it is “essentially Aristotle’s.”

¹⁵³ ἔστι γὰρ ἐξ ἐντελεχείᾳ ὄντος πάντα τὰ γιγνόμενα. For a similar interpretation of this principle, see Polansky, *Aristotle’s De Anima: A Critical Commentary*, 482. See too the extensive comments and passage citations in Hicks, *Aristotle De Anima*, 525–26. Cf. *Meta.* Θ.8 1049b24-29: “For what actually (ἐνεργείᾳ) is always comes to be from what potentially (δυνάμει) is as a result of what actually (ἐνεργείᾳ) is (for example, human from human, musician as a result of musician), there being always a first changer^k; and the [first] changer^k already actually (ἐνεργείᾳ) is. For it was stated in the accounts concerned with substance that everything that comes to be, comes to be something, from something, and as a result of something, and this is the same in form (εἶδει) as it.” αἰ γὰρ ἐκ τοῦ δυνάμει ὄντος γίγνεται τὸ ἐνεργείᾳ ὄν ὑπὸ ἐνεργείᾳ ὄντος, οἷον ἄνθρωπος ἐξ ἀνθρώπου, μουσικὸς ὑπὸ μουσικοῦ, αἰ κινουντός τινος πρώτου· τὸ δὲ κινουν ἐνεργείᾳ ἤδη ἔστιν. εἴρηται δὲ ἐν τοῖς περὶ τῆς οὐσίας λόγοις ὅτι πᾶν τὸ γιγνόμενον γίγνεται ἐκ τινος τι καὶ ὑπὸ τινος, καὶ τοῦτο τῷ εἶδει τὸ αὐτό.

¹⁵⁴ Per *Meta.* Θ.8 1049b5 “actuality is prior to potentiality” (Reeve translation, modified). πρότερον ἐνέργεια δυνάμει ἔστιν. This is of course still true in a metaphysical sense of priority, for the argument we are making here is just that in a temporal sense with respect that things which can be generated and destroyed and change in various other ways that for them—even if not universally or metaphysically—actualities come to be in what was first *potentially* so. See 1049b11-12 “actuality is prior both in account and in being, whereas in time it is prior in one way and in another not” (Reeve translation, modified). της προτέρα ἔστιν ἡ ἐνέργεια καὶ λόγῳ καὶ τῇ οὐσίᾳ· χρόνῳ δ’ ἔστι μὲν ὥς, ἔστι δὲ ὥς οὐ.

As such, we might sum up both of these points by saying that not only is change a matter of form transmission from the side of the agent, but form reception from the side of the patient. There is much more to say on this point, and we do address it in more depth in Appendix 1. For now let us merely note that Aristotle intends us to keep both of these principles together: *both* the actuality of the agent *and* the potentiality of the patient are necessary for change.

1.3.4 *Physics* 3.1-3: Change as between Agents and Patients

This leads us to our fourth and final component of the account of change from *Physics* 3.1-3: the relation between agents and patients. All natural entities have both actualities and potentialities. A horse may be actually saddled while potentially bare-back, actually galloping while potentially resting, or actually feeding while potentially fasting. Importantly, these actualities and potentialities are *opposites* to one another such that to have the form in actuality is to have its privation in potentiality; for to be actually galloping is to be potentially resting and vice versa. Moreover, it is precisely this mixture of actuality and potentiality which makes change *possible* for natural objects. God, for Aristotle, is pure actuality and hence *cannot* change (*Meta.* E.1 1026a15-16, 29-31). For change as the process of transitioning from potentiality to actuality requires that what *can* change have both actualities and potentialities.¹⁵⁵ If something *cannot* transition from potentiality to actuality or from actuality to potentiality, then that thing cannot possibly change (*Phys.* 5.2 226b10-17). As such, this mixture of actuality and potentiality

¹⁵⁵ As we have noted previously, there is undoubtedly a sense in which privation and form are *relative* to one another. What has the privation of yellow has the form of orange, and yet if it acquired the form of yellow, it would then also acquire the privation of orange in that case where different colors are mutually exclusive. When it comes to two competing *positive* entities, what counts as privation or form depends on the facts at hand and the direction of the change (i.e., it is always *from* privation *to* form). Hence, Charlton, *Physics*, 70: “Aristotle’s generic expression for the opposite *from which* change takes place is an abstract noun, ‘the lack’, *steresis*” (italics mine). Likewise, the same ‘relativity’ applies to some degree at least, to actuality and potentiality. To be actually sitting is to be potentially standing; to be potentially sitting is to be actually standing. Both standing and sitting are capable of being classified as potentialities or actualities, and neither positive state has any more or less claim to the term in any unqualified sense. The same does not hold, of course, in the case of a positive-negative pair such as sight and blindness where one (sight) is always the form and the other (blindness) always the privation. See *Cat.* 10 11b15ff.

is essential for natural objects which change—which is to say, *all* natural objects (*Meta.* E.1 1026a13-14).

What Aristotle would like to add to this very common-sense picture is that there are *other* actualities and potentialities that agents and patients have which we would do well to keep in mind: namely, that patients have the potentiality to be acted upon (passion) while agents have the potentiality to act (action) (*Meta.* Θ.1 1046a9-31). For example, a particular patient might have the potentiality to be darkened or the potentiality to be fractured. A particular agent, on the other hand, might have the potentiality to darken or the potentiality to fracture. And it is *prior* to any change that patients and agents possess these potentialities. This, however, seems to pose a problem. If *both* agent and patient have potentialities, then *both* agent and patient have actualities of these potentialities as well. To be heating (action) is an actuality as is to be heated (passion). But if change *involves* the movement of something from potentiality to actuality and there are *pairs* of potentiality and actuality in both agent and patient, then it stands to reason that there must be a *pair* of changes as well—one of the agent and one of the patient—for *every* change. The fire heated (action) while the iced melted (passion)—and *both* are changes. For reasons that become clear in *Physics* 8.5, this implication does not set well with Aristotle as it makes impossible the existence of an *unchanged* changer.¹⁵⁶ Hence, Aristotle needs to explain how these pairs of actuality and potentiality in agent and patient do not amount to (a) agents always changing and (b) there being two changes for every single change, a puzzle he addresses in *Physics* 3.3. We scrutinize this puzzle very closely in our final chapter and even apply it to perception in Appendix 2. For now, however, let us summarize simply by saying that Aristotle resolves this problem by saying that while there are pairs of actuality and potentiality of both

¹⁵⁶ *Physics* 8.5 256a14-20, 258b4-9. Cf. 7.1 242a49-54 and 3.1 201a25-27; see too *DA* 3.2 426a4-6.

agent and patient, there is only one change which is *in* the patient.¹⁵⁷ Hence, the actuality of the agent is the agent's—it is *of* the agent—but it is *in* the patient along with the actuality *of* the patient; and together they make for a single change which is “one and the same but different in account” *in* the patient.¹⁵⁸ Given that *all* change involves agent and patient,¹⁵⁹ this entails that *all* movement from potentiality to actuality is in a way doubled, involving the dual potentialities of the agent and patient *moving towards* their dual actualities which are a single change *in* the patient. It is with this solution in mind that Aristotle widens the definition given at *Physics* 3.1 201a10-11 to include agent and patient in *Physics* 3.3 202b26-28: “more intelligibly (ἔτι δὲ γνωριμώτερον), it [change] is [the actuality of] the potential agent and the [potential] patient *qua* potentially.”¹⁶⁰

We have now adduced the first four features of the composite account of change from *Physics* 3.1-3: (1) change as categorial, (2) change as both actuality and potentiality, (3) change as form transmission, and (4) change among agents and patients. We turn now to *Physics* 5.1-2 for the final four features of the composite account, which we will take in order: (5) the five irreducible components of change, (6) the subject of change, (7) the four logical species of change, and (8) the difference between kinetic (κίνησις) and metabolic (μεταβολή) change.

1.3.5 *Physics* 5.1-2: The Five Requirements for Change

¹⁵⁷ I borrow these locutions from Ursula Coope, “Aristotle’s Account of Agency in *Physics* III.3,” *Proceedings of the Boston Area Colloquium in Ancient Philosophy* 20 (2004): 206 n.9.

¹⁵⁸ We scrutinize this fascinating line about sameness of being but difference in account in the final chapter as well. For the phrase which occurs many times in Aristotle, applied specifically to change see *Phys.* 3.3 202a20.

¹⁵⁹ Even in self-change, a part of the self in actuality acts on another part of the self in potentiality, such that the acting part plays agent to the acted parts patient. See *Phys.* 8.5 257b7-14.

¹⁶⁰ ἔτι δὲ γνωριμώτερον, ἢ τοῦ δυνάμει ποιητικοῦ καὶ παθητικοῦ, ἢ τοιοῦτον. Coope translation, modified. See Coope, “Aristotle’s Account of Agency in *Physics* III.3,” 220. “Actuality” (ἐντελέχεια), is supplied from the previous line and is clearly in reference here. On this definition being ‘more intelligible’ see the comments of Philoponus at *in Phys.* 386.1-13.

The first component of change from *Physics* 5:1-2 we should add to our *Physics* 3.1-3 account, and our fifth overall, concerns what Aristotle takes to be necessary requirements for change.¹⁶¹ According to Aristotle at *Physics* 5.1 224a34-b1, there are five: an agent, a patient, an interval of time, that from which (ἐξ οὗ), and that to which (εἰς ὃ).¹⁶² We have already seen how *all* change, according to Aristotle, involves agents and patients and how the actualities and potentialities invoked in Aristotle's definition in *Physics* 3.1 201a10-11 are of *both* the agent and the patient. The time factor is new, but its addition should not surprise us. At the beginning of *Physics* 3.1 at 200b16-21, Aristotle mentioned a number of items that would need to be examined once change was defined as these items were entailed in his definition; among these were the continuous, the infinite, divisibility, place, the void, and *time* (χρόνου, 200b21). Now we are told that *all* change involves time. How so? Because (a) becoming takes time such that there are no "instantaneous" changes for Aristotle (6.6 237a19-28), and (b) because time itself is a measure of change (4.12 220b35-36).¹⁶³ As a result, not only is there no time without change but where there is no time there can be no change.

What though of the two remaining components, "that from which" (ἐξ οὗ) and "that to which" (εἰς ὃ)? We were told that the principles of change in *Physics* 1.7 were matter and the

¹⁶¹ For this way of putting the matter see Aquinas, *Expositio libri Physicorum* 5.1.641; cf. Simplicius in *Phys.* 804.23-24.

¹⁶² *Phys.* 5.1 224a34-b1: "There is, then, something which first initiates change; something that is changed; further, that in which, the time; and, beyond these, that from which and that to which." ἐπεὶ δ' ἔστι μὲν τι τὸ κινεῖν πρῶτον, ἔστι δέ τι τὸ κινούμενον, ἔτι ἐν ᾧ, ὁ χρόνος, καὶ παρὰ ταῦτα ἐξ οὗ καὶ εἰς ὃ.

¹⁶³ Cf. Maier, "The Nature of Motion," 23: "Succession is thus an essential element in the concept of motion [i.e., change generally]. It is conceived of as the fundamental and unique ordering into prior and posterior states that belongs implicitly to the concept of motion; it is not, in principle, identified with temporal progression. Aristotle and the scholastic thinkers regarded time as something derived from motion; it is the 'measure of motion with respect to prior and posterior' (*mensura motus secundum prius et posterius*). Time makes explicit the element of succession contained in the phenomenon of motion. This idea, although very foreign to modern thinkers, is of fundamental importance to the theory of motion developed in high and late scholasticism. Motion is thus the acquisition or loss, in successive stages, of a categorical attribute, a so-called 'perfection'; it is, in other words, a continual change of state (*aliter et aliter se habere*)."

two opposites of privation and form.¹⁶⁴ All change, we are told, involves opposites and this is what Aristotle refers to here. Change is *from* (ἐκ) one opposite and *to* (εἰς) another opposite. As he puts it at 224b1-4:

For every change (κίνησις) proceeds from (ἐκ) something to (εἰς) something, since the thing primarily changed is distinct from that to which (εἰς ὃ) and that from which (ἐξ οὗ) it is caused to change—for example, wood, hot, cold, of which one is the what (τὸ ὅ), one to which (εἰς ὃ) and one from which (ἐξ οὗ).¹⁶⁵

In the example given of a piece of cold wood being heated, the wood is *what* heats while the cold is *that from which* it transitions and hot *that to which* it transitions.¹⁶⁶ Hence, for Aristotle ‘that from which’ (ἐξ οὗ) and ‘that to which’ (εἰς ὃ) are the opposites referred to in *Physics* 1.7¹⁶⁷—that is, they *just are* privation and form.¹⁶⁸ That from which (ἐξ οὗ) is the *opposite* (and therefore

¹⁶⁴ Cf. Philoponus in *Phys.* 511.9-11: “The contraries themselves are privations, because it is said that white is not-black, and black is not-white. One refers to them, however, with positive expressions, i.e. ‘white’ and ‘black’.”

¹⁶⁵ πᾶσα γὰρ κίνησις ἐκ τινος καὶ εἰς τι· ἕτερον γὰρ τὸ πρῶτον κινούμενον καὶ εἰς ὃ κινεῖται καὶ ἐξ οὗ, οἷον τὸ ξύλον καὶ τὸ θερμόν καὶ τὸ ψυχρόν· τούτων δὲ τὸ μὲν ὅ, τὸ δ’ εἰς ὃ, τὸ δ’ ἐξ οὗ. Reeve translation, modified.

¹⁶⁶ Cf. Simplicius in *Phys.* 805. “He has given the names of ‘the what’ to that which is changed, of ‘that from which’ to that from which the change starts, of ‘that to which’ to what the change is to, and he has said that that from which and that to which are other than what is changed, as the cold from which it changes and the hot to which it changes are other than the wood, and he establishes their difference from their different names.” Θείς δε και ονόματα τω μεν κινουμένω τὸ ὅ, τω δε ἐξ οὗ κινεῖται το ἐξ οὗ, τω δε εἰς ὃ κινεῖται το εἰς ὃ, και εἰπών ἕτερα εἶναι το ἐξ οὗ και εἰς και αὐτοῦ του κινουμένου, ὡςπερ του ξύλου τὸ τε ψυχρόν ἐξ οὗ κινεῖται και το θερμόν εἰς ὃ κινεῖται, δείκνυσιν ἐκ των διαφορῶν ονομάτων την ετερότητα.

¹⁶⁷ Cf. Cohen, “Alteration and Persistence: Form and Matter in the *Physics* and *De Generatione et Corruptione*,” 207: “In *Physics* V, Aristotle uses slightly different terminology for the ingredients of his analysis. He points out that ‘every change is from something and to something’ (225a1), and these two ‘somethings’ are traditionally called the *termini* of change: (1) the *terminus a quo* (the ‘from which’—an attribute possessed by the subject at the start of the change that is no longer present after the change) and (2) the *terminus ad quem* (the ‘to which’—an opposed attribute possessed by the subject at the completion of the change but not present at the start).”

¹⁶⁸ Cf. Aquinas, *Expositio libri Physicorum* 5.1.642: “[Aristotle] says, therefore, first that that which is changed primarily and *per se* is different from the *terminus* toward which the change tends and from the *terminus* from which the change began. This is clear in regard to wood, hot, and cold. For in the change of heating the wood is a changeable object which differs from hot, which is the *terminus* to which, and from cold, which is the *terminus* from which. He says that that which is moved primarily is other than both *termini* because there is nothing to prevent that which is changed *per accidens* from being one of the *termini*. The object, i.e., the wood, becomes hot *per se*. But the privation and the contrary (*privatio vero et contrarium*), i.e., cold, becomes hot *per accidens*, as was said in Book 1” (italics mine). Blackwell, Spath, and Thirlkel translation, modified. Dicit ergo primo quod id quod primo et per se movetur, alterum est a termino in quem tendit motus, et a termino a quo motus incipit; sicut patet in istis tribus, lignum, calidum et frigidum. In motu enim calefactionis, lignum quidem est subiectum mobile, aliud vero, scilicet

privation) which is destroyed or replaced.¹⁶⁹ Black, for instance. That to which (εἰς ὃ), on the other hand, is the opposite (or form) which replaces the one destroyed, e.g., white. Hence the only new items in this account are the explicit mentioning of time (χρόνος)—which was addressed in *Physics* 3.4-8 and thus not detailed in *Physics* 3.1-3—and the new language of the *termini* from (ἐκ) and to (εἰς) which are just the contraries. There is, however, a new emphasis on the *teleological* relationship between contraries in change. All change is *towards* a contrary—that is, it is *for* it. Change is, for Aristotle, *necessarily teleological*.¹⁷⁰ Here, Aristotle tells us what it is towards: *that to which*.¹⁷¹ As Aristotle puts the point, we name changes after the-that-to-which rather than the-that-from-which because that is precisely what they are *for* (224b7-8).

1.3.6 *Physics* 5.1-2: The Subject of Change

If change involves opposites, then are opposites what change? This leads us to the second component from *Physics* 5.1-2 and our sixth overall, *the subject of change*. As there are five factors involved in all change, any change that occurs might conceivably be *in* any one of them: the agent, the patient, the time, that from which (privation), and that to which (form). Aristotle has already addressed the issue of change in relation to agents and patients in *Physics* 3.1-3 as noted above: the actuality of the agent and the actuality of the patient constitute one single change which is *in* the patient. But Aristotle did not there address the *termini*, viz., privation and

calidum, est terminus ad quem, aliud autem, scilicet frigidum, est terminus a quo. Dicit autem id quod movetur primum esse alterum ab utroque termino, quia nihil prohibet id quod movetur per accidens, esse alterum terminorum: subiectum enim, ut lignum, est id quod calefit per se; privatio vero et contrarium, ut frigidum, est quod calefit per accidens, ut in primo dictum est.

¹⁶⁹ See change as “destruction by a contrary” (φθορά τις ὑπὸ τοῦ ἐναντίου) at *DA* 2.5 417b3. See too *Phys.* 1.9 192a21-22 for “contraries are destructive of each other” (φθαρτικὰ γὰρ ἀλλήλων τὰ ἐναντία). Cf. *GC* 1.4 319b26-28.

¹⁷⁰ See e.g., Waterlow, *Nature, Change, and Agency in Aristotle's Physics*, 112–19; and Coope, “Change and Its Relation to Actuality and Potentiality,” 282–84.

¹⁷¹ See Burnyeat, “De Anima II 5,” 42: “[Change] is defined by and directed toward an end-state outside itself. Cold is a potentiality for being warm. Being warmed, the actuality of that potentiality, is the process of change from cold to warm. But once a thing is warm, it is no longer manifesting and no longer even possesses the potentiality for being warm. It has the actuality of warmth instead. The cold has been destroyed and replaced by its contrary.”

form or the opposites except in passing (e.g., *Phys.* 3.1 201a34-b3, 3.2 202a9-11). Conceivably, when a red object becomes a white object through the bleaching of the sun, for example, both *termini*—red and white—*change*. Red ceases to be and white comes to be (cf. *GC* 1.4 319b26-28). Hence, while change is *in* the patient, it is also *in* the opposites—the *termini* of that from which (ἐξ οὗ) and that to which (εἰς ὃ). This is a conclusion, however, which Aristotle wishes to avoid.

We presented the example of the heating of cold wood in the previous section just above. There he referred to the wood as ‘the what’ (τὸ ὅ), hot as the ‘to which’ (εἰς ὃ) and cold as the ‘from which’ (ἐξ οὗ). As Aristotle stipulates concerning this case, “it is clear, though, that the change is in (ἐν) the wood, not in (οὐκ ἐν) its form (εἶδει). For the form (εἶδος) neither causes change nor is changed, and the place and the quantity do not do so either” (*Phys.* 5.1 224b4-6).¹⁷² And a little bit later: “the change is not in (οὐκ ἐν) the form (εἶδει) but in (ἀλλ’ ἐν) that which is changing (κινουμένῳ) whose potential to change is in actuality” (224b24-26).¹⁷³ Cold itself does not *become* hot; nor does hot *become* cold. Rather, the underlying subject in possession of these qualities comes to be differently characterized while remaining “one and the same” (ταὐτὸν καὶ ἓν, 3.1 201b2-3).¹⁷⁴ Cold remains cold, while ceasing to characterize the wood; hot remains hot while coming to characterize the wood. The forms or contraries here, do not change; they are,

¹⁷² ἡ δὲ κίνησις δῆλον ὅτι ἐν τῷ ξύλῳ, οὐκ ἐν τῷ εἶδει· οὔτε γὰρ κινεῖ οὔτε κινεῖται τὸ εἶδος ἢ ὁ τόπος ἢ τὸ τοσόνδε. Reeve translation, modified.

¹⁷³ καὶ ἐπὶ κινούντος καὶ ἐπὶ κινουμένου, δῆλον, καὶ ὅτι ἡ κίνησις οὐκ ἐν τῷ εἶδει ἀλλ’ ἐν τῷ κινουμένῳ καὶ κινητῷ κατ’ ἐνέργειαν. Reeve translation, modified.

¹⁷⁴ τὸ δὲ ὑποκείμενον καὶ τὸ ὑγιαῖνον καὶ τὸ νοσοῦν, εἴθ’ ὑγρότης εἴθ’ αἷμα, ταὐτὸν καὶ ἓν. Cf. *Cat.* 5 4a10-11: “It seems most distinctive of substance that what is numerically one and the same is able to receive contraries.” Μάλιστα δὲ ἴδιον τῆς οὐσίας δοκεῖ εἶναι τὸ ταὐτὸν καὶ ἐν ἀριθμῷ ὄν τῶν ἐναντίων εἶναι δεκτικόν.

rather replaced or swapped. What *changes* is the wood which is the matter or substance. So it is in all cases: the sole subject of change is the patient which is that wherein the change occurs.¹⁷⁵

1.3.7 Physics 5.1-2: The Four Logical Species of Change

All change occurs with respect to opposites, as we have seen. But the term “opposites” is itself a bit vague in the way we have been using it. The suggestion so far has been that opposites are straightforwardly *equivalent* to contraries such as black and white, but this is not quite correct. Rather, for Aristotle opposites as they relate to us here come in two types: contraries (ἐνάντια) and contradictories (ἀντιφάσεις).¹⁷⁶ Let us differentiate them. Contraries have three features. First, they consist in pairs from the *same genus* such as color, sound, number, or direction.¹⁷⁷ So, e.g., black and white, hot and cold, moist and dry, large and small, up and down, left and right, and backwards and forwards are all instances of contrary pairs from the same genus. Notice that large cannot be the contrary of black, not backwards the contrary of cold, as those items are of *different genus*. Second, contraries come in degrees called *intermediates* (μεταξύ) which are of the same genus as the contraries and are actually *composed* of them (*Meta*. I.7 1057b32-4).¹⁷⁸ Gray, e.g., is an intermediate (μεταξύ) between black and white and is also *composed* of both black and white just as one might mix colors on a paint palette. Third, if the opposites are contraries then *each* contrary will be designated by an affirmation (κατάφασις) or

¹⁷⁵ See *Physics* 3.3 202b5-8: “Or, is rather that it is not absurd for the actuality of one thing to be *in* another thing, since teaching is the actuality of the one who can teach, but occurring *in* something, and not cut adrift, but of *this* occurring *in that*” (Reeve, translation modified). ἢ οὔτε τὸ τὴν ἄλλου ἐνέργειαν ἐν ἑτέρῳ εἶναι ἄτοπον (ἔστι γὰρ ἡ διδασκίς ἐνέργεια τοῦ διδασκαλικοῦ, ἐν τινι μέντοι, καὶ οὐκ ἀποτετμημένη, ἀλλὰ τοῦδε ἐν τῷδε).

¹⁷⁶ We simplify matters here in order to retain clarity. See *Cat.* 10 11b17-23 for the fuller picture.

¹⁷⁷ Aristotle defines contraries at *Meta.* Δ.10 27-8 as “the most different of the things in the same genus.” Οὐαὶ τὰ πλεῖστον διαφέροντα τῶν ἐν τῷ αὐτῷ γένει. Cf. *Meta.* I.4 1055a27-8: “the things in the same genus that differ the most are contraries.” καὶ τὰ ἐν ταύτῳ γένει πλεῖστον διαφέροντα ἐναντία.

¹⁷⁸ This too is more complicated than we say, but it is helpful for an initial characterization. The more complicated story, based on *Cat.* 10 11b38-13a37, we discuss in detail in chapter 4.

positive term such as black or white rather than the negative non-black or non-white (*Phys.* 5.1 225b3-5).¹⁷⁹

Contradictories, on the other hand, have two features. First, contradictories admit of no intermediates. Aristotle explains this as follows: “Contradictories (ἀντιφάσεις) admit of no intermediate (μεταξύ)—for this is what a contradiction (ἀντίφασις) is, namely, an *antithesis* (ἀντίθεσις) one or the other of which must be present in anything whatever, not having any intermediate” (*Meta.* I.7 1057a33-6).¹⁸⁰ In an antithesis (ἀντίθεσις), a form of logical opposition, if one term is true then the other *must* be false as the terms are opposed in an absolute sense.¹⁸¹ To use Aristotle’s example (*De Interp.* 10 19b19-36), if it is true that “every man is just,” then “*not* every man is just” is false—and vice versa. It is necessary that only one of these be true for *both* cannot be true due to the strict antithesis, and neither is there intermediate (μεταξύ) between the two statements as stated.¹⁸² So too in the case of being and nonbeing which are contradictories lacking a μεταξύ. The same applies to human and nonhuman, colored and noncolored, and anything else lacking any *possible* intermediate. Second, contradictories are signified by one positive term and one negative term such as A or ~A because of the *pure antithesis* with no possible intermediate.¹⁸³ With contraries such as black and white we can have A or B, both positive terms; with contradictories (e.g., being and nonbeing), on the other hand, it must be A or ~A, for no “B” (or any other affirmation) can properly take the place of the

¹⁷⁹ Cf. *Meta.* Λ.4 1070b18-21.

¹⁸⁰ τῶν δ’ ἀντικειμένων ἀντιφάσεως μὲν οὐκ ἔστι μεταξύ (τοῦτο γάρ ἐστιν ἀντίφασις, ἀντίθεσις ἥς ὁπόθεν θάτερον μῶριον πάρεστιν, οὐκ ἔχουσης οὐθὲν μεταξύ).

¹⁸¹ *De Interp.* 10 19b19-20a3; cf. 9 18a28-33, 19b1-4. Cf. also *Rhet.* 3.9 1410a20-24.

¹⁸² *Cat.* 10 13a37-b1.

¹⁸³ *De Interp.* 6 17a25-6, 33-4: “An affirmation is a statement affirming something of something, a negation is a statement denying something of something.... Let us call an affirmation and a negation which are opposite a contradiction” (Barnes translation). Cf. *Top.* 2.8 113b15-26.

negation.¹⁸⁴ With complications in mind, we turn now to what Aristotle thinks follows from them: the four logical species of change which is the third feature of the account in *Physics* 5.1-2 and the seventh overall.

We have now seen a number of different terms for opposites as ἀρχαὶ for change: form and privation, contraries, and the-that-from-which and the-that-to-which. Aristotle now employs another set of terms which involve an entirely new usage of a term used in *Physics* 1.7: ὑποκείμενον. There it designated the “underlying subject” of change, the matter (i.e., the dog or tree, etc.). Now in a usage unparalleled in the corpus,¹⁸⁵ Aristotle uses the term to indicate either species of *opposite*, not matter. Hence, we find unique locutions, like “from that which is a subject to that which is a subject” and all the rest. Notice that opposites are still being used as poles or *termini* from (ἐκ) and to (εἰς), but the opposite in question is now called a ὑποκείμενον—often translated as “a subject” as directly above. In what follows we present the term untranslated so as not to confuse it with the different usage from *Physics* 1.7.

¹⁸⁴ Cf. Apostle: “If the opposition is a contrariety, *each* contrary is signified by an affirmative term, and if a contradiction, as in A and not-A, then *one* of the contradictories, namely A, is signified by an affirmative term.” Apostle, *Aristotle’s Nicomachean Ethics*, 270, n23. Italics mine.

¹⁸⁵ Ross, *Aristotle’s Physics. A Revised Text with Introduction and Commentary*, 616–17. Ross actually disagrees here with Bonitz who takes ὑποκείμενον to bear the same meaning here as it did in *Physics* 1.7: “(id quod positum est) tamquam fundamentum cui alia inhaerent” or “(that which exists) as the foundation of another”—that is, a substratum or subject of change—a substance or a *this* (Hermann Bonitz, *Index Aristotelicus* (Berlin: G.Reimeri, 1870), 798a11-3.) As Ross argues, however, ὑποκείμενον here “refers not to the substratum of change (το κινούμενον) but to its termini, which are not viewed as having anything inherent in them. Rather Aristotle means a positive entity (a6-7)—a substantial nature, a quality, a size, or a place—which has to be laid down or presupposed as implied in change, viz, as its *terminus a quo* [that from which, ἐξ οὗ] or *ad quem* [that to which, εἰς ὃ]. Then μὴ ὑποκείμενον is used loosely for the absence of such an entity, such absence being implied as a terminus in two of the kinds of change (γένεσις [generation] and φθορά [destruction])” (Ross, 616-17). This is exactly what we find in other commentators too. So, Aquinas, *Expositio libri Physicorum* 5.2.659: “Moreover by two ‘subjects,’ that is, two affirmations, we mean contraries or intermediaries. For privation also in a way is a contrary and is sometimes signified affirmatively. Thus naked is a privation, and white and black are contraries” And Philoponus, in *Phys.* 510.16-17: “By ‘subject’ [ὑποκείμενον] I refer to what is positively expressed. This may be either a contrary, such as [occurs in] the change from black to white, or an intermediate state, such as grey.” See too Jacob Rosen, “Motion and Change in Aristotle’s *Physics* 5.1,” *Phronesis* 57 (2012): 79 n. 22.

Aristotle presents us with four logical possibilities derived from a strict distinction between contraries and contradictories.¹⁸⁶ We place the logical form of each statement below the phrases:¹⁸⁷

(1) From (ἐκ) a ὑποκείμενον to (εἰς) a ὑποκείμενον.¹⁸⁸

From A to B

(2) From (ἐκ) a ὑποκείμενον to (εἰς) what is not a ὑποκείμενον.¹⁸⁹

From A to ~A

(3) From (ἐκ) what is not a ὑποκείμενον to (εἰς) a ὑποκείμενον.¹⁹⁰

From ~A to A

(4) From (ἐκ) what is not a ὑποκείμενον to (εἰς) what is not a ὑποκείμενον.¹⁹¹

From ~A to ~A

Once again, by ὑποκείμενον he means an opposite in this context, though there is more to it than that: it is also a *positive* entity or an affirmation (κατάφασις), says Aristotle (225b3-5).¹⁹² Keeping in mind what was said earlier about contraries (ἐνάντια) and contradictories (ἀντιφάσεις), we can see in the case of (1) that if something is from (ἐκ) a ὑποκείμενον to (εἰς) a ὑποκείμενον, then it *must* involve *contraries* and not *contradictories* as one pole of a contradictory is as we have noted, always negative. (1) then is contrary to contrary change. But if

¹⁸⁶ As Aristotle thinks that all change is necessarily “from something to something” (ἐκ τοῦδε εἰς τόδε, 5.2 226a13-14) and that contraries and contradictories exhaust the possibilities of what the *termini* could be, these four ending up being the only possible options.

¹⁸⁷ For the logical forms see Ross, *Aristotle's Physics. A Revised Text with Introduction and Commentary*, 616. Cf. Apostle, *Aristotle's Nicomachean Ethics*, 270 n. 23.

¹⁸⁸ *Phys.* 5.1 225a3-4: ἡ γὰρ ἐξ ὑποκειμένου εἰς ὑποκείμενον.

¹⁸⁹ *Phys.* 5.1 225a4-5: ἡ ἐξ ὑποκειμένου εἰς μὴ ὑποκείμενον.

¹⁹⁰ *Phys.* 5.1 225a5: ἡ οὐκ ἐξ ὑποκειμένου εἰς ὑποκείμενον.

¹⁹¹ *Phys.* 5.1 225a5-6: ἡ οὐκ ἐξ ὑποκειμένου εἰς μὴ ὑποκείμενον.

¹⁹² So, Aquinas, *Expositio libri Physicorum* 5.2.650: “The word ‘subject’ [ὑποκείμενον] here does not mean that which sustains form, but rather *anything which is affirmatively signified*” (italics mine). See also Philoponus, in *Phys.* 503.18-19: “‘Subject’ [ὑποκείμενον] means something existing and *what is positively expressed*, and non-subject something not existing and *what is negatively expressed*” (italics mine).

this is correct, then (2) and (3) involve *contradictories* and not contraries—for in (2) something is transitioning from a positive state (an affirmation) to the negation of that state, while in (3) from a negated state to the positive state or affirmation. As such, the contradictory to contradictory change of (2) is ceasing to be or destruction (φθορά) says Aristotle (225a17-20), while the contradictory to contradictory change of (3) is coming to be or generation (γένεσις, 225a12-17). Concerning (4), Aristotle notes that while this is a *logically* possible kind, it constitutes in itself no change at all, as something cannot *change* from negation to negation (225a10-12). As such, Aristotle avoids any mentioning of (4) from here on. But if (2) and (3) indicate destruction (φθορά) and generation (γένεσις), respectively, and (4) is not a change, then what of the contrary to contrary change of (1)? This is where Aristotle harkens back to what he stipulated in *Physics* 3.1 and elsewhere:¹⁹³ that there are *only* four species of change because change occurs only in the four categories of substance, quality, quantity, and place. We justify this claim later. For now, let us focus on how change in these four categories relates to the three remaining logical species of change.

Generation (2) and destruction (3), says Aristotle, *primarily* apply to the category of substance (οὐσία/τόδε).¹⁹⁴ That leaves (1) contrary to contrary change to apply to the categories

¹⁹³ *Phys.* 3.1 200b32-33; cf. *Cat.* 14 15a13-33, *Phys.* 5.1 225a34-35, *GC* 319b31-320a5, *DA* 406a12-13, and *Meta.* Λ.2 1069b9-14.

¹⁹⁴ Elsewhere Aristotle calls a substance a “this” or τόδε. See, e.g., *Phys.* 3.1 200b35 and 201a4. We should also note that when discussing both (2) ceasing to be/destruction (φθορά) and (3) coming to be/generation (γένεσις) in *Physics* 5.1 225a11-20, Aristotle mentions that while what we might call “generation without qualification” (γένεσις ἀπλῶς) and “destruction without qualification” (φθορά ἀπλῶς) pertain to substances (οὐσίας), there are *also* modified or qualified forms of generation and destruction he calls “generation of a sort” (γένεσις τις) and “destruction of a sort” (φθορά τις). And his example of, e.g., γένεσις τις? “A change from not pale to pale is a coming to be in this respect, pale” (225a14-15). Hence, it would seem as though we have a case of *qualitative* generation and *qualitative* destruction “when the change is to the opposite contradictory (ἡ εἰς τὴν ἀντικειμένην ἀπόφασιν)” (225a19). That this is indeed an opening for *qualitative* generation and destruction involving contradictories as opposed to contraries is clear in the commentators too, although they do not seem to know what to do with such a distinction. See, e.g., Ross, *Aristotle’s Physics. A Revised Text with Introduction and Commentary*, 616. For our part, this is a crucial distinction which we will exploit in chapter 3 with respect to the sort of change which occurs with respect to perception. But more on this anon.

of quality (ποιόν), quantity (ποσόν), and place (ποῦ/τόπον) (225a34-b9). When, to reuse an example, a man becomes sunburnt he changes from ὑποκείμενον to ὑποκείμενον—from pale to red—or from contrary to contrary in the category of quality (*Cat.* 8 9a28-31). And when the same man gains 5 pounds on his vacation, he changes from ὑποκείμενον to ὑποκείμενον—from less to more—or from contrary to contrary in the category of quantity (*Cat.* 5 3b31). Or, when he moves from one spot on the beach to another he changes from ὑποκείμενον to ὑποκείμενον—north and south—or from contrary to contrary in the category of place (*Cat.* 6a11-15). Hence, (1) is able to apply to quality, quantity, and place alike because change in them all involves the transition from contrary to contrary, both of which are positive terms which can be designated by affirmations (κατάφασις).¹⁹⁵ But it does not apply to substance as its *termini*—being and nonbeing—are positive *and* necessarily negative which requires that any transition between them be a matter of contradictory to contradictory rather than contrary to contrary change. As Aristotle makes clear in the *Categories* at 1.5 3b24-25, there is no contrary with respect to substance (cf. *Phys.* 5.2 225b9-11) even as substances *receive* contraries as they undergo change (*Cat.* 1.5 4b3-4), so a change of substance, whether generation or destruction, will always be an instance of contradictory to contradictory change (*Phys.* 5.2 225b10-11). The four logical species of change and how they relate to the four categories of genuine change is the penultimate feature of our account. We set out these distinctions in a diagram below, but not before we add a few more complications via the final feature to the composite account of change to which we now turn.

1.3.8 *Physics* 5.1-2: Μεταβολή, Κίνησις, and the Four Categories of Change

¹⁹⁵ This should not be confused with the discussion of the principles of change from *Phys.* 1.7 which were privation, matter, and form. Privation and form *both* refer to contraries with respect to non-substantial contrary to contrary change; it is just that the presence of one contrary entails the privation of another. See e.g., *Meta.* Λ.2 1069b32-34: “The causes, then, are three, and the starting-points three, two of them are the *contraries*, of which *one is the account and the form and the other the lack*, and the third the matter.” τρία δὲ τὰ αἰτία καὶ τρεῖς αἱ ἀρχαί, δύο μὲν ἢ ἐναντίωσις, ἥς τὸ μὲν λόγος καὶ εἶδος τὸ δὲ στέρησις, τὸ δὲ τρίτον ἡ ὕλη.

The fourth and final feature of *Physics* 5.1-2 and our eighth overall, concerns the difference between kinetic (κίνησις) and metabolic (μεταβολή) change. In addressing this distinction, we will finally be able to give an answer to why it is that Aristotle limits change to just four of his ten categories. First, the distinction: According to Aristotle's account in *Physics* 5.1-2, μεταβολή has a broad and a narrow sense. Broad-sense μεταβολή applies to *all* change, whether in the category of substance, quality, quantity, or place (225a34).¹⁹⁶ Hence, this broad-sense metabolic change is opposite to opposite change where opposites (αντικείμενα) refer to either contraries (ενάντια) or contradictories (ἀντιφάσεις).¹⁹⁷ Narrow-sense μεταβολή, on the other hand, refers only to contradictory to contradictory change and is applicable only in cases of generation and destruction.¹⁹⁸ Narrow-sense metabolic change is a *subspecies* of broad-sense μεταβολή—and the same is true of κίνησις which now refers *only* to contrary to contrary change (5.1 225a34-b3).¹⁹⁹ Given that substances cannot undergo contrary to contrary change as there is no contrary of substance, this entails that in its most technical sense κίνησις refers *just* to change in the three categories of quality, quantity, and place (225a20-b8).²⁰⁰ If we think of these along the lines of the genus-species distinction then broad-sense metabolic change is the genus while narrow-sense metabolic change and kinetic change both are species of the genus. This is a striking change from what Aristotle told us in both *Physics* 3.1 200b32-34 and *Categories* at 14

¹⁹⁶ See too *Meta.* Λ.2 1069b9-14; cf. *Phys.* 8.8 265a11, *GC* 1.4 319b31-320a5, 2.10 336a19, and *Meta.* H.1 1042a32-b8. See the discussion in Ross, *Aristotle's Physics. A Revised Text with Introduction and Commentary*, 7–8.

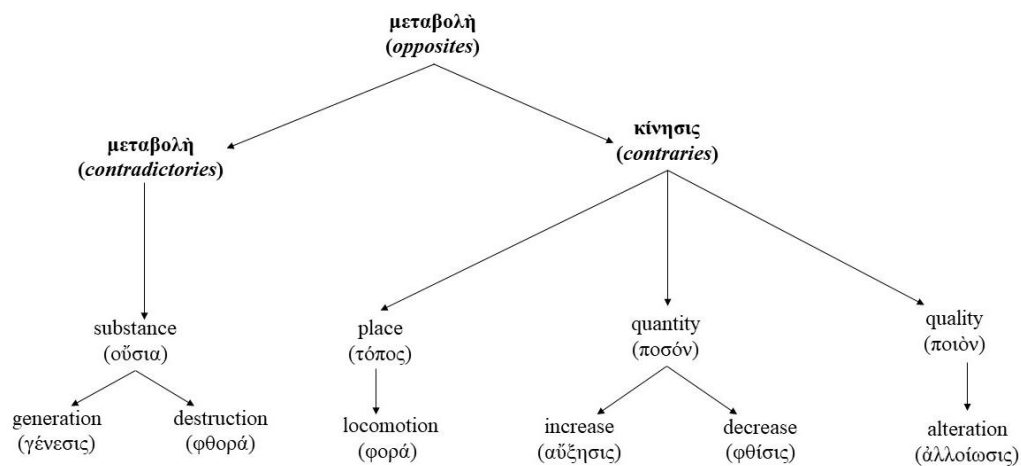
¹⁹⁷ Cf. *Phys.* 5.3 227a7-8: “All change is between opposites, however, and these are either contradictories or contraries.” δὲ πᾶσα μεταβολή ἐν τοῖς ἀντικειμένοις, τὰ δ' ἀντικείμενα τὰ τε ἐναντία.

¹⁹⁸ *Phys.* 5.5 229a30-32: “a change^m differs from a change^k—for change^k is change^m from an underlying subject to an underlying subject” (Reeve translation, modified). διαφέρει μεταβολή κινήσεως (ἢ ἕκ τινος γὰρ ὑποκειμένου εἰς τι ὑποκείμενον μεταβολή κίνησις ἐστίν). Both the narrow and broad senses are present here. For a brief discussion see Wolfson, *Crescas' Critique of Aristotle: Problems of Aristotle's Physics in Jewish and Arabic Philosophy*, 428. See too *Phys.* 5.5 229b10-14 and 6.5 235b6-7.

¹⁹⁹ Cf. *Phys.* 5.2 226a23-26.

²⁰⁰ Cf. *Phys.* 5.2 226a16-17, 23-26, 226b9-10, 7.2 243a35-37, and 8.7 260a27-29.

15a13-15 where he took κίνησις to refer to *the genus* just as much as μεταβολή. Metabolic and kinetic change are now technical terms for Aristotle, a distinction to which we will often refer. One change he does not make from *Physics* 3.1 and *Categories* 14 is with reference to what the changes in the four categories are regularly called. Substantial change is always referred to as generation or destruction as it falls under narrow-sense μεταβολή (*Phys.* 5.1 225a12-20), while alteration, increase and decrease, and locomotion all refer to the kinetic changes that occur in the categories of quality, quantity, and place respectively (5.2 226a26-b1). And all of these changes are considered metabolic in the broad-sense usage of μεταβολή (225a34). We can set out these distinction as follows:



1.3.8.1 The Relationship Between the *Physics* and *De Anima*

We should note at this juncture that one of the reasons why the first four books (1-4) of the *Physics* called *On Nature* are considered entirely compatible with but *prior to* the final four books (5-8) of the *Physics* called *On Change* is precisely this distinction which is *only* worked out here in the entirety of the *Corpus*.²⁰¹ By the same reasoning, the presence or absence of the

²⁰¹ See the arguments to this effect in Ross, *Aristotle's Physics. A Revised Text with Introduction and Commentary*, 7–8. Cf. the statement Aristotle makes towards the very end of *On Nature* (books 1-4) at 4.10 218b19-20: “It makes

kinetic/metabolic distinction acts as evidence for either an earlier or later date of a work relative to the *Physics* as a whole. Hence, the absence of the distinction at *Categories* at 14 15a13-15 is evidence for an earlier date than the *Physics*, while the presence of the distinction at *De Caelo* 4.3 310a23-24 and *De Anima* 1.3 406a12-13 as well as at *Metaphysics* H.1 1042a32-b3 and Λ.2 1069b9-14 is evidence for a later date than the *Physics* for these works.²⁰² This is especially important in the case of *De Anima* where we not only see κίνησις and μεταβολή being employed in their newly technical senses,²⁰³ but we also see other doctrines being *assumed* in *De Anima* which are developed *only* in *Physics* 3.2-3, namely that change is incomplete actuality,²⁰⁴ and that the actuality of the agent is both in the patient and one and the same with the patient's actuality, though distinct in account.²⁰⁵ Now, of course, all this is also compatible with the *Physics* and *De Anima* being written during the same period and perhaps even in collaboration with one another. Ross, for instance, makes this claim.²⁰⁶ But if we consider in addition the *back* references to other works in *De Anima* like the thematically similar *Physics* (2.5 417a17) and *Generation and Corruption* (417a1, 423b29), the evidence indicates not the simultaneous writing of the *Physics* and *De Anima*, but the sequential writing of the two.²⁰⁷ Finally, if we consider in addition the fact that *De Anima* seems to make actual *corrections* to Aristotle's theorems from

no difference to us at present whether we speak of change^k or of change^m" (Reeve translation, modified). μηδὲν δὲ διαφερέτω λέγειν ἡμῖν ἐν τῷ παρόντι κίνησιν ἢ μεταβολήν.

²⁰² See too *Topics* 4.1 121a30-39. The evidence from *GC*, however, is mixed. Cf. 1.2 315a26-29 with 1.4 319b31-20a5 and 2.10 336a19. I mention *Meta.* H.1 and Λ.2 as individual cases because the evidence is exceedingly strong that the *Metaphysics* as we have it now is arrangement and combination of what were originally, in some cases, separate treatises composed at different times in Aristotle's philosophical career. In fact, ABΓΕΖΗΘΜΝΙ seems to form a ten-book unit while α, Δ, Κ, and Λ all seem to interpret the flow. Fragments too seem to be inserted at various points (e.g., Θ.10, E.4). Hence, that both *Meta.* H.1 and Λ.2 mention the metabolic/kinetic distinction is indeed significant. For an excellent survey of the evidence for these conjectures, see Ross, *Aristotle's Metaphysics*, 1924, 1:xiii–xxxiii.

²⁰³ See *DA* 2.5 416b33-34, 417a14-18, 417b15-18, 3.2 426a2-6, etc.

²⁰⁴ Compare *Phys.* 3.2 201b24-202a3 with *DA* 2.5 417a14-17.

²⁰⁵ Compare *Phys.* 3.3 202a12-b22 with *DA* 3.2 425b26-426a26.

²⁰⁶ W. D. Ross, *Aristotle: De Anima. Edited with Introduction and Commentary* (Oxford: Clarendon Press, 1961), 11.

²⁰⁷ For the dating of *De Anima* based on internal references alone, see Ross, 7–8.

the *Physics*,²⁰⁸ then it would seem that we have reached critical mass with respect to the evidence for a literary priority of *Physics* and the posteriority of *De Anima* with respect to one another. We revisit this issue later in chapter 5.²⁰⁹ For now let us turn to the question, now that we are in a position to answer it, of why it is that Aristotle limits change to just four of his ten categories.

1.3.8.2 Limiting Change: The Criterion

Why is it that genuine change *only* occurs to the categories of substance, quality, quantity, and place when these are just four of the ten categories in Aristotle's canonical lists in *Categories* and *Topics*?²¹⁰ What of the excluded categories of relative (πρός τι), action (ποιεῖν), being acted upon/passion (πάσχειν), time (πότε/χρόνος), position (κεῖσθαι), and having (ἔχειν) (*Cat.* 1b25–2a4)? In *Physics* 5.2 we find the only place this issue is addressed in detail in the *Corpus*.

First, let us note again that it is Aristotle's firm position that *all* change is “from something to something” (ἐκ τοῦδε εἰς τόδε, 5.2 226a13-14).²¹¹ This entails that *all* change occurs with respect to opposites broadly speaking, whether contradictories or contraries (5.3 226b7-10).²¹² Given that kinetic changes are always contrary to contrary while narrow-sense metabolic changes are always contradictory to contradictory, no category which lacks contrariety as a feature can be classified as a kinetic change (5.2 226a25-26). It is an open question as to whether any specific category admits of contrariety, but it is necessary that every one at least admit of contradictoriness: the categories are categories of *being* as we have said, and everything

²⁰⁸ Compare *Phys.* 3.3 202a12-b22 and 7.2 244b2-12 with *DA* 2.5 417a31-b16.

²⁰⁹ There we make the argument that *DA* 2.5 417a31ff is a corrective to *Phys.* 7.2 244b2-12.

²¹⁰ *Cat.* 4 1b25-27 and *Top.* 1.9 103b22-23. Interestingly, while all of the categories are mentioned numerous times elsewhere in the *Corpus*, no other list of the ten is ever complete, including the one at *Phys.* 5.1 225b5-9.

²¹¹ Cf. *Phys.* 6.4 234b11: “Every change is from something to something.” ἕκ τινος εἰς τι πᾶσα μεταβολή. See too *Phys.* 6.5 235b6, 6.6 237a19, and 8.2 252b10.

²¹² Cf. *Phys.* 261a32-33: “For all changes^k and changes^m are from opposites to opposites” (Reeve translation, modified). ἅπασαι γὰρ ἐξ ἀντικειμένων εἰς ἀντικείμενά εἰσιν αἱ κινήσεις καὶ μεταβολαί. Cf. *Phys.* 6.5 235b7 and 8.2 252b10.

that *is* can also *not be*. Now, we have already noted that substance lacks in contrary, so no substantial change can be a kinetic change. We also saw that contrariety is present in the categories of quality, quantity, and place, so kinetic change does occur in those categories. But if this is the criterion differentiating narrow-sense metabolic change from kinetic change, then, surely, we can classify change with respect to the other categories in this same way. Hence, by this standard if contrariety is present in a category, then a change in that category is classifiable as a kinetic change, while if only contradictoriness then change therein is classifiable only as narrow-sense metabolic change. This leads us to two further questions. First, which of the categories admits of contrariety? And second, why is it that Aristotle will not allow narrow-sense metabolic change in the categories which only admit of contradictoriness?

Aristotle answers the first of these questions in the *Categories*. Relatives (πρός τι), generally speaking, admit of contrariety (7 6b15-19), as do action (ποιεῖν) and being acted upon/passion (πάσχειν, 9 11b14). Though time (πότε/χρόνος) is a continuous quantity composed of parts (6 4b20-25) and Aristotle thinks that less and more, increase and decrease, and odd and even are themselves contraries in the category of quantity,²¹³ he does not think there are contraries to any “definite quantity” (ἀφορισμένων ποσῶν) such as four-foot or 10 (*Cat.* 5 3b31-32). As such, a definite quantity such as 10:00 a.m. cannot be contrary to 10:00 p.m. despite appearances, though they are certainly contradictories, for if one *is* then the other *is not*. As for position (κεῖσθαι), instances of which are lying, standing, and sitting, Aristotle classifies it as a species of *relative* (*Cat.* 7 6b11-12) apparently not reducible to that of a mere relative. Given that relatives generally admit of contrariety (7 6b15-19) and that lying and standing, at least, appear

²¹³ On less (ὀλίγος) and more (πολύς) see *Cat.* 5 3b30-31; on increase (αὔξησις) and decrease (φθίσις) see *Phys.* 5.226a29-32; on odd (περιττόν) and even (ἄρτιον) see *Cat.* 10 12a6-8.

to be contraries by Aristotle's definition,²¹⁴ then it would seem that position too admits of contrariety.

Finally, what of having (ἔχειν)? The examples Aristotle gives of instances of the category upon his first mentioning it in the *Categories* are having shoes on and having armor on (4 2a3). When he turns to focus upon ἔχειν at *Categories* 15 15b17-32, however, he lists eight different uses of the term, not all of which, he says, belong to the category proper (15b27-30). Contemporary commentators have rarely dwelt upon the category or these eight uses, but the same cannot be said for the ancient commentators. Simplicius, for one, spills an incredible amount of ink on the topic in *Cat.* 365.1-377.8, where he surveys the views of previous commentators ranging from pseudo-Archytas, the early Platonists Nicostratus and Boethus, to the Neoplatonists Plotinus and Iamblichus, in addition to positing his own. The consensus view of these philosophers, as well as that of Simplicius,²¹⁵ is that of the eight *uses* of the term only two are genuine instances which refer to the *category* of having, viz., sense three: “things on the body, like a cloak or tunic” (15b21-22);²¹⁶ and sense four: “or as on a part [of the body] like a ring on a hand” (15b22-23).²¹⁷ These two senses, of course, coincide with the two examples given at *Categories* 4 2a3: having armor on (sense three) and having shoes on (sense four). Now, Plotinus had complained that both of these senses reduce to the category of position—for the armor is just *positioned* on the body and the shoe just *positioned* of the foot (in *Cat.* 370.23-29). But as Simplicius points out, at the suggestion of Boethus (373.23-33)—and later pseudo-Archytas (438.31-32)—ἔχειν is not a matter of mere position (κεῖσθαι) of one substance in

²¹⁴ *Cat.* 6 6a17-18: “For they define as contraries those things in the same genus which are most distant from one another.” τὰ γὰρ πλεῖστον ἀλλήλων διεστηκότα τῶν ἐν τῷ αὐτῷ γένει ἐναντία ὀρίζονται.

²¹⁵ See Simplicius in *Cat.* 369.12-13, 32-35, 370.1-10, 371.11-14, 373.18-33, and 437.20-23.

²¹⁶ ἢ ὡς τὰ περὶ τὸ σῶμα οἷον ἱμάτιον ἢ χιτῶνα.

²¹⁷ ἢ ὡς ἐν μορίῳ, οἷον ἐν χειρὶ δακτύλιον.

relation to another as even Simplicius' own teacher had thought (Ammonius, *in Cat.* 93.5-6), but of actual *control* (κράτησις) of what *has* by what is *had* with respect to acquired bodies (Simplicius, *in Cat.* 370.24-26, 371.4-10). As Simplicius goes on to summarize much later, “the category of having was a placing, which manifest the control (κράτησιν) of the haver, of an acquired body around the body of an animal” (437.27-29).²¹⁸ We should note, of course, that this too makes having a species of *relative* just as was position, though it too is not reducible to a mere relative (369.2-7, 370.6-11). Moreover, unlike relatives generally and including position (*Cat.* 7 6b15-19), having does not admit of contrariety, for something can either *have* or *not have* and that is all (10 12b26-27).

We have now examined all the categories, searching for contrariety. For given the criterion above, categories in which contrariety can be found are those in which kinetic change occurs, while those which lack contrariety necessarily undergo narrow-sense metabolic change. Alongside quality, quantity, and place we find that relative and position also admit of contrariety, as do both action and passion. Hence, transitions from one contrary *termini* to another in all seven of these categories should be classifiable as kinetic changes. Alongside substance, only time and having lack contrariety, hence transitions from one contradictory *termini* to another in these three categories should be classifiable as narrow-sense metabolic changes. If this is correct, then there is not only broad-sense metabolic change in all ten categories, but kinetic change in seven, not three. What can Aristotle say in response to this quandary given that the problem is of his own making? After all, he was the one who relegated change to just four categories.

1.3.8.3 Limiting Change: Just Substance, Quality, Quantity, and Place

²¹⁸ ἡ τοῦ ἔχεις κατηγορία σώματος, ἣν ἐπίκτητου περί ζῶου σῶμα περίθεσις ἐμφαινουσα τὴν τοῦ ἔχοντος κράτησιν. This is the same view of pseudo-Archytas (438.31-32), Boethus (373.23-33), to the Neoplatonists Plotinus and Iamblichus

As we just saw, if all change is from something to something, and if the *termini* can be either kinetic contraries or metabolic contradictories, then all ten categories should admit of either kinetic or metabolic change.²¹⁹ If Aristotle refuses this as he does, he must justify his reason for doing so. This is precisely the challenge that Aristotle takes up in *Physics* 5.2. The chapter contains some very difficult reasoning, but he makes three points which are themselves relatively clear.²²⁰ First, there can be no kinetic change in a category which lacks contrariety such as substance (225b10-11). This, of course, would include the categories of time and having as well. Second, despite the fact that contrariety is present with respect to relatives generally, no transition from a contrary relative to a contrary relative constitutes either a kinetic or metabolic change. Aristotle puts it this way: “Nor is there [change^k] with respect to [the category of] relation; for when one of the two (θατέρον) [*relata*] changes^m, it may be truthfully said and not truthfully said (ἀληθεύεσθαι καὶ μὴ ἀληθεύεσθαι) that the other (θάτερον) does not change^m, so that the change^k of them is accidental (κατὰ συμβεβηκός)” (225b11-13).²²¹ And third, there can be no change in the categories of action (ποιούντος) or being-affected/passion (πάσχοντος), as he puts it at 225b13-16, “because there is no change^k of change^k nor generation (γενέσεως) of generation (γένεσις), nor in general, change^m of change^m.”²²² These three points, of course, are restrictions for what can count as a change. But what are we to make of them?

The first restriction, of course, is just the κίνησις/μεταβολή criterion. No category which lacks contrariety can participate in kinetic change. This immediately strikes substance, time, and

²¹⁹ As we mentioned earlier, according to Simplicius, Aristotle’s successor, Theophrastus, thought just this, viz., that change occurs in *all* ten of Aristotle’s categories (Simplicius *ap. in Phys.* 412.34-413.1). Again though, for the view that Simplicius likely *miscites* Theophrastus, see Sorabji, *Matter, Space and Motion: Theories in Antiquity and Their Sequel*, 198 n. 58.

²²⁰ For the same account of these three points, see Aquinas *Expositio libri Physicorum* 5.3.662.

²²¹ οὐδὲ δὴ [κίνησις—supplied from line 10] τοῦ πρὸς τι· ἐνδέχεται γὰρ θατέρον μεταβάλλοντος <ἀληθεύεσθαι καὶ μὴ> ἀληθεύεσθαι θάτερον μηδὲν μεταβάλλον, ὥστε κατὰ συμβεβηκός ἡ κίνησις αὐτῶν. Reeve translation, modified.

²²² οὐδὲ δὴ ποιούντος καὶ πάσχοντος, ἢ κινουμένου καὶ κινούντος, ὅτι οὐκ ἔστι κινήσεως κίνησις οὐδὲ γενέσεως γένεσις, οὐδ’ ὅλως μεταβολῆς μεταβολή.

having from the kinetic side of the ledger, though not from the narrow-sense metabolic side. But what of the remaining seven categories which do admit of contrariety? This is where the second caveat comes in: no instance of relative change counts as an instance of genuine change, whether kinetic or metabolic. Now, we saw above that Alexander (Simplicius *ap. in Phys.* 436.26-35), Themistius (*in Phys.* 75.3-18), Philoponus (*in Phys.* 367.28-369.1), and Simplicius (*in Phys.* 438.2-5) all think that Aristotle's second definition of change at *Physics* 3.2 202a7-8—"change is the actuality of the changeable *qua* changeable"—was employed by Aristotle to *block* relative changes from counting as genuine changes. And the reason this was necessary was because Aristotle's first definition at *Physics* 3.1 201a10-11—"change is the actuality of that which potentially is, *qua* potentially"—would have allowed for the genuine change of relatives given that actuality and potentiality occur in that category too. The second definition, as we saw, specifies that the potentiality in question must be one that is *changeable*—the relative potentialities as we see now at *Physics* 5.2 225b11-13, just are not. And if this is correct, then this would apply not just to the category of relative *simpliciter*, but to all the species of relative as well—whether position or having. As such, not only is there no genuine change in the category of relative, but neither is there in the categories of position or having. That relatives lack any genuine metabolic status is axiomatic for Aristotle, including in a key passage we examine later at *Physics* 7.3 246b10-12, so this is not controversial. But it would, of course, strip transitions among three of ten categories from having any metabolic status whatsoever precisely *because* of they are relatives. That this is precisely the case for Aristotle, is Aquinas' position as well as my own. Aquinas puts the matter this way in *Expositio libri Physicorum* 5.3.662: "Position indicates a certain order of parts. But order is a relative. Likewise, having refers to a

certain relative of a body to that which is joined to it. Hence, there cannot be change in these two categories just as there is no change (*motus*) in [the category of] relative.”²²³

Now, this move certainly works to revoke the metabolic status of three categories. But one might be left wondering *why* Aristotle would be inclined to make such a move. Simplicius, for instance, does not like the restriction. As we noted earlier, he wished instead that Aristotle had included relative changes on the list of genuine changes (*in Phys.* 409.12-22, 412.31-413.1, 437.6-9). So, what is the justification for the restriction? If we revisit Aristotle’s restriction we find him worried that “when one of the two (θατέρου) [*relata*] changes^m, it may be truthfully said and not truthfully said (ἀληθεύεσθαι καὶ μὴ ἀληθεύεσθαι) that the other (θάτερον) does not change^m, so that the change^k of them is accidental (κατὰ συμβεβηκός)” (225b11-13).²²⁴ We can restate this worry in argument form as follows:

- (1) A relative is a polyadic property which requires at least two *relata* in order to be truthfully predicated.
- (2) Yet, a relative transitions into its contrary (e.g., from right to left) just in case one *relatum* changes, not both.
- (3) Hence, of the other *relatum* which does not change, it may be truthfully said *both* that it changed and did not change, which is absurd.
- (4) Therefore, there is no genuine change in any category of relative.

²²³ Situs autem ordinem quendam partium demonstrat; ordo vero relatio est: et similiter habere dicitur secundum quandam habitudinem corporis ad id quod ei adiacet: unde in his non potest esse motus, sicut nec in relatione. Blackwell, Spath, and Thirlkel translation, modified.

²²⁴ ἐνδέχεται γὰρ θατέρου μεταβάλλοντος <ἀληθεύεσθαι καὶ μὴ> ἀληθεύεσθαι θάτερον μηδὲν μεταβάλλον, ὥστε κατὰ συμβεβηκός ἡ κίνησις αὐτῶν. Reeve translation, modified.

Aristotle is blocking any and all change with respect to relatives because relative change is, to use Peter Geach's term, "mere 'Cambridge' change".²²⁵ And mere Cambridge change is always parasitic on some more fundamental change in a category where genuine change occurs, whether of substance, quality, quantity, or place. As Plato points out in *Theaetetus* 155b4-c7, when Socrates becomes shorter than Theaetetus because the latter grows, something comes to be true (and something else, false) of Socrates, but himself Socrates does not undergo any becoming and so does not thereby change because "without coming to be it is impossible to come to be" (155d2-3).²²⁶ The point, of course, is that a relative change *of x* without any genuine becoming *in x*,²²⁷ is not genuine change: it is, as John McDowell puts it following Geach, mere "Cambridge coming to be".²²⁸ Aristotle, too, takes this line at *Metaphysics* N.1 1088a29-35.²²⁹

An indication that a relative (πρός τι) is least of all a kind of real object (οὐσία) and existing thing (ὄν τι) is the fact that relatives alone are not generated (γένεσιν) or destroyed (φθοράν) or change (κίνησιν) in the way that increase and decrease (αὔξεις καὶ φθίσεις) occur in quantity, alteration (ἀλλοίωσις) in quality, locomotion (φορά) in place, generation and destruction (γένεσις καὶ φθορά) without qualification (ἀπλῇ) in the

²²⁵ Peter Geach, *God and the Soul* (London: Routledge and Kegan Paul, 1969), 71–72. The phrase refers to the Cambridge philosophers, Bertrand Russell and J. M. E. McTaggart, and their overly broad definition of change which included *all* instances of changing truth values, whether or not the entity in question actually underwent any *intrinsic* change. For an excellent overview, see Ludwig Jaskolla, *Real Fourdimensionalism: An Essay in the Ontology of Persistence and Mind* (Cham, Switzerland: Springer, 2017), 30–33.

²²⁶ ἄνευ γὰρ τοῦ γίνεσθαι γενέσθαι ἀδύνατον. See *ad loc.* J. Burnet, *Platonis Opera*, vol. 1 (Oxford: Clarendon Press, 1900).

²²⁷ For clarity, I take the locution "change of x" to be equivalent to *extrinsic* becoming, while I take the locution "becoming in x" to be equivalent to *intrinsic* becoming. In the former, at least one *external* thing undergoes some sort of contrary to contrary or contradictory to contradictory becoming in at least one of its *monadic* properties. In the latter, the thing *itself* undergoes some sort of contrary to contrary or contradictory to contradictory becoming in at least one of its *monadic* properties. Hence, in "change of x" *only* a polyadic property comes to be *in x*, while no monadic property comes to be *in x*. In "becoming in x," on the other hand, *both* a polyadic property comes to be *in x*, *and* a monadic property comes to be *in x*. As such, all "change of x" is parasitic on some "becoming in x".

²²⁸ McDowell, *Plato: Theaetetus*, 136: "[Relative change] might be called 'Cambridge coming to be', after Peter Geach's phrase 'Cambridge change'.... Socrates has undergone a Cambridge change when it becomes newly true of him that he is smaller than Theaetetus; but there has been no change in Socrates *himself*" (*italics mine*).

²²⁹ For excellent commentary, see Richard Sorabji, *The Philosophy of the Commentators, 200-600 AD: A Sourcebook*, vol. 3: Logic and Metaphysics (Ithaca, NY: Cornell University Press, 2005), 79–81.

case of a real object. There is none of this with relatives (πρός τι). A thing will be greater or less or equal without itself changing (ἄνευ τοῦ κινήθῃναι) if another thing changes (θατέρου κινήθέντος) in quantity.²³⁰

Genuine change consists in instances of generation, destruction, alteration, increase, decrease, or locomotion. Relatives do not so change, but instead their “change” is parasitic on some instance of genuine change in at least one of the *relata*. All genuine changes are instances of *becoming*, whereas relative change is merely *correlated* with the becoming of at least one of a pair. This is why Aristotle speaks of relative change in *Physics* 5.2 225b13 as “accidental” (κατὰ συμβεβηκός) rather than “genuine” (καθ’ αὐτό): because one of the relatives does not genuinely undergo becoming (*Meta.* N.1 1088a34). Hence, of a *relatum* that changes relatively it can be said truthfully both that it changed and did not change, but *only* because it changed accidentally and not genuinely. As a result, all contrary to contrary transitions in a relative category are instances of ‘mere Cambridge change’ or pseudo-change and are themselves parasitic on some *metaphysically prior* change in a category where genuine change occurs (1088a35).²³¹ Hence, the three relative categories lack any genuine metabolic status but just occur on the occasion of some other change.

So much for the second restriction, but what now of the third? Broad-sense metabolic change still occurs in seven of the ten categories, and kinetic change in the five remaining categories which admit of contrariety. What says Aristotle concerning action, passion, and time? The third restriction stated that there can be no change in the categories of action (ποιούντος) or

²³⁰ σημείον δ’ ὅτι ἥκιστα οὐσία τις καὶ ὄν τι τὸ πρὸς τι τὸ μόνου μὴ εἶναι γένεσιν αὐτοῦ μηδὲ φθορὰν μηδὲ κίνησιν ὥσπερ κατὰ τὸ ποσὸν αὐξήσεις καὶ φθίσεις, κατὰ τὸ ποιὸν ἀλλοιώσεις, κατὰ τόπον φορά, κατὰ τὴν οὐσίαν ἢ ἀπλὴ γένεσις καὶ φθορά,—ἀλλ’ οὐ κατὰ τὸ πρὸς τι· ἄνευ γὰρ τοῦ κινήθῃναι ὅτε μὲν μείζον ὅτε δὲ ἔλαττον ἢ ἴσον ἔσται θατέρου κινήθέντος κατὰ τὸ ποσόν. Annas translation, modified. Cf. Julia Annas, *Metaphysics: Books M and N* (New York: Oxford University Press, 1988), 198, who refers readers back to *Phys.* 5.2 225b11-13 for clarification.

²³¹ Cf. *EN* 1.6 1096a21-22 where Aristotle describes relatives (πρός τι) as being like “an offshoot and accident of the being” (παραφυάδι γὰρ τοῦτ’ ἔοικε καὶ συμβεβηκότι τοῦ ὄντος).

being-affected/passion (πάσχοντος) “because there is no change^k of change^k nor generation (γένεσεως) of generation (γένεσις), nor in general, change^m of change^m” (225b13-16). His point seems to be as follows: action and passion, regardless of the category in which they are operating, cannot themselves change because they just *are* changes—or, at least, *parts* of changes.²³² For if the parts of change also had to change, then there would need be, as he says, μεταβολή of μεταβολή if occurring from opposite to opposite generally, or κίνησις of κίνησις if occurring in a changeable category admitting of contrariety, or generation of generation if occurring from contradictory to contradictory. But if this is correct in one instance, then so it will be in the second instance such that now there must be μεταβολή of μεταβολή of μεταβολή, and so on *ad infinitum*. And the same logic, moreover, applies to time. Time is a measure of change (4.12 220b35-6), says Aristotle. Though not identical with change (4.11 219a1-3), time is defined by change (4.10 218b18-20) and cannot exist without it (4.11 218b21, 34-35). Time, in fact, necessarily *belongs* to change (4.11 219a7-9, 4.14 222b30-31). Hence, if every time indicates a change, then if there were a change of time there would also have to be a time measuring *that* change. But if there has to be a change for every time and a time for every change, and time also changes, then this would generate an infinite regress of times and changes. As Aquinas puts the matter, “‘when’ signifies being in time. But time is a measure of change. Hence there is no change in ‘when’ for the same reason there is no change in action and passion, which pertain to change.”²³³

²³² Cf. Simplicius in *Phys.* 860.2-3; and Aquinas, *Expositio libri Physicorum* 5.3.668. We address this issue of the composition of change and the parts of action and passion in detail in chapter 6 below.

²³³ Aquinas, *Expositio libri Physicorum* 5.3.662. Quando enim significat in tempore esse; tempus autem mensura motus est: unde per quam rationem non est motus in actione et passione, quae pertinent ad motum, eadem ratione nec in quando.

The third restriction now narrows down the occurrence of genuine broad-sense metabolic change from seven to just four of Aristotle's ten categories: substance, quality, quantity, and place. And as only three of these admit of contrariety, there now remain only three categories in which kinetic change is possible: quality, quantity, and place. The three restrictions at the beginning of *Physics* 5.2, thus, give us three ways to fail being an instance of kinetic change and two ways to fail being an instance of broad-sense metabolic change. The first restriction tells us that no contradictory to contradictory change is classifiable as an instance of κίνησις, so substantial change cannot be so classified. The second restriction tells us that no instance of change in a relative category can be an instance of either kinetic or metabolic change in either sense. Relative, position, and having are such categories, so in none of the three can an opposite to opposite transition be anything more than mere 'Cambridge' or pseudo-change. Finally, the third restriction tells us that no opposite to opposite transition occurring in a category that is itself a component part of change is classifiable as either a κίνησις or a μεταβολή in either sense. Action, being-affected/passion, and time are component parts of change, so transitions in those categories cannot be classified as either kinetic or metabolic change. The only remaining categories to slip past the latter two restrictions are the metabolic categories of substance, quality, quantity, and place, while the only categories which slip past all three are the kinetic categories of quality, quantity, and place as Aristotle tells us repeatedly.²³⁴

1.3.9 *Physics* 3.1-3 and 5.1-2: Putting it all together

We are now in a position to summarize these eight features of change, four from *Physics* 3.1-3 and four from *Physics* 5.1-2. First, change is a categorial phenomenon of which all genuine, irreducible instances occur in four of Aristotle's ten categories: substance (οὐσία),

²³⁴ See, e.g., *Phys.* 5.2 226a16-17, 23-26, 226b9-10, 7.2 243a35-37, 8.7 260a27-29, etc.

quantity (ποσόν), quality (ποιόν), and place (ποῦ). Second, change involves actuality and potentiality in both the agent and patient as well as in the termini. The potentiality of the agent to cause change and the potentiality of the patient to be changed are both actualized in change—although the actuality is “incomplete.” Moreover, in the termini—which are always opposites—the opposite in potentiality is actualized while the opposite in actuality is “potentialized”—either by giving way to a contrary or a contradictory. Third, change always involves the transmission of a form, which is an actualized opposite and, fourth, always does so through the action of an agent upon a patient which has the form in question in actuality.

Fifth, via the foregoing it is clear that there are five essential components to change: an agent, a patient, a time, a that from which (opposite), and a that to which (an opposite). Sixth, the change is *in the patient* and not the agent or the termini—and certainly not in the time. The patient *changes*, while the termini are the means by which it changes, the time a measure of the change, and the agent the cause of the change. Seventh, opposites come in two types, contraries and contradictories. Contraries are in the same genus (e.g., color), have intermediates, and both opposites are referred to by affirmative terms. Contradictories have no intermediates and one term is affirmative while the other is its negation. Contraries and contradictories make way for three species of change: (a) from affirmation to affirmation (i.e., alteration, increase, decrease, locomotion), (b) from negation to affirmation (i.e., generation), and (c) from affirmation to negation (i.e., destruction). (a), change from affirmation to affirmation involves *contraries* and is called κίνησις; (b), change from negation to affirmation and (c), from affirmation to negation, involve *contradictories* and are called μεταβολή in a narrow sense. And change *only* occurs in categories capable of opposition, viz., substance, quality, quantity, and place.

Let us be as perspicuous as we can and put this all together in a sequence. First, an agent which is actually x and a patient which is potentially x come into contact. Then, the agent acts on the patient and transmits the form x , an opposite, to the patient which is acted upon. Simultaneous with that action the patient receives x , transitioning from potentially x to actually x —from opposite to opposite—over an interval of time. When the opposites are contraries as they are in the categories of quality, quantity, and place, the change is both a broad-sense μεταβολή and a κίνησις. When the opposites are contradictories as is the case in substantial change, the change is a μεταβολή in the narrow sense. And finally, when the patient’s potentiality to be x is actual but only partially so, it is said to be an incomplete actuality or process change. But when the patient’s potentiality to be x is no longer potential but fully actual, it is said to be a complete actuality or product change^o. This is Aristotle’s composite account of change, and we will assume just this account going forward. We turn now to examine the metabolic status of perception as characterized in *De Anima* 2.5, Aristotle’s most comprehensive treatment of the topic.

CHAPTER 2: PERCEPTION AS CHANGE: THE PROBLEM

Chapter Contents:

- 2.1 Introduction
 - 2.2 *De Anima* 2.5 in Context of *De Anima*
 - 2.3 In the Beginning: *De Anima* 2.5 416b32-417a20
 - 2.4 First and Second Actuality and First and Second Potentiality: The Triple Scheme
 - 2.4.1 The Lack of Contrariety in the Triple Scheme: The Case of Knowledge
 - 2.4.1.1 The First Disjunction: 417b2-12
 - 2.4.1.2 The Second Disjunction: 417b12-16
 - 2.4.1.3 The Knowledge Model: Summing Up
 - 2.5 The Triple Scheme Revisited: The Case of Perception
 - 2.5.1 How Perception and Contemplation Differ
 - 2.5.1.1 Corollary 1: Internality and Externality
 - 2.5.1.2 Corollary 2: Voluntary Choice
 - 2.5.1.3 Corollary 3: Agency and Patiency
 - 2.5.1.4 Externality and Agency and Patiency: Returning to the 417a2-9 ἀπορία
 - 2.5.2 Perception and the Triple Scheme: A Positive Account
 - 2.6 Conclusion and a Problem
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2.1 Introduction

When one comes to perceive, is that a change? If so, what sort of change is it? And to what category does it belong? With our composite account of change in hand from chapter 1, we are now ready to examine Aristotle's account of perception from *De Anima* 2.5. The chapter is dense and the argument difficult at times, so we will largely be following what has now become a fairly standard analysis of this chapter,²³⁵ that of the late Myles Burnyeat from his seminal 2002 paper, "*De Anima* II 5."²³⁶ Of course, other commentators are consulted, both ancient and contemporary, but we do not in this chapter deviate from any of Burnyeat's analysis of both the

²³⁵ See, e.g., Polansky, *Aristotle's De Anima: A Critical Commentary*, 223–49, esp. 225 n. 3; Rosen, "Motion and Change in Aristotle's *Physics* 5.1," 85 n. 30; and Shields, *Aristotle: De Anima*, 211–22, esp. 212. This is not to say there are no dissenters: see, e.g., Robert Heinaman, "Actuality, Potentiality and *De Anima* II.5," *Phronesis* 52, no. 2 (2007): 139–87.

²³⁶ Burnyeat, "*De Anima* II 5."

problem and the solution. Before beginning our analysis of *De Anima* 2.5 in earnest, it seems prudent to situate the chapter in the *De Anima* as a whole.

2.2 *De Anima* 2.5 in Context of *De Anima*

De Anima Book 1 focuses on introducing the topic of psychology (1.1), surveying (1.2) and criticizing the ἔνδοξα (“reputable opinions”) of Aristotle’s predecessors and exposing the various ἀπορία (“puzzles”) their views left unresolved (1.3-5). In 1.1, we are given four questions which are meant to guide the subsequent discussion: First, what sort of thing is the soul (402a23-24)? That is, to which of the categories does the soul belong?²³⁷ Second, is the soul the sort of thing that exists in potentiality or in actuality (402a25-26)?²³⁸ Third, does the soul have parts (402b1)?²³⁹ And fourth, is there single account of the soul (402b1-3)?²⁴⁰ In Book 2 Aristotle takes a more positive approach. Hence, in the first lines of Book 2, “Let this much be said about what has been handed down concerning the soul by our predecessors,” he says; and “let us start anew” (2.1 412a3-4).²⁴¹ *De Anima* Book 2 is composed of twelve chapters, the bulk of which is devoted to perception. Here, he gives answers to his four questions which respect the ἔνδοξα of his predecessors while attempting to avoid their errors. In 2.1-2, Aristotle turns to the issue of the definition of the soul, which he defines as “the first actuality” (ἐντελέχεια ἡ πρώτη) of a potentially living natural body (412a26-27). This is the place where Aristotle first introduces the so-called first and second actuality distinctions, which we examine below. It is also the place

²³⁷ Aristotle specifies here that he is speaking of the categories. So, 402a23-25: “It is presumably first of all necessary to determine the genus of the soul and what it is. I mean it is some *this*—that is, a *substance*—or *quality*, or a *quantity*, or *something in some one of the other delineated categories*”, italics mine. πρῶτον δ’ ἴσως ἀναγκαῖον διελεῖν ἐν τίνι τῶν γενῶν καὶ τί ἐστὶ, λέγω δὲ πότερον τόδε τι καὶ οὐσία ἢ ποιὸν ἢ ποσόν, ἢ καὶ τις ἄλλη τῶν διαιρεθεισῶν κατηγοριῶν.

²³⁸ “Further, it is necessary to determine whether it is one of the things which exist in potentiality or whether it is, rather, an actuality.” ἔτι δὲ πότερον τῶν ἐν δυνάμει ὄντων ἢ μᾶλλον ἐντελέχειά τις.

²³⁹ “One must also consider whether it has parts or is without parts.” σκεπτέον δὲ καὶ εἰ μεριστὴ ἢ ἀμερής.

²⁴⁰ “And whether or not all souls are uniform in kind, or if not whether they differ in species or in genus.” καὶ πότερον ὁμοειδὴς ἅπαντα ψυχὴ ἢ οὐ· εἰ δὲ μὴ ὁμοειδὴς, πότερον εἶδει διαφέρουσα ἢ γένει.

²⁴¹ Τὰ μὲν δὴ ὑπὸ τῶν πρότερον παραδεδομένα περὶ ψυχῆς εἰρήσθω· πάλιν δ’ ὥσπερ ἐξ ὑπαρχῆς ἐπανίωμεν.

where Aristotle answers two of his four questions, viz., questions one and two: what is the soul and does it exist in actuality or potentiality? The answers we find in *De Anima* 2.1 are as follows: the soul is the form of the body (2.1 412a19-21, answer to question one) and the soul is both an actuality and a potentiality (2.1 412a22-28, answer to question two). What of questions three and four? In 2.2-3, Aristotle gives an initial assay of the various possible parts (or faculties) of the soul—whether plant, animal, or human. It is clear, he says, that animals have faculties not possessed by plants (e.g., perception and locomotion), and that humans have a faculty not possessed by animals (i.e., reason). Hence, not only are there various parts of the soul—if parts are taken as faculties²⁴²—(2.2 413b11-14a1, answer to question three), but as a result of these parts the soul can be given a single account *only if* considered generally; for, specific souls will have specific parts which will give rise to specific accounts (2.3 414b19-15a11, answer to question four).

Having given answers in the first three chapters of Book 2 to the questions he raised in 1.1, Aristotle turns to the project of analyzing these faculties of souls in the remaining sections of *De Anima*. As he says at the beginning of 2.3, “it is necessary for anyone who is going to conduct an inquiry in these things [i.e., faculties of the soul] to grasp what each of them is, and then to investigate in the same way things closest to them as well as other features” (415a14-16).²⁴³ And so he does. In the remainder of 2.4 he analyzes the nutritive faculty, in 2.5-3.3 the faculty of perception, in 3.3-4 the faculty (or sub-faculty) of imagination (φαντασία), in 3.2 and 3.4-8, the faculty of intellect, and in 3.9-10 the faculties of desire and locomotion, before concluding with a summary of the various psychic interrelations in 3.12-13.

²⁴² See the discussion on this point in Shields, *Aristotle: De Anima*, 89.

²⁴³ Ἀναγκαῖον δὲ τὸν μέλλοντα περὶ τούτων σκέψιν ποιεῖσθαι λαβεῖν ἕκαστον αὐτῶν τί ἐστίν, εἴθ' οὕτως περὶ τῶν ἐχομένων καὶ περὶ τῶν ἄλλων ἐπιζητεῖν.

It is important for us to recognize this structure before moving on to an analysis of *De Anima* 2.5. In the chapter immediately prior, he focused on the nutritive faculty, having yet to discuss the faculty of perception in any depth—even as he introduced perception in 2.2-3. It is only in 2.5 that he turns to focus upon perception, stating in the chapter's first lines that he wishes to “discuss what is common to *the whole* of perception (πάσης αἰσθήσεως)” (416b32-33).²⁴⁴ It is only here and, to a lesser degree in 2.12, that Aristotle proposes such a focus. In *De Anima* 2.6 the focus is on perceptible objects, in 2.7 on sight, in 2.8 on hearing, in 2.9 on smell, in 2.10 on taste, on 2.11 on touch, and in 2.12 on the sense organs. The focus of 3.1 is on the exact number of senses, 3.2 on the so-called common sense, and, finally, 3.3 focuses on the differences between perception, thinking, and imagination. Hence, only in 2.5 do we have a discussion of what is common to perception as a whole—which is itself a discussion set in the context of analyzing the various possible parts or faculties of souls. *De Anima* 2.5 is thus exceedingly broad in scope.

2.3 In the Beginning: *De Anima* 2.5 416b32-417a20

Now let us turn to the chapter itself. The chapter runs from 416b32-417a6,²⁴⁵ and begins as follows in at 416b32-17a2:

With these things determined, let us discuss what is common to whole of perception (αἰσθήσεως). Perception (αἴσθησις) arises in both being changed (κινεῖσθαι) and being-affected (πάσχειν), as has been said; for it seems to be a kind of alteration (ἀλλοιώσις τις). Some also say that like (ὅμοιον) is affected (πάσχειν) by like (ὅμοιου); and we have

²⁴⁴ Διωρισμένων δὲ τούτων λέγωμεν κοινῇ περὶ πάσης αἰσθήσεως.

²⁴⁵ *DA* 2.5 is seventy-five Bekker lines of Greek text.

said how this is possible or impossible in our general discussions on acting (ποιεῖν) and being-affected (πάσχειν).²⁴⁶

The things which have been determined are the details of the nutritive faculty which Aristotle discussed in the previous chapter, 2.4. He is now indicating his intention to move on, wishing to discuss, as we have already seen, “what is common to the whole of perception” (416b32-33). Next, he gives a brief description of perception, which we have also seen. We should note here that Aristotle designates perception (αἴσθησις) in these first lines as an instance of kinetic change, but of what sort?²⁴⁷ It is, he says, an instance of πάσχειν—passion or “being-affected”—and “a kind of alteration” (ἀλλοιώσις τις). We address this in much more detail below, but in our analysis in chapter 1 we mentioned that alteration (ἀλλοιώσις) refers to a change in the category of quality, though we did not there make much of it. Aristotle offers what is, perhaps, his canonical definition of alteration in *Physics* 5.2 226a26-29:²⁴⁸

Change (κίνησις) with respect to quality (ποιόν) we may call alteration (ἀλλοιώσις), since it has been joined to this common name. By quality (ποιόν) I mean not what is in the substance (for even the differentia is a quality (ποιότης)), but the affection (παθητικόν) in virtue of which a thing is said to be affected (πάσχειν) or to be incapable of being-affected (ἀπαθής).²⁴⁹

²⁴⁶ Διωρισμένων δὲ τούτων λέγωμεν κοινῇ περὶ πάσης αἰσθήσεως. ἡ δ’ αἴσθησις ἐν τῷ κινεῖσθαι τε καὶ πάσχειν συμβαίνει, καθάπερ εἴρηται· δοκεῖ γὰρ ἀλλοιώσις τις εἶναι. φασι δὲ τινες καὶ τὸ ὅμοιον ὑπὸ τοῦ ὁμοίου πάσχειν. τοῦτο δὲ πῶς δυνατόν ἢ ἀδύνατον, εἰρήκαμεν ἐν τοῖς καθόλου λόγοις περὶ τοῦ ποιεῖν καὶ πάσχειν. Shields translation, modified.

²⁴⁷ Κίνησις is the cognate noun of the passive verb used here, κινεῖσθαι.

²⁴⁸ See Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 164.: “In [*Physics* 5] Ch. 2 he formally defines alteration. Since one might assume that a definition in this context has canonical status, it deserves very careful study.”

²⁴⁹ ἡ μὲν οὖν κατὰ τὸ ποιὸν κίνησις ἀλλοιώσις ἔστω· τοῦτο γὰρ ἐπέzeugται κοινὸν ὄνομα. λέγω δὲ τὸ ποιὸν οὐ τὸ ἐν τῇ οὐσίᾳ (καὶ γὰρ ἡ διαφορὰ ποιότης) ἀλλὰ τὸ παθητικόν, καθ’ ὃ λέγεται πάσχειν ἢ ἀπαθεῖς εἶναι. Reeve translation, modified.

Notice the connection made between ἀλλοίωσις and πάσχειν here. There is a specialized, narrow definition of the term “πάσχειν,” which we have translated as “passion” or “being-affected”, in *Generation and Corruption* 1.6. In context, Aristotle is attempting to differentiate between “action” (ποιεῖν) and “change” (κινεῖν) such that the latter is the wider of the two (323a15-17, 20). As for the former, we are told that “action is opposed to passion” (τὸ ποιοῦν ἀντιθήσομεν τῷ πάσχοντι, 323a17-18) and that passion should just narrowly refer to “things for which the change is an affection (πάθος)” (323a18).²⁵⁰ The term “πάθος” translated “affection” refers to a quality at *Categories* 8 9a28-29 such as hot or cold, sweet or bitter, or dark or pale, just as it does here (323a19-20).²⁵¹ Hence, says Aristotle, narrowly speaking, πάσχειν refers to “that in respect of which a thing alters only (ἀλλοιοῦται μόνον)” (323a19).²⁵² In this narrow sense, thus, being-affected is synonymous with alteration.²⁵³ That said, both emphasize *different aspects* of qualitative change—πάσχειν that what is qualitatively changed is acted upon by receiving an affection (πάθος), and ἀλλοίωσις that the transition be from contrary to contrary. Hence,

²⁵⁰ τοῦτο δ’ οἷς ἡ κίνησις πάθος.

²⁵¹ τὸ λευκὸν καὶ τὸ θερμόν.

²⁵² δὲ καθ’ ὅσον ἀλλοιοῦται μόνον. Williams translation, modified.

²⁵³ See e.g., Philoponus in *Cat.* 164.13: “Being-affected is being altered by something.” πάσχειν δε εστι το υπό τινός ἀλλοιόουσθαι. Share translation, modified. Cf. Philoponus in *GC* 136.26-28, Simplicius in *Cat.* 295.16-296.1, and C. J. F. Williams, *Aristotle’s De Generatione et Corruptione* (New York: Clarendon Press, 1982), 116–17. For the broad sense see *Phys.* 5.2 225b13-16 and *Meta.* K.12 1068a13-16. Cf. Burnyeat, “De Anima II 5,” 35 n. 23: “There is a neutral use in which the family of terms πάσχειν, πάθος, πάθημα does not select for any category, and a narrower use in which they select for attributes in respect of which a thing can alter and hence for the category of quality.” See too: Robert Heinaman, “Actuality, Potentiality and De Anima II.5,” *Phronesis* 52, no. 2 (2007): 141: “It is a ‘narrow’ sense of ‘being affected’ (πάσχειν) restricted to real change of quality.” John of Damascus is particularly helpful on this point in *Dialectica* 52: “Action (ποιεῖν) and passion (πάσχειν), then, are observed in all the categories: in substance, generating and being generated; in quantity, counting and being counted; in relative, doubling and being doubled; in quality, whitening and being whitened; in position, seating and being seated; in having, carrying and being carried; in place, containing and being contained; in time, containing and being contained in present, past, and future time.” The quotation is modified from the translation of Frederic H. Chase, Jr., *Saint John of Damascus: Writings*, vol. 37, The Fathers of the Church (New York: The Fathers of the Church, Inc., 1958), 86. For John’s Greek, see J. P. Migne, ed., *Joannes Damascenus*, vol. 94, *Patrologia Graeca* (Paris: Imperimerie Catholique, 1864), 640: ἐν πᾶσαις οὖν ταῖς κατηγορίαις θεωρεῖται τό ποιεῖν καὶ πάσχειν. ἐν μὲν τῇ οὐσίᾳ, το γεννᾶν καὶ γεννᾶσθαι; ἐν δὲ τῷ τοσο, ἀριθμεῖν καὶ ἀριθμεῖσθαι; ἐν δὲ τοῖς πρὸς τι, διαπλασιάζειν καὶ διαπλασιάζεσθαι; ἐν τῇ ποιότητι, λευκαίνειν καὶ λευκαίνεσθαι; ἐν τῷ κείσθαι, καθίζειν καὶ καθέζεσθαι; ἐν τῷ ἔχειν, φορεῖς καὶ φορεῖσθαι; ἐν τῇ που, περιέχειν καὶ περιέχεσθαι; ἐν τῇ ποτε, περιεχειν καὶ περιεχεσθαι ἐν τῷ ἐνεστώτι, καὶ παρεληλυθότι καὶ μέλλοντι χρόνῳ.

alteration refers to a kinetic change in the category quality (ποιόν) with respect to an affection (παθητικός/πάθος) by means of which the patient which changes is said to undergo passion or be affected (πάσχειν). Perception, according to Aristotle at *De Anima* 416b33-34, is apparently of this kind.

Next, we have the claim at 416b35 that “some also say that like (ὅμοιον) is affected by (πάσχειν) like (ὁμοίου).” Not only was this one of the reputable opinions (ἐνδοξα) from Book 1 (1.2 404b17-18, 405b15), it also turned out to be a puzzle (ἀπορία), especially in the case of knowledge and perception (1.5 409b24ff). Likeness (ὅμοιος), says Aristotle in the *Categories*, refers to sameness in quality.²⁵⁴ Aristotle presses back on this like-like theory, as Christopher Shields calls it,²⁵⁵ arguing that if true, then in order to know the elements the soul must be composed of the elements (409b26-10a13); *or*, that for the soul to know items in the different categories, then the soul must either be a member of said category or of all the categories (410a13-22).²⁵⁶ Key in the discussion in 1.5 is 410a23-26:

It is, moreover, absurd to say that like (ὅμοιον) is unaffected (ἀπαθές) by like (ὁμοίου), but that like (ὅμοιον) is perceived (αἰσθάνεσθαι) by like (ὁμοίου) and that one knows (γινώσκειν) like (ὁμοίῳ) by like (ὅμοιον). Yet they maintain that perceiving

²⁵⁴ *Cat.* 8 11a15-19: “Nothing so far mentioned is distinctive of quality (ποιότης), but it is in virtue of qualities (ποιότης) only that things are called like (ὅμοιος) and unlike (ἀνόμοιος); a thing is not like (ὅμοιος) to another in virtue of anything but that in virtue of which it is qualified (ποιός). So it would be distinctive (ἴδιον) of quality (ποιόν) that a thing is called like (ὅμοιος) or unlike (ἀνόμοιος) in virtue of it.” Cf. Burnyeat, “*De Anima* II 5,” 35 n. 21.

²⁵⁵ Shields, *Aristotle: De Anima*, 152.

²⁵⁶ See Shields, *Aristotle*, 156–58.

(αἰσθάνεσθαι) is a sort of being-affected (πάσχειν) or being changed (κινεῖσθαι);²⁵⁷ and the same hold for both reasoning and knowing (τὸ νοεῖν τε καὶ γινώσκειν).²⁵⁸

The point Aristotle is making is as follows. Take a body that is the same temperature as a tub full of water. Would we want to say in the case of taking a bath that the water *affects* one's body by heating it? Certainly not, if they are the same temperature. There is no agency or patiency in such a case, for there would be *no change* at all. Hence, like does *not* affect like.²⁵⁹ Nevertheless, Aristotle's predecessors hold that both perceiving and knowing are instances of being changed or affected (1.3 406b15-16, 1.4 408b1-11), *and* that like is known by like (1.2 404b17-18, 405b15). Hence, they hold to the following:

1. Like is not affected by like.
2. Like is known and perceived by like.
3. Perceiving and knowing are both instances of being-affected.
4. So, in both perceiving and knowing like is affected by like (from 2. and 3.).
5. Therefore, like is not affected by like (1.) and like is affected by like (4.).²⁶⁰

On the face of it, the conjunction of 1 and 4 in 5 is absurd. But Aristotle will start to unravel this absurdity in the case of perception here in 2.5. Thus, he begins here in 416b35-17a2:

Some also say that like (ὅμοιον) is affected by (πάσχειν) like (ὁμοίου); and we have said how this is possible or impossible in our general discussions on affecting (ποιεῖν) and being-affected (πάσχειν).²⁶¹

²⁵⁷ Κινεῖσθαι is the passive verbal infinitive cognate of the noun κίνησις, as we have seen.

²⁵⁸ ἄτοπον δὲ καὶ τὸ φάναι μὲν ἀπαθὲς εἶναι τὸ ὅμοιον ὑπὸ τοῦ ὁμοίου, αἰσθάνεσθαι δὲ τὸ ὅμοιον τοῦ ὁμοίου καὶ γινώσκειν τῷ ὁμοίῳ τὸ ὅμοιον· τὸ δ' αἰσθάνεσθαι πάσχειν τι καὶ κινεῖσθαι τιθέασιν· ὁμοίως δὲ καὶ τὸ νοεῖν τε καὶ γινώσκειν.

²⁵⁹ I owe this example to Ronald Polansky, *Aristotle's De Anima* (New York: Cambridge University Press, 2007), 129.

²⁶⁰ For a similar reading see Burnyeat, "De Anima II 5," 37–38. Cf. also Polansky, *Aristotle's De Anima*, 129.

The work he refers to as “our general discussions on acting and being-affected” is typically thought to be *Generation and Corruption*, specifically 1.7.²⁶² There, he discusses the like-like theory in detail, with respect to sameness of quality.²⁶³ He also specifies in 1.7 how the like-like theory “is possible or impossible.” For likeness to occur contrariety (ἐναντίωσις) is required, which itself appeals to the notions of genus and species as we previously noted.²⁶⁴ Aristotle also appeals to them here, noting at 324a3-5: “It is necessary that in one sense agent (τό ποιοῦν) and patient (τὸ πάσχον) should be the same (ταὐτὰ) and in another sense different and unlike (ἕτερα καὶ ἀνόμοια) one another.”²⁶⁵ What is this difference? Agent (τό ποιοῦν) and patient (τὸ πάσχον) must be “the same and like (ὅμοια) in genus (γένει) but unlike (ἀνόμοια) in species (εἴδει), and it

²⁶¹ φασὶ δέ τινες καὶ τὸ ὅμοιον ὑπὸ τοῦ ὁμοίου πάσχειν. τοῦτο δὲ πῶς δυνατόν ἢ ἀδύνατον, εἰρήκαμεν ἐν τοῖς καθόλου λόγοις περὶ τοῦ ποιεῖν καὶ πάσχειν. Shields (2016) translation, modified.

²⁶² See, e.g., Burnyeat, “De Anima II 5,” 38–40; Shields, *Aristotle: De Anima*, 213; Polansky, *Aristotle’s De Anima*, 225; Williams, *Aristotle’s De Generatione et Corruptione*, 121.

²⁶³ See *GC* 1.7 323b24–24a24, throughout.

²⁶⁴ So, e.g., *Meta.* Δ.10 27–8: Contraries are “the most different of the things in the *same genus*.”

²⁶⁵ Ὡστ’ ἀνάγκη πῶς μὲν εἶναι ταῦτα τό τε ποιοῦν καὶ τὸ πάσχον, πῶς δ’ ἕτερα καὶ ἀνόμοια ἀλλήλοις. The passage in full is fascinating. Here is 323b21–344b8: “Again, if something is capable of being affected by what is like it, it will also be capable of being affected by itself; and if this were the case there would be nothing imperishable or immovable, given that like qua like is capable of acting, for everything would move itself. The same goes for that which is completely different and in no respect the same. Whiteness could not be affected in any way by a line or a line by whiteness, unless per accidens: e.g. the line might per accidens be white or black. Nothing dislodges another from its nature unless both are either contraries or from contraries. But, since action and passion belong naturally, not to any old thing, but only to things which have contrariety or are contraries, agent and patient are necessarily alike and the same in genus (τῷ γένει μὲν ὅμοιον) but unlike and contrary in species (τῷ δ’ εἴδει ἀνόμοιον καὶ ἐναντίον). For it is natural for body to be affected by body, flavour by flavour, colour by colour, and generally things that are of a given genus by other such things. The reason for this is that contraries are all in the same genus, and it is contraries which act on and are affected by each other. So it is necessary that in one sense agent and patient should be the same and in another sense different and unlike one another. And, since patient and agent are the same and like in genus but unlike in species, and it is contraries that are like this, clearly the things which are capable of acting on and being affected by one another are the contraries and the intermediates.” εἴ τε ὑπὸ τοῦ ὁμοίου τι πάσχειν δυνατόν, καὶ αὐτὸ ὑφ’ αὐτοῦ· καίτοι τούτων οὕτως ἐχόντων οὐδὲν ἂν εἴη οὔτε ἄφθαρτον οὔτε ἀκίνητον, εἴπερ τὸ ὅμοιον ἢ ὅμοιον ποιητικόν· αὐτὸ γὰρ αὐτὸ κινήσει πᾶν, τό τε παντελῶς ἕτερον καὶ τὸ μηθαμὴ ταῦτόν ὡσαύτως· οὐδὲν γὰρ ἂν πάθῃ λευκότης ὑπὸ γραμμῆς ἢ γραμμὴ ὑπὸ λευκότητος, πλην εἰ μή που κατὰ συμβεβηκός, οἷον εἰ συμβέβηκε λευκῇ ἢ μέλαιναν εἶναι τὴν γραμμὴν· οὐκ ἐξίστησι γὰρ ἄλληλα τῆς φύσεως ὅσα μήτ’ ἐναντία μήτ’ ἐξ ἐναντίων ἐστίν. Ἀλλ’ ἐπεὶ οὐ τὸ τυχὸν πέφυκε πάσχειν καὶ ποιεῖν, ἀλλ’ ὅσα ἢ ἐναντία ἐστὶν ἢ ἐναντίωσιν ἔχει, ἀνάγκη καὶ τὸ ποιοῦν καὶ τὸ πάσχον τῷ γένει μὲν ὅμοιον εἶναι καὶ ταῦτό, τῷ δ’ εἴδει ἀνόμοιον καὶ ἐναντίον· πέφυκε γὰρ σῶμα μὲν ὑπὸ σώματος, χυμὸς δ’ ὑπὸ χυμοῦ, χρῶμα δ’ ὑπὸ χρώματος πάσχειν, ὅλως δὲ τὸ ὁμογενὲς ὑπὸ τοῦ ὁμογενοῦς. Τούτου δ’ αἴτιον ὅτι τὰναντία ἐν ταῦτῳ γένει πάντα, ποιεῖ δὲ καὶ πάσχει τὰναντία ὑπ’ ἀλλήλων. Ὡστ’ ἀνάγκη πῶς μὲν εἶναι πάσχει τὰναντία ὑπ’ ἀλλήλων. Ὡστ’ ἀνάγκη πῶς μὲν εἶναι ταῦτα τό τε ποιοῦν καὶ τὸ πάσχον, πῶς δ’ ἕτερα καὶ ἀνόμοια ἀλλήλοις. Ἐπεὶ δὲ καὶ τὸ πάσχον καὶ τὸ ποιοῦν τῷ μὲν γένει ταῦτα καὶ ὅμοια τῷ δ’ εἴδει ἀνόμοια, τοιαῦτα δὲ τὰναντία, φανερόν ὅτι παθητικὰ καὶ ποιητικὰ ἀλλήλων ἐστὶ τὰ τ’ ἐναντία καὶ τὰ μεταξύ.

is contraries (τάναντία) that are like this” (324a6-7).²⁶⁶ We might call this alternative to the like-like theory Aristotle’s generically-like-but-specifically-unlike theory.

As for how this plays out in the case of perception we soon will see. For now, in the lines that immediately follow his reference to *Generation and Corruption* 1.7, Aristotle employs his alternative to the like-like theory in the puzzle at 417a2-9:

There is a puzzle (ἀπορίαν) as to why there is no perception (οὐ αἴσθησις) of the senses themselves (αἰσθήσεων αὐτῶν), and why they do not produce (ποιοῦσιν) perception (αἴσθησιν) without external objects, even though present in them (ἐνόντος) are fire, earth, and the other elements of which there is perception (αἴσθησις) either in themselves (καθ’ αὐτὰ) or accidentally (συμβεβηκότα). It is clear from this that the percipient (αἰσθητικὸν) does not exist (οὐκ ἔστιν) in actuality (ἐνεργεία), but only in potentiality (δυνάμει μόνον); that is why it does not perceive (οὐκ αἰσθάνεται), just as (καθάπερ) what is combustible does not burn by itself (καίεται αὐτὸ καθ’ αὐτὸ) without something capable of burning it (καυστικοῦ). For otherwise it would burn itself, and would need no (οὐθὲν ἐδεῖτο) actually existing fire (ἐντελεχεία πυρὸς ὄντος).²⁶⁷

We can state the basic query the puzzle begins with as follows: If like perceives like then why is it that the senses do not perceive themselves? Philoponus clarifies this puzzle for us by paraphrasing it in the following way: “If perception, he says, apprehends perceptibles, and the sense organs through which we perceive are perceptibles, why does perception not apprehend

²⁶⁶ Ἐπεὶ δὲ καὶ τὸ πάσχον καὶ τὸ ποιοῦν τῷ μὲν γένει ταῦτα καὶ ὅμοια τῷ δ’ εἶδει ἀνόμοια, τοιαῦτα δὲ τάναντία.

²⁶⁷ ἔχει δ’ ἀπορίαν διὰ τί καὶ τῶν αἰσθήσεων αὐτῶν οὐ γίνεται αἴσθησις, καὶ διὰ τί ἄνευ τῶν ἔξω οὐ ποιοῦσιν αἴσθησιν, ἐνόντος πυρὸς καὶ γῆς καὶ τῶν ἄλλων στοιχείων, ὧν ἐστὶν ἡ αἴσθησις καθ’ αὐτὰ ἢ τὰ συμβεβηκότα τούτοις. δῆλον οὖν ὅτι τὸ αἰσθητικὸν οὐκ ἔστιν ἐνεργεία, ἀλλὰ δυνάμει μόνον, διὸ οὐκ αἰσθάνεται, καθάπερ τὸ καυστὸν οὐ καίεται αὐτὸ καθ’ αὐτὸ ἄνευ τοῦ καυστικοῦ· ἔκαιε γὰρ ἂν ἑαυτό, καὶ οὐθὲν ἐδεῖτο τοῦ ἐντελεχεία πυρὸς ὄντος. Shields translation, modified.

these too, even when nothing is present from outside?” (*in DA* 291.2-5).²⁶⁸ Aristotle’s point seems to be that if the sense organs are themselves composed of elements such as fire, air, water, and earth which are qualified by perceptibles, then why is it that we have not e.g., sight of the eye, hearing of the ear, or taste of the mouth? For if in perception we apprehend what our sense organs are already like such that color apprehends color and flavor apprehends flavor, then our sense organs should apprehend themselves given that they are clearly so composed. This does not occur, of course, a fact which Aristotle takes to align far more with his own generically-like-but-specifically-unlike theory rather than the simple Presocratic like-like theory. His present point, however, is not so much about alternatives to the like-like theory *per se* as it is about one of its assumptions, *viz.*, that perception is a matter of some sort of self-contained *activity*. If like apprehends like on the like-like theory, then like must *act* upon like in perception which just does not occur. That we do not perceive our own sense organs shows not only that the like-like theory is false, but that its assumption of perception as something *active* is false as well. As for his solution in the second half of the text concerning how the externality of perceptible objects explains why the sense organs do not perceive themselves, there is a better place to address this later and we table it for now.

In the next lines, 417a9-14, Aristotle turns to the different senses of perception (αἴσθησις) and perceptible (αἰσθητόν), both of which can be understood as actual or potential. We saw in the previous chapter that Aristotle makes much use of the distinction between actuality (ἐνέργεια/ἐντελέχεια) and potentiality (δύναμις). What we have not seen, however, is the double usage Aristotle soon makes of the terms when applying them to perception and knowledge in this present chapter. First, however, the typical distinction at 417a9-12:

²⁶⁸ εἰ ἡ αἴσθησις, φησὶν, ἀντιληπτικὴ ἐστὶ τῶν αἰσθητῶν, αἰσθητὰ δὲ καὶ τὰ αἰσθητήρια, δι’ ὧν αἰσθανόμεθα, διὰ τί οὐχὶ καὶ τούτων ἡ αἴσθησις ἀντιλαμβάνεται, καὶ μηδενὸς ἐξώθεν παρόντος; Charlton translation, modified.

Since we speak of perceiving (αἰσθάνεσθαι) in two ways—for we speak of that which potentially (δυνάμει) hears or sees as hearing and seeing, even if it should happen to be sleeping, and also of that which is already actually (ἐνεργοῦν) seeing and hearing.²⁶⁹

The point here is that we speak the same way about what *potentially* hears or sees as we do about what *actually* hears or sees. For example, after an accident requiring hospitalization we might ask, “Does Jones see?” The Doctor might reply, while Jones is asleep, “Yes, Jones sees.” Yet, Jones does *not actually* see when the phrase is uttered. Jones *potentially* sees, i.e., Jones’ faculty of sight is operable even as Jones is not at the time making use of it. To see the strangeness of this, think about asking the friend standing between you and Jones on a bird watching expedition, “Does Jones see that great blue heron?” The friend replies, “Yes, Jones sees.” In this case, Jones *actually* sees, not just potentially sees. Yet the locution in both instances, “Jones sees”, is identical. One locution for two different intensions: potentially perceiving and actually perceiving. This is important for Aristotle because if the activity of perceiving (αἰσθάνομαι) can be meant in two different ways, then so must the faculty of perception (αἴσθησις) admit of the same distinction. And if the faculty of perception, then so the object of perception or the perceptible. He puts it this way in the following lines at 417a12-14:

Perception (αἴσθησις) will also be spoken of in two ways, in one case as potential (δυνάμει) and in the other as actual (ἐνεργεία); and the same for the object of perception (τὸ αἰσθητόν), in one case as potential (δυνάμει) and in the other as actual (ἐνεργεία).²⁷⁰

²⁶⁹ ἐπειδὴ δὲ τὸ αἰσθάνεσθαι λέγομεν διχῶς (τό τε γὰρ δυνάμει ἀκοῦον καὶ ὁρῶν ἀκούειν καὶ ὁρᾶν λέγομεν, κἂν τύχη καθεῦδον, καὶ τὸ ἤδη ἐνεργοῦν). Shields translation, modified.

²⁷⁰ διχῶς ἂν λέγοιτο καὶ ἡ αἴσθησις, ἡ μὲν ὡς δυνάμει, ἡ δὲ ὡς ἐνεργεία. ὁμοίως δὲ καὶ τὸ αἰσθητόν, τό τε δυνάμει ὄν καὶ τὸ ἐνεργεία.

Given that Aristotle situates psychology in his physics as we noted in the introduction (DA 1.1 403a16–28), it is no surprise that he would apply his ‘physical’ actuality-potentiality distinction here too.²⁷¹

Having set the stage thus, Aristotle now returns to the distinctions he began the chapter with (416b32–17a2), viz., that perception is an instance of kinetic change, a narrow-sense passion (πάσχειν) and “a kind of alteration” (ἀλλοίωσις τις)—and how the like-like theory applies in such cases. As we will see, these distinctions are crucial for the new double usage of actuality and potentiality in the case of knowing and perceiving both. So, 417a14–20:

First, then, let us speak as if (ὥς) being-affected (πάσχειν) and being changed (κινεῖσθαι) and being actual (ἐνεργεῖν) were the same; for change (κίνησις) is a kind of actuality (ἐνέργεια τις), however incomplete (ἀτελής), as was said in other writings. Everything is affected (πάσχει) and changed (κινεῖται) by what is capable of producing such a result and is in actuality (ἐνεργείᾳ). There is, accordingly, a sense in which like (ὁμοίου) is affected by (πάσχει) [like] and there is a sense in which unlike (ἀνομοίου) is affected by (πάσχει) [unlike], just as we have said; for something unlike (ἀνόμοιον) is affected (πάσχει), but once affected (πάσχει) it is like (ὁμοίον).²⁷²

Much of this is a repetition of his earlier comments from 416b32–17a2, though he does make a new connection here with the equation of πάσχειν and kinetic change with ἐνέργεια τις—although this is not really new. As we saw in chapter 1 it is a standard line for Aristotle to refer

²⁷¹ Nature is the realm of change, as we pointed out in the introduction. And what cannot change in a certain respect lacks the potentiality to do so. The heavens can only change in one way (circular motion), while the unchanged changer cannot in any way change. If the psychical admits of both actuality and potentiality, therefore, *ipso facto* it is a part of the natural. So, Burnyeat, “De Anima II 5,” 78: “Aristotle’s psychology is designed to be the crowning achievement of his physics.” Cf. *ibid.*, 36 and n. 24, as well as 81.

²⁷² πρῶτον μὲν οὖν ὥς τοῦ αὐτοῦ ὄντος τοῦ πάσχειν καὶ τοῦ κινεῖσθαι καὶ τοῦ ἐνεργεῖν λέγωμεν· καὶ γὰρ ἔστιν ἡ κίνησις ἐνέργειά τις, ἀτελής μέντοι, καθάπερ ἐν ἐτέροις εἴρηται. πάντα δὲ πάσχει καὶ κινεῖται ὑπὸ τοῦ ποιητικοῦ καὶ ἐνεργείᾳ ὄντος. διὸ ἔστι μὲν ὥς ὑπὸ τοῦ ὁμοίου πάσχει, ἔστι δὲ ὥς ὑπὸ τοῦ ἀνομοίου, καθάπερ εἵπομεν· πάσχει μὲν γὰρ τὸ ἀνόμοιον, πεπονθὸς δ’ ὁμοίον ἔστιν.

to change as an “incomplete actuality” (ἀτελής ἐνέργεια, *Phys.* 3.2 201b31-32).²⁷³ This was, in fact, part of the puzzle with respect to the very definition of change, namely that it is neither purely potential nor purely actual (*Phys.* 3.2 201b27-29) but something “indefinite” (ἄοριστος, 201b24). To be purely actual or purely potential is to be something definite. But to be *both* actual and potential simultaneously—that is precisely what is means to be *indefinite*. And this is precisely what Aristotle is trying to capture in the definition, viz., that change is *both* about what is and what is not—while yet still existing in its own right. Hence, to say as he does here that kinetic change is ἐνέργεια τις—“a kind of actuality”²⁷⁴—is exactly in keeping with his standard doctrine in the *Physics*, which he refers to in 417a17 as “other writings.”²⁷⁵ Change itself is that middle moment between potentiality and actuality—neither a potentiality nor an actuality, but an combinatorial *actualizing potentiality*. Hence, κίνησις is indeed an ἐνέργεια τις—“a kind of actuality.” What Aristotle is asking here is for us to consider them *as though* κίνησις and ἐνέργεια were the same. That is, we are for now to consider them as such. The reason being that, as Philoponus, points out, Aristotle has not yet made the distinction between them.²⁷⁶

Also in this passage, we see the return of the like-like theory—but this time with an explanation. In fact, it is the very explanation we see in *Generation and Corruption* 1.7 as noted

²⁷³ See also, e.g., *Phys.* 8.5 257b8-9, *Meta.* Θ.6 1048b29-36, K.6 1066a20-22, *NE* 10.3 1173a29-31, etc.

²⁷⁴ Reading τις as a Greek indefinite. We will see this again soon.

²⁷⁵ On the reference, see Ross, *Aristotle: De Anima. Edited with Introduction and Commentary*, 7.

²⁷⁶ Philoponus, in *DA* 296.19-24: “He [Aristotle] now says that we are speaking as though it were the same to say that the senses are affected and changed and [to say that] they are in actuality; [we are speaking thus] until we draw the distinction, [and say] that for the senses to actuality is not the same as for them to be changed and affected. For even if change is a kind of actuality, actuality is more universal than change, and change than being affected. For everything that is affected is also changed, and everything that is changed is in actuality, but it is not also the case that what is in actuality is also changed” (Charlton translation, modified). That is, there is good reason to think that the ὥς at 417a14 is important. Though I do not make anything of it in our present context, at the end of chapter 3 it will become important to see that Aristotle does *not* equate πάσχειν and κίνησις with ἐνέργειά proper. He is making the assumption here for the sake of argument, but the assumption itself turns out to be false: For incomplete actuality and complete actuality, though connected, are not identical. We make much of this point in chapter 6.

above.²⁷⁷ Agent (τό ποιοῦν) and patient (τὸ πάσχον) must be *generically* like but *specifically* unlike;²⁷⁸ for, as he says here in 417a20, “something unlike (ἀνόμοιον) is affected (πάσχει), but once affected (πεπονθὸς) it is like (ὅμοιον).”²⁷⁹ This will come up again at the end of *De Anima* 2.5 in a specific application to perception. What we should take note of now is how Aristotle has set the table: perception is both a case of being-affected and being changed, and thus would seem to be an alteration; both being-affected and being changed are instances of actuality, albeit an incomplete sort; the like-like theory supposes agent and patients to be generically like but specifically unlike until affected; and perception admits of characterization via the actuality-potentiality distinction. These are the suppositions, and it is with these in hand that Aristotle is now ready to turn to what Burnyeat calls “the triple scheme.”²⁸⁰

2.4 First and Second Actuality and First and Second Potentiality: The Triple Scheme

In *De Anima* 2.1, Aristotle introduces two senses of *actuality* which Aristotle amplifies in 2.5 417a21-b2 by drawing the same distinction with respect to *potentiality* as well.²⁸¹ This distinction between first and second actuality and first and second potentiality *together* compose the triple scheme—a distinction Aristotle makes use of just four times in the entire *Corpus*.²⁸² Let us first examine the distinction in *De Anima* 2.1 before moving on to its amplification in 2.5.

In a discussion on the definition of the soul in 2.1, we are told that “actuality is spoken of in two ways, first as knowledge (ἐπιστήμη) is, and second as contemplating (θεωρεῖν) is”

²⁷⁷ So, Williams, *Aristotle's De Generatione et Corruptione*, 122, who cites this passage specifically.

²⁷⁸ Burnyeat, “De Anima II 5,” 39, for this way of putting it.

²⁷⁹ πάσχει μὲν γὰρ τὸ ἀνόμοιον, πεπονθὸς δ' ὅμοιον ἐστίν.

²⁸⁰ Burnyeat, “De Anima II 5,” 48ff.

²⁸¹ See his clear statement of this intent at 417b21.

²⁸² The four places in the *Corpus* are: *DA* 2.1 412a22-28, 2.5 417a21-b2, *Phys.* 8.4 255a33-b3, 21-23 and *Meta.* Θ.8 1050a15-23. For more on the first three of these passages and possibly an allusion in *De Sensu* 4 441b21-23, see Burnyeat, “De Anima II 5,” 48–49. I argue in chapter 6 that it likely occurs at *DA* 3.2 425b26-426a26 as well.

(412a22-23).²⁸³ Using knowledge as a model²⁸⁴ or ‘the knowledge model’ as we shall call it, waking is said to be analogous to contemplating, and sleeping to knowing. And as the soul is requisite for both sleeping *and* waking, the soul must be “the first actuality (ἐντελέχεια ἡ πρώτη) of a natural body which has life in potentiality” (412a26-27).²⁸⁵ The idea is as follows: waking is the actuality of the potentiality *for* waking, which is sleeping. But, sleeping too is the actuality of the potentiality *for* living. Hence, while sleeping is a potentiality, it is also, in another way, an *actuality*—the actuality of the potentiality of a natural, organic body to be alive (412b4-5).²⁸⁶ Minerals do not sleep as they are not potentially alive—that potentiality being requisite for the actuality which is sleeping. Going back to the knowledge model, contemplating (θεωρεῖν) is the actuality of knowing (ἐπιστήμη), as to know but not contemplate is *to possess knowledge without exercising* (ἐνέργεια) *it* (412a25-26). To know is to *potentially* contemplate, whereas contemplating itself is the *actuality* (ἐνέργεια). Yet, knowing (ἐπιστήμη) itself is an actuality, specifically the actuality of the potentiality *to be able to know*. Hence, we here have two senses of actuality: first actuality (i.e., sleeping, knowing) and second actuality (i.e., waking, contemplating)—and the second actuality is the *completion* (or perfection) or *exercise/actuality* (ἐνέργεια)²⁸⁷ of what was in first actuality.²⁸⁸

²⁸³ αὕτη δὲ λέγεται διχῶς, ἡ μὲν ὡς ἐπιστήμη, ἡ δ’ ὡς τὸ θεωρεῖν.

²⁸⁴ Burnyeat, “De Anima II 5,” 50. See Philoponus in DA 307.10: τὴν ἐπιστήμην παρέθετο.

²⁸⁵ διὸ ἡ ψυχὴ ἐστὶν ἐντελέχεια ἡ πρώτη σώματος φυσικοῦ δυνάμει ζῶν ἔχοντος.

²⁸⁶ See the excellent discussion in Shields, *Aristotle: De Anima*, 170–77.

²⁸⁷ One can see in 417b1 (below) that Aristotle means nothing diminishing with respect to ἐνέργεια by having it characterize ἐντελέχεια rather than the other way around given that there he refers to both first and second actuality by means of the former term. Both terms, hence, mean actuality—though we nevertheless retained the traditional “exercise” for clarity. Cf. comments to similar effect in Hicks, *Aristotle De Anima*, 328–29.

²⁸⁸ While Aristotle does indeed use the term “first actuality” (DA 2.1 412a27, b5), we nowhere in the *Corpus* find “second actuality.” It is, nevertheless, the standard term today as it not only follows conceptually from first actuality, but was bequeathed to us by Aristotle’s commentators, beginning with Alexander of Aphrodisias (e.g., *Quaest.* 3.3, 84.34-6, 85.25-6). See Burnyeat, “De Anima II 5,” 48–51, esp. 73 n. 116.

Employing this same knowledge model from 2.1, Aristotle continues the theme right where we left off above at 2.5 417a21-b2:

One must also draw a distinction concerning potentiality (δυνάμει) and actuality (ἐντελεχείᾳ).²⁸⁹ For we have just now been speaking of them without qualification (ἀπλῶς). In the first case, something is a knower (ἐπιστήμον) in the way in which we might say that a human knows (ἐπιστήμονα) because human belongs to the class of knowers (ἐπιστημόνων) and to those things which have knowledge (ἐπιστήμην); but in the second case, we say directly that the one who has grammatical knowledge (τὴν γραμματικὴν) knows (ἐπιστήμονα). These are not in the same way potential (δυνατός) [knowers]; instead, the first one because his genus and matter are of a certain sort, and the other because he has the potential (δυνατός) to contemplate (θεωρεῖν) whensoever he wishes, so long as nothing external hinders him. Yet another sort [of knower] is the one already contemplating (θεωρῶν), who is in actuality (ἐντελεχείᾳ) and strictly knowing (ἐπιστάμενος) this A. In the first two cases, then, those knowing in potentiality (κατὰ δύναμιν ἐπιστήμονες) come to be knowers (ἐπιστήμονες) in actuality (ἐνέργειᾳ), but the first one by being altered (ἀλλοιωθεὶς) through learning, with frequent changes from a contrary (ἐναντίας) state (ἔξωθεν);²⁹⁰ and the other, from having arithmetical or

²⁸⁹ Aristotle is using ἐντελέχεια and ἐνέργεια interchangeably here, just as he does in *Physics* 3.1-2 and elsewhere. See the discussion of the terms in chapter 1 above.

²⁹⁰ Why “*frequent* changes from a contrary state” rather than just a simple change from ignorant to its contrary, knowing? Burnyeat is helpful here: “Just as an apprentice learns to be a builder by building, though not yet with the finished skill of the master, so pupils learn arithmetic or literacy by *gradually* acquiring, and exercising themselves in, *bits* of knowledge they were ignorant of before.... Learning is a stage by stage process, a *growth* of knowledge” (Burnyeat, “De Anima II 5,” 53).

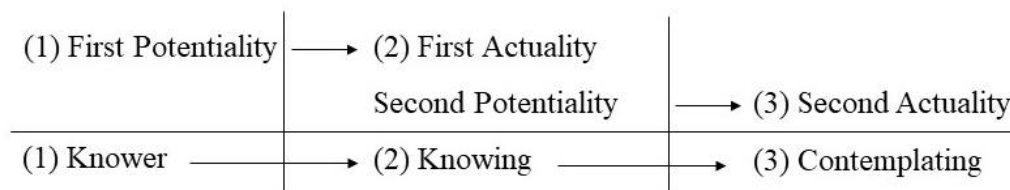
grammatical knowledge and not actualizing (μὴ ἐνεργεῖν) it to actualizing (ἐνεργεῖν) in another way.²⁹¹

We now have two senses also of potentiality which are meant to correlate with the two senses of actuality from *De Anima* 2.1. What we might call first potentiality knowers are simply humans; that is, they are the type of beings which belong to the class of beings which *can* (potentially) know. The second grouping, what we might call second potentiality knowers are those who *actually* know—they have actualized the first potentiality to know by obtaining knowledge—but are not currently exercising (ἐνέργεια) this *actuality*. Both may be correctly described as knowers—just as in the case of Jones above with the verbs and nouns for perception—but in different senses. As Aristotle says, “they are not in the same way potential knowers” (417b26). But this seems strange; how is it that one can *have* an actuality but not exercise it? That is, how can an actuality be at the same time a potentiality? This strangeness is resolved by the fact that Aristotle takes second potentialities to be *identical* to first actualities. Hence, a second potentiality knower is the same thing as a first actuality knower. It is the same object at the same level of actualization, but under a different description. In addition to these two sorts of potential knowers—the latter of whom is also a first actuality knower—we have “yet another sort of knower is the one already contemplating (θεωρῶν), who is in actuality and strictly knowing this A” (417a28-29).²⁹² This, of course, is a second actuality knower which we say in *De Anima* 2.1. Hence, we now have three different senses of “knower” or three grades of actuality-potentiality

²⁹¹ διαιρετέον δὲ καὶ περὶ δυνάμεως καὶ ἐντελεχείας· νῦν γὰρ ἀπλῶς ἐλέγομεν περὶ αὐτῶν. ἔστι μὲν γὰρ οὕτως ἐπιστήμον τι ὡς ἂν εἴποιμεν ἄνθρωπον ἐπιστήμονα ὅτι ὁ ἄνθρωπος τῶν ἐπιστημόνων καὶ ἐχόντων ἐπιστήμην· ἔστι δ' ὡς ἥδη λέγομεν ἐπιστήμονα τὸν ἔχοντα τὴν γραμματικὴν· ἐκάτερος δὲ τούτων οὐ τὸν αὐτὸν τρόπον δυνατός ἐστιν, ἀλλ' ὁ μὲν ὅτι τὸ γένος τοιοῦτον καὶ ἡ ὕλη, ὁ δ' ὅτι βουλευθεὶς δυνατὸς θεωρεῖν, ἂν μὴ τι κωλύση τῶν ἔξωθεν· ὁ δ' ἥδη θεωρῶν, ἐντελεχεῖα ὣν καὶ κυρίως ἐπιστάμενος τόδε τὸ Α. ἀμφοτέρω μὲν οὖν οἱ πρῶτοι, κατὰ δύναντα ἐπιστήμονες <ὄντες, ἐνεργεῖα γίνονται ἐπιστήμονες>, ἀλλ' ὁ μὲν διὰ μαθήσεως ἀλλοιωθεὶς καὶ πολλάκις ἐξ ἐναντίας μεταβαλὼν ἔξεως, ὁ δ' ἐκ τοῦ ἔχειν τὴν ἀριθμητικὴν ἢ τὴν γραμματικὴν, μὴ ἐνεργεῖν δέ, εἰς τὸ ἐνεργεῖν, ἄλλον τρόπον. Shields translation, modified.

²⁹² ὁ δ' ἥδη θεωρῶν, ἐντελεχεῖα ὣν καὶ κυρίως ἐπιστάμενος τόδε τὸ Α.

in relation to knowledge. Following Burnyeat, we call this the triple scheme.²⁹³ We can put the foregoing distinctions as follows:



Also following Burnyeat, we can call the first potentiality to first actuality transition a passing from (1) to (2), and the second potentiality to second actuality transition a passing from (2) to (3).²⁹⁴ Now, Aristotle mentions these transitions 417a30-b2 as (i) being altered through learning from a contrary state and (ii) from having knowledge and not actualizing it to actualizing it in another way. In the first case, the (1) to (2) transition, one changes from being a first potentiality knower—that is, a person who potentially knows but does not actually know—to a first actuality knower *by learning*. Notice two things here: first, Aristotle calls the (1) to (2) transition an instance of being altered (ἀλλοιωθεῖς). Second, as we would expect, the (1) to (2) transition which is an alteration involves contraries (ἐνάντια). What would the contraries here be? The obvious candidates in this instance are ignorance and knowledge as Burnyeat points out.²⁹⁵ A first potentiality knower is a fully potential knower, but is specifically ignorant.²⁹⁶ In the (1) to (2) transition to first actuality, ignorance is replaced with knowledge—ignorance being clearly contrary to knowledge in that one cannot simultaneously possess both qualities at the same time, in the same way, with regard to the same subject matter. In the second case, on the other hand, we have something else altogether: “from having arithmetical or grammatical

²⁹³ Once again, for the locution see Burnyeat, “De Anima II 5,” 48ff.

²⁹⁴ Burnyeat, 50–51.

²⁹⁵ Burnyeat, 53. See also Shields, *Aristotle: De Anima*, 218.

²⁹⁶ Generically the knower knows in that they *can* know, but specially they know nothing. That is, they belong to the class of knowers without *actually* knowing anything (specific).

knowledge and not actualizing it to actualizing *in another way*” (417a32-b2). Once again, two points need to be made. First, in the instance of a (2) to (3) transition, we are moving from having knowledge but not exercising it to having knowledge and exercising it. The difference lies in whether or not the possessed trait—in the case, knowledge—is being *exercised* or is *actual* (ἐνέργεια). And this leads to our second point: if the distinction is between having but not exercising to both having and exercising, then where is the contrariety? In what way is the state of having knowledge of the square root formula and the state of having this knowledge and actually exercising it by contemplating it *contrary* to one another? In contrariety, as we have seen, we have two mutually incompatible states such that when one is present the other cannot also be present at the same time and in the same way. In what manner is the (2) to (3) transition an instance of one contrary state replacing another when the distinction between the two states is between having and not exercising and having *and* exercising? One does not *lose* the knowledge of the square root formula when one transitions from merely knowing this to actually contemplating it. But if this is correct, then the (2) to (3) transition *cannot* be a case of alteration (and thus, a passion) since it does *not* involve contrary qualities, nor can it be a case of kinetic change more generally. It is instead, as Aristotle puts it, “actualizing in another way” (τὸ ἐνεργεῖν, ἄλλον τρόπον, 417b1-2).²⁹⁷ But what might this mean?

2.4.1 The Lack of Contrariety in the Triple Scheme: The Case of Knowledge

Aristotle began *De Anima* 2.5 by alerting us to the scope of his discussion: “Let us discuss what is common to *the whole* of perception” (416b32-33).²⁹⁸ It is just in the next line that he declares, in the line which we examined so thoroughly, that “perception consists in both being changed^K and being-affected, as has been said; for it seems to be a kind of alteration” (416b33-

²⁹⁷ For this same reading see Burnyeat, “De Anima II 5,” 53, 83–87. See also Polansky, *Aristotle’s De Anima*, 234.

²⁹⁸ Διωρισμένων δὲ τούτων λέγωμεν κοινῇ περὶ πάσης αἰσθήσεως.

5).²⁹⁹ One thing we glossed over in our previous examination was the phrase “*a kind of alteration*” (ἀλλοίωσις τις), the “τις” being a so-called “*alienans* qualification” (i.e., Greek indefinite)³⁰⁰ which, per Burnyeat, is meant “to signal that perception is an alteration only in an etiolated sense.”³⁰¹ Aristotle had also mentioned this previously the chapter before, in *De Anima* 2.4 415b24: “Perception seems to be a sort of alteration (ἀλλοίωσις τις).”³⁰² Following Burnyeat we will translate ἀλλοίωσις τις as “alteration of a sort”. With the above distinctions in hand, we are now able to see why he was hedging. Alteration (ἀλλοίωσις)—and, thus, being-affected (πάσχειν)—is a form of κίνησις, and kinetic change requires *contrariety*. In a κίνησις such as an alteration, one contrary is *replaced* by another contrary. When Socrates transitions from pale to red, red *replaces* pale in Socrates; Socrates no longer has pale, but red—red and pale acting as contraries to one another. But when one goes from being a sense (2) knower to a sense (3) knower by contemplating, where is the contrariety? As just stated, one does not *lose* the knowledge of the square root formula when one transitions from merely knowing this to actually contemplating it. And if this is correct, then the (2) to (3) transition *cannot* be a case of alteration (and thus, an affection) since it does *not* involve contrary qualities, nor can it be a case of κίνησις change more generally. It is instead “actualizing in another way” (417b1-2). But what is this other way?

2.4.1.1 The First Disjunction: 417b2-12

After completing his *De Anima* 2.5 (417a21-b2) discussion of the so-called triple scheme, Aristotle continues in the next lines, *De Anima* 2.5 417b2-7:

²⁹⁹ ἢ δ’ αἴσθησις ἐν τῷ κινεῖσθαι τε καὶ πάσχειν συμβαίνει, καθάπερ εἴρηται· δοκεῖ γὰρ ἀλλοίωσις τις εἶναι.

³⁰⁰ Shields, *Aristotle: De Anima*, 212.

³⁰¹ See the discussion in Burnyeat, “*De Anima* II 5,” 36–37; cf. 74: “‘an alteration of a sort’: an alteration from which you cannot expect everything you would normally expect from alteration.” See also the excellent discussion of this point in Shields, *Aristotle: De Anima*, 212–13.

³⁰² ἢ μὲν γὰρ αἴσθησις ἀλλοίωσις τις εἶναι δοκεῖ.

Nor is being-affected (πάσχειν) without qualification (ἀπλοῦν). Rather, in one way it is a kind of destruction (φθορά τις) by a contrary (ἐναντίου), and in another way it is rather a preservation (σωτηρία) of what is in potentiality (δυνάμει) by what is in actuality (ἐντελεχείᾳ), and of what is like (ὁμοίου) something in the way potentiality (δύναμις) is in relation to actuality (ἐντελέχειαν). For whenever the one who has knowledge (ἐπιστήμην) comes to contemplate (θεωροῦν), he is either not altered (οὐκ ἀλλοιοῦσθαι), since this is a progression into the same [state] and into actuality (ἐντελέχειαν), or his is a different kind of alteration (ἢ ἕτερον γένος ἀλλοιώσεως).³⁰³

As Burnyeat comments, “The distinction between two types of potentiality leads into a corresponding distinction between their actualities: two types of being affected or altered.”³⁰⁴

Being-affected (πάσχειν) is not without qualification (ἀπλοῦν), says Aristotle, i.e., it is not a singular notion. We have, rather, at least two sorts of πάσχειν and thus two sorts of its (narrow sense) synonym, ἀλλοιώσις. One is a kind of *destruction* by a contrary, and the other a *preservation* of what is in potentiality by what is in actuality (417b2-4). In the first case, we have the canonical sort of alteration we have previously seen where contrary replaces contrary, one contrary being actualized and the other potentialized—or, as Aristotle puts it here, *destroyed*.³⁰⁵ In the latter case, on the other hand, we do not have the destruction or replacement of a contrary, but its *preservation* (σωτηρία). Without contrariety, we cannot have kinetic change, and given that alteration (and being-affected) is species of κίνησις, neither can we have alteration. As

³⁰³ οὐκ ἔστι δ’ ἀπλοῦν οὐδὲ τὸ πάσχειν, ἀλλὰ τὸ μὲν φθορά τις ὑπὸ τοῦ ἐναντίου, τὸ δὲ σωτηρία μᾶλλον ὑπὸ τοῦ ἐντελεχείᾳ ὄντος τοῦ δυνάμει ὄντος καὶ ὁμοίου οὕτως ὡς δύναμις ἔχει πρὸς ἐντελέχειαν· θεωροῦν γὰρ γίνεται τὸ ἔχον τὴν ἐπιστήμην, ὅπερ ἢ οὐκ ἔστιν ἀλλοιοῦσθαι (εἰς αὐτὸ γὰρ ἢ ἐπίδοσις καὶ εἰς ἐντελέχειαν) ἢ ἕτερον γένος ἀλλοιώσεως. Shields translation, modified.

³⁰⁴ Burnyeat, “De Anima II 5,” 54.

³⁰⁵ “Destruction” (φθορά) is a fairly atypical term for Aristotle when speaking of change involving contraries (i.e., non-substantial change or κίνησις). He scrupulously avoids using φθορά in *Physics* 1.7 where he is attempting to show that alteration is not a case of generation *ex nihilo*. Once he has made his case, however, he appears no longer worried about the objection. Cf. Burnyeat, 54 n. 73.

Burnyeat states—and as was demonstrated at length in chapter 1—it is “a fundamental principle of his physics: no alteration without contrariety.”³⁰⁶ A (2) to (3) transition from knowing *x* to exercising one’s knowledge by contemplating *x*, thus cannot be an alteration or an affection as it is a preservation of (2) which lacks contrariety when transitioning to (3). Upon learning, thus, one is either “not altered” (οὐκ ἀλλοιοῦσθαι) or this is “a different kind of alteration” (ἢ ἕτερον γένος ἀλλοιώσεως, 417b6-7). Burnyeat—and I think he is right to do so—takes this as a disjunction: “either (a) not an alteration at all or (b) a different kind of alteration.”³⁰⁷

So, which disjunct is it? (a) Not an alteration or (b) a different kind of alteration? Given the so-called *alienans* τις we examined above in the phrase “*alteration of a sort*” (ἀλλοιώσις τις) in both *De Anima* 2.4 415b24 and 2.5 416b34, we might expect the latter. Aristotle continues in the lines immediately following, 417b8-12:

For this reason, it is inappropriate to say that one who understands (φρονέω) is altered (ἀλλοιόω) whenever he understands (φρονέω), in just the way it is inappropriate to say that the builder is altered whenever he builds. Hence, leading one who thinks or understands into actuality (ἐντελέχεια) from potentiality (δύναμις) is not teaching, but properly has some other name.³⁰⁸

³⁰⁶ Burnyeat, 55.

³⁰⁷ Burnyeat, 60–61; cf. 56, 64–65. For agreement, see Polansky, *Aristotle’s De Anima*, 235–37; Shields, *Aristotle: De Anima*, 218. Cf. others who also seem to read it this way, e.g., Alexander, *Quaest.* 3.2, 81.11-14, 3.3 84.10-13, and John E. Sisko, “Alteration and Quasi-Alteration: A Critical Notice of Stephen Everson, Aristotle on Perception,” *Oxford Studies in Ancient Philosophy* 16 (1998): 335.

³⁰⁸ διὸ οὐ καλῶς ἔχει λέγειν τὸ φρονοῦν, ὅταν φρονῇ, ἀλλοιοῦσθαι, ὥσπερ οὐδὲ τὸν οἰκοδόμον ὅταν οἰκοδομῇ. τὸ μὲν οὖν εἰς ἐντελέχειαν ἄγειν ἐκ δυνάμει ὄντος [κατὰ] τὸ νοοῦν καὶ φρονοῦν οὐ διδασκαλίαν ἀλλ’ ἐτέραν ἐπωνυμίαν ἔχειν δίκαιον· τὸ δ’ ἐκ δυνάμει ὄντος μαθήανον καὶ λαμβάνον ἐπιστήμην ὑπὸ τοῦ ἐντελεχείᾳ ὄντος καὶ διδασκαλικοῦ ἦτοι οὐδὲ πάσχειν φατέον, [ὥσπερ εἴρηται,] ἢ δύο τρόπους εἶναι ἀλλοιώσεως, τὴν τε ἐπὶ τὰς στερητικὰς διαθέσεις μεταβολὴν καὶ τὴν ἐπὶ τὰς ἕξεις καὶ τὴν φύσιν.

We should *not* say that the one who transitions from (2) (knowing *x*) to (3) (contemplating *x*) is altered.³⁰⁹ It is “inappropriate to say” or, more literally, “it is not speaking well” (οὐ καλῶς ἔχει λέγειν).³¹⁰ Why is this? Aristotle spells this out with the builder analogy which, as Burnyeat points out, Aristotle had used in the previous chapter, *De Anima* 2.4 416b1-3, to say that “a carpenter is not affected by the material he works on; he merely changes (μεταβάλλει μόνον) from inactivity to activity.”³¹¹ It is indeed a change (μεταβολή), but not an instance of being-affected (πάσχειν)—and thus, not an alteration (ἀλλοίωσις) either. Likewise, here. The builder *acts* to build, and the knower *acts* to think.³¹² Whatever prompts building on the part of a builder does not impart the materials or the craft knowledge to the builder who already possessed them; rather, what prompts is merely the occasion on which the builder actualizes these things. Perhaps we might call this an occasional cause of *self*-change via the *choice* to build.³¹³ The same applies to the (2) to (3) transition in the knowledge domain. A person in (2) *already* knows *x*. Hence, “leading one who thinks or understands into actuality from potentiality is not teaching, but properly has some other name” (417b9-12). Perhaps we might call this person a facilitator, but certainly not a teacher. The person in state (2) *already* knows—what is left for the teacher to teach? Instead, we have another occasional cause of *self*-change. While these are certainly changes, Aristotle does not want to call them instances of passion or alteration. Not merely, it would seem, because they lack the requisite contrariety, but because they are not the right *sort* of

³⁰⁹ Φρονέω here is acting as a substitute for contemplating or θεωρέω as it indicates the *activity* of “the person thinking or the mind engaged in thinking.” Polansky, *Aristotle’s De Anima*, 236 n. 19.

³¹⁰ Polansky, 236. Cf. Burnyeat, “De Anima II 5,” 59.

³¹¹ Burnyeat, “De Anima II 5,” 56; cf. 60. *De Anima* 2.4 416b1-3 reads: “A carpenter is not affected by the matter, but it is affected by him. The carpenter changes only from idleness to activity.”

³¹² As we will see, this is a central difference between knowledge and perception for Aristotle later on in our chapter. See *DA* 2.5 417b18-27.

³¹³ For *building* as a change in the *Physics*, see *Phys.* 3.1 201b13; for *self*-change see *Phys.* 8.4-6, the only explicit discussion of the matter in the *Corpus*.

patients either but rather *agents*.³¹⁴ In terms of the disjunction, we now have our answer in the case of the (2) to (3) transition in the instance of knowledge: Aristotle prefers (a), not an alteration.³¹⁵

2.4.1.2 The Second Disjunction: 417b12-16

Having designated the (2) to (3) transition a preservation rather than a destruction, and also as a non-alteration, Aristotle in the very next lines moves on the (1) to (2) transition in 417b9-16:

Whereas the one who, from being in potentiality (δύναμις) learns and receives knowledge (ἐπιστήμη) from one who is in actuality (ἐντελέχεια), and able to teach, either should not be said to be affected (πάσχειν) or there are two types of alteration (ἀλλοιώσεις), one a change (μεταβολή) towards conditions of privation (στερητικός) and the other towards positive states and a things nature (τὴν ἐπὶ τὰς ἕξεις καὶ τὴν φύσιν).³¹⁶

Here we have another disjunction: either (a*) not an alteration or (b*) there are two types of alteration. The (1) to (2) transition which is rightfully called learning in the case of knowledge, and which is *not* the (2) to (3) transition from inactivity to activity, is non-destructive. Ordinary, canonical alteration *is* destructive. In any given case of genuine alteration, one contrary quality is *displaced* or *destroyed* by another contrary quality. This is the sort of alteration Aristotle is

³¹⁴ As was made clear above in the fourth aspect of the composite picture of change from *Physics* 3.1-3 and 5.1-2, *all* change involves agent acting on patient, including self-change. For even there, a part of the self in actuality acts on another part of the self in potentiality, such that the acting part plays agent to the acted parts patient (see, e.g., *Phys.* 8.5 257b7-14). Nevertheless, there is an *internality* to this which is lacking in other cases. Contemplating as a case of self-change is an acting *on self* which, while perhaps occasioned by something external, directs the agent to act *internally* on the contents of one's mind; likewise, with a builder accessing and exercising their *internal* craft knowledge. This is not so in other cases such as the case of perception which is a case of being acted on *from the outside* (i.e., perceptibles) and has an *external* focus as well as we will see (see *DA* 2.5 417b18-27). These make for a *different sort of patiency* in the case of the percipient than in the case of one prompted to contemplate.

³¹⁵ Burnyeat, "De Anima II 5," 60–61.

³¹⁶ τὸ μὲν οὖν εἰς ἐντελέθειαν ἄγειν ἐκ δυνάμει ὄντος [κατὰ] τὸ νοοῦν καὶ φρονοῦν οὐ διδασκαλίαν ἀλλ' ἐτέραν ἐπὶ νομίαν ἔχειν δίκαιον· τὸ δ' ἐκ δυνάμει ὄντος μαθήσαντα καὶ λαμβάνον ἐπιστήμην ὑπὸ τοῦ ἐντελεχέως ὄντος καὶ διδασκαλικοῦ ἥτοι οὐδὲ πάσχειν φατέον, [ὥσπερ εἴρηται,] ἢ δύο τρόπους εἶναι ἀλλοιώσεως, τὴν τε ἐπὶ τὰς στερητικὰς διαθέσεις μεταβολὴν καὶ τὴν ἐπὶ τὰς ἕξεις καὶ τὴν φύσιν. Shields translation, modified.

referring to when he speaks of “one a change (μεταβολή) towards conditions of privation (στερητικός)” (417b15). As Burnyeat argues, privation (στερητικός) here refers to negation “in its standard logical meaning.”³¹⁷ Canonical, destructive alteration cannot be what the (1) to (2) transition in the case of learning is an instance of. And why? Because there is still another sort of transition besides preservation, and this one is indeed an alteration (ἀλλοίωσις): “the other [a change] towards positive states and a thing’s nature” (417b16).³¹⁸ “Positive states” here is ἔξεις and is to be contrasted with διάθεσις. Aristotle introduces the terms and makes this contrast in *Categories* 8 8b26-9a13 where he characterized the former as “fixed dispositional states” and the latter as “temporary conditions.”³¹⁹ Knowledge (ἐπιστήμη) is a ἔξεις like virtue, not a fleeting temporary condition like cold or warmth. As for being “towards” ἔξεις “and a thing’s nature” the idea seems to be as follows. Sense (1) knowers, while ignorant, are *still* knowers. They are of the class of things for which to acquire knowledge and become knowers in sense (2) is *natural*. Hence, on this score, the transition from (1) to (2) is not destruction of this natural capacity but its *fulfillment*. As Burnyeat puts it, “as the ancient commentators saw, if gaining knowledge is a change at all, it should be described as *developing* or *perfecting* the nature on already has.”³²⁰ The (1) to (2) transition ought not be thought to have the contrariety supposed when we thought the contraries to be ignorance and knowledge. Instead, it would seem, the appropriate *termini* are (1) knower and (2) knower—the latter being a *development*, not a destruction, of the former, as Burnyeat points out.³²¹ In terms of the disjunction (either (a*) not an alteration or (b*) there are two types of alteration), it would seem that we also have an answer in the case of the (1) to (2)

³¹⁷ Burnyeat, “De Anima II 5,” 62 n. 88. Cf. Polansky, *Aristotle’s De Anima*, 240 n. 24: “Aristotle is repeating in other words the point about alteration’s being a sort of destruction (φθορά τις, 417b3)”

³¹⁸ τὴν ἐπὶ τὰς ἔξεις καὶ τὴν φύσιν.

³¹⁹ Burnyeat, “De Anima II 5,” 62. We examine both states and conditions in detail in chapter 4.

³²⁰ Burnyeat, 63. Italics mine. Referring to Alexander, *Quaest.* 3.2, 82.13-17; 3, 84.27; Themistius in *DA* 56.12; and Philoponus in *DA* 304.24.

³²¹ Burnyeat, 61.

transition in the instance of knowledge:³²² Aristotle prefers (b*), there are two types of alteration.³²³

2.4.1.3 The Knowledge Model: Summing Up

Aristotle began *De Anima* 2.5 by stating that “perception (αἴσθησις) consists in both being changed (κίνησις) and being-affected (πάσχειν)” (416b33-4). And why? “For it seems to be alteration of a sort (ἀλλοίωσις)” (416b34-5). Using knowledge as a model for the distinctions he wishes to make concerning perception, we were shown that neither the (1) to (2) transition from first potentiality knower to first actuality knowing knower is a canonical (i.e., destructive) alteration, nor is the (2) to (3) transition from second potentiality knowing knower to second actuality contemplator. The former, as we just saw, is more properly called *development*; the latter, *preservation*. Both are *non-destructive*, and in the case of knowledge, while the former is a *sort* of alteration (ἀλλοίωσις τις),³²⁴ the latter ought not be considered an alteration (or affection) at all. Following Burnyeat, let us characterize these as follows:³²⁵

(A) Alteration: the replacement of one quality by a contrary quality from the same range.³²⁶

(D) Development: the development of the dispositions which perfect a thing’s nature.

(P) Preservation: one nature-perfecting dispositions passing from inactivity to exercise.

³²² As we argue in chapter 5, this is just a seeming. For Aristotle denies that the coming to be of rational psychic states are changes at all, while he affirms that they are changes with respect to irrational psychic states.

³²³ Cf. Shields, who agrees with Burnyeat on the distinctions here, but seems to disagree on which disjunct Aristotle argues for: (a*) not an alteration or (b*) there are two types of alteration. As Shields puts it, “Aristotle offers in this passage [i.e., 417a21-b2] two distinct ways in which psychic changes are *not* alterations,” Shields, *Aristotle: De Anima*, 219. Italics mine. Cf. also, his comments on the *alienans* τις passage in 2.4 415b24: “Aristotle will eventually *deny* that perception is properly thought of as a *kind* of alteration,” Shields, 205. Italics mine. Either Shields opts for (a*) against Burnyeats’ (b*), or he wrote these lines without sufficient care for precision in an otherwise masterful commentary.

³²⁴ See *DA* 2.4 415b24 and 2.5 416b34.

³²⁵ Burnyeat, “De Anima II 5,” 65, with slight modifications.

³²⁶ By “range,” I take Burnyeat to mean genus.

While (A) is a genuine instance of κίνησις change involving contrariety, neither (D) nor (P) is—nor can possibly be—an instance of κίνησις. And if not instances of κίνησις, then neither can they be genuine instances of alteration (ἀλλοίωσις). For they *lack* the requisite contrariety of κίνησις changes, and thus of ἀλλοίωσις. Why, then, continue to call (D) an alteration if alterations *require* the contrariety precluded in this sort of (1) to (2) transition? Because, says Burnyeat: “standardly, in Aristotle, any change in the category of quality is an alteration.”³²⁷ We seemingly are at an impasse here.³²⁸ Hence, on the one hand, Aristotle has reason to *deny* that the (1) to (2) transition in the case of knowledge is an alteration as it lacks the requisite contrariety; on the other hand, we do have a change in *quality* here and changes in quality are precisely what alterations are.³²⁹ Hence, while not (A), canonical alterations, instances of the (1) to (2) transition on the knowledge model do appear to be “*alteration of a sort*” (ἀλλοίωσις τις).³³⁰ With this in mind, let us label (A), which is the standard or canonical sort of alteration, as *destructive alteration*, and label (D) as *non-destructive alteration*.³³¹

Destructive Alteration

(A) Alteration: the replacement of one quality by a contrary quality from the same range.

Non-Destructive Alteration

(D) Development: the development of the dispositions which perfect a thing’s nature.

³²⁷ Burnyeat, “De Anima II 5,” 55. See, e.g., *Phys.* 5.2 226a25-28.

³²⁸ Cf. Burnyeat, 56.

³²⁹ See, e.g., *Cat.* 14 15b-11-12. See other references as well, specifically *GC* 1.4 319b6-14, in Burnyeat, 55 n. 76. See also Rosen, “Motion and Change in Aristotle’s *Physics* 5.1,” 84 n. 29.

³³⁰ See *DA* 2.4 415b24 and 2.5 416b34.

³³¹ Different commentators use different terms here. Polansky uses “standard alteration” and “nonstandard alteration” (Polansky, *Aristotle’s De Anima*, 237.) Shields speaks of “standard alteration” or “destructive alteration” and “non-destructive development” (Shields, *Aristotle: De Anima*, 217–18.) Burnyeat speaks of “ordinary alteration”, “preservation”, and “development,” which he later relabels as “ordinary alteration”, “unordinary alteration” (development), and “extraordinary alteration” (preservation) (Burnyeat, “De Anima II 5,” 61, 65.) Hendrick Lorenz, who we follow here, speaks of “destructive alteration” and “non-destructive alteration,” the latter of which is a “quasi-alteration” (Hendrik Lorenz, “The Assimilation of Sense to Sense-Object in Aristotle,” *Oxford Studies in Ancient Philosophy* 33 (2007): 186.) Cf. Sisko who distinguishes between “alteration” and “quasi-alteration” (Sisko, “Alteration and Quasi-Alteration,” 335.)

Non-Destructive Non-Alteration

(P) Preservation: one nature-perfecting dispositions passing from inactivity to exercise.

With these distinctions in hand, Aristotle now returns to the case of perception—his stated focus in *De Anima* 2.5³³²—in the immediately succeeding lines. Two questions are in need of attention as we examine what he says. First, how do the distinctions uncovered in the knowledge model map onto perception? Second, applied to perception, what sort of alteration would perception be, destructive or non-destructive? These questions will guide us as we turn now to perception.

2.5 The Triple Scheme Revisited: The Case of Perception

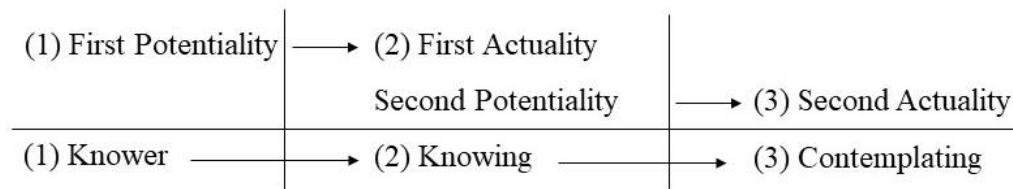
So far, we have been following Aristotle in examining the various senses of affection or alteration as implied by the triple scheme using the model of knowledge. What of perception, however? Aristotle continues in 417b16-19:

In what is capable of perceiving (ὁ αἰσθητικός), the first change (πρώτη μεταβολή) is brought about by the parent; what is born also already has perception (αἰσθάνομαι), just as we have knowledge (ἐπιστήμη). Actually perceiving (ἐνέργεια) is spoken of in a way similar (ὁμοίως) to contemplation (θεωρέω).³³³

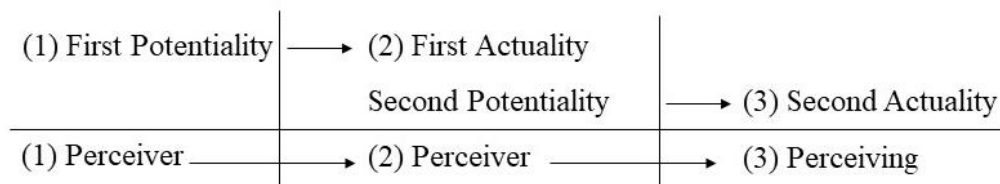
Perception, it would seem, maps rather nicely onto knowledge. What is capable of perceiving (i.e., a perceiver) is analogous to (1) what is capable of knowing (i.e., a knower). Once born, perceivers are like (2) knowing knowers; and when actually perceiving, like (3) knowing knowers exercising their knowledge by contemplating. For knowledge, we put these distinctions this way above:

³³² His first line: “With these things determined, let us discuss what is common to the whole of perception” (416b32-33).

³³³ τοῦ δ’ αἰσθητικοῦ ἡ μὲν πρώτη μεταβολὴ γίνεται ὑπὸ τοῦ γεννῶντος, ὅταν δὲ γεννηθῇ, ἔχει ἤδη, ὥσπερ ἐπιστήμην, καὶ τὸ αἰσθάνεσθαι. τὸ κατ’ ἐνέργειαν δὲ ὁμοίως λέγεται τῷ θεωρεῖν. Shields translation, modified.



With these distinctions now applied to perception, we get the following:



While this taxonomy of actuality and potentiality seems to work well in the case of knowledge, it may seem misapplied to perception. After all, what distinguishes a (1) to (2) transition of perception to perception from a (2) to (3) transition of perception to perceiving *if not* that the former is not a change or even a transition but a remaining the same—perception remains perception—whereas the (2) to (3) transition of faculty inactivity to faculty activity is indeed a change? This objection misses the mark, however. Let us revisit the case of Jones. Let us say in Jones’ accident that his retina was detached from the back of his eye. We might ask the doctor, “Does Jones see?” The doctor might reply “No, Jones does not see.” We might press the doctor, however. “Are you saying that Jones will never see again?” The doctor might clarify as follows: “No, he can see, but we will have to reattach Jones’ retina in order for him to do so.” What sense can we make of this? I think the same sense as in the following case. When Jones was an unborn fetus, he was a (1) first potentiality perceiver. That is, Jones had developed the physical structures necessary for, e.g., sight by week ten of his development, yet was at that time not able to see. In fetuses, the eyelids, for instance, remain closed until week twenty-seven,

blocking the actuality of the faculty.³³⁴ This is analogous to Jones being able to see in one sense while his retina was *detached*, while yet being unable to see in a different sense *until* it was reattached. Jones was indeed a (1) perceiver at week ten of his development (and when his retina was detached), but was a (2) perceiver in a different sense after week twenty-seven (or post retina reattachment) *even when asleep*. How can this be? Because, in the first case of being a sense (1) perceiver, he had the faculty but it was inoperable. In the second case of being a sense (2) perceiver, he had the faculty and it was operable *even if not operating*. The (1) to (2) transition for perception, thus, typically occurs during fetal development, while the (2) to (3) transition occurs when one goes from potentially using the sense to actually using the sense.³³⁵ That is, one goes from, like in the case of knowledge, merely possessing to both possessing and operating (ἐνέργεια).³³⁶

2.5.1 How Perception and Contemplation Differ

What of contrariety? In the case of knowledge, Aristotle called the (1) to (2) transition a non-destructive alteration (D) development, and the (2) to (3) transition a non-alteration (P) preservation. In keeping with the comparison he wishes to make of perception with knowledge, he clearly wishes to maintain these alternatives to canonical, destructive alteration (A), and apply them to perception. As we will see, he takes perceiving and knowing to be “similar” (ὁμοίως,

³³⁴ Kathleen Scogna, “Fetal Development: Your Baby’s Eyes and Sight,” BabyCenter, accessed November 4, 2019, https://www.babycenter.com/0_fetal-development-your-babys-eyes-and-sight_20004926.bc.

³³⁵ “The form of the male parent is taken on by the female material so as to constitute an animal, i.e., a perceiver. It is the ‘first change’ (πρώτη μεταβολή) 417b17) in the strong sense that the embryo ‘is first an animal when perception occurs’ (GA 5.1 778b33-34).” Burnyeat, “De Anima II 5,” 65. Cf. Philoponus, *in DA* 306.1-12. Philoponus specifically states that it is “in gestation” that a child is brought from “what is in potentiality in the first way” to “what is in potentiality in the second way but in actuality in the first” (*in DA*. 306.3-5, Charlton translation, modified).

³³⁶ Burnyeat puts this as follows: “The previous plant-like organism [i.e., the fetus] was a first potentiality perceiver. The transition to being a second potentiality perceiver is not the coming to be of a new entity, but neither is it straightforward case of an existing subject exchanging one quality for another. Rather, the subject arrives at a new phase of its own existence. Such a ‘change towards nature’, a real ‘advance into itself’, is no ordinary alteration.” Burnyeat, 65; cf. 64–65. The reference is to 417b17.

417b19)—and in just this way. But do they bear the same character in this new application? Let us examine this. Let us return to the text, picking up where we left off, 417b18-27:

Actually (ἐνέργεια) perceiving is spoken of in a way similar (ὁμοίως) to contemplation (θεωρέω). But there is a difference (διαφορά): what is capable of producing (ποιητικός) this actuality (ἐνέργεια), the object of sight and hearing and so on (ὁμοίως) for the remaining objects of perception (ὁ αἰσθητός), is external (ἔξωθεν). The reason is that actual perception (ἐνέργειαν αἴσθησις) is of particulars (ἕκαστος), whereas knowledge is of universals (ἡ ἐπιστήμη τῶν καθόλου), which are in a sense in the soul itself (ἐν αὐτῇ τῇ ψυχῇ). Consequently, reasoning is up to oneself (ἐπ' αὐτῷ), whenever one wishes (ὅποτε βούληται); but perceiving (αἰσθάνομαι) is not up to one's self (οὐκ ἐπ' αὐτῷ), since it is necessary for the object of perception (ὁ αἰσθητός) to be present. This holds in the same way for the types of knowledge (ἐπιστήμη) which concern objects of perception (ὁ αἰσθητός), and for the same reason, namely that the objects of perception (ὁ αἰσθητός) are particulars (ἕκαστος) and are external (ἔξωθεν).³³⁷

As we saw previously, (3) perceiving is indeed *similar* (ὁμοίως) to (3) contemplating in that both are (3) second actualities which perfect or preserve their (2) second potentiality starting points by transitioning them from inactivity to activity. Both are instances of (P) *preservation* which lack contrariety. Nevertheless, knowledge and perception *differ* (διαφορά) as well. Knowledge is of universals (τῶν καθόλου) such as redness or triangularity, while perception is of particulars (ἕκαστος) such as *this* instance of red, or *this* triangle. Three things follow from this for Aristotle.

³³⁷ τὸ κατ' ἐνέργειαν δὲ ὁμοίως λέγεται τῷ θεωρεῖν· διαφέρει δέ, ὅτι τοῦ μὲν τὰ ποιητικὰ τῆς ἐνεργείας ἔξωθεν, τὸ ὁρατὸν καὶ τὸ ἀκουστόν, ὁμοίως δὲ καὶ τὰ λοιπὰ τῶν αἰσθητῶν. αἴτιον δ' ὅτι τῶν καθ' ἕκαστον ἢ κατ' ἐνέργειαν αἴσθησις, ἢ δ' ἐπιστήμη τῶν καθόλου· ταῦτα δ' ἐν αὐτῇ πῶς ἐστὶ τῇ ψυχῇ. διὸ νοῆσαι μὲν ἐπ' αὐτῷ, ὅποτε βούληται, αἰσθάνεσθαι δ' οὐκ ἐπ' αὐτῷ· ἀναγκαῖον γὰρ ὑπάρχειν τὸ αἰσθητόν. ὁμοίως δὲ τοῦτο ἔχει καὶ ταῖς ἐπιστήμαις ταῖς τῶν αἰσθητῶν, καὶ διὰ τὴν αὐτὴν αἰτίαν, ὅτι τὰ αἰσθητὰ τῶν καθ' ἕκαστα καὶ τῶν ἔξωθεν. Shields translation, modified.

2.5.1.1 Corollary 1: Internality and Externality

The first corollary is that if perception is of particulars, then perception is of *external* objects. *This* instance of red, or *this* triangle are external to the perceiver. If, on the other hand, contemplation is of universals, then contemplating is in some sense *internal* to the knower as universals “are in a sense in the soul itself” (ταῦτα δ’ ἐν αὐτῇ πῶς ἐστι τῇ ψυχῇ, 417b23). This may seem confusing as it would seem that Aristotle would *deny* that universals exist as entities in the soul in a manner analogous to Plato’s theory of recollection.³³⁸ His point, though, is not to affirm the *pre*-existence of universals in the soul, but rather to speak of the status of universals *once they have been acquired through experience*.³³⁹ Prior to sense experience, he says of the intellect in *De Anima* 3.4 429b31-30a2, it is “in potentiality just as in a writing tablet on which nothing written in actuality is present.”³⁴⁰ Hence, universals as the objects of knowledge are internal to the knower, whereas particulars as the objects of perception are external to the perceiver.

2.5.1.2 Corollary 2: Voluntary Choice

³³⁸ For the internality of knowledge of Plato’s theory, see *Meno* 85d and *Phaedo* 73a; for knowledge being of Forms or universals, see *Phaedo* 75b. For Aristotle’s rejection of Plato’s theory of recollection, see *APr.* 2.21 67a8-30. For Aristotle’s rejection of *pre-existing* universals and for the acquisition of universals through induction see, e.g., *APo.* 1.18 81a38-b9.

³³⁹ See, e.g., *APo.* 2.19 100a3-9: “From perception there comes memory, as we call it, and from memory (when it occurs often in connection with the same thing), experience; for memories that are many in number from a single experience. *And from experience, or [rather] from the whole universal that has come to rest in the soul* (ἐκ δ’ ἐμπειρίας ἢ ἐκ παντὸς ἡρεμήσαντος τοῦ καθόλου ἐν τῇ ψυχῇ)... there comes a principle of skill and of understanding.” Notice, once activated through the process, the universals (τοῦ καθόλου) come to rest “in the soul” (ἐν τῇ ψυχῇ). Cf. the much longer description of the same process by which universals are *acquired* at *Meta.* A.1 980a21-81a12.

³⁴⁰ δυνάμει δ’ οὕτως ὥσπερ ἐν γραμματείῳ ᾧ μὴ ἐν ἐνυπάρχει ἐντελεχεία γεγραμμένον. That is, prior to its activation in the process described at *APo.* 2.19 100a3-9 (see above), it possesses no universals. W.D. Ross rightfully compares this passage to Plato’s *Theaetetus* 191c-d—where the memory is compared to a block of wax capable of taking the imprints of perceptible or thinkable things—which is, he says, “the earliest example, so far as is known, of the notion of the *tabula rasa*.” Ross, *Aristotle: De Anima. Edited with Introduction and Commentary*, 295.

The second corollary is that it is not just internality and externality which follow from the respective objects of knowledge (universals) and perception (particulars), but whether or not the (2) to (3) transition from inactivity to activity of these faculties is “up to oneself” (ἐπ’ αὐτῷ, 417b24). This term, ἐπ’ αὐτῷ—and the plural ἐφ’ ἡμῖν, “up to us”—became a technical term for “free choice” in later Hellenistic philosophy, especially in the hands of the Stoics and Alexander of Aphrodisias.³⁴¹ While Aristotle lacks a developed theory of free choice—and especially a theory of free will³⁴²—he is somewhat prescient of later developments in his discussion in the *Nicomachean Ethics* 3.5. There at 1113b3-8, speaking of the end of human action, he tells us:

The end (τέλος) being that which we wish (βούλησις)—the means to the end (τέλος) what we choose (προαίρεσις) and wish for (βούλησις)—actions concerning the means must be according to choice (κατὰ προαίρεσις) and voluntary (ἐκούσιος). Now the exercise (ἐνέργεια) of virtue (ἀρετή) is concerned with these. Therefore, virtue (ἀρετή) also is up to us (ἐφ’ ἡμῖν), and so too vice. For where it is up to us (ἐφ’ ἡμῖν) to act it is also up to us (ἐφ’ ἡμῖν) not to act, and vice versa.³⁴³

Willing or wanting (or wishing) something is βούλησις. And βούλησις aims at an end (τέλος). To select that end is to choose (προαίρεσις) or to exercise a βούλησις or wish, and these must be “according to choice” (κατὰ προαίρεσις) and thus “voluntary” (ἐκούσιος). And what exactly does it mean to for a βούλησις to be “according to choice” (κατὰ προαίρεσις) and thereby “voluntary” (ἐκούσιος)? It means that that choice is “up to us”, ἐφ’ ἡμῖν—where “up to us”

³⁴¹ See Susanne Bobzien, “The Inadvertent Conception and Late Birth of the Free–Will Problem,” *Phronesis* 43, no. 2 (1998): 133–75.

³⁴² See, e.g., Michael Frede, *A Free Will: Origins of the Notion in Ancient Thought*, ed. A. A. Long (Los Angeles, CA: University of California Press, 2011), 19–30.

³⁴³ Ὅντος δὴ βουλευτοῦ μὲν τοῦ τέλους, βουλευτῶν δὲ καὶ προαιρετῶν τῶν πρὸς τὸ τέλος, αἱ περὶ ταῦτα πράξεις κατὰ προαίρεσιν ἂν εἶεν καὶ ἐκούσιοι. αἱ δὲ τῶν ἀρετῶν ἐνέργειαι περὶ ταῦτα. ἐφ’ ἡμῖν δὴ καὶ ἡ ἀρετή, ὁμοίως δὲ καὶ ἡ κακία. ἐν οἷς γὰρ ἐφ’ ἡμῖν τὸ πράττειν, καὶ τὸ μὴ πράττειν, καὶ ἐν οἷς τὸ μὴ, καὶ τὸ ναί. Irwin translation, modified.

means “it is up to us (ἐφ ἡμῖν) to act it is also up to us (ἐφ ἡμῖν) not to act, and vice versa” (1113b7-8). Whether or not this is the much debated “ability condition” for free choice in contemporary metaphysics³⁴⁴—and even later Hellenistic philosophy³⁴⁵—is debated. Nevertheless, Aristotle does make the connections here between βούλησις and what is “up to us” (ἐφ ἡμῖν) such that one would be justified in saying that βούλησις for Aristotle, *if voluntary*, must be “up to us” (ἐφ ἡμῖν).

Applied to *De Anima* 2.5 417b18-27, we can now see how this is meant to play out. Reasoning—or contemplating—can occur “whenever one wishes” (ὁπόταν βούληται, 417b24). For, says Aristotle, it is “up to oneself” (ἐπ’ αὐτῷ, 417b24)—or more commonly, “up to us”, ἐφ ἡμῖν.³⁴⁶ And why is this important? Because, this is precisely what it means to be a *voluntary choice*. The (2) to (3) transition in the case of contemplation, thus, is a voluntary choice. But not so with the (2) to (3) transition in the case of *perception* which is “not up to one’s self” (οὐκ ἐπ’ αὐτῷ, 417b25), that is, *not* “up to us” (οὐκ ἐφ ἡμῖν). Hence, unlike contemplation, it cannot occur “whenever one wishes” (ὁπόταν βούληται, 417b24). Perception is not an instance of voluntary choice. But why would Aristotle say this? Is it not the case that I *choose* to taste a peppermint when I put it in my mouth, or I *choose* to hear Bach when I play the CD, and I *choose* to see Van Gogh when I go to the art museum? Yes, but this is precisely what proves his point: we have to be in physical (or actionable) *proximity* to these things in order to perceive them *because* they are particulars and thus are *external*. Universals residing in the soul can be

³⁴⁴ See, e.g., Robert Kane, *The Oxford Handbook of Free Will* (New York: Oxford University Press, 2002), 3–41, esp. 10–14 and 5 where this passage is directly cited by Kane in this regard.

³⁴⁵ See Susanne Bobzien, “Found in Translation: Aristotle’s Nicomachean Ethics 3.5, 1113b7-8 and Its Reception,” *Oxford Studies in Ancient Philosophy* 45 (2013): 103–48.

³⁴⁶ For an excellent defense of this majority position against a minority view, see Klaus Corcilius, “How Are Episodes of Thought Initiated According to Aristotle?,” in *Ancient Perspective on Aristotle’s De Anima*, ed. Gerd Van Riel and Pierre Destrée (Leuven, BE: Leuven University Press, 2009), 1–15. Cf. too the statement that this interpretation seems to be that which is “accepted by almost all scholars, including ancient commentators” (ibid., 3).

accessed “whenever one wishes” (ὅποτεν βούληται, 417b24) *because they are internal*; the same does not hold of particulars *because they are external*. The former can be accessed “at will”, we might say, so long as we are awake. But not so with the latter. For the (2) to (3) transition in the case of perception, we must be in the requisite *proximity* of perceptibles—the particular (ἕκαστος), and therefore external (ἐξωθεν), “the objects of perception” (ὁ αἰσθητός 417b27).

2.5.1.3 Corollary 3: Agency and Patiency

The third corollary which follows from the differing objects of knowledge (universals) and perception (particulars) is not merely that the former are internal and the latter external, nor that the former are “up to us” whereas the latter are “not up to us.” Rather, it follows in addition is that *because*, in the case of perception, internality and involuntary action follow from particularity, *so does the patiency of the percipient*.³⁴⁷ And patiency is precisely why percipients must be in *proximity* to the objects of perception: so that they may be *acted upon*.

When one contemplates on universals which are internal, the (2) to (3) transition from inactivity to activity called (P) preservation, is “up to us” such that it is a voluntary choice *to act*. Contemplators are agents, acting upon the universals internal to them as patients. When one perceives particulars which are external, on the other hand, the (2) to (3) transition from inactivity to activity—and also called (P) preservation—is “*not up to us*”, and thus not subject to voluntary choice to act. Rather, perceivers are *acted upon*; one may have voluntarily chosen *proximity* to a perceptible, but one does *not* choose to be acted upon. Perceivers, thus, are patients, being acted upon by the particulars external to them.³⁴⁸

³⁴⁷ By “percipient” I merely intend the typical meaning of the noun, viz., *a perceiver* or *one who perceives*. See, for example, OED entry 1. for the noun: “*Chiefly Philosophy*. A person who or thing which perceives.”

³⁴⁸ So Burnyeat, 57-58: “For the *knower*, the [end 57] transition between (2) and (3) is not a passive change, hence not a change at all as change is understood in *Physics* 3.1-3. For the *perceiver*, on the other hand, the transition between (2) and (3) is a passive change, as [1][a] [DA 2.5 416b33-5 – “perception consists in being changed and

2.5.1.4 Externality and Agency and Patiency: Returning to the 417a2-9 Puzzle

These insights, moreover, are key to understanding the puzzle at the beginning of the chapter at lines 417a2-9:

There is a puzzle (ἀπορίαν) as to why there is no perception (οὐ αἴσθησις) of the senses themselves (αἰσθήσεων αὐτῶν), and why they do not produce (ποιοῦσιν) perception (αἴσθησιν) without external objects (ἄνευ τῶν ἔξω), even though present in them (ἐνόντος) are fire, earth, and the other elements (στοιχείων) of which there is perception (αἴσθησις) either in themselves (καθ' αὐτὰ) or accidentally (συμβεβηκότα). It is clear (δῆλον) from this that the percipient (αἰσθητικὸν) does not exist (οὐκ ἔστιν) in actuality (ἐνεργεία), but only in potentiality (δυνάμει μόνον); that is why it does not perceive (οὐκ αἰσθάνεται), just as (καθάπερ) what is combustible does not burn by itself (καίεται αὐτὸ καθ' αὐτὸ) without something capable of burning it (καυστικοῦ). For otherwise it would burn itself, and would need no (οὐθὲν ἐδεῖτο) actually existing fire (ἐντελεχείᾳ πυρὸς ὄντος).³⁴⁹

We noted previously how this puzzle was meant as an attack on the like-like theory and its assumption that if perception is a matter of like affecting like then perception is a matter of some sort of self-contained *activity*. For if like apprehends like, then like must *act* upon like in perception which just does not occur. That we do not perceive our own sense organs shows not only that the like-like theory is false, but that its assumption of perception as something *active* is

being-affected, as has been said”] proposed, and within the framework of Aristotelian physics the only change it can be, as [1][b] [DA 2.5 416b33-5 – “for it is held to be some sort of alteration”] explained, is alteration. If the external objects of perception are agents (ta poietika, 417b20), perceivers must be patients in something like the sense of *De Generatione et Corruptione* 1.7.”

³⁴⁹ ἔχει δ' ἀπορίαν διὰ τί καὶ τῶν αἰσθήσεων αὐτῶν οὐ γίνεται αἴσθησις, καὶ διὰ τί ἄνευ τῶν ἔξω οὐ ποιοῦσιν αἴσθησιν, ἐνόντος πυρὸς καὶ γῆς καὶ τῶν ἄλλων στοιχείων, ὧν ἔστιν ἡ αἴσθησις καθ' αὐτὰ ἢ τὰ συμβεβηκότα τούτοις. δῆλον οὖν ὅτι τὸ αἰσθητικὸν οὐκ ἔστιν ἐνεργεία, ἀλλὰ δυνάμει μόνον, διὸ οὐκ αἰσθάνεται, καθάπερ τὸ καυστὸν οὐ καίεται αὐτὸ καθ' αὐτὸ ἄνευ τοῦ καυστικοῦ· ἔκαιε γὰρ ἂν ἑαυτό, καὶ οὐθὲν ἐδεῖτο τοῦ ἐντελεχείᾳ πυρὸς ὄντος. Shields translation, modified.

false as well. This is the puzzle with which the passage begins, but what of the solution in the second half of the passage involving externality which we tabled for later?

Externality, as we have seen, is a shorthand reference to the objects of perception *as* particulars. And particulars, of course, imply the corollaries we have just seen: externality, “not up to us” or not being subject to the voluntary choice to act, and patiency. The reason the sense organs do not perceive themselves, thus, is because they are patients in need of agents, not patients *and* agents. Percipients *qua* patients cannot act upon themselves as they are not external particulars relative to themselves. They are, rather, patients in need of actualization, not agents which can actualize at will. And this, moreover, is also what explains the placement of the ἀπορία both *where* it is in 2.5 and *why* it is in 2.5. Aristotle had just mentioned perception as an instance of kinetic change, specifically being-affected (πάσχειν) and alteration (ἀλλοίωσις), as well as linking agent (τό ποιοῦν) and patient (τὸ πάσχον) to the like-like theory. Now we see that the externality of objects of perception is precisely in line with the concern for agents and patients in that externality implies the *agency* of perceptibles, and, thus, the *patiency* of percipients. As for how this is a solution involving Aristotle’s generically-like-but-specifically-unlike alternative to the like-like theory, however, is yet to be seen.

2.5.2 Perception and the Triple Scheme: A Positive Account

Picking back up at 417b28-18a1, Aristotle returns again to the triple scheme distinction of (1) first potentiality, (2) first actuality/second potentiality, and (3) second actuality, approving of its application to perception:

There may come an appropriate time later to clarify these things. For now, let this much be distinguished (διαφορά): that what is spoken of as being in potentiality (δύναμις) is not without qualification (οὐχ ἀπλοῦς), but rather in the first case as when we say that the

child is potentially (δύναμις) a general, and in the second, as when we say this of someone who is at the right age; and it is in this way that we speak of what is potentially perceiving (τὸ αἰσθητικόν).³⁵⁰

To say a child is potentially a general is the same as saying that an embryo is potentially a perceiver—that is, both are in (1) first potentiality. And to say that a man is potentially a general is the same as saying that a properly developed and well-functioning person is potentially a perceiver—that is, both are in (2) second potentiality. These are the same potentialities we saw on the knowledge model. Likewise, it would seem, for the actualities. The (1) to (2) transition called (D) development is non-destructive. In the case of knowledge, it occurs when learning; in the case of perception, it occurs *in utero*.³⁵¹ It was classified as an instance of non-destructive alteration (or ἀλλοίωσις τις, “*alteration of a sort*”). The (2) to (3) transition called (P) preservation is also non-destructive. In the case of knowledge, it occurs when a knower as an agent chooses and acts upon her internal universals and contemplates them; in the case of perception, it occurs when a suitable person plays the role of patient and is acted upon (πάσχειν) by perceptibles. In the case of contemplation, it was classified as a non-destructive, *non-alteration*. But what of the case of perception given the *difference* it bears to the knowledge model, viz., of being a patient and thus a πάσχειν? Aristotle continues in the next lines, 418a1-3:

Since the difference (διαφορά) between these has no name, though the boundary between them has been drawn—that they are different and how they are different—it is necessary

³⁵⁰ ἀλλὰ περὶ μὲν τούτων διασαφῆσαι καιρὸς γένοιτ' ἂν καὶ εἰσαυθις· νῦν δὲ διωρίσθω τοσοῦτον, ὅτι οὐχ ἄπλοῦ ὄντος τοῦ δυνάμει λεγομένου, ἀλλὰ τοῦ μὲν ὥσπερ ἂν εἴποιμεν τὸν παῖδα δύνασθαι στρατηγεῖν, τοῦ δὲ ὡς τὸν ἐν ἡλικίᾳ ὄντα, οὕτως ἔχει τὸ αἰσθητικόν. Shields translation, modified.

³⁵¹ As we were told previously, the “first change” (πρώτη μεταβολή, 417b17) is brought about by the parents in the case of perception.

to use ‘being-affected’ (πάσχειν) and ‘being altered’ (ἀλλοιοῦσθαι) as though they were the appropriate names.³⁵²

The reasoning here is as follows. Both πάσχειν and ἀλλοίωσις are supposed to be synonyms referring to qualitative alteration. The former (πάσχειν) emphasizes that what is qualitatively changed is acted upon, while the latter (ἀλλοίωσις) that the transition is from contrary to contrary. In the case of perception, however, we have an instance of something which is qualitatively changed through being acted upon but does *not* transition from contrary to contrary. Hence, while truly an instance of narrow-sense qualitative πάσχειν which is *supposed to be* synonymous with alteration it must be, *qua* narrow-sense qualitative πάσχειν, an “alteration of a sort” (ἀλλοίωσις τις). But it cannot be an instance of canonical alteration nor, for that reason, a kinetic change. Since we lack the appropriate term even as we mark the distinction, Aristotle says, let us call it a πάσχειν and an ἀλλοίωσις “as though they were the appropriate names” (418a3).³⁵³ For otherwise, he will have to invent new terms. The import of this passage is not just that Aristotle recognizes that though πάσχειν and ἀλλοίωσις are supposed to be synonyms they come apart in the case of perception, but that *Aristotle is now including (P) preservation too, as an instance of non-destructive alteration*. Hence, in the case of perception we get the following:

Destructive Alteration

(A) Alteration: the replacement of one quality by a contrary quality from the same range.

Non-Destructive Alteration

(D) Development: the development of the dispositions which perfect a thing’s nature.

³⁵² ἐπεὶ δ’ ἀνώνυμος αὐτῶν ἡ διαφορά, διώρισται δὲ περὶ αὐτῶν ὅτι ἕτερα καὶ πῶς ἕτερα, χρῆσθαι ἀναγκαῖον τῷ πάσχειν καὶ ἀλλοιοῦσθαι ὡς κυρίοις ὀνόμασιν. Shields translation, modified.

³⁵³ Cf. Shields, *Aristotle: De Anima*, 221–22: “Aristotle notes, fairly, that we do not have words to mark the distinctions we have observed between the ways our psychic faculties need to be affected and altered in order for actual perception to occur. So, he suggests, we shall have to make do with our ordinary language, while being alert to the fine-grained distinctions language obscures.”

(P) Preservation: one nature-perfecting dispositions passing from inactivity to exercise. Both (D) and (P) in the case of perception are ἀλλοίωσις τις, “alteration of a sort,” specifically of the non-destructive sort. And, of course, this entails that neither (D) nor (P) can be instances of canonical alteration or kinetic change, both of which require contrariety.

With these distinctions in hand, Aristotle now gives his most positive account yet of perception in *De Anima*, returning again to the like-like theory to do so in the final lines of the chapter, 418a3-6, which we turn to in a moment. First, let us reflect on where we started. Aristotle began *De Anima* 2.5 with the statement that “perception (αἴσθησις) consists in both being changed (κινεῖσθαι) and being-affected (πάσχειν), as has been said; for it seems to be alteration of a sort (ἀλλοίωσις τις)” (416b33-5).³⁵⁴ He then stipulated, prior to the application of the triple scheme, that we speak “as if (ὥς) being-affected (πάσχειν) and being changed (κινεῖσθαι) and being actual (ἐνεργεῖν) were the same” (417a15-16).³⁵⁵ In both cases he connected this to the like-like theory—or his alternative from *Generation and Corruption* 1.7 which is also a theory of qualitative change—and to the notions of agent (τὸ ποιοῦν) and patient (τὸ πάσχον) at 416b35-17a2 and 417a17-20.

We have now seen that while perception is indeed an instance of being-affected (πάσχειν) in some sense, it is not thereby a *kinetic* or a canonical instance of (A) destructive alteration. It is, rather, an “alteration of a sort” (ἀλλοίωσις τις) lacking contrariety. And as such, the generically-like-but-specifically-unlike theory of qualitative change still applies. Remember, per *Generation and Corruption* 1.7, agent (τὸ ποιοῦν) and patient (τὸ πάσχον) must be *generically* like but *specifically* unlike. As he said previously in 417a20, “something unlike (ἀνόμοιον) is affected

³⁵⁴ ἢ δ’ αἴσθησις ἐν τῷ κινεῖσθαι τε καὶ πάσχειν συμβαίνει, καθάπερ εἴρηται· δοκεῖ γὰρ ἀλλοίωσις τις εἶναι.

³⁵⁵ πρῶτον μὲν οὖν ὥς τοῦ αὐτοῦ ὄντος τοῦ πάσχειν καὶ τοῦ κινεῖσθαι καὶ τοῦ ἐνεργεῖν λέγωμεν. Shields translation, modified.

(πάσχει), but once affected (πεπονθός) it is like (ὅμοιον).³⁵⁶ He now explains the application of this in the case of perception in the final lines of *De Anima* 2.5, 418a3-6:

What is capable of perceiving (τὸ αἰσθητικὸν) is in potentiality (δυνάμει) such as the perceptible (αἰσθητὸν) is already in actuality (ἐντελεχείᾳ), as was just said. Hence, it is affected (πάσχει) while being unlike (οὐχ ὅμοιον) [what affects it], but when it has been affected, it has been made like (ὁμοίωται) it and is such as (ἔστιν οἷον ἐκεῖνο) what affected it (πεπονθός).³⁵⁷

The percipient is actually qualitatively like the perceptibles in a generic sense, but qualitatively unlike them in a specific sense. Notice that the percipient is both in actuality *and* potentiality with respect to perceptibles. This, of course, is the state of being in (2) first actuality/second potentiality. In sense (2), Jones sees, but in sense (3), Jones does not see. To be generically like, thus, is to be both potential and actual (i.e., a sense (2) perceiver), whereas to be specifically like is to be in actuality alone (i.e., a sense (3) perceiver). That is, in actual perception (3), as in the case of contemplation (3), one transitions from merely possessing the capacity to perceive (generically like) to both possessing and exercising (ἐνέργεια) the capacity (specifically like). And this specific likeness is achieved by means of agent (perceptibles) acting on (πάσχειν) patient (percipient) such that the patient is “*made like*” (ὁμοίωται) or *assimilated* to the agent.³⁵⁸

2.5 Conclusion and a Problem

We have now exhaustively surveyed the content of *De Anima* 2.5. We have seen how, using the triple scheme and the modified like-like theory, Aristotle wants us to understand

³⁵⁶ πάσχει μὲν γὰρ τὸ ἀνόμοιον, πεπονθὸς δ' ὅμοιον ἔστιν.

³⁵⁷ τὸ δ' αἰσθητικὸν δυνάμει ἔστιν οἷον τὸ αἰσθητὸν ἤδη ἐντελεχείᾳ, καθάπερ εἴρηται. πάσχει μὲν οὖν οὐχ ὅμοιον ὄν, πεπονθὸς δ' ὁμοίωται καὶ ἔστιν οἷον ἐκεῖνο. Note that πεπονθός is the perfect participle of πάσχω. Shields translation, modified.

³⁵⁸ We address assimilation in much more detail in chapter 5.

perception as an instance of change (417a32, b15, 17), though not a kinetic change and a (A) destructive alteration. For the (2) to (3) transition in perception is a case of preservative or non-destructive alteration (P), which, though still an instance of being-affected (πάσχειν) and an “alteration of a sort” (ἀλλοίωσις τις), lacks contrariety.

Burnyeat summarizes all this from *De Anima* 2.5 in terms of two messages, one negative, one positive. The negative message is as follows. I quote from Burnyeat:

The negative message of *De Anima* 2.5 is easy to state. This is the chapter in which Aristotle informs us of his view that, although perceiving is traditionally thought to be a case of being affected by something, an alteration caused by the object perceived, it is only in a refined sense of being affected or altered that this is true. In the ordinary sense of these terms they signify the loss of a quality and its replacement by another (opposite or intermediate) quality from the same range.... [But] that is not what happens in perception, which is a different way of being affected and altered.³⁵⁹

This is exactly what we have seen in our analysis. Contrariety is necessary for κίνησις and thus for alteration. Instances of perception, while clearly qualitative changes, lack contrariety and thus can be neither instances of kinetic change nor canonical ἀλλοίωσις (A). What, however, of the positive message of *De Anima* 2.5? Burnyeat continues in a long passage which is necessary to quote it in full:

New meanings of ‘potentiality’ have been distinguished, and... they bring with them new, non-standard meanings of ‘being affected’ and ‘being altered’. Hence, there will be new meanings also for ‘assimilation’ and its specific varieties: ‘being made red’, ‘being warmed’, ‘sounding Middle C’. By the end of II 5 the familiar theories of *Generation and*

³⁵⁹ Burnyeat, “De Anima II 5,” 28–29. I have altered the citation formatting Burnyeat uses here to match mine.

Corruption I 7 and *Physics* III 1-3 have been filled with a whole range of new meanings undreamed of in earlier philosophy. The result is that perception is ἀλλοίωσις τις in the *alienans* sense, ‘an alteration of a sort’: an alteration from which you cannot expect everything you would normally expect from alteration. You cannot expect the perceiver to be really altered, really reddened at the eye; seeing red is not at all like a case of internal bleeding. You cannot even expect the alteration to take time, as ordinary changes do.... Nevertheless, you can still expect from perceiving some of the things you would normally expect from alteration. The term has not lost all connection with the lessons of the other physical works. You can expect this type of alteration to be caused by a sensible quality, which determines the qualitative character of the effect in the perceiver in such a manner that to be reddened by it *in a way*.... To feel the warmth of a fire is to be warmed by it, but not in the way the cold room or your chilled hands are warmed by it. Naturally, readers will ask: But what are these new ways of being reddened or warmed? 2.5 does not say.³⁶⁰

One of the motives for Burnyeat’s paper was to push back on the interpretation of Aristotle’s theory of perception offered by Richard Sorabji in his influential 1974 paper, “Body and Soul in Aristotle.”³⁶¹ There in a throwaway line, Sorabji had said that “the [sense] organ is coloured during the perceptual process ... [and] this colouration is a physiological process, which could in principle, even if not in practice, be seen by other observers, using ordinary sense-perception.”³⁶² In the footnote to this line, Sorabji comments that this seems to “suggest a literal taking on of

³⁶⁰ Burnyeat, 73–74. Italics original.

³⁶¹ Richard Sorabji, “Body and Soul in Aristotle,” *Philosophy* 49, no. 187 (1974): 63–89.

³⁶² Sorabji, 72.

colour.”³⁶³ This position has since come to be called literalism, and is contrasted with another view, championed by Burnyeat in paper first delivered in 1983, spiritualism.³⁶⁴ This is the view Burnyeat is protecting when he said above:

You cannot expect the perceiver to be really altered, really reddened at the eye....

Nevertheless, you can still expect from perceiving some of the things you would normally expect from alteration.... You can expect this type of alteration to be caused by a sensible quality, which determines the qualitative character of the effect in the perceiver in such a manner that to be reddened by it *in a way*.³⁶⁵

Socrates does not *literally* lose the whiteness of his eye when he sees red, the contrary redness replacing (or destroying) the contrary whiteness. Rather, Socrates is indeed altered in a sense, but in a different way, a *spiritual* way—which was a view championed by both Aquinas and Franz Brentano.³⁶⁶ On this view, Socrates is *intentionally* reddened, but not literally so; that is, redness becomes the intentional object of Socrates’ perceptual state, and thus he is altered *in a way*. As for Sorabji’s view, Burnyeat characterizes it as follows: “on Sorabji’s account, what goes on inside the [sense] organ is an alteration—a replacement of one sensible quality by another—of the same kind as the alterations that occur outside when a cold thing is warmed or a green things is coloured red.”³⁶⁷

³⁶³ Sorabji, 72 n. 30.

³⁶⁴ For an excellent overview of this debate complete with bibliography, see Victor Caston, “The Spirit and the Letter: Aristotle on Perception,” in *Metaphysics, Soul and Ethics: Themes From the Work of Richard Sorabji*, ed. Ricardo Salles (New York: Oxford University Press, 2004), 245–47.

³⁶⁵ Burnyeat, “De Anima II 5,” 74.

³⁶⁶ For Aquinas, see Myles Burnyeat, “Aquinas on ‘Spiritual Change’ in Perception,” in *Ancient and Medieval Theories of Intentionality*, ed. Dominik Perler (Brill, 2001), 129–53. For Brentano, see the 1867 Franz Brentano, *The Psychology of Aristotle*, trans. Rolf George (University of California Press, 1977), esp., 54–55.

³⁶⁷ Burnyeat, “De Anima II 5,” 29. Cf. Sorabji, “Body and Soul in Aristotle,” 76 n. 40 where he says “of sense-perception he says that it is a matter of being affected by something, that it is a change in the body, that it is a qualitative change [alteration], and that a certain change in the eye is seeing.”

The debate, thus, for Burnyeat, concerns whether or not perception is a canonical case of (A) destructive alteration (in which case Sorabji's interpretation would be correct), or whether perception is an ἀλλοίωσις τις, a (P) non-destructive alteration of a sort which cannot entail the literal, physiological taking on of the quality of the perceptible by the percipient in question. Having shown that perception is not (A) destructive alteration, Burnyeat takes himself to have blocked Sorabji's literal interpretation which requires it.³⁶⁸ Such was the negative aim of Burnyeat's paper.³⁶⁹ As for the positive aim, Burnyeat stated that he wished, through the introduction and application of the triple scheme to knowledge and perception, to show how "in both cases the actuality is an alteration different from ordinary alteration."³⁷⁰ The problem, however, is that Burnyeat does not tell us what this non-destructive alteration *is* for Aristotle—which is both a metaphysical and a categorization question. Just as in chapter 1 where we presented the composite account of change without thereby specifying *what* exactly it is in that account to which change is identical in the case of perception (this was the task of chapter 2, of course), so Burnyeat has given us a picture of (A) destructive alteration and non-destructive alteration—(D) or (P)—without supplying a metaphysical account of what exactly this sort of change is. And without a metaphysical account, we are left without a way to categorize it on Aristotle's four-change scheme. Our focus in the following chapter is not on the Sorabji/Burnyeat debate, interesting as that is, but on what Burnyeat left unsaid, *viz.*, on a *positive* characterization of non-destructive alteration, and where it fits in Aristotle's categorial scheme with respect to change. If we wish to get a handle on the question of the metabolic status of perception for Aristotle as is our aim, then we must press on past Burnyeat.

³⁶⁸ So, e.g., Burnyeat, "De Anima II 5," 78.

³⁶⁹ Burnyeat, 28.

³⁷⁰ Burnyeat, 28.

CHAPTER 3: PERCEPTION AS CHANGE: THE PROPOSAL

Chapter Contents:

- 3.1 Perception and Change: A Restatement of the Problem
 - 3.2 Burnyeat's Metaphysical Reticence: Three Motivations
 - 3.2.1 Burnyeat's Epistemological Motivation
 - 3.2.1.1 Change and Epistemic Security
 - 3.2.1.2 Burnyeat's Epistemological Motivation Again
 - 3.2.2 Burnyeat's Anti-Sorabjian Motivation
 - 3.2.2.1 Positively Characterizing Perception
 - 3.2.3 Burnyeat's Categorical Motivation
 - 3.2.3.1 A Solution from *Physics* 5.1: QG
 - 3.3 The QG Account of Perceptual Change Vindicated?
 - 3.3.1 Two Adjustments and the Task Before Us
-

3.1 Perception and Change: A Restatement of the Problem

In the previous chapter we saw the problem with attempts to categorize perception as an instance of alteration. Alteration and what is supposed to be its synonym, narrow-sense being-affected (πάσχειν), are both instances of qualitative change (*GC* 1.6 323a17-20). Alterations, moreover, are instances of kinetic change, itself a subcategory of metabolic change in the broad sense as we saw in chapter 1. While μεταβολή change only requires that a thing change via opposites (αντικείμενα)—contraries (ενάντια) or contradictories (ἀντιφάσεις)—κίνησις requires that the opposites be *contraries* (ενάντια, *Phys.* 5.1 225a34-b5). As we saw in chapter 2, though, while instances of second actuality perception are instances of qualitative change, they *lack* contrariety. Hence, they cannot be proper instances of contrary to contrary alteration nor kinetic change. Nevertheless, because instances of perception are genuine instances of passion or being-affected (πάσχειν) qualitatively by an agent through being-*made*-like or assimilation (ὁμοίωσθαι, *DA* 418a5), they ought to be synonymous with alteration.³⁷¹

³⁷¹ See e.g., *Cat.* 8 11a15-19, *Phys.* 5.2 226a26-29, *GC* 1.6 323a17-20, and 1.7 323b19-324b14.

The problem, however, is that while both *πάσχειν* and *ἀλλοίωσις* refer to qualitative change, the former emphasizes that what is qualitatively changed is acted upon, while the latter that the transition is from contrary to contrary. And in the case of perception we have an instance of something which is qualitatively changed through being acted upon but does *not* transition via contrariety. As such, it cannot be an instance of canonical alteration nor a kinetic change even though it is truly an instance of narrow-sense qualitative *πάσχειν* which is *supposed to be* synonymous with alteration. Since we lack the appropriate terminology to even mark the distinction, Aristotle acquiesces to the lack of distinguishing vocabulary. As he said, at *De Anima* 2.5 418a1-3:

Since the difference (διαφορά) between these has no name, though the boundary between them has been drawn—that they are different and how they are different—it is necessary to use ‘being-affected’ (*πάσχειν*) and ‘being altered’ (*ἀλλοιοῦσθαι*)³⁷² as though they were the appropriate names.³⁷³

If he did not acquiesce, then he would have to invent new terms for instances of qualitative change, which, while still being instances of qualitative *πάσχειν*, are not genuine instances of (A) alteration but of non-destructive “alteration of a sort” (*ἀλλοίωσίς τις*). It would seem that either Aristotle thinks the subset of these sorts of changes, given qualitative change generally, must be exceedingly small and thus not worth the effort to name, or he thinks to do so would be to sow confusion.³⁷⁴ Hence, in the case of perception we have the following:

³⁷² The verb *ἀλλοιοῦσθαι* is the passive infinitive of *ἀλλοίωσις*.

³⁷³ ἐπεὶ δ’ ἀνώνυμος αὐτῶν ἡ διαφορά, διώρισται δὲ περὶ αὐτῶν ὅτι ἕτερα καὶ πῶς ἕτερα, χρῆσθαι ἀναγκαῖον τῷ *πάσχειν* καὶ *ἀλλοιοῦσθαι* ὡς κυρίοις ὀνόμασιν.

³⁷⁴ In some places he refuses to acquiesce as he does here. So, e.g., *Cat.* 7 7a5-7 “It may be sometimes necessary even to invent names, if no name exists in relation to which a thing would be given properly.” It is worth asking, one would think, why he acquiesces in some places and yet refuses to in others as one would think that a systematic thinker such as Aristotle rarely makes such decisions at random. In chapters 5 and 6 below I propose a plausible solution to this problem which goes some way to ameliorate the apparent randomness in this case.

Destructive Alteration (ἀλλοίωσις)

(A) Alteration: the replacement of one quality by a contrary quality from the same range.

Non-Destructive Alteration-of-a-Sort (ἀλλοίωσις τις)

(D) Development: the development of the dispositions which perfect a thing's nature.

(P) Preservation: one nature-perfecting dispositions passing from inactivity to exercise.

Both (D) and (P) in the case of perception lack contrariety and thus are only ἀλλοίωσις τις; they cannot be instances of kinetic change as that requires contrariety, but given the fact that they are qualitative changes and instances of πάσχειν, they nevertheless should be called “alterations.”

3.2 Burnyeat's Metaphysical Reticence: Three Motivations

This was Burnyeat's reading of *De Anima* 2.5 which we largely followed. And if one reads the ancient commentators Burnyeat cites—whether Alexander or Philoponus or Simplicius³⁷⁵—one finds in them the same sort of reading with respect to the main line: perception as a (2) to (3) transition is an instance of non-destructive alteration (P) which is “alteration” in name alone for it lacks contrariety. Burnyeat's reading can be readily endorsed here. What cannot be endorsed in Burnyeat's account, however, is his reticence on the metaphysical question of what this non-destructive alteration *is*. As stated previously, this is both a metaphysical question and a categorization question for Aristotle, which we can especially see given his careful metabolic categorizing scheme in *Physics* 5.1. For if we are endeavoring to grasp the metabolic status of perception rather than just endorse Burnyeat's interpretation, then we must at least *attempt* to move on. As for why Burnyeat is reticent here, one can only speculate. Such speculations can, however, be useful. For my part, I see the motive for Burnyeat's reticence as threefold. The first is epistemological; the second derives from his

³⁷⁵ Alexander, *Quaest.* 3.2 81.8-29, Philoponus, *in DA* 300.8-26, and Simplicius, *in DA* 122.10-123.27.

decades-long debate with Richard Sorabji; and the third is, I think, categorial and interpretive. Let us now turn to these motivations as our discussion of them will shed much light on the metaphysical questions pertaining to *De Anima* 2.5 we are so keen to address.

3.2.1 Burnyeat's Epistemological Motivation

First, Burnyeat is aware of the possible losses if Aristotle wrenches perception entirely from alteration and thus kinetic change. Had Aristotle done so, says Burnyeat:

he would have cut the links with dialectic of *Generation and Corruption* I 7 and the categorial analysis of change in *Physics* III 1-3. He would be set adrift, not merely from the reputable opinions he began with, but from the entire project of comprehending perception within the framework of the physics he develops in *Generation and Corruption* and *Physics* by analysis, systematization and refinement of reputable opinions from the earlier tradition. He would have to tear up the *De Anima* and start again.³⁷⁶

Moreover, says Burnyeat, there would be “an epistemological loss” as well:

Perception is a power of *receptivity*, not an autonomous activity. To perceive is to submit to being in-formed (we still say) about the particular objects around us, by the agency of the very objects we receive information about. Such receptivity is *necessary* for perception's content to be objective truth. It is objective because it is determined by the particular external object which causes the perception, rather than by factors internal to the perceiver. Ultimately, the [purpose of postulating like-like theory and perception as alteration] ... is to account for the cognitive accuracy of perception by treating the determination of perceptual content by the object perceived as a special case of

³⁷⁶ Burnyeat, “De Anima II 5,” 58.

assimilation or alteration. And for this it is essential to retain the idea that perception is some sort of passive change with a particular external cause.³⁷⁷

Perception is a qualitative change, qualitative changes are alterations, and if alterations then instances of kinetic change as well—which they are *not*. But would that they were for perception as κίνησις would give Aristotle the sort of epistemic assurances Burnyeat—I think rightly—takes Aristotle to need. We analyzed two aspects of change in chapter 1 that would give Aristotle just the sort of connection between percipient and perceptible to make perception epistemically plausible: (a) change as form reception and (b) change as necessitating agent and patient. Let us briefly examine how both of these are epistemically crucial for perception before concluding our discussion on Burnyeat’s first motivation.

3.2.1.1 Change and Epistemic Security

Let us take (a) form reception first. In *Physics* 3.1, Aristotle tells us that change is a categorial phenomenon, occurring in four of the ten categories: substance (οὐσία/τόδε), quantity (ποσόν), quality (ποιόν), and place (ποῦ/τόπον).³⁷⁸ Moreover, he says in the following lines,

³⁷⁷ Burnyeat, 58. Second italic, mine.

³⁷⁸ *Phys.* 3.1 200b32-33: “there is no change^k beyond the things mentioned” (Reeve translation, modified). οὐκ ἔστι δὲ κίνησις παρὰ τὰ πράγματα. Along with commenters ancient, medieval, and modern, Burnyeat also embraces the view that *for Aristotle* there are “only four types” of change (Burnyeat, “De Anima II 5,” 82). Sorabji too embraces this view. See Peter Lautner, *Simplicius: On Aristotle Physics 3*, ed. Richard Sorabji (A&C Black, 2014), 1. Cf. Odzuck, *The Priority of Locomotion in Aristotle’s Physics*, 10, 39, 43, 86, 189, and esp. 27: “there are *exactly* the four different kinds of change, namely change in quality, quantity, place, and substance” (italics mine). Cf. also Hussey, *Aristotle’s Physics*, 57: “Some categories yield changes which Aristotle takes to be necessarily secondary to and dependent on changes in other categories. It is for this reason that at [*Phys.* 3.1] 200b33-4 change in *only* four categories is recognized, whereas Aristotle here and in general recognizes more than four categories altogether. The restriction of basic or *per se* change to only four categories is repeated and argued for at *Physics* 5.2” (italics mine). See also, Simplicius in *Phys.* 408.15.20: “it is worth inquiring why, since potentiality and actuality are in all the kinds of being and since change is the activity of the potential as such, change is in *only* four kinds of being, substance, quality, quantity and place, but not also in the other although the actualization of the potential which remains potential is in them all. This distinction was made in the *Categories* [14] and he will take trouble to demonstrate it in the fifth book of this work [i.e., *Phys.*]” (italics mine). See too, Averroes, *Questions in Physics* Q7.35 for talk of “the four species of change” (cf. Q7.3 where he identifies these four species by name), and Aquinas, *Expositio libri Physicorum* 3.1.281: “*Everything* that is changed is changed according to substance, or according to quantity, or according to quality, or according to place, as will be shown in [*Phys.*] Book V.... Hence it is clear that there is *not* motion or mutation outside the above mentioned genera” (italics mine). For a broad

201a3-9, things belong to these four categories in one of two ways: either in potentiality or in actuality. In the case of one of the categories involving contrariety, e.g., quality, to be potentially white is to be actually black. In the case of the paradigm category involving contradictories, on the other hand, i.e., substance, to be potentially a man is to be actually a not-man—this being said of a suitable sort of matter capable of the right sort of potentiality such as an ovum.³⁷⁹ How does what is actually black but potentially white, and what is actually not-man but potentially man, transition from actuality to potentiality? Via form transmission, Aristotle tells us. Form, as we saw in chapter 1, is actuality, and *all forms come from other forms*. So, *Physics* 3.2 202a9-12:

That which produces change (τὸ κινουῦν) will always carry some form (εἶδος), either ‘this’ (τόδε) or ‘of such a kind’ (τοιόσδε) or ‘so much’ (τοσόνδε), which will be the principle of (ἀρχὴ), and responsible for (αἴτιον), the change (κινήσεως), when it produces

selection of Medieval Aristotelians (Islamic, Jewish, and Christian) discussing the restriction of change to only four of Aristotle’s ten categories, see Wolfson, *Crescas’ Critique of Aristotle: Problems of Aristotle’s Physics in Jewish and Arabic Philosophy*, 498–503. For Wolfson’s own intriguing discussion of this restriction, see Wolfson, 70–75. See chapter 1 above for an analysis of the argument from *Phys.* 5.2 as for why change is so restricted.

³⁷⁹ Two things are important to point out here. First, per Aristotle’s stipulations in *DA* 2.1 where he defines the soul as the first actuality of the body, he stipulates there that it must be the first actuality of a *natural, organic body* (412b4-5). This is the sort of body that *could* be alive, that is, it has the appropriate *organization* to do so. In this way, rocks are not potentially alive as they lack the appropriate genetic structure for cellular organization, while fertilized ova are—they are appropriately genetically arrayed to be cellular—as are cryogenically frozen bodies. Second, potentiality is not the same as mere possibility—it is something far more fecund than that. So, Burnyeat: “the concept of potentiality on which Aristotelian physics is founded is not the bare concept of possibility” (Burnyeat, “De Anima II 5,” 42 n. 38). See here too, Waterlow, *Nature, Change, and Agency in Aristotle’s Physics*, 109: “Something comes to be what previously it was not. But to say simply that X was not-P is misleading. This bare statement contrasts with things (including itself later which *are* P in a way that takes no account of another and equally essential contrast, namely between X’s being not-P and the not-P-ness of things that *never* can be P. Even when X lacks the actuality, it has the potential; and this is *something*. Change then must be conceptually located in the domain of things that are sometimes actually and sometimes potentially P.” Second italic, mine. Cf. *GC.* 1.5 320a12-14: “a change from *this* to *that*—from potential substance to actual substance—is generation” (Barnes translation, modified). ἡ μὲν ἐκ τοῦδε εἰς τόδε μεταβολή, οἷον ἐκ δυνάμει οὐσίας εἰς ἐντελεχείᾳ οὐσίαν, γένεσις ἐστίν. See too *Meta.* Λ.2 1069b15:-16 “everything changes from that which is potentially to that which is actually” (Barnes translation). μεταβάλλει πᾶν ἐκ τοῦ δυνάμει ὄντος εἰς τὸ ἐνεργείᾳ ὄν.

change (κινῆ)—e.g. what is actually (ἐντελεχεία) a human being makes (ποιεῖ), out of which is potentially (δυνάμει) a human being, a human being.³⁸⁰

Things that are potentially white are made white by what is itself actually white; things which are potentially man are made man by what is itself actually man, so on and so forth. All form comes from other forms; that is, all actuality comes from actuality.³⁸¹

This leads us to the second feature of the composite picture of change: (b) the necessity of agent and patient in change. If all form comes from form, then at a minimum whatever has form must have received it from what itself, at the time of the change, had form. If this is how things are metaphysically structured for Aristotle, then form-begetting-form either carries on *ad infinitum*, or terminates in something that of necessity has form.³⁸² For Aristotle, it is the latter: there is “an eternal unchangeable changer” (*Phys.* 8.6 260a15).³⁸³ And this eternal changer is unchangeable because it *is* form—pure actuality with no potentiality whatsoever.³⁸⁴ Since all change is the transition from potentiality to actuality or form with respect to some, one, specific actuality *x*, then all change requires patients in potentiality with respect to *x* and agents in actuality with respect to *x*. Change as form transmission in the sense of form-begetting-form necessitates the agency and patency relations.

³⁸⁰ εἶδος δὲ αἰεὶ οἴσεται τι τὸ κινουν, ἥτοι τόδε ἢ τοιόνδε ἢ τοσόνδε, ὃ ἔσται ἀρχὴ καὶ αἴτιον τῆς κινήσεως, ὅταν κινῇ, οἷον ὁ ἐντελεχεία ἄνθρωπος ποιεῖ ἐκ τοῦ δυνάμει ὄντος ἀνθρώπου ἄνθρωπον. Reeve translation, modified.

³⁸¹ See this same principle elsewhere in the *Corpus*, e.g., *Phys.* 8.5 257b7-10, *Meta.* A.1 993b23-27, *APo.* 1.2 72a29-30. Cf. Hussey, *Aristotle's Physics*, xv–xvi. See also A.C. Lloyd, “The Principle That the Cause Is Greater than Its Effect,” *Phronesis* 21, no. 2 (1976): 147, who calls this the “transmission theory of causation,” saying it is “essentially Aristotle’s.”

³⁸² See, e.g., *Phys.* 3.1 201a23-27, 8.5 256a13-21.

³⁸³ Traditionally, an “unmoved mover” (ἀκινήτου κινεῖται αἰδίου). As mentioned earlier, we have attempted to consistently avoid the terminology of movement in favor of change.

³⁸⁴ See *Meta.* Λ.6 1071b17-22: “Further, even if it will be in actuality, it is not enough, if the substance of it is a potentiality. For then there will not be eternal change, since what is potential may possibly not be. There must, therefore, be such a principle, the substance of which is actuality. Further, accordingly, these substances must be *without matter*. For they must be eternal, if indeed anything else is eternal. Therefore, they must *be actuality*” (Reeve translation, modified). ἔτι οὐδ’ εἰ ἐνεργήσῃ, ἢ δ’ οὐσία αὐτῆς δύνάμει· οὐ γὰρ ἔσται κίνησις αἰδίου· ἐνδέχεται γὰρ τὸ δυνάμει ὄν μὴ εἶναι. δεῖ ἄρα εἶναι ἀρχὴν τοιαύτην ἥς ἡ οὐσία ἐνέργεια. ἔτι τοίνυν ταύτας δεῖ τὰς οὐσίας εἶναι ἄνευ ὕλης· αἰδίου γὰρ δεῖ, εἴπερ γε καὶ ἄλλο τι αἰδίου. ἐνέργεια ἄρα.

What these two features, (a) and (b), mutually entail for kinetic change is that *if* patients change *then* they can only do so in the manner in which their agents have directed them. This, in fact, is precisely what it means to be a so-called “efficient cause.” “Efficient,” though apt, is not a term Aristotle used, coming instead through his commentators from the Latin *efficere*, “to bring about” or “accomplish.”³⁸⁵ Aristotle calls this sort of cause (αἷτια) κίνησις-derived terms such as “the changer” (τὸ κινῆσαν, *Phys.* 2.7 198a24) or “the primary changer” (τὸ πρῶτον κινῆσαν, 2.7 198a33). As he describes it in *Physics* 2.3 194b29-31, it is “the primary principle of the change (μεταβολή) or rest.”³⁸⁶ It is “what acts on of what is acted on and what changes of what is changed” (194b31-32).³⁸⁷ Changing causes are thus *agents* because—being in the relevant actuality—they are what *cause* change in their patients. And what they cause is the relevant actuality or form of the relevant potentiality—no more, no less.

It is this (a)-(b) change as agent-to-patient form-transmission view which gives Aristotle the epistemological effects he wants. By grounding perception in change and change in agent-to-patient form-transmission, Aristotle can *guarantee* that how one is characterized in perception is how things are, for it is in our very status as patients that percipients are “in-formed” by perceptibles—becoming like they are in the relevant actuality and to the precise degree, no more, no less. Hence, if (i) change is the actualizing potentiality of potentialities from a specific range or genus, and if (ii) all actualities in patients come from prior actuality in agents, and further if (iii) no change can occur outside this sequence, then (iv) no patient can change—that is, become actual—in *any* manner not specified by the action and actuality of the agent. There is literally no room for error, as actualities can come to be from no other source. Hence, *if* perception is a

³⁸⁵ Angus Stevenson, ed., *Oxford Dictionary of English* (New York: Oxford University Press, 2010), 561.

³⁸⁶ ἡ ἀρχὴ τῆς μεταβολῆς ἢ πρώτη ἢ τῆς ἡρεμῆσεως.

³⁸⁷ τὸ ποιοῦν τοῦ ποιουμένου καὶ τὸ μεταβάλλον τοῦ μεταβαλλομένου. Charlton translation, modified.

kinetic change by virtue of being an alteration, then this account applies to perception too, and perceptions *cannot* be mistaken—which is precisely what Aristotle says concerning “proper perceptibles” in *De Anima* 2.6: “by ‘proper’ (ἰδιόν) I mean what cannot be perceived by another sense and *about what one cannot be deceived* (ἐνδέχεται ἀπατηθῆναι)” (418a11-12).³⁸⁸ But, as we have just said, this would seem to only follow *only if* perception is a kinetic change by virtue of being an alteration.

3.2.1.2 Burnyeat’s Epistemological Motivation Again

For Burnyeat, because perception *can* be called an “alteration of a sort,” this somehow entails that the epistemically stable relationship between percipient and perceptible enabled by kinetic change is secured.³⁸⁹ This, then, is what I take as Burnyeat’s first reason for reticence: he needs the murkiness of perception *qua* kinetic “alteration of a sort” in order to allow Aristotle the epistemic stability Aristotle thinks follows from labeling perception as an alteration. To disallow

³⁸⁸ λέγω δ’ ἴδιον μὲν ὃ μὴ ἐνδέχεται ἑτέρα αἰσθῆσαι αἰσθάνεσθαι, καὶ περὶ ὃ μὴ ἐνδέχεται ἀπατηθῆναι. Shields translation, modified. Perceptual error does occur, of course. Just not here with respect to proper objects. See Aristotle’s discussion at *DA* 3.3 428b10-25 where he argues, first, that “perception of proper objects is true, or is subject to falsity in the smallest degree” (δεύτερον ἢ αἰσθησις τῶν μὲν ἰδίων ἀληθὴς ἐστὶν ἢ ὅτι ὀλίγιστον ἔχουσα τὸ ψεῦδος, 428b18-19); “Second, perception is of something’s being an attribute of something; and already here it is possible to be mistaken” (δὲ τοῦ συμβεβηκέναι ταῦτα <ἂ συμβέβηκε τοῖς αἰσθητοῖς>· καὶ ἐνταῦθα ἤδη ἐνδέχεται διαψεῦδεσθαι, 428b19-21); and “third, perception is of the common [perceptibles] which follow upon attributes to which the proper [perceptibles] belong (I mean, for instance, change and magnitude, which are attributes of perceptibles), concerning which there is already, most of all, deception in the realm of perception” (τρίτον δὲ τῶν κοινῶν καὶ ἐπομένων τοῖς συμβεβηκόσιν οἷς ὑπάρχει τὰ ἴδια (λέγω δ’ οἷον κίνησις καὶ μέγεθος) [ἂ συμβέβηκε τοῖς αἰσθητοῖς]· περὶ ἃ μάλιστα ἤδη ἔστιν ἀπατηθῆναι κατὰ τὴν αἴσθησιν, 428b22-25). Shields translation, modified. The order of treatment here is proper perceptible, accidental perceptible, and then common perceptible. Proper perceptibles are directly perceived via the agent-to-patient form-transmission we have described, and thus admit of “falsity in the smallest degree” (I offer an explanation of how this is possible due to error on the patient reception end in chapter 6). Accidental perceptibles, on the other hand, require some form of rational inference, and thus we are prone to error here (“already here it is possible to be mistaken”). The same applies to common perceptibles as we perceive them in the same sort of inferential manner as accidental perceptibles (see *DA* 3.2 425a20-27), “concerning which there is already, most of all, deception in the realm of perception.” Error, thus, arises from (attempted) rational inference, not agent-to-patient form-transmission by which a patient can only receive what is delivered.
³⁸⁹ I am not actually sure this follows as it stands. Epistemic security would only follow here if perception is the *right sort* of alteration, viz., has the same features which alteration has which entail epistemic security, i.e., (a) and (b). Whether “alteration of a sort” *as described by Burnyeat* does, I think, is an open question. On the solution I propose below, however, (a) and (b) are both clearly entailed.

this would be, in Burnyeat's language, "to set adrift" perception from Aristotle's theory of change which would have untoward epistemic repercussions, to put it mildly.

The only question with which we are left here is why Aristotle needs *alteration*. If kinetic change itself is what would give Aristotle the epistemic security he wants for perception, and if perception cannot be an alteration, then why not say that perception is a kinetic change but not an alteration? For the same reason, it seems: κίνησις and alteration *both* necessitate contrariety which perception lacks. As we have specified, (A) alteration is *destructive*, while neither (P) nor (D) is. But what about the broader category of metabolic change and especially its narrow-sense subcategory? Not only does μεταβολή belong with κίνησις to the same composite account of change we examined in chapter 1, but *as such* includes as features the (a)-(b) change as agent-to-patient form-transmission view as well. Moreover, unlike kinetic change, broad-sense metabolic change is not restricted to change in respect to *contraries*. All that is needed are opposites (αντικείμενα), *either* contraries (ενάντια) or contradictories (ἀντιφάσεις). Man comes from its contradictory not-man, as is the case in all instances of generation (γένεσις) per *Physics* 5.1³⁹⁰—although what was not-man (i.e., the underlying matter³⁹¹) came to be a man *through* the agency

³⁹⁰ Speaking of generation, Aristotle characterizes it in *Phys.* 5.1 225a5 as ἡ οὐκ ἐξ ὑποκειμένου εἰς ὑποκείμενον.

³⁹¹ As Aristotle makes plain in *Phys.* 1.7 190b3-5: "in every case there is something that underlies, from which the thing comes to be—for example, plants and animals come to be from seed." αἰ γὰρ ἔστι ὁ ὑπόκειται, ἐξ οὗ τὸ γιγνόμενον, οἷον τὰ φυτὰ καὶ τὰ ζῷα ἐκ σπέρματος. Seed (σπέρματος) here, acting as *the matter*. See Charlton, *Physics*, 75–77, 79, 81, 91, 99–100, and 123 for this same interpretation. Cf. *Phys.* 2.8 199b7: "seed must come first, and not the animal straight off." ἀνάγκη σπέρμα γενέσθαι πρῶτον, ἀλλὰ μὴ εὐθὺς τὰ ζῷα. Cf. also *DA* 2.1 412b27 where Aristotle identifies seed and fruit as "a body in potentiality" (τὸ δὲ σπέρμα καὶ ὁ καρπὸς τὸ δυνάμει τοιονδὶ σῶμα). Seed need not be semen here, but may indicate the resultant *embryo* (κύημα, *GA* 1.23 730b32-31a4) which Aristotle says in animals, "acts like the seeds of plants" (*GA* 2.4 739b33-34). "Ὅταν δὲ συστήῃ τὸ κύημα ἤδη παραπλήσιον ποιεῖ τοῖς σπειρομένοις. For this same interpretation of σπέρματος as embryo, see Alan Code, "The Persistence of Aristotelian Matter," *Philosophical Studies* 29, no. 6 (1976): 364. Code also answers the problem Charlton, *Physics*, 76–77, sees with σπέρματος being the matter rather than the form, viz., that flesh and bones, not σπέρματος, is the matter of a man. As Code points out, σπέρματος *as an embryo* was the matter of man *before* it was, in conjunction with the menstrual fluid, converted or transformed "through the successive stages of development and growth" into flesh and bones (364). As Code says, "the end product—the man—is made of not semen or embryos, but of flesh and bone" (365). The point, however, is that there is *always* some underlying matter at each stage of development.

of what was actually a man, the father.³⁹² Actuality comes from actuality, form from form—in both κίνησις and μεταβολή.³⁹³ Finally, Aristotle, while unwilling to call either knowledge or perception a κίνησις is so willing to apply μεταβολή to them both, doing so consecutively and unambiguously in *De Anima* 2.5.³⁹⁴ Burnyeat does not explore this perception as μεταβολή option, although it seems clear that he should have. But if so, why did he miss it? This question leads us to what I take to be Burnyeat’s second motivation, his anti-Sorabjism.

3.2.2 Burnyeat’s Anti-Sorabjism Motivation

Burnyeat could have, it seems, characterized perception as both a broad and narrow-sense metabolic change which transitions from contradictory (ἀντίφασις) to contradictory (ἀντίφασις). In second actuality perception (P) the percipient transitions from not-seeing-red to seeing-red. Or, for first actuality perception (D), from not-being-able-to-see-red to being-able-to-see-red.³⁹⁵

³⁹² In the case of generation, the efficient cause (i.e., man) coincides with the formal and final causes—which is why the change is law-like and not haphazard. See, e.g., *Phys.* 2.7 198a24-27: “The causes being four, it is the business of the student of physics to know about them all, and if he refers his problems back to all of them, he will assign the ‘why’ in the way proper to his science—[1] the matter, [2] the form, [3] the changer, [4] that for the sake of which. The last three often coincide; for [2] the what and [4] that for the sake of which are one, while [3] the primary source of change is the same in species as these. For [3] man generates man—so too, in general, with all the things which cause change by being themselves changed.” In generation, the form transmitted is man, the generative act is performed for the sake of transmitting the form man, and the efficient cause of the generation is a man (i.e., “the same in species as these”). Formal and efficient causation coalesce in all instances of generation (and change for that matter), as an efficient cause cannot give what it does not have. See again, Lloyd, “The Principle That the Cause Is Greater than Its Effect.” As for the material cause, it is, as Aristotle has said, “seed” (190b5).

³⁹³ See, e.g., *PA* 1.1 641b27-30: “For a given seed does not give rise to any change living being, nor spring from any change one; but each springs from a definite parent. And thus it is that from which the seed comes which is the origin and fabricator of its offspring. For it is *by nature*, the offspring being at any rate which in nature will spring from it.” Cf. his comment on seed in the midst of his discussion of chance in *Phys.* 2.4 196a31-33: “it is not just any random thing that comes to be from a given sort of seed, but an olive tree from one sort and a human being from another.”

³⁹⁴ When speaking of (D) on the knowledge model at 417b13-16, he says that in the case of a (D) transition from not-knowing to knowing that what learns “either should not be said to be affected or there are two types of alteration, one a change (μεταβολήν) towards conditions of privation and other towards positive states and a things nature” When speaking of (D) in the case of perception at 417b16-17, he labels the (1) to (2) transition “the first change” (ἡ πρώτη μεταβολή). As we argue in chapter 5, this is a false tall with respect to knowledge.

³⁹⁵ We can also put these locutions adverbially. For (P), from not-being-appeared-to-redly to being-appeared-to-redly; for (D), from not-being-able-to-be-appeared-to-redly to being-able-to-be-appeared-to-redly. On the adverbial theory of perception, “I see a tree” should be restated as “I am seeing-treely.” Or “I am thinking of Harry Potter” should be restated as “I am thinking-Harry-Potterly.” In both cases, the object of the mental act (tree and Harry Potter) is restated to be a *mode* or manner of the mental act—the way in which the mental act is carried out. As acts are verbs

If perception is a μεταβολή, we still get the same result: (1) it is not an alteration or a being-affected, or if it is *qua* qualitative change, then (2) it is only an “alteration of a sort” and bit still an instance of being-affected. This is just the same as it was on Burnyeat’s interpretation. The difference, however, is that we now have a *positive* metaphysical characterization of (P) which gives real content to the claim that it is not a destructive alteration (A). Thus given, why does Burnyeat not take his analysis one step further? He says instead that Aristotle “leaves no textual space for anything but alteration” and that “he has said all he has to say about perception” when he characterizes (P) as “alteration of a sort”.³⁹⁶ But why would Burnyeat say this given other possible avenues of interpretation?

This leads us to a second reason for Burnyeat’s reticence on the metaphysical and categorical status of perception as (P): if he had *positively* characterized and categorized (P), he

and modifications of acts are adverbs (which, in English, typically take on the *ly* ending), to restate mental act statements in adverbial form is to adverbialize the object—in my examples, “tree” as “treely” and “Harry Potter” as “Harry-Potterly.” Cf. the description of adverbial theory in John Foster, *The Nature of Perception* (New York: Oxford University Press, 2000), 171. The reason for this locutionary shift is to *rid* oneself of *mental relations* of act-to-object. In the adverbial solution, one does this by incorporating the object *into the act* by adverbializing the object (i.e., tree to treely). Mental relations are polyadic properties, requiring the existence of two or more things to obtain. For “X is taller than Y”, “taller than” as a relation requires *both* “X” and “Y” in order to obtain. Analogously in “X perceives Y”, “perceives” as a relation requires *both* “X” and “Y” in order to obtain. But if perception is adverbialized, “X perceives Y” becomes “X perceives-Yly”. Here, “perceives-Yly” is a monadic property, requiring *only* “X” in order to obtain. The relation is eliminated when the intentional object is recast as an intentional *act*. For Burnyeat’s apparent preference for an adverbial perception view for Aristotle, see Burnyeat, “De Anima II 5,” 75–76. See the interesting discussion on Franz Brentano’s rejection of intentionality as a relation—and of relations generally—and of his embrace of adverbialism in: John Haldane, “Brentano’s Problem,” *Grazer Philosophische Studien* 35 (1989): 10–17. Cf. the *affirmation* of Brentano’s denial of intentionality as a relation paired with the *denial* of his adverbialism in: Uriah Kriegel, “Brentano’s Mature Theory of Intentionality,” *Journal for the History of Analytical Philosophy* 4, no. 2 (2016): 1–15. The connection with Aristotle, of course, is that, as Peter Simons writes in the Introduction to the 1995 translation of Brentano’s *Psychology from an Empirical Standpoint*, “the idea of intentional inexistence [i.e., intentionality] comes from Aristotle’s theory of perception, in which the form but not the matter of the perceived object is literally within the soul.” Franz Brentano, *Psychology from an Empirical Standpoint*, ed. Oskar Kraus, trans. Antos C. Rancurello, D.B. Terrell, and Linda L. McAlister, Second Edition (New York: Routledge, 1995), xvii. As Brentano states his view, “Aristotle himself spoke of this mental in-existence [i.e., intentionality]. In his books on the soul [*De Anima*] he says that the sensed object, as such, is in the sensing subject; that the sense contains the sensed object without its matter; that the object which is thought is in the thinking intellect.” Brentano, footnote, 67.

³⁹⁶ Burnyeat, “De Anima II 5,” 82, 83. He actually says this in response to those who would “functionalize” Aristotle’s philosophy of mind, stating that Aristotle says nothing about material realization of perceptual states and neither should we. Despite the context, his conclusion amounts to the same thing for us: (P) is a preservation or perfection which lacks contrariety, and thus is only an “alteration of a sort.” No further will Burnyeat go.

would not have been able to press the point he wished to maintain *against* Sorabji's literalistic account of (P) *as* (A). For if (P) is a μεταβολή but not a κίνησις, Burnyeat *can still* have (a)-(b) agent-to-patient form-transmission as we have seen; but, he seems to think, he *cannot* use *De Anima* 2.5 to press his point that (P) is an alteration "of the sort from which we should not suspect normal things." Burnyeat's spiritualism follows from the metaphysical opacity of (P) *qua* "alteration of a sort." That is, perceptual changes are for Burnyeat "spiritual" *only if* we leave (P) undefined. Once we define (P), however, it would seem that this spiritual status once again becomes an open question. For the lack of literal contrariety in (P) does *not* entail (P) is a spiritual change *if* change between contradictories (i.e., μεταβολή). To become red from a prior state of not-red (as opposed to a prior contrary state like white or yellow) is not to become red in a spiritual but nonliteral sense. Transparent glass windows which are not-red (nor any other contrary color) *literally* become red when so painted. Such change is not kinetic for Aristotle as there is no contrariety, but we would not for that reason have on our hands a *nonliteral* sense of becoming red. For if (P) is a μεταβολή, Burnyeat seems to think, then (P) as described in *De Anima* 2.5 cannot act as evidence *for or against* Burnyeat's spiritualism—nor, *pari ratione*, *for or against* Sorabji's literalism. *De Anima* 2.5 is neutral in this regard, and thus Burnyeat and Sorabji both will need to hunt for other texts to prove their case.

There is reason, however, to think that this is incorrect. Of course, if perception is a destructive alteration as Sorabji suggests, then a literal interpretation works just fine. In seeing, for instance, the eye-jelly would receive one contrary while the prior one is replaced or destroyed, contrary to contrary. On this score, one can see as much as one has the eye-space to

take in contraries.³⁹⁷ Burnyeat's "alteration of a sort", of course, blocks such occurrences and thereby falsifies literalism. But, we should note, so does the contradictory to contradictory metabolic theory we have been examining. When contrary to contrary change occurs, there is what we might call a 'clearing mechanism' in that when one contrary comes the other, of necessity, must go. Contraries are mutually repellent.³⁹⁸ If, however, one comes to be perceptually characterized from contradictory to contradictory, then there is nothing to remove the contradictory that came before. For instance, if my transparent eye-jelly transitions from not-blue to blue when I look to the sky, then at least some part of it becomes blue. But if I then look down to the green grass and transition from not-green to green, then some other part of my eye-jelly becomes green. While blue and green *qua* intermediates are contraries, they did not come to be as contraries but contradictories from what is not, and hence do not repel one another. Rather, I come to be characterized by both—which is one would expect of simultaneous perception but not sequential perception. I saw blue but I see green, yet I am at the same time characterized by both since one does not 'clear' the other as would contraries.³⁹⁹ Moreover, what if I then come to see a whole host of other colors in sequential fashion as well, filling up all the space in my eye-jelly? If I cannot clear what came before but see what was sequentially received all at once and keep doing so, then I will have overlapping colors in the various places of my eye-jelly. Say I see blue and then see red and both are received in the same place and overlap. Would I not then see purple from their combination, a color I never perceived in the sequence? Again, Sorabji *needs* alteration to be of the canonical, destructive sort for his literalism to remain coherent, but

³⁹⁷ See Sorabji, "Body and Soul in Aristotle," 88: "For Aristotle, seeing is, among other things, a physiological process, the coloration of the eye-jelly. And this process can in principle, even if not in practice, be observed by others.... It should not be supposed that after one has observed the physiological process, there is some purely mental act still waiting to be detected.... There are no such acts."

³⁹⁸ Cf. *Cat.* 6 6b1. See too Simplicius *In cat.* 384.20.

³⁹⁹ I owe this insightful criticism to David Bradshaw, "Aristotle on Perception: The Dual-Logos Theory," *Apeiron* 30, no. 2 (1997): 144 n. 2.

Burnyeat does not need a murky sort of alteration for his spiritualism. If the contradictories are spiritually or mentally received, then unlike the eye-jelly the soul can ‘clear’ itself. We suggest a mechanism for this in chapter 6, but for now let us rest contented to see the point that Burnyeat’s interpretation is not necessary in order to obtain his desired result.

Burnyeat, as we have said, neglects the μεταβολή option with respect to perception. This could be because he never considered it, but there is reason to think Burnyeat purposely ignored the suggestions of several of the ancient Aristotelian commentators with whom he interacted in order to advance an attack against Sorabji’s literalism. While this was entirely unnecessary as we have just argued, Burnyeat nevertheless ignores the common positive metaphysical characterization of perception in Alexander, Philoponus, and Simplicius.⁴⁰⁰ Their view, as we will see, is in part the same as Burnyeat’s: perception is not an instance of destructive alteration or kinetic change, but a rather odd sort of alteration. On what perceptual change is *not*, all are agreed. Where Burnyeat and the ancient commentators part company, however, is on the issue of what perceptual change *is*. As we shall see, their voices are in unison: (P) is not (A) but rather a *generation* (γένεσις)—and thus a metabolic change. And as a generation, it does not involve change between contraries (ἐνάντια) but *contradictories* (ἀντιφάσεις). Let us briefly turn to these positive metaphysical accounts of perceptual change before turning to what I take to be Burnyeat’s third and final motivation.

3.2.2.1 Positively Characterizing Perception

⁴⁰⁰ The following is an exhaustive listing of Burnyeat’s citations of the commentators’ *DA* commentaries in Burnyeat, “De Anima II 5.” The page number in Burnyeat is first, followed by the commentary passage in parentheses. Alexander references: 7 references to 10 passages: 48 n. 54 (3.3 83.6); 56 n. 77 (3.2 81.25-26; 3.3 84.16-17); 60 n. 85 (3.2 81.27-82.7); 63 n. 92 (3.2 82.13-17, 84.27); 73 n. 116 (3.3 84.34-36, 85.25-26); 84 (3.3 82.27-30); 86 (3.3 83.25-26). Philoponus references: 11 references to 11 passages: 38 n. 29 (290.25-28); 43 n. 39 (296.21-297.10); 46 n. 46 (289.31-32); 47 n. 51 (299.4); 52 n. 63 (308.20-22); 59 n. 83 (304.7); 62 n. 88 (304.16-22); 63 n. 92 (304.24); 63 n. 93 (304.26-28); 77 n. 127 (290.4-5); 84 (300.8-30). Simplicius references: 6 references to 6 passages: 40 n. 32 (118.8-10); 47 n. 53 (120.13-14); 51 n. 63 (125.11-12); 60 n. 85 (123.10-14); 63 n. 94 (123.34-35); 84 (121.29-30).

Let us first look at Alexander. Commenting on perception (P) and how it lacks contrariety and thus cannot be an instance of either κίνησις or destructive (A) (ἀλλοιώσις),⁴⁰¹ he asks: “is it then perhaps better to call them *generations of some sort* (γενέσεις τινάς), since they contribute to the perfection (τελειότητα)⁴⁰² of the beings of which they are?” (*Quaest.* 3.2 81.29-31).⁴⁰³ A bit later he is more confident (*Quaest.* 3.3 84.20-24):

That from the state (ἔξωθεν) to the activity (ἐνέργειαν) that is on account of it—as with exercising intellect and thinking, since it does not come about through teaching—is not alteration or change^k (οὐχ ἀλλοίωσις οὐδὲ κίνησις), but a different kind of change^m (μεταβολῆς); such a change^m (μεταβολή) would [fall] under *generation* (γένεσιν), if [that to which] being perfected (τελείουσθαι), and progression towards this, apply [is] in some way a thing that is comes to be (γινόμενον).⁴⁰⁴

While Alexander is speaking here of the knowledge model, he is clear that it applies to perception as well: “the activities of perception and of intellect differ in this way *only* (μόνον):

⁴⁰¹ “For making the change^m from intellectual state to actually exercising intellect will not be some sort of alteration (ἀλλοιώσις), if alteration (ἀλλοιώσις) is change^m in respect of an affection (πάθος), and this is not change^m with respect of an affection (πάθος) if it is a progression towards what is the same (ταὐτὸν)” (*Quaest.* 3.2 81.19-22). If a (2) to (3) transition is from what is first actuality x to what is second actuality x, then it is *from* what is “the same” as what it is *to*, actually x. The problem of sameness is the problem of a *lack* of contrariety.

⁴⁰² According to Burnyeat (“De Anima II 5,” 63, n. 91), “‘perfecting’ is standard in the ancient commentators [for actuality].” He immediately goes on to reference Alexander (*Quaest.* 3.2, 82.13-17, 84.27), Themistius in *DA* 56.12), and Philoponus (in *DA* 304.24) in this regard. As Philoponus states in several places, perfection (τελειότης) is second actuality (in *DA* 302.13-14, 303.9-15) as well as first actuality/second potentiality, the latter of which is “perfection in a way” (τελειότητα πῶς, 304.27). Perfections, thus, are first or second actualities which are the *products* of the (1) to (2) transition (D) development *as well as* the (2) to (3) transition (P) preservation. More on this distinction later.

⁴⁰³ μήποτ οὖν ἀμεινον γενέσεις αὐτάς λέγειν τινάς, εἴ γε πρὸς τὴν τελειότητα τῶν οὐσιῶν ὧν εἰσι συντελοῦσιν. Sharples translation, modified.

⁴⁰⁴ ἢ μὲν γὰρ ἐκ τῆς ἔξωθεν εἰς τὴν ἐνέργειαν τὴν δια ταύτην, ὥς το νόειν ἔχειν καὶ το φρονεῖν, ἐπεὶ μὴ διὰ διδασκαλίας γίνεται, οὐκ ἀλλοίωσις οὐδὲ κίνησις, ἀλλ' ἑτέρον τι γένος μεταβολῆς (ὕπὸ γὰρ τὴν γένεσιν εἴη αὐτοαὕτη μεταβολή, εἴ γε το τελείουσθαι καὶ ἢ εἰς τοῦτο ἐπίδοσης γινομένου πῶς ἐστὶ). Sharples translation, modified.

what is heard and what is seen by the one who perceives are outside and not within him, and similarly with each of the other [objects of sense]” (*Quaest.* 3.3 85.5-7).⁴⁰⁵

We see the same thing in Philoponus too. Speaking of (D) in the knowledge model, he says a *in De An.* 300.11-17:

For it [the knower] changes (μεταβάλλει) either from not-knowing (αγνοίας) to knowing (γνώσιν) or at least from false opinion (από ψευδούς δόξης) to true (εἰς ἀληθὴ),⁴⁰⁶ of which the first is a change (μεταβολή) from a lack (από στέρησεως) to a form (εἰς εἶδος), and that is *generation* (γένεσις) and not alteration (αλλοίωσις), while the second is a change from contrary state (ἐναντίας ἐξέως) to contrary (ἐναντίαν), and that is properly [called] alteration (αλλοίωσις). For alteration (αλλοίωσις) is change (μεταβολή) from what has been made to have form (ἐξ εἰδοπεποιημένου) to what has been made to have form (εἰς εἰδοπεποιημένον), the same subject (υποκειμένου) remaining.⁴⁰⁷

In Philoponus’ terminology, alterations change “from form to form” (ἐξ εἶδους εἰς εἶδος, 304.35)—as do all instances of kinetic change—for this is the very same thing as to change “from contrary to contrary” (ἐξ ἐναντίου εἰς ἐναντίον, 301.36-02.1).⁴⁰⁸ The language of “from”

⁴⁰⁵ ἐξωθεν γὰρ καὶ οὐκ ἐν τῷ αἰσθανομένῳ καὶ τὸ ἀκούμενον ὑπ’ αὐτοῦ καὶ τὸ ὁρώμενον, ὁμοίως δὲ καὶ τῶν ἄλλων ἕκαστον. The implication, as I argue later in chapter 5, is that *because* of the internality/externality difference, contemplation does not occur by change though perception does. On this score, Alexander would agree with the position Burnyeat argued for in chapter 2, though for different reasons.

⁴⁰⁶ For ignorance (ἄγνοια) as the *privation* (στέρησις) of knowledge, see *Topics* 6.9 147b26-148a3. Philoponus seems to be making the point that it need not be stated negatively and thus can *act* as a contrary rather than a contradictory, but that does not make it so. Thus if truly characterizable as the former rather than the latter, it is necessarily a metabolic contradictory to contradictory change, even if otherwise (and falsely) describable.

⁴⁰⁷ ἢ γὰρ ἐξ ἀγνοίας εἰς γνώσιν μεταβάλλει ἡ γὰρ ἀπὸ ψευδούς δόξης ἐπὶ τὴν ἀληθὴ, ὥν τὸ μὲν πρῶτον ἀπὸ στέρησεως εἰς εἶδος ἐστὶ μεταβολή, καὶ ἐστὶ γένεσις καὶ οὐκ αλλοίωσις, τὸ δὲ δεύτερον ἐξ ἐναντίας ἐξέως μεταβολή εἰς τὴν ἐναντίαν, καὶ ἐστὶ κυρίως αλλοίωσις· ἢ γὰρ αλλοίωσις μεταβολή ἐστὶν ἐξ εἰδοπεποιημένου εἰς εἰδοπεποιημένον, τοῦ αὐτοῦ υποκειμένου μένοντος. Charlton translation, modified.

⁴⁰⁸ Cf. Philoponus *in Phys.* 510.12-14: “Change (κίνησις) is a change (μεταβολή) *from* one subject *to* another. This is *equivalent* to our statement that it is a change *from* one contrary [*to* another] and a change *from* one actual form *to* another” (Lettinck translation, modified; brackets original, italics mine). Contrary to contrary is equivalent to form to form, which is precisely what κίνησις is *in Phys.* 5.1 for Aristotle: ἡ γὰρ ἐξ ὑποκειμένου εἰς ὑποκείμενον (225a3-4).

(ἐκ) and “to” (εἰς) is clearly reliant on Aristotle’s usage in *Physics* 5.1 where he categorizes *all* change in terms of the change’s *termini* (*Phys.* 5.1 225a3-6)—that from which (ἐξ οὗ) and that to which (εἰς ὃ, *Phys.* 5.1 224a34-b1), *terminus a quo* and the *terminus ad quem*. Black is a form, as is white, so to change *from* black *to* white is to change *from* one contrary form *to* another contrary form in the same range or genus. In Philoponus’ example, true opinion and false opinion are contraries, so when Socrates changes, one state comes to be (true opinion) while its contrary is destroyed (false opinion), as contraries are impossible in the same subject at the same time.⁴⁰⁹ This is obviously an instance of canonical, destructive alteration (A).

What, however, of the case with the transition from not-knowing (αγνοίας) to knowing (γνώσιν)? There one transitions, as Philoponus puts it, “from lack to form” (ἀπό στέρησεως εἰς εἶδος, 300.14).⁴¹⁰ “Lack” here is negation or privation.⁴¹¹ Lack and form are *contradictories* for

⁴⁰⁹ “Nothing seems to admit contraries at the same time” (*Cat.* 6 5b39-6a1). ἀλλ’ οὐδὲν δοκεῖ ἅμα τὰ ἐναντία ἐπιδέχασθαι. Cf. 6a3-4: οὐδὲ τῶν ἄλλων οὐδὲν ἅμα τὰ ἐναντία ἐπιδέχεται. And esp. *Meta.* Γ.6 1011b15-18: “But since it is impossible (ἀδύνατον) for contradictories (ἀντίφασιν) to be true of the same thing at the same time, it is evident that contraries (ἐναντία) cannot belong to the same thing at the same time either.” ἐπεὶ δ’ ἀδύνατον τὴν ἀντίφασιν ἅμα ἀληθεύεσθαι κατὰ τοῦ αὐτοῦ, φανερόν ὅτι οὐδὲ τὰ ἐναντία ἅμα ὑπάρχειν ἐνδέχεται τῷ αὐτῷ. For the language of impossibility, see Jorge García and Douglas Davis’ general statement concerning contrariety in their discussion of the opposition of good and evil in the Medieval Aristotelian, Francisco Suárez: “Contrariety includes the impossibility of opposite forms in the same subject.” Francisco Suárez, *The Metaphysics of Good and Evil According to Suárez. Metaphysical Disputations X and XI and Selected Passages from Disputation Xxiii and Other Works*, trans. Jorge J. E. Gracia and Douglas Davis (München: Philosophia Verlag, 1989), 175.

⁴¹⁰ Cf. 301.36-302.1 for “from lack to form” (ἐκ στέρησεως εἰς εἶδος) specifically *contrasted* with “from contrary to contrary” (ἐξ ἐναντίου εἰς ἐναντίον), which Philoponus later calls “from form to form” (ἐξ εἶδους εἰς εἶδος, 304.35).

⁴¹¹ For the contrast between negation and privation, see, e.g., *Meta.* Γ.2 1004a13-16: “for the negation (ἢ ἀπόφασιν) is the thing’s absence (ἀπουσία), and in the case of the privation (ἢ στέρησις) a certain nature (τις φύσις) is also involved that is the underlying subject (ὑποκειμένη) of which it is said (καθ’ ἣς λέγεται).” Negation is pure absence or denial in reference *only* to the entity in question (e.g., not-man). Privation, on the other hand, is a denial said in reference to a certain subject (e.g., not-legged man). Not-man is a *negation* (ἢ ἀπόφασιν) because it is said in reference to nothing in particular. There is *no-thing* that is not-man—no entity or thing which has ‘not-man’ as a feature. Not-legged man is a *privation* (ἢ στέρησις) though, because “not legged” is said about *man*. A man has ‘not-legged’ as a feature. “Lack” (στέρησις) is used frequently in the *Physics* and is described in 1.7 as a contrary (ἐνάντιος) to form (εἶδος, 1.7 190b27; cf. 191a13-14). Nevertheless, it is also described in 1.8 as “what is in itself something that is not” (ὃ ἐστὶ καθ’ αὐτὸ μὴ ὄν, 191b15-16; cf. 1.9 192a5 τὴν δὲ στέρησιν καθ’ αὐτήν) while in 2.1 it is said that “lack too is in a way form” (καὶ γὰρ ἡ στέρησις εἶδος πῶς ἐστίν, 193b19-20). Moreover, it is *juxtaposed* to potentiality (δύναμις) and actuality (ἐνέργεια) in 3.2 202a34, clearly indicating—in accordance with 1.8 191b15-16—that it is something *less* than potentiality. Finally, in 5.1 we are told that “lack may be posited as a contrary, and may be made clear by an affirmation (the naked, toothless, or black)” (γὰρ ἡ στέρησις κείσθω ἐναντίον, καὶ δηλοῦται καταφάσει, τὸ γυμνὸν καὶ νωδὸν καὶ μέλαν, 225b3-5). Pulling all this together, we can say the following:

Philoponus.⁴¹² In the case of the change from not-knowing to knowing, one transitions from negation (or lack) to form, or from contradictory to contradictory. This is *not* κίνησις for Aristotle, nor is it alteration; for both require contrariety, as Philoponus is well aware.⁴¹³ Even though it is not a paradigm instance (i.e., substantial change), what is left but to call it a *generation* (γένεσις) and thus a μεταβολή?⁴¹⁴ For again, it is certainly not an alteration (A) or κίνησις. So, Philoponus again, making the same point which Aristotle makes in *De Anima* 2.5 417b2-7, but *adding* generation to the mix (*in DA* 301.9-11):

(a) a lack is a denial spoken of a subject; (b) as a denial it is nothing (not-x), not even a potentiality; (c) but relative to forms (e.g., red, tall, musical) it can act *as* a form (i.e., things can move to a lack and can be ‘shaped’ by it); (d) hence, sometimes we speak of lacks using an affirmation (κατάφασις) which is actually a cloaked *denial* which yet provides specific content (e.g., naked = lack of *cloths*; black = lack of *white*). At *De Anima* 2.5 417b15, Aristotle uses στερητικός when speaking of what a change can move *towards* (ἐπὶ) (i.e., towards negation, e.g., not-knowing), which is juxtaposed with (positive) “states and a thing’s nature” (ἔξεις ἔξεις καὶ τὴν φύσιν, 417b16) which a change can also move *towards* (ἐπὶ) (i.e., towards affirmation, e.g., knowing). On the meaning of στερητικός at *De Anima* 2.5 417b15, see Burnyeat, “*De Anima* II 5,” 62 n. 88, who notes on this passage that “στερητικός in its standard logical meaning = ἀποφατικός (see Bonitz sv.).” See also Polansky, *Aristotle’s De Anima*, 240 n. 24 who cites Burnyeat approvingly, noting that “Aristotle is repeating in other words the points about alteration’s being a sort of destruction.” *De Anima* 2.5 417b15 is just a few lines after the section of the text on which Philoponus is here commenting.

⁴¹² Burnyeat (and Polansky, *Aristotle’s De Anima*, 240 n. 24) cite Philoponus in *DA* 304.16-22 as evidence that Philoponus (and Themistius for that matter) takes στερητικός in the sense of privation or “change to στέρησις in the sense of a bad condition like blindness or disease” (Burnyeat, “*De Anima* II 5,” 62 n. 88, italics mine). The context of the passage shows, however, that this is not so. While in 304.16-22 Philoponus does indeed speak of a change “to lack” such as moving from knowing to *not*-knowing (ἐκ τοῦ εἰδέναι εἰς τὸ μὴ εἰδέναι, 304.20) as “a kind of destruction and change to what is worse” (although he does *not* use the examples of blindness or disease cited by Burnyeat), just a few lines later he speaks of what moves “*from* lack to disposition” (304.28) in the case of transitioning from *not*-knowing to knowing (304.25-26). Surely *this* does not indicate “a change to a bad condition” as it is a *from*. The sense, rather, is *negation*—and the application of “worse” applies only to the *direction* of the change (i.e., to negation), not to the term στέρησις. See, e.g., Philoponus’ contemporary, Simplicius, on the two different kinds of privation (στέρησις): “One is the privation of the *Categories* which is opposite to possession (ἔξις), as blindness is opposed to vision” (*in Phys.* 211.31-32). “Another kind of privation is the one which is opposite to a form and does not revert to it so that generation and destruction comes about in terms of the change of these two into one another” (212.4-6); this sort of privation is “a certain absence (απουσία) of form. And when the form is present the privation is not present” (212.9-10). Notice that “absence (απουσία)” here in Simplicius was the *sole* characterizing term Aristotle used to describe negation in *Meta.* Γ.2 1004a13-14: “for the negation (ἡ ἀπόφασις) is the thing’s *absence* (απουσία).” The difference is that privations are said *in reference to a subject* while negations are just said. See this same distinction in Philoponus in *De aeternitate mundi contra Aristotelem* frag. 64-65 as characterized by Simplicius in *in De Caleo* 121.4-14 & 121.25-122.9. See chapter 1 above for more of an essay on στέρησις in *Phys.* 1.7.

⁴¹³ See, e.g., *in Phys.* 510.14-18, 501.10-20, etc. See also in *DA* 304.33-34 where Philoponus says the transition from second potentiality knowing to second actuality contemplating which *lacks* contrariety, “is not an affection at all nor an alteration and therefore the change (μεταβολή) in this respect is neither a change (κίνησις) nor a teaching.” If it is not a κίνησις, it is not an alteration (cf. 301.9-11)—even if it is *still* a μεταβολή, and a qualitative one at that.

⁴¹⁴ For *substantial* generation as the paradigm, see *Phys.* 5.1 225a11-20. I will say more about this momentarily.

Being affected (πάσχειν) is twofold, the one leading to destruction (φθοράν) which is also genuinely both affection (πάθος) and alteration (αλλοίωσις), the other to perfection (τελειότητα), which is not properly (ου κυρίως) called affection (πάθος) or alteration (αλλοίωσις) but rather *generation* (γένεσις).⁴¹⁵

The reason for this, Philoponus had said previously, is because the coming to be of a perfection is itself a generation, not an alteration. Speaking of a carpenter, he says at *in DA* 283.32-284.5:

He changes, he [Aristotle] says, to actuality (εἰς ἐνέργειαν) from idleness (ἐξ ἀργίας), but not by an affection (πάθος) (for he is not affected (πάσχει) in any way or altered (ἀλλοιούται)), showing that the change (μεταβολή) too of the nourishing power in nourishing is like this, not an alteration (ουκ αλλοίωσις) but a perfection (τελειότης). For the actuality (ἐνέργεια) is the perfection (τελειότης) of the potentiality (δυνάμεως). Such a change^m (μεταβολή) is not a change^k (κίνησις), but rather a *generation* (γένεσις) of perfection (τελειότητος), as he showed in the *Physics* [3.2-3].⁴¹⁶

Perfections—which Philoponus identifies with preservation (σωτήριος, 303.15) from *De Anima* 2.5 417b3—come to be via generation *because* they are non-destructive.⁴¹⁷ As he makes clear in this passage, they are neither instances of alteration nor of κίνησις, though they are indeed instances of metabolic change. What, though, constitutes a perfection? Either a first actuality disposition or a second actuality activity—though the name primarily applies to the latter

⁴¹⁵ διττόν οὖν φησι το πάσχειν, το μεν εἰς φθοράν ἄγον, ὅπερ ἐστὶ καὶ κυρίως πάθος τε καὶ αλλοίωσις, το δε εἰς τελειότητα, ὅπερ ου κυρίως λέγεται πάθος ουδέ αλλοίωσις, ἀλλὰ γένεσις μάλλον. Charlton translation, modified.

⁴¹⁶ εἰς ἐνέργειαν γάρ ἐξ ἀργίας, φησὶν, οὗτος μεταβάλλει, ἀλλ ου κατὰ πάθος (οὐ γάρ πάσχει τι ουδέ ἀλλοιούται), ἐνδεικνύμενος ὅτι τοιαύτη τις καὶ ἡ τῆς θρεπτικῆς δυνάμεως μεταβολή ἐν τῷ τρέφειν, ουκ αλλοίωσις, ἀλλὰ τελειότης; τελειότης γάρ ἡ ἐνέργεια τῆς δυνάμεως. ἡ δε τοιαύτη μεταβολή ου κίνησις, ἀλλὰ γένεσις μάλλον τῆς τελειότητος, ὡς ἔδειξεν ἐν τῇ Φυσικῇ ἀκροάσει. Charlton translation, modified. That the reference is to the *Physics* 3.2-3 specifically is the suggestion of Charlton.

⁴¹⁷ Again, see *in DA* 301.9-11 cited just above: “Being affected (πάσχειν) is twofold, the one leading to destruction (φθοράν) which is also genuinely both affection (πάθος) and alteration (αλλοίωσις), the other to perfection (τελειότητα), which is not properly (ου κυρίως) called affection (πάθος) or alteration (αλλοίωσις) but rather generation (γένεσις).”

(305.33-34; cf. 304.27). Hence, given that both first and second actuality perception counts as a perception, the coming to be of both counts as generation. Philoponus puts it this way with respect to (D) a 301.29-35:

But the change (μεταβολή) from what is in potentiality in the first way (προτέρου δυνάμει) to what is in potentiality in the second (δεύτερον δυνάμει), but actuality in the first (πρώτον ενεργεία), if it changes from contrary (ἐξ εναντίου) to contrary (εἰς εναντίον), is alteration (αλλοίωσις), as when something from (ἐκ) hot becomes cold and from (ἐκ) white black. For contrary (εναντίον) is in potentiality what its contrary (εναντίον) is. But when the change (μεταβάλλη) is from lack (ἐκ στερήσεως) to form (εἰς εἶδος), that is *generation* (γένεσις) and not alteration (οὐκ αλλοίωσις), as when from what is not a man (ἐξ οὐκ ἀνθρώπου) a man arises (ἄνθρωπος γίνηται), or from what is not fire (ἐξ οὐ πυρός), fire (πύρ), and in like cases.⁴¹⁸

And with respect to second actuality perception (P) at 302.32-37:

Just, then, as the disposition (ἐξίς) when the actuality (ενεργείας) is present acquires its own perfection (τελειότητα) without being destroyed (οὐ φθειρομένη) or altered (οὐδέ ἀλλοιουμένη), so too the perceptual faculty (ἡ αἴσθησις), being in potentiality (δυνάμει) what the perceptible is (in potentiality in the dispositional way) is advanced (προάγεται) to actuality (ενεργεία) by the perceptible which is in actuality (ενέργειαν) and is made like it in the way in which it is by nature such as to be made like it.⁴¹⁹

⁴¹⁸ ἢ δε ἐκ τοῦ προτέρου δυνάμει ἐπὶ το δεύτερον δυνάμει, πρῶτον δ' ενεργεία μεταβολή, εἰ μὲν ἐξ εναντίου εἰς εναντίον μεταβάλλου, αλλοίωσις ἐστίν, ὡς ὅταν τι ἐκ θερμοῦ ψυχρὸν γίνηται καὶ ἐκ λευκοῦ μέλαν· δυνάμει γάρ το εναντίον ὅπερ το εναντίον; ὅταν δε ἐκ στερήσεως εἰς εἶδος μεταβάλλη, γένεσις ἐστὶ τοῦτο καὶ οὐκ αλλοίωσις, ὡς ὅταν ἐξ οὐκ ἀνθρώπου ἄνθρωπος γίνηται καὶ ἐξ οὐ πυρός πυρ, καὶ ἐπὶ τῶν ὁμοίων. Charlton translation, modified.

⁴¹⁹ ὥσπερ οὖν ἡ ἐξίς παρούσης τῆς ενεργείας τὴν οἰκείαν τελειότητα ἀπολαμβάνει οὐ φθειρομένη οὐδέ ἀλλοιουμένη, οὕτω καὶ ἡ αἴσθησις δυνάμει οὕσα ὅπερ το αἰσθητόν (δυνάμει δε το κατὰ τὴν ἐξίν) ὑπὸ τοῦ αἰσθητοῦ ενεργεία ὄντος προάγεται εἰς ἐνέργειαν ὁμοιουμένη αὐτῇ οὕτως ὡς πέφυκεν ὁμοιούσθαι. Charlton translation, modified.

And this actuality that the perceptual faculty is advanced to is not a destruction but a perfection (305.31-33): “Then he [Aristotle] said how it is with perception as regards being-affected (πάσχειν), that it is affected (πάσχει) by the perceptible not in being brought to destruction (οὐκ εἰς φθοράν), but to perfection (εἰς τελειότητα).”⁴²⁰ Granting how perfections come to be for Philoponus, both (D) and (P) occur by virtue of generation. An, lastly, as with Alexander, so with Philoponus: “for just as perceiving in potentiality is similar to having knowledge, so perceiving in act is similar to contemplation” (307.17-19)⁴²¹—the difference coming from the fact that the objects of perception are external (ἔξωθεν) while the objects of contemplation are not external (οὐχ ἔξωθεν, 307.22-25).⁴²²

Finally, let us turn briefly to Simplicius. Speaking of the (2) to (3) transition (P) in the case of knowledge, he says: “Therefore such a change^m (μεταβολή) is not alteration (οὐκ αλλοίωσις) ‘or is another kind of alteration’ (γένος αλλοιώσεως), which is why [Aristotle] does not call psychic change (ψυχικὴν μεταβολήν) either alteration (οὔτε αλλοίωσιν) or change^k (οὔτε κίνησιν)” (in *DA* 123.7-10).⁴²³ Once again, we have a μεταβολή which is neither κίνησις nor (A) alteration. And by parity of reasoning, what goes for knowledge goes for perception, says Simplicius of Aristotle: “having determined these points about cognition (του επιστημονικού) he applies them also what can perceive (του αισθητικού)” (123.26-27).⁴²⁴ Hence, commenting on *De Anima* 2.5 418a2-3 where Aristotle says that we must apply ‘being-affected’ and ‘being

⁴²⁰ εἶτα εἶπεν ὅπως ἔχει κατὰ το πάσχειν ἡ αἴσθησις, ὅτι πάσχει ὑπὸ τοῦ αισθητοῦ οὐκ εἰς φθοράν ἀγομένη, ἀλλ εἰς τελειότητα. Charlton translation, modified. Cf. 303.18-25

⁴²¹ ὥσπερ <γάρ> το κατὰ δύναμιν αισθάνεσθαι ὁμοίον ἐστὶ το ἐπίστασθαι, οὕτως το κατ ἐνέργειαν αισθάνεσθαι τὴ κατ ἐπιστήμην θεωρία ὁμοίον.

⁴²² Again, the implication, as I argue later in chapter 5, is that *because* of the internality/externality difference, contemplation does not occur by change though perception does. Philoponus too would agree with the position Burnyeat argued for in chapter 2, though again for different reasons.

⁴²³ διὸ ἢ τοιαύτη μεταβολή οὐκ αλλοίωσις ἢ ἕτερον γένος αλλοιώσεως, διότι αὐτός οὔτε αλλοίωσιν οὔτε κίνησιν ὁλως τὴν ψυχικὴν μεταβολήν προσαγορεύει. Steel translation, modified.

⁴²⁴ ταῦτα περὶ τοῦ επιστημονικοῦ διορισάμενος ἐπιφέρει καὶ περὶ τοῦ αισθητικού. Steel translation, modified.

altered' to perception (P) "as though they were the appropriate words," Simplicius says (125.15-16): "Even this is not affected (πάθην) in a destructive manner (φθαρτικην) but in such a way that is *generative* (γένεσιν), not however as a substance (ουσιώδης)."⁴²⁵ Hence, for Simplicius too, not only is (P) not a κίνησις or an (A) alteration, but a μεταβολή and a generation (γένεσις).

What is most interesting, however, is Simplicius' quotation of *De Anima* 2.5 417b3-4, a passage we analyzed in chapter 2. There speaking of the (2) to (3) transition (P), Aristotle had just stated that being-affected (πάσχειν) was not simple, but in one way is "a kind of destruction" (φθορά τις), whereas in another way, as lines 3-4 read, is "rather a preservation of what is in potentiality by what is in actuality." The Greek is as follows: (3) τὸ δὲ σωτηρία μᾶλλον ὑπὸ τοῦ (4) ἐντελεχείᾳ ὄντος τοῦ δυνάμει ὄντος. Simplicius (122.21), however, adds γένεσις και to line (3) such that it reads with (4): (3) τὸ δὲ γένεσις και σωτηρία μᾶλλον ὑπὸ τοῦ (4) ἐντελεχείᾳ ὄντος τοῦ δυνάμει ὄντος. The addition causes 417b3-4 to read: "rather a *generation and* preservation of what is in potentiality by what is in actuality."⁴²⁶ On Simplicius' reading thus, 'being-affected' (πάσχειν) can be either (a) a destruction as with (A) or (b) a generation as with (P)—and (D) for that matter—which is not a destruction of a contrary but a "preservation" or "salvation" (σωτηρία) of that which it is from.⁴²⁷ On this reading, (P) does not just lack destructive contrariety in the form of (A), but the second actuality activity which is contemplating is a

⁴²⁵ οὐδε τούτο κατὰ την φθαρτικὴν πάθην, ἀλλὰ την κατὰ γένεσιν οὐ την ουσιώδη. Steel translation, modified.

⁴²⁶ Interestingly, while the reading is omitted from Ross' OCT, Ross has γένεσις και as an alternative reading in his own critical text of *De Anima*, citing *eight* of the fourteen major manuscripts and two ancient authorities (i.e., Philoponus and Sophonias) which have the same reading. See the critical apparatus *ad loc.* in Ross, *Aristotle: De Anima. Edited with Introduction and Commentary*. Interestingly, *neither* of the ancient authorities Ross cites have the γένεσις και reading, while one he does not cite (i.e., Simplicius in *DA* 122.21), *does*. See Philoponus in *DA* 301.2, and Sophonias in *DA* 67.8, for their citations of the passage.

⁴²⁷ For "salvation" as an appropriate reading here of σωτηρία, see Polansky, *Aristotle's De Anima*, 235.

“generation and preservation” of the second potentiality.⁴²⁸ The second potentiality is preserved, but not generated. Rather, *the activity* is generated, coming from contradictory to contradictory (e.g., from not-seeing to seeing) *from* that second potentiality which is preserved. As Simplicius puts it, a “perfective principle contributes” (συντρέχει τελειωτικον, 122.22-23), causing a (2) to (3) generation from mere possession (2). My point here is not to argue for the γένεσις και reading of *De Anima* 2.5 417b3 (textually, I think it is suspect), but the much more modest claim that γένεσις και *conceptually* looks at home at 417b3. Clearly others thought so as well, thus bolstering my point. If (P) is not a κίνησις or an (A), then what else could it be if not a μεταβολή and a generation (γένεσις)?

Burnyeat was familiar with the accounts we just examined, referencing them often in his work as noted above. Yet, he failed to even *mention* their positive metaphysical accounts of (P) perception (and contemplation) in his analysis. While Burnyeat certainly could have characterized (P) as did the ancient commentators—viz., as a *generation* (γένεσις) and thus a metabolic change which transitions from contradictory to contradictory—he did not. Thus far, I have provided two reasons for this reluctance, namely his epistemological motivation and his anti-Sorabjian motivation, pushing back on both. While the first is admirable, the latter gives the impression that Burnyeat’s motives may be suspect and that he ended his analysis where he did *solely* in an effort to win the debate with Sorabji. I do not think this is correct, however. Rather, while I think it inconceivable that Burnyeat was not *aware* of the positive metaphysical accounts of the commentators just examined, I also think Burnyeat probably thought their solutions to be not merely disadvantageous to his own, but also as ill-conceived attempts at resolution given

⁴²⁸ Cf. the two different versions of *Phys.* 7.3, discussed at length in chapter 5. In α we have generation (246b10), but in β , we have preservation (246b24). Even Aristotle seems them as coordinate terms. Cf. too *DA* 3.2 426a17 where we find the same coordination.

Aristotle's categorial scheme. Let us call the generational metabolic account of the ancient commentators the Qualitative Generation (QG) account.⁴²⁹ To see what this objection to QG amounts to, let us turn now to what I take to be Burnyeat's third and final motivation.

3.2.3 Burnyeat's Categorial Motivation

The third and final cause for Burnyeat's reticence on the metaphysics of perceptual change is, I believe, that he could not find a non-*ad hoc* way to fit it in to the *Physics* 5.1 categorization scheme. As we have seen *ad nauseam*, metabolic change occurs in four of Aristotle's ten categories, substance (οὐσία/τόδε), quantity (ποσόν), quality (ποιόν), and place (ποῦ/τόπον).⁴³⁰ Moreover, all change involves opposites (αντικείμενα), which are either contraries (ενάντια) or contradictories (ἀντιφάσεις). Opposites as contraries or contradictories are two of the five requirements for *all* change from *Physics* 5.1 224a34-b1, which include, an agent, a patient, an interval of time, that-from-which, and that-to-which.

In chapter 1, we discussed the four *logical* categories of broad-sense metabolic change for Aristotle from his discussion in *Phys.* 5.1 225a3-6:⁴³¹

- (1) From a ὑποκείμενον to a ὑποκείμενον (from A to B)
- (2) from a ὑποκείμενον to what is not a ὑποκείμενον (from A to ~A)
- (3) from what is not a ὑποκείμενον to a ὑποκείμενον (from ~A to A)
- (4) from what is not a ὑποκείμενον to what is not a ὑποκείμενον (from ~A to ~A)

⁴²⁹ Included in QG is also qualitative *destruction* or QDA. For brevity, however, I leave it as QG which I mean to be inclusive of both generation and destruction.

⁴³⁰ Along with commenters ancient, medieval, and modern, Burnyeat also embraces the view that *for Aristotle* there are "only four types" of change (Burnyeat, "De Anima II 5," 82). Sorabji too, embraces this view. See Lautner, *Simplicius: On Aristotle Physics* 3, 1. See chapter 1 above for an analysis of the argument from *Phys.* 5.2 as for why change is so restricted.

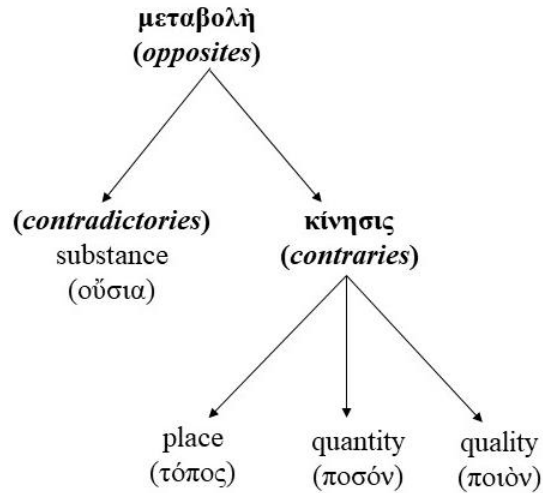
⁴³¹ Aristotle uses ὑποκείμενον here merely to indicate a positive entity. See the discussion of this passage in chapter 1 above for justification for this posit.

Aristotle strikes (4) from the list, saying it is not a change. (1), on the other hand, is a change from contrary A (e.g., white) to contrary B (e.g., black). This sort of change he calls a kinetic, a subcategory of metabolic which involves contrariety (225b1-3). The only categories, so Aristotle argues, which possess contrariety are quantity (ποσόν), quality (ποιόν), and place (ποῦ/τόπον), hence there are only three categories in which κίνησις can occur (225b5-9). (2), on the other hand, is destruction (φθορά), while (3) is generation (γένεσις). Both are changes from contradictory to contradictory, (2) destruction from A to ~A, and (3) generation from ~A to A (225a34-b2).⁴³² And the only remaining of the four categories of change to which (2) and (3) seem to be applicable to is that of *substance* (οὐσία/τόδε). As Aristotle says in regard to (3) generation (γένεσις), “a change from what is not a ὑποκειμένου to a ὑποκείμενον, the relation being that of contradiction (ἀντίθεσιν), is a generation (γένεσις)” (225a12-14). His paradigm example of “unqualified generation” (γένεσις ἀπλῶς) is of a change “from (ἐκ) not being without qualification (μὴ ὄντος ἀπλῶς) to (εἰς) substance (οὐσίαν)” (225a15-16).⁴³³ Likewise for (2) destruction (φθορά), yet in reverse: it is “unqualified (ἀπλῶς) when from (ἐκ) substance (οὐσίας) to (εἰς) not being (μὴ εἶναι)” (225a18).⁴³⁴ Generation and destruction—(2) and (3)—thus, would appear to represent the category of *substance* (οὐσία) alone, at least paradigmatically. We can schematically present the above categories of change as follows:

⁴³² *Phys.* 5.1 225a34-b2: “Since, then, every κίνησις is a sort of μεταβολή, and μεταβολαὶ are the three sorts we mentioned [i.e., (1), (2), and (3)], and since of these generation (γένεσις) and destruction (φθορά) are not κινήσεις, and these are the ones that are with respect to contradictories (ἀντίφασιν), it necessarily follows that only [(1)] μεταβολή from ὑποκειμένου to ὑποκείμενον is κίνησιν. And ὑποκείμενα are either contraries (ἐναντία) or intermediates (μεταξύ).” Reeve translation, modified.

⁴³³ Reeve translation, modified. ἢ δ’ ἐκ τοῦ μὴ ὄντος ἀπλῶς εἰς οὐσίαν γένεσις ἀπλῶς.

⁴³⁴ Reeve translation, modified. ἀπλῶς μὲν ἢ ἐκ τῆς οὐσίας εἰς τὸ μὴ εἶναι.



The obvious question for us and for Burnyeat is if perceptual change is not a κίνησις or an alteration which transitions from contrary to contrary but a μεταβολή and a generation which transitions from contradictory to contradictory, then where can we *fit* a qualitative generation of this sort in the *Physics* 5.1 categorial scheme? The “Q” in QG would seem to require that (P) belong to two categories at once, substance and quality, while lacking the full features of either.⁴³⁵ To situate (P) in either category, thus, would be a mistake. As such, it would seem, Aristotle has no *ad hoc* way of categorizing such odd changes as (D) or (P) on QG, and thus we ought to stand with Burnyeat’s negative analysis of them as a shadowy “alteration of a sort” and nothing more. Any additional analysis will necessarily run afoul of Aristotle’s ubiquitous *Physics* 5.1 categorial scheme.⁴³⁶ Better murky, it might be argued, than false.

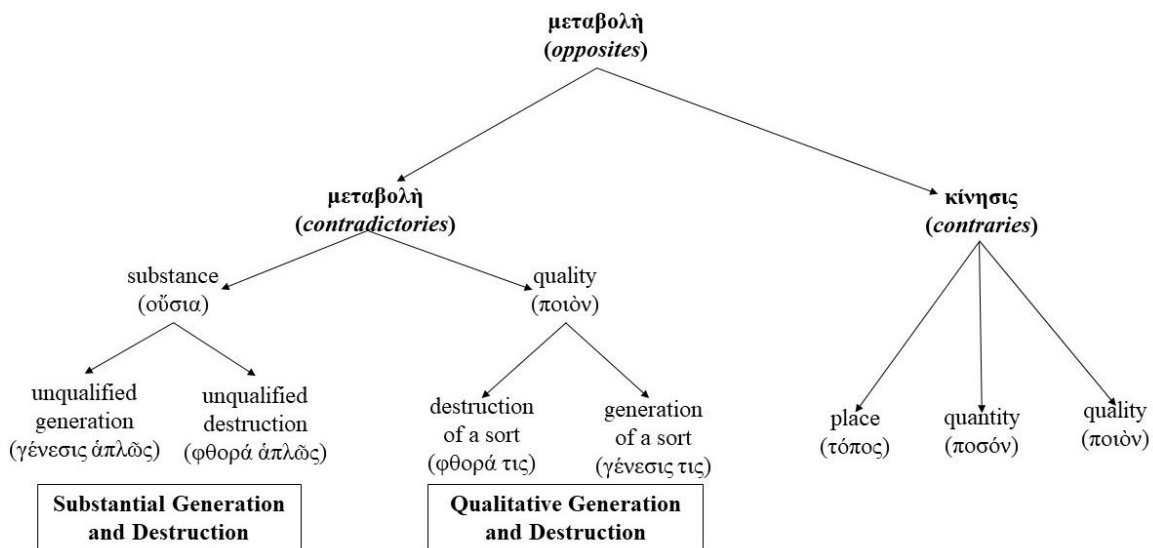
3.2.3.1 A Solution from *Physics* 5.1: QG

This is a laudable motivation, I think, and even sits nicely with Burnyeat’s anti-Sorabjanism. Nevertheless, I think it is wrongheaded. For what often goes unmentioned is that

⁴³⁵ That is, (P) is like a quality in that it is said of and present in substances, yet unlike a quality in that it does not admit of contrariety. Similarly, it is like a substance in that (P) admits of generation and destruction and lacks contrariety, but unlike a substance in that it can be said of and present in other things whereas substances cannot.

⁴³⁶ I call it ubiquitous because of the number of times and places it occurs in the *Corpus*. Here is a partial listing: *Cat.* 14, 15a13ff, *Top.* 4.1 121a30ff, *Phys.* 3.1 200b33-34, 5.1 225b7-9, 5.2 226a24-25, 7.2 243a6-7, 8.7 260a26-28, *De Caelo* 4.3 310a23-24, *GC* 1.4 319b31ff, *DA* 1.3 406a12ff, *Meta.* H.1 1042a32-b3, M.2 1069b9ff, etc.

in *Physics* 5.1 along with “unqualified generation” (γένεσις ἀπλῶς) and “unqualified destruction” (φθορά ἀπλῶς), Aristotle recognizes two other *subtypes* as well: “generation of a sort” (γένεσις τις) and “destruction of a sort” (φθορά τις).⁴³⁷ And his examples of both? For γένεσις τις it is a change “from not pale to pale” (ἐκ μὴ λευκοῦ εἰς λευκόν, 225a15). And the reverse for φθορά τις “as was said in the case of generation (γενέσεως)” (225a19-20). Notice that for both γένεσις τις and φθορά τις the example is of a *quality*, pale or white (λευκός).⁴³⁸ Hence, it would seem as though we have a case of *qualitative* generation and destruction or QG “when the change is to the opposite contradictory (ἢ εἰς τὴν ἀντικειμένην ἀπόφασιν)” (225a19), viz., not-pale rather than a contrary such as red.⁴³⁹ With these distinctions in hand, we arrive at the following:



⁴³⁷ On translating “τις” as “of a sort” with respect to generation (and destruction), see Rosen, “Motion and Change in Aristotle’s *Physics* 5.1,” 81, 83. This is undoubtedly the proper rendering of given the contrast with ἀπλῶς. Though Aristotle does use γένεσις τούτου, “generation of *this*” (225a15), this does not take away from the fact that to come to be *characterized* in a certain way from not being so is only a *sort* of γένεσις—an eliotation or *weakening*—not an unconditional generation which applies to only substances not accidents (cf. *Cat.* 4 2a4-10, 5 2b6b-c, & 4b8-10).

⁴³⁸ This QG account also occurs at *Phys.* 5.5 229b10-14: “As for what is only to a contrary, it is not a change^k but a changem—for example, becoming pale but not from something. And in those cases in which there is no contrary, it is the change^m from the same thing and the one to the same thing that are contraries. That is why generation is contrary to destruction, and losing to gaining. These are changes^m, but they are not changes^k” (Reeve translation, modified). ἢ δ’ εἰς ἐναντίον μόνον οὐ κίνησις ἀλλὰ μεταβολή, οἷον τὸ γίγνεσθαι λευκὸν μὴ ἐκ τινος. καὶ ὅσοις δὲ μὴ ἔστιν ἐναντία, ἢ ἐξ αὐτοῦ τῇ εἰς αὐτὸ μεταβολῇ ἐναντία· διὸ γένεσις φθορᾷ ἐναντία καὶ ἀποβολῇ λήψει· αὗται δὲ μεταβολαὶ μὲν, κινήσεις δ’ οὐ.

⁴³⁹ For this same analysis of *Phys.* 5.1, see Rosen, “Motion and Change in Aristotle’s *Physics* 5.1,” 83–84. Cf. Ross, *Aristotle’s Physics. A Revised Text with Introduction and Commentary*, 616.

Applying the QG account to perception, we can now sketch the following. When Jones was an unborn fetus, he was a (1) first potentiality perceiver. That is, Jones had developed the physical structures necessary for, e.g., sight by week ten of his development such that he was able-to-be-able-to-see, yet was at that time *not-able* to see until week twenty-seven.⁴⁴⁰ After week twenty-seven, however, Jones became a (2) first actuality perceiver. Now Jones is *able-to-see*, even when *not-seeing* (e.g., even when asleep, which is one's typical state during gestation). This *qualitative* change from (1) to (2) is a γένεσις τις. Finally, supposing that the first time Jones actually saw anything was at birth, Jones became a (3) second actuality perceiver upon delivery, now seeing e.g., the white of the hospital room. This *qualitative* change from (2) to (3) is also a γένεσις τις.⁴⁴¹ In neither (D) nor (P) do we have a qualitative kinetic change from contrary to contrary (i.e., an alteration), but a qualitative metabolic change which is a “generation of a sort” from contradictory to contradictory. (D) and (P), thus, on the QG account are instances of *qualitive* narrow-sense metabolic change which are yet genuine instances of generation; and they do indeed have a place in the *Physics* 5.1 categorial scheme.

⁴⁴⁰ In human fetuses, the eyelids, for instance, remain closed until week twenty-seven, blocking the actuality of the faculty. For source citation, see chapter 2.

⁴⁴¹ It is worth bearing in mind Aristotle's axiom in ch. 8 of the *Categories* that “if one of a pair of contraries is a qualification, the other too will be a qualification” (10b17-18). ἔτι ἐὰν τῶν ἐναντίων θάτερον ᾗ ποιόν, καὶ τὸ λοιπὸν ἔσται ποιόν. Hence, if (3) seeing-white is a qualification, so is (2) being-able-to-see-white. I do not think this applies, however, to the *negation*, not-seeing-white, nor do I think it was Aristotle's intention to include so-called negative properties in his ontology. Rather, the *affirmative* features of each level of actuality are what must belong to the same category, just as the affirmative contraries do (e.g., white and black). Moreover, this axiom seems to be just a specification of another axiom, namely that opposites are *principles* such that nothing that is can come to be, whether via μεταβολή or κίνησις, without *both* of a pair of opposites. See, e.g., *Phys.* 1.5 188a31-36: “No being whatsoever is by nature such as to do or suffer an random thing due to any random thing, nor does anything come to be from just anything, except if one takes a coincidental case. For how could pale come to be from musical, unless musical were coincident with the not pale or with the dark? Instead, pale comes from not pale—and not from any not pale but from dark, or something intermediate between the two.” An axiom of opposite principles for all natural beings entails an axiom of categorial identity for these opposites, given that they are defined and paired *relative to one another*. Humean causation is metaphysically impossible on an Aristotelian view—which is why the *post-Aristotelian* Malebranche was the first to suggest its (metaphysical) possibility. See, e.g., *The Search After Truth* Book 5, Part 2, Chapter 3.

While each of these transitions is indeed a move from contradictory to contradictory (i.e., from negation to affirmation⁴⁴²), we must keep in mind the *preservative* nature of these sorts of transitions as highlighted in the previous chapter. That is, the transition from a lower level to a higher “saves” rather than destroys what was so at the lower level. Hence, in the (1) to (2) transition, (1) being-able-to-be-able-to-see is preserved when (2) comes to be, forming the basis for the actuality of (2). Likewise, (2) being-able-to-see is preserved when (3) comes to be, forming the basis for the actuality of (3). Moreover, this process is duplicative at the highest level such that (3) is marked by the preservation of *both* (1) being-able-to-be-able-to-see and (2) being-able-to-see *as well as* the generation of its own unique activity, i.e., seeing-white. The only thing which is destroyed in the “upward” transition from level to level is contradictory *negation* of the previous level, not that level’s affirmation.⁴⁴³ With these distinctions in mind, we can mark these stages of the triple scheme in the case of perception as follows:

	(D)		(P)
(1) First Potentiality	→	(2) First Actuality Second Potentiality	→ (3) Second Actuality
(1) Perceiver	→	(2) Perceiver	→ (3) Perceiving
<i>Able-to-be-able-to-see</i>		<i>Able-to-be-able-to-see</i>	<i>Able-to-be-able-to-see</i>
<i>Not-able-to-see</i>		<i>Able-to-see</i>	<i>Able-to-see</i>
<i>Not-seeing-white</i>		<i>Not-seeing-white</i>	<i>Seeing-white</i>

3.3 The QG Account of Perceptual Change Vindicated?

On our QG, instances of perception (P) are said to be a instances of qualitative change, which, of course, involves a subject changing with respect to a characteristic in the category of quality. While this is typically an instance of kinetic change and (A) destructive alteration, we

⁴⁴² And from affirmation to negation, we might add. Destruction is just as much a part of QG as is generation.

⁴⁴³ We can, of course, also speak of the “downward” transition from (3) to (2), or from (2) to (1), which would be *destruction*.

have seen that Aristotle is only willing to call (P) an “alteration of a sort” (ἀλλοίωσις τις)” (416b34) given that it lacks *contrariety*. Contra Burnyeat, who we think is correct so far at this point, our proposal has been to take this a step further and say that while (P) is indeed an instance of qualitative change, it is a generation (γένεσις) and thus a metabolic change characterizable in terms of contradictories rather than contraries. While this QG account was surely apparent to Burnyeat via the ancient commentators, one of the reasons he seemed to be reluctant with respect to this position is that he seems to have thought that if (P) is as we have described it, then it would run afoul of *Physics* 5.1. This is mistaken, however, as (P) can indeed be classified as a metabolic change by being a “generation of a sort” (γένεσις τις).⁴⁴⁴ Not only does this securely place (P) and (D) in the *Physics* 5.1 scheme as we have seen, but it gives them both positive metaphysical content as well. This time, one seems sure: Burnyeat was mistaken for his reluctance to name them as instances of metabolic change and generation.

3.3.1 The Task Before Us and Two Adjustments

Now that we have introduced our account, we must try to justify it. We begin this endeavor in the next chapter. For now, we should note that despite how neat our QG account seems, it does appear to have a drawback; for it would seem that if we grant that the qualitative generation of either first or second actuality perception is an instance of contradictory to contradictory metabolic change, then we must assume that the transition from not-perceiving *x* to perceiving *x* occurs in an *instant*. Such “instantaneous” change, however, is blocked by Aristotle in several places. For were we to allow for change in an instant then we would be required to admit the existence of a contradiction. Aristotle reasons just this way in *Physics* 6.6 237a19-28:

⁴⁴⁴ We can add here, of course, that the transition from hearing Don McLean’s *American Pie* to not-hearing Don McLean’s *American Pie* would be an instance of φθορά τις, “destruction of a sort”, i.e., the transition of a quality from contradictory to contradictory.

And not only must what is changing^m have changed^m, but what has changed^m must also previously have been changing^m. For everything that has changed^m from something to something has changed^m in an interval of time. For let a thing have changed^m from A to B in a now ($\nu\tilde{\nu}$). Then the now ($\nu\tilde{\nu}$) in which it has changed^m cannot be the same as the one in which it is in A (since otherwise it would be in A and B at the same time). For we have shown previously that what has changed^m, at the moment when it has changed, is not in what it has changed from. But if it is in another now ($\nu\tilde{\nu}$), there will be an interval of time ($\chi\rho\acute{o}\nu\omicron\varsigma$) intermediate between the two. For, as we saw, nows ($\nu\tilde{\nu}$) are not contiguous. Since, then, it has changed^m in an interval of time ($\acute{\epsilon}\nu\ \chi\rho\acute{o}\nu\omicron$), and all time is divisible, in half that interval it must have made another change^m, and in half the half another again, and so on always in the same way, so that it must have been changing^m previously.

This would seem to be a serious problem for our QG account of perceptual change, if indeed it requires instant change.⁴⁴⁵

There are two things we can say in response to this. First, what does one mean by the locution ‘instantaneous change’? The intension seems inexact. It could mean, for instance, that (i) two opposite states coming to be in a single instant. If so, then that would indeed require the occurrence of a contradiction just as Aristotle’s argument shows, for precisely in that single instant, I_1 , Jones would see-red *and* not-see-red. Change *in* an instant entails the compresence of contradictories in a single subject at a single time, which is impossible. But, ‘instantaneous change’ could mean instead that (ii) we have two instants back-to-back, change occurring over

⁴⁴⁵ See just this problem advanced against qualitative generation accounts of perception in Rosen, “Motion and Change in Aristotle’s Physics 5.1,” 85.

the internal *from one to the other*.⁴⁴⁶ Here, let us take two instants, I_1 and I_2 , and some instance of contradictory to contradictory change like the change from not seeing green to seeing green. To say that a change is ‘instantaneous’ is just to claim that while it is true in I_1 Jones does not-see-green and false that Jones sees-green, the converse is the case in I_2 such that it is false that Jones does not-see-green and true that Jones sees-green. There is clearly no contradiction here, for there is no middle instant at which both contradictories are true of Jones. But will Aristotle allow such thing? Aristotle’s answer to this is clearly positive. In *Physics* 8.8 263b15-26, for instance, he argues for the possibility that what is entirely white in one moment could become entirely non-white in another without contradiction.⁴⁴⁷ And at *De Sensu* 6 447a1-3 he allows that a pond could freeze in an instant rather than over a period of time so long as it does so altogether.⁴⁴⁸ What is interesting about both examples is that the change occurs *all at once*, from contradictory to contradictory, which is key for Aristotle. As he maintains at the end of *Physics* 6.6, the chapter from which we quoted his argument against instantaneous change, this prohibition applies to “every magnitude and every interval of time *divisible without limit*” (237b20-21).⁴⁴⁹ *Indivisible wholes*, thus, are excluded from the prohibition. As Sorabji notes, “Aristotle counts as exempt from a process of coming into existence: processes themselves,... the occurrence of contact of sundering, and the resulting points, lines and planes; the existence of units, of instants, of

⁴⁴⁶ For this same distinction between two senses of instantaneous change, see Waterlow, *Nature, Change, and Agency in Aristotle’s Physics*, 142.

⁴⁴⁷ See the thorough analysis of this passage in Sorabji, *Time, Creation, and the Continuum*, 409–15, esp. 413.

⁴⁴⁸ Cf. *Phys.* 1.3; 186a10-16 and 8.3; 253b21-26, both of which—along with *De Sensu* 6 as cited here—are standardly cited in the literature as instances of Aristotle allowing instantaneous change. See e.g., Waterlow, *Nature, Change, and Agency in Aristotle’s Physics*, 97, 155; Sorabji, *Time, Creation, and the Continuum*, 53, 411, though he neglects *Phys.* 1.3; 186a10-16; Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 330 n. 41; Robert Heinaman, “Alteration and Aristotle’s Activity-Change Distinction,” *Oxford Studies in Ancient Philosophy* 16 (1998): 243, 252; and Daniel W. Graham, *Aristotle: Physics, Book VIII* (Oxford, UK: Clarendon Press, 1999), 7, 68.

⁴⁴⁹ πᾶν γὰρ μέγεθος καὶ πᾶς χρόνος ἀεὶ διαίρετά.

pleasure, seeing, hearing, perceiving and in general indivisible wholes.”⁴⁵⁰ That such things *come to be* can be clearly seen from *Metaphysics* B.5 1002a30-b4:

For it seems that substance, whether it did not exist earlier but does exist now or existed earlier but does not exist later, undergoes (πάσχειν) these things through coming to be (γίγνεσθαι) and being destroyed (φθείρεσθαι). But points, lines, and surfaces neither admit of coming to be (οὔτε γίγνεσθαι) nor being destroyed (οὔτε φθείρεσθαι), though at one time they exist (ὅτε μὲν οὐσας) and at another do not exist (ὅτε δὲ οὐκ οὐσας). For at the moment bodies make contact or are divided, in one case when they make contact there immediately (ἄμα) comes to be (γίγνονται) one [point], and in the other case when they are divided, two [points].⁴⁵¹

While Aristotle is happy to say of substances that they come to be and are destroyed (γίγνεσθαι καὶ φθείρεσθαι, 1002a31)—that is, that they undergo generation and destruction⁴⁵²—he wishes to deny the terms of wholes that come to be immediately or *instantaneously* (ἄμα, 1002b1). Instead, he says, they *are* and then they *are-not* (ὅτε μὲν οὐσας ὅτε δὲ οὐκ οὐσας, 1002a34). Though this still makes the advent of their existence an instance of γίγνονται (1002b2), it is clearly not in the standard or unqualified sense an instance of generation (γένεσις), nor its converse destruction (φθορά).⁴⁵³ Only substances undergo generation without qualification

⁴⁵⁰ Sorabji, *Time, Creation, and the Continuum*, 11 n. 5. See the exemptions he lists at *Meta.* B. 5 1002a28-b11, H.5 1044b21, K.2 106018, *De Caleo* 1.11 280b26, *EN* 10.4 1174b10-13, and *De Sensu* 6 446b4.

⁴⁵¹ δοκεῖ μὲν γὰρ ἡ οὐσία, ἐὰν μὴ οὐσα πρότερον νῦν ἢ ἢ πρότερον οὐσα ὕστερον μὴ ἢ, μετὰ τοῦ γίγνεσθαι καὶ φθείρεσθαι ταῦτα πάσχειν· τὰς δὲ στιγμὰς καὶ τὰς γραμμὰς καὶ τὰς ἐπιφανείας οὐκ ἐνδέχεται οὔτε γίγνεσθαι οὔτε φθείρεσθαι, ὅτε μὲν οὐσας ὅτε δὲ οὐκ οὐσας. ὅταν γὰρ ἅπτηται ἢ διαιρῇται τὰ σώματα, ἄμα ὅτε μὲν μία ἀπομένων ὅτε δὲ δύο διαιρουμένων γίγνονται. Reeve translation, modified.

⁴⁵² Though γίγνεσθαι itself is vague and can intend either kinetic or metabolic change (see *Phys.* 1.7 189b30-34), Aristotle regularly uses the *pairing* of γίγνεσθαι and φθείρεσθαι to indicate to indicate generation and destruction, especially substantial. See, e.g., *Phys.* 1.8 191a27, 2.1 193a27-28, 6.6 238a19, 8.1 250b19, 8.6 258b26-27, and 8.7 260b27-28.

⁴⁵³ See *Phys.* 5.1 for the qualified and unqualified senses of both terms, which were discussed in detail in chapter 1.

(ἀπλῶς, *Phys.* 1.7 190a32-33).⁴⁵⁴ Mathematical entities, for instance, are not substances (*Meta.* A.9 992a7-8).⁴⁵⁵ Hence, they cannot undergo generation without qualification, but only *in a sense* or *of a sort*.⁴⁵⁶ In *EN* 10.4 1174b10-14 we find a discussion of pleasure which makes much the same point:

And from these considerations, it is clear too that when people say that pleasure (ἡδονήν) is change^k (κίνησιν) or a generation (γένεσιν), they do not speak nobly. For these are not spoken of in the case of all things, but only in the case of things that are parts (μεριστῶν) and not wholes (μὴ ὅλων): there is no generation (γένεσις) of the act of seeing (ὁράσεώς), of a mathematical point (στιγμῆς), or of a numerical unit (μονάδος), and of none of these is there any change^k (κίνησις) or a generation (γένεσις). So neither is there in the case of pleasure (ἡδονῆς), for it is something whole (ὅλον).⁴⁵⁷

Wholes come and go all at once. Hence, if a partless whole transitions from A to B in consecutive instants *I*₁ and *I*₂, then it is not the case that part of it lingers in A in *I*₂ while the rest of it is in B. Rather, the transition occurs all at once—which precludes a whole such as pleasure, a mathematical point, a numerical unit, etc. from being said to kinetically change or be generated in the unconditional sense given that both, according to Aristotle, take time.⁴⁵⁸ Perhaps this

⁴⁵⁴ “Only substances come to be without qualification.” ἀπλῶς δὲ γίνεσθαι τῶν οὐσιῶν μόνον.

⁴⁵⁵ οὐκ ἔσονται οὐσίαι οἱ ἀριθμοί.

⁴⁵⁶ Cf. again *Meta.* K 11 1067b21-25: “A [change] from what is not a subject to a subject, the relation being that of contradiction, is a generation—without qualification [when the change is] without qualification, of a sort [when the generation is] of a sort. A [change] from a subject to what is not a subject is a destruction—without qualification [when the change is] without qualification, of a sort [when the destruction is] of a sort” (Reeve translation, modified). ἡ μὲν οὖν οὐκ ἐξ ὑποκειμένου εἰς ὑποκείμενον κατ’ ἀντίφασιν γένεσις ἐστίν, ἡ μὲν ἀπλῶς ἀπλῆ, ἡ δὲ τινὸς τίς· ἡ δ’ ἐξ ὑποκειμένου εἰς μὴ ὑποκείμενον φθορά, ἡ μὲν ἀπλῶς ἀπλῆ, ἡ δὲ τινὸς τίς.

⁴⁵⁷ ἐκ τούτων δὲ δῆλον καὶ ὅτι οὐ καλῶς λέγουσι κίνησιν ἢ γένεσιν εἶναι τὴν ἡδονήν. οὐ γὰρ πάντων ταῦτα λέγεται, ἀλλὰ τῶν μεριστῶν καὶ μὴ ὅλων· οὐδὲ γὰρ ὁράσεώς ἐστι γένεσις οὐδὲ στιγμῆς οὐδὲ μονάδος, οὐδὲ τούτων οὐθὲν κίνησις οὐδὲ γένεσις· οὐδὲ δὴ ἡδονῆς· ὅλον γάρ τι. Bartlett and Collins translation, modified.

⁴⁵⁸ *EN* 1174a19-23: “But pleasure is not a change^k either. For every change^k occurs in time and is bound up with some end—for example, the building of a house and is complete when it accomplishes what it is aiming at, either in the whole of the time in question or at that moment [of completion]. But all changes^k, considered in their parts and at any moment, are incomplete and differ in form from the whole and from one another” (Bartlett and Collins

makes sense with respect to mathematical entities and even pleasure in that once pleasure is present it is wholly present.⁴⁵⁹ But why does Aristotle include second actuality visual perception as a whole, *seeing* (ὄρασις)? He justifies its inclusion as follows at 1174a14-16, a couple of paragraphs prior to the passage we quoted above: “For the act of seeing (ὄρασις) seems to be complete (τελεία) at any given moment (καθ’ ὄντινον χρόνον): [seeing] is not deficient (ἐνδεής) in anything that could subsequently come into being (γινόμενον) so as to complete (τελειώσει) its form (εἶδος).”⁴⁶⁰ There are no incomplete seeings, says Aristotle, nor any incomplete perceptions. As he goes on to argue, “every sense perception (αἰσθήσεως) is actual (ἐνεργούσης) relative to the thing perceived, and complete (τελειώως)” (1174b14-15).⁴⁶¹ For second actuality perceptions are wholes—or, as he goes on to it, instances of “complete actuality” (τελεία ἐνέργεια, 1174b15-16).

While this allows us to avoid Aristotle’s prohibition against instant change and generation—i.e., we are dealing here with “generation of a sort” (γένεσις τις) from *Physics* 5.1, not “unqualified generation” (γένεσις ἀπλῶς)—it presents us with a second problem, this time with respect to Burnyeat’s account of both (D) and (P). For on our QG account and given that there is no *process* of change from contradictory to contradictory as we have just argued, this

translation, modified). διόπερ οὐδὲ κίνησις ἐστίν. ἐν χρόνῳ γὰρ πᾶσα κίνησις καὶ τέλους τινός, οἷον ἡ οἰκοδομική, καὶ τελεία ὅταν ποιήσῃ οὐ ἐφίεται. ἢ ἐν ᾧ παντὶ δὴ τῷ χρόνῳ ἢ τούτῳ. ἐν δὲ τοῖς μέρεσι καὶ τῷ χρόνῳ πᾶσαι ἀτελεῖς, καὶ ἕτεραι τῷ εἶδει τῆς ὅλης καὶ ἀλλήλων. Ὅν γένεσις see *Phys.* 6.5 235b29-32: “For what we have said applies universally to every sort of change, and is most of all clear in that with respect to contradiction (ἀντίφασιν). It is clear, accordingly, that what has changed, at the moment when it has first changed, is in what it has changed to.” καθόλου τε γὰρ εἴρηται περὶ πάσης μεταβολῆς, καὶ μάλιστα δῆλον ἐν τῇ κατ’ ἀντίφασιν. ὅτι μὲν τοίνυν τὸ μεταβεβληκός, ὅτε μεταβεβλήκε πρώτον, ἐν ἐκείνῳ ἐστίν, δῆλον. Cf. *EN* 10.3 1173b4-7, 19-20 for similar points concerning γένεσις in the context of the passage we are citing.

⁴⁵⁹ *EN* 1173b16-19: “And pleasure too seems to be a thing of this sort, for it is something whole; no one could at a given moment experience a pleasure whose form will be completed, provided the pleasure lasts longer.” τοιοῦτο δ’ ἔοικε καὶ ἡ ἡδονή. ὅλον γάρ τι ἐστί, καὶ κατ’ οὐδένα χρόνον λάβοι τις ἂν ἡδονὴν ἧς ἐπὶ πλείῳ χρόνῳ γινομένης τελειωθήσεται τὸ εἶδος.

⁴⁶⁰ δοκεῖ γὰρ ἡ μὲν ὄρασις καθ’ ὄντινον χρόνον τελεία εἶναι· οὐ γὰρ ἐστὶν ἐνδεὴς οὐδενὸς ὃ εἰς ὕστερον γινόμενον τελειώσει αὐτῆς τὸ εἶδος. Bartlett and Collins translation, modified.

⁴⁶¹ αἰσθήσεως δὲ πάσης πρὸς τὸ αἰσθητὸν ἐνεργούσης, τελειώως. Bartlett and Collins translation, modified.

entails that perception cannot be the *transition* from one state to another. This, however, was precisely what Burnyeat supposed, and we too supposed this with him, in his reading of *De Anima* 2.5. But on the QG account, this cannot be correct. For perception cannot be, as on Burnyeat's phrasing, the *transition* from (2) to (3) (P), but will be (3) second actuality *itself*. Likewise, for first actuality perception: it will not be the *transition* from (1) to (2) (D), but rather (2) first actuality *itself*. On this score, second actuality perception can never be an incomplete actuality but must always be an actuality which is *complete*. What shall we say about this rather radical adjustment to the received account?

First, I think this view is more plausible. Perception seems to be something that just occurs, not a process on which one has to wait on to occur.⁴⁶² That is, what we call instances of perception phenomenologically seem more like complete products rather than transitions to products. The immediacy of the perceptible in perception seems far more intelligible on the grounds that it is something that has *already* occurred rather than will occur. One drawback of this will be that we do not actually perceive flux or change, but are rather just immediately perceptually characterized by things as they meet our gaze—and *then* the next thing, so on. Perceptual experience on this view is more like a comic flip book than live feed streaming. That said, one of the dominant views currently in the field of the cognitive science holds that there are perceptual cycles composed of psychological 'moments' which are discrete periods of time like snapshots.⁴⁶³ Various snapshots are then blended together in experience, which make it *seem* as

⁴⁶² Cf. Coope, "Aristotle's Account of Agency in Physics III.3," 204: "Seeing is not defined in terms of some goal that can only be achieved when the seeing has come to an end. While I am looking at a thing, I am *already* in the state that results from seeing it. This difference between changes and other kinds of activities is reflected in the fact that changes, unlike other kinds of activities, can be fast or slow. I can walk from A to B more or less quickly, but seeing is not the sort of thing that can be done more or less quickly" (italics mine).

⁴⁶³ See a detailed description of the view along with empirical evidence for its viability in Rufin VanRullen and Christof Koch, "Is Perception Discrete or Continuous?," *Trends in Cognitive Sciences* 7, no. 5 (May 2003): 207: "Do we experience the world as a continuous signal or as a discrete sequence of events, like the snapshots of a

though we perceive movement itself when we are really just perceiving the *difference* between one discrete moment (or a small series of them) and the next. If this is akin to the complete actuality or change⁶⁰ product view we are advancing, then this is a welcome result.

Second, this view does not, in fact, require a radical re-reading of *De Anima* 2.5. Robert Heinaman, for instance, takes issue with Burnyeat's account because, says Heinaman, "the overall aim of *De Anima* II.5 is to clarify perception, not the transition to perception."⁴⁶⁴ He then offers a re-reading of *De Anima* 2.5 which focuses on the actualities in play rather than transitions to actuality. The result is a reading that looks very much like Burnyeat's but replaces the emphasis on process change with product change⁶¹ such that references to alteration *qua* process and read as alteration *qua* products; that is, not *baking* but *being-baked*.⁴⁶⁵ On this view, 'alteration of a sort' refers to the "actuality rather than the transition to actuality."⁴⁶⁶

That we are making such an adjustment to our reading of *De Anima* 2.5 is, perhaps, to be expected. Aristotle framed the discussion of perception at 417a14-17 as follows: "First, then, let us speak as if (ὥς) being-affected (πάσχειν) and being changed (κινεῖσθαι) and being actual (ἐνεργεῖν) were the same; for change (κίνησις) is a kind of actuality (ἐνέργεια τις), however incomplete (ἀτελής), as was said in other writings."⁴⁶⁷ As we noted at the time, Aristotle is not so much equating πάσχειν, κινεῖσθαι, and ἐνεργεῖν—and if πάσχειν then an ἀλλοίωσις—in this

Multimedia Component camera? Although the subjectively seamless nature of our experience would suggest that the relevant underlying neuronal representations evolve continuously, this is not the only possibility. Conscious perception might well be constant within a snapshot of variable duration. The idea of discrete perception was already considered, but quickly discarded by William James. It faced a renewal during the 20th century with the expansion of the cinematograph—an obvious technological metaphor. The most influential modern version of this discrete sampling hypothesis is the 'perceptual moment' theory of Stroud. The popularity of this topic peaked around 50 years ago, and has declined continuously since." For signs the view is growing again in popularity as the evidence comes in, see: Rufin VanRullen, "Perceptual Cycles," *Trends in Cognitive Sciences* 20, no. 10 (2016): 723–35.

⁴⁶⁴ Heinaman, "Actuality, Potentiality and *De Anima* II.5," 176.

⁴⁶⁵ Heinaman, 176–81.

⁴⁶⁶ Heinaman, 179.

⁴⁶⁷ πρῶτον μὲν οὖν ὥς τοῦ αὐτοῦ ὄντος τοῦ πάσχειν καὶ τοῦ κινεῖσθαι καὶ τοῦ ἐνεργεῖν λέγωμεν· καὶ γὰρ ἔστιν ἡ κίνησις ἐνέργειά τις, ἀτελής μέντοι, καθάπερ ἐν ἑτέροις εἴρηται.

passage as he is *assuming* their equation for the sake of argument. For as he goes on to point out, there is a connection in that κίνησις—to which πάσχειν, κινεῖσθαι, and ἀλλοίωσις all belong—is a *sort* of ἐνέργεια (ἐνέργειά τις, 417a16), just an *incomplete* (ἀτελής, 417a16) sort. But the equation, apparently, is false; for no instance of perception is incomplete. Hence, he told us, he was speaking *as if* (ὥς).⁴⁶⁸ For in reality, though something unlike (ἀνόμοιον) is indeed affected in perception (i.e., the percipient) and “once affected (πάσχει) it is like (ὅμοιον)” (417a20),⁴⁶⁹ this ‘affection’ or ‘alteration’ is itself instantaneous and, thus, at all times it exists, *complete*. This does not make it any less useful to employ the assumption of process to get at the canonical intensions of affection and alteration so they can be modified for the purposes of perception, but it does mean that we cannot retain the assumption going forward—especially on our QG account. It also, we should note, does not really make for a radical new reading of *De Anima* 2.5 so much as a small shift with respect to (D) and (P). For again, the result is a reading that looks very much like Burnyeat’s but replaces the emphasis on process change with product change^o. For (D) and (P) are now no longer *transitions* from first potentiality to first actuality as with (D) or from second potentiality to second actuality as with (P), but rather just the states of first actuality/second potentiality and second actuality themselves. We can characterize this minor shift as follows:

⁴⁶⁸ See, again, Philoponus at *in DA* 296.19-25: “He [Aristotle] now says that we are speaking as though it were the same to say that the senses are affected and changed and [to say that] they are in actuality; [we are speaking thus] until we draw the distinction, [and say] that for the senses to actuality is not the same as for them to be changed and affected. For even if change is a kind of actuality, actuality is more universal than change, and change than being affected. For everything that is affected is also changed, and everything that is changed is in actuality, but it is not also the case that what is in actuality is also changed” (Charlton translation, modified).

⁴⁶⁹ πάσχει μὲν γὰρ τὸ ἀνόμοιον, πεπονθὸς δ’ ὅμοιον ἐστίν.

	(D)	(P)
(1) First Potentiality	→ (2) First Actuality	
	Second Potentiality	→ (3) Second Actuality
(1) Perceiver	→ (2) Perceiver	→ (3) Perceiving
<i>Able-to-be-able-to-see</i>	<i>Able-to-be-able-to-see</i>	<i>Able-to-be-able-to-see</i>
<i>Not-able-to-see</i>	<i>Able-to-see</i>	<i>Able-to-see</i>
<i>Not-seeing-white</i>	<i>Not-seeing-white</i>	<i>Seeing-white</i>

Third and finally, both of these shifts are to be expected. According to Aristotle's standard doctrine, anything that passes the so-called 'tense-test' is a complete actuality product change⁴⁷⁰ rather than an incomplete actuality process change.⁴⁷⁰ What exactly is the 'tense-test'? Sorabji characterizes it in the case of thinking as follows: "As soon as you can use the present tense 'is thinking', you can use the perfect 'has thought'."⁴⁷¹ Thinking, of course, passes the 'tense-test', *but so does perception*: "one always hears (ἀκούει) and has heard (ἀκήκοε)—and, in general, perceives (αἰσθάνεται) and has perceived (ἤσθηται)—simultaneously (ἅμα)" (*De Sensu* 6, 446b2-3).⁴⁷² Thus given, of course, perceptual change is instantaneous in our sense, for if the present and the perfect tenses are simultaneous, then *the whole* is present any time a part is present. But it will not just be an instantaneous change or *transition*, but an instantaneous *product*. In perception, change and change^o cannot be come apart, for if one is absent then so is the other—or so we argue in chapter 6 below. Taking both points together entails not just that there is no time (i.e., no *instant*) at which perception is a transition of incomplete actuality, but

⁴⁷⁰ I borrow the phrase 'tense-test' from Andreas Anagnostopoulos, "Change, Agency and the Incomplete in Aristotle," *Phronesis* 62, no. 2 (2017): 174.

⁴⁷¹ Sorabji, *Time, Creation, and the Continuum*, 148. Cf. Burnyeat, "De Anima II 5," 67: "At the same time one φs one has φed (*SE* 22, 178a 9-28; *Sens.* 6, 446b 2-6; *Met.* IX 6, 1048b 23-34). The idea is that there is no moment of φing that is not achieved." Burnyeat, of course, rejects this as a challenge to his reading of *DA* 2.5, taking the line that it is somehow incompatible with the first/second actuality distinction (*ibid.*, 67). As I argue in chapter 6, I do not think the tense-test and triple scheme are incompatible but actually reliant on one another in *DA* 3.2. Absent a better reading of *DA* 3.2 than my own, I think the tense-test *must* be included in our reading of *DA* 2.5. But more on this anon.

⁴⁷² ἅπαν ἅμα ἀκούει καὶ ἀκήκοε, καὶ ὅλως αἰσθάνεται καὶ ἤσθηται. Cf. *Meta.* Θ.6 1048b18-35, Θ.8 1050a23-b2; *EN* 10.4 1174a13-b14; *EE* 2.1 1219a16. *Soph. El.* 22 178a9-28, etc.

that any occurrence of the present tense must be of necessity tied to that of the perfect. And if so, then neither (D) nor (P) *can* refer to a transition to actuality but *must* refer to an actuality itself. There just is no temporal moment at which (D) nor (P) refer to a transition which is not, at the same time, a product. While there remains an important reason to continue to refer to perception not just as a product change^o but also a process change, we do not address it until chapter 6. As a result, while we will keep to both these points about perception as instantaneous change and complete actuality going forward, we do not entirely cease to refer to perception as an instance of process change. Going forward, we do, however, cease to use Burnyeat's symbolic language of (A) alteration, (D) development, and (P) perfection, referring instead to canonical or destructive alteration, first actuality perception, and second actuality perception. We will, at times, use his phrase 'triple scheme' as shorthand for the first/second potentiality/actuality distinction, but our focus from here on is not on Burnyeat but on Aristotle and whether our QG account is justifiable. For this is the task which will consume our energies in the remaining chapters.

CHAPTER 4: PERCEPTION AS QG: PROBLEMS AND SOLUTIONS

Chapter Contents:

4.1 Introduction

4.2 The Four Species of Quality in *Categories* 8

4.2.1 Capacities, States, Potentiality, and Actuality

4.2.2 Three More Features: Likeness, Degreedness, and Contrariety

4.2.2.1 The Importance of the Contrariety Question for States and Capacities

4.3 Contrariety in States and Capacities

4.3.1 Why Capacities Cannot Alter

4.3.2 Contrariety in States—Again

4.3.2.1 The Opposition Among States: The Three Sorts in *Categories* 10

4.3.2.1.1 The Opposition Among States: Resolution of Ambiguity

4.3.2.1.2 The Opposition Among States: In Defense of Two Claims

4.3.2.1.3 The Opposition Among States: What the Two Claims Entail for Change

4.3.2.1.4 The Case Mediated Contraries

4.3.2.1.5 Mediated Contraries: An Alternative Analysis

4.3.2.1.6 The Opposition Among States: Conclusion and Implications

4.3.3 Summary and Conclusion

4.1 Introduction

In the last chapter, we concluded by saying that Burnyeat had been too quick to say that perception is some murky “alteration of a sort” without specifying any more as to what, exactly, that means. This is especially so, we said, given that Aristotle does indeed have another option available, viz., the generation of a sort QG account. Not only would such an account avoid the contrary to contrary requirement of kinetic alteration—replacing it with metabolic contradictory to contradictory change—but it would allow for perception to be a specifically *qualitative* change as well. Perceptual change is qualitative change all the way through, not some sort of substantial, quantitative, or spatial change—much less a “change” in one or more of the categories without change, such as relative “change.” There is a real entity to be analyzed here, and Aristotle has the conceptual machinery to do so as the ancient commentators all saw.

Nevertheless, there is a certain sort of dissatisfaction with what we have presented so far. We have said perception is a qualitative change, but we have not said much about the *qualities*

involved. What exactly are qualities such that they can be generated or destroyed in acts of perception? Moreover, even if the QG account can capture what is said in *De Anima* 2.5 about perception, what about what the *Categories* says about qualities and what the *Physics* says about their alternation? Perhaps we are guilty of what we charged Burnyeat with: being too quick.

In order to rebut this charge of hastiness and to diminish any lingering dissatisfaction with the QG account, we here examine the qualitative aspects of perception in greater detail. We begin by looking at the four different varieties of quality from the *Categories* before identifying the sort (or sorts) to which perception belongs. The knowledge model will serve us here again, too, as Aristotle has much to say concerning it which applies, with requisite modifications, to perception. The text which we will begin with is *Categories* 8. There, Aristotle gives us four species of quality and presents us with three common—though not necessarily essential—features of the category: likeness, degreedness, and contrariety. We are not just interested in the category of quality, however, but with qualitative *change*. Hence, once we present these four species and three common features, we then turn to examine the metabolic implications of the latter for the former, especially with respect to degreedness and contrariety. This requires an examination of a few other chapters in the *Categories* besides 8, especially chs. 7 and 10, though the focus remains on the metabolic implications of the common features. What we discover is that when the features of degreedness and contrariety are thoroughly assayed with respect to how they relate to the species of quality involved in perception, they can reasonably be said to have metabolic implications which directly map on to our “generation of a sort” QG account from the previous chapter, especially when synthesized with certain features of Aristotle’s composite account of change from *Physics* 5.1. The result is somewhat experimental in that though we draw directly from Aristotle’s accounts of the category of quality and of change and its principles, we

combine these accounts in ways he did not in order to draw our metabolic results. But just because Aristotle did not write on this subject in just the way we have does not mean that ‘experimental’ here means false. Rather, if what Aristotle says about the category of quality in the *Categories*, and if what he said about change in the *Physics* are both his genuine views, then he *should* have said what we say here, were he conceptually consistent. For the metabolic inferences we draw are precisely those he should have drawn, given his own principles, had he pursued the topic in the way we have here. This is, at least, my claim. And if this claim is correct or even verisimilitudinous, then these results are a significant step on the way to both explaining and justifying our QG account of perception.

Now, it is important to note that Aristotle does indeed make precisely the metabolic claims we make in this chapter in *Physics* 7.3, but that he does so on very different grounds. Nevertheless, these chapters should be seen as complementary rather than competing accounts of the same metabolic phenomena, for though they argue for the same results from different starting points and with different pedigrees of Aristotelian authenticity, they are in every way consistent with one another and with the *Corpus* as a whole. Our conclusions in both cases will allow for a far more exact designation of what the “generation of a sort” applied to perception via QG amounts to *qua* qualitative change. With these bearings in mind, we turn first to the account of the category of quality and then to the experiment, with which we will close out this chapter.

4.2 The Four Species of Quality in *Categories* 8

Aristotle addresses the category of quality (ποιός) in *Categories* 8 after addressing the categories of substance (οὐσία), quantity (ποσόν), and relative (πρός τι) in the three preceding chapters, *Categories* 5, 6, and 7 respectively—and after introducing introductory matters regarding the categories in the first four chapters. The categories of acting (ποιεῖν) and being

acted upon (πάσχειν) are addressed in a very short ch. 9, before Aristotle moves on to other topics such as opposites (*Cat.* 10 and 11), priority (*Cat.* 12), simultaneity (*Cat.* 13), change (*Cat.* 14), and the category of having (ἔχειν) (*Cat.* 15). The remaining three categories of place (τόπος), time (πότε), and position (κεῖσθαι) do not receive their own special discussion, even as they are each briefly addressed in *Categories* 6 and 7. The goal of the book is to offer an in-depth treatment of each of the categories addressed.⁴⁷³

Aristotle begins *Categories* 8 with the following definition: “by quality (ποιός) I mean that in virtue of which things are said to be qualified (ποιότητα) somehow (8b25).”⁴⁷⁴ He then goes on to list four very different sorts of qualities which he takes to follow from the application of this linguistic criterion:⁴⁷⁵ (1) states (ἔξεις) and conditions (διαθέσεις), (2) natural capacity (δύναμις φυσικός) and incapacity (ἀδυναμιας), (3) affective qualities (παθητικός ποιότης) or affections (πάθη), and (4) shape (σχῆμα) and figure (μορφή). Let us examine these one by one.

The first species of quality (1) is twofold, being comprised of both states (ἔξεις) and conditions (διαθέσεις). While broadly similar, they differ in terms of both their relative duration and ease of change. States are the longer-lasting of the two, and the more difficult to change, while conditions do not last as long, nor are they as hard to change (8b27-a9). Nevertheless, state (ἔξις) is the narrower category of the two, while condition (διάθεσις) is inclusive of *both* states and conditions.⁴⁷⁶ Both knowledge (ἐπιστήμη) and virtue (ἀρετή) would be examples of a state (ἔξις, 8b29). Sickness (νόσος) and health (ὕγιει) would be examples of a condition (διάθεσις,

⁴⁷³ Ackrill, *Aristotle's Categories and De Interpretatione*, 69.

⁴⁷⁴ Ποιότητα δὲ λέγω καθ' ἣν ποιοὶ τινες λέγονται.

⁴⁷⁵ Cf. “The diverse types of ποιότης reflect the heterogeneous semantics of quality-language. The range permitted by this criterion is remarkably wide.” Wardy, *The Chain of Change: A Study of Aristotle's Physics VII*, 160.

⁴⁷⁶ See *Cat.* 8 9a10-13: “States are also conditions but conditions are not necessarily states. For people in a state are, in virtue of this, also in some condition, but people in a condition are not in every case also a state.” εἰσὶ δὲ αἱ μὲν ἔξεις καὶ διαθέσεις, αἱ δὲ διαθέσεις οὐκ ἐξ ἀνάγκης ἔξεις· οἱ μὲν γὰρ ἔξεις ἔχοντες καὶ διάκεινται πῶς κατὰ ταύτας, οἱ δὲ διακείμενοι οὐ πάντως καὶ ἔξιν ἔχουσιν.

8b36-37)—even as, broadly speaking, both knowledge and virtue may also said to be conditions as well. While condition is indeed technically the broader of the two such that it includes *all* states, Aristotle does not always mind this distinction, using the terms rather interchangeably at places (e.g., *EE* 2.1 1219a23-38, *DA* 2.5 417a30-b16, etc.) and often using “state” (ἔξις) to refer to *both*—something he frequently does in the *Categories* and the *Physics* as we shall see. I shall follow him in this practice of using “state” to refer to both states and conditions for the sake of clarity and consistency, despite the fact that it is technically incorrect.

The second species (2) is natural capacity (δύναμις) or incapacity (ἀδυναμία).⁴⁷⁷ Both are concerned with whether or not a thing having the quality “has a natural capacity for doing something easily or for being unaffected” (*Cat.* 9a18-19).⁴⁷⁸ Examples given are being a boxer or a runner, or being healthy or sickly (ὕγιεινός ἢ νοσώδεις, 9a15). Being a boxer or runner when not exercising these skills is to have a *potentiality* or *capacity* (δύναμις) to exercise them—and thus to be qualified by the traits they entail.⁴⁷⁹ To be a runner when running is not to be swift, but potentially swift. One can “do so easily.” The same applies to boxing and health, which are capacities (δυνάμεις) to acquire the traits they entail, while the converse is true of being sickly, which is an incapacity (ἀδυναμία). Even when one is not sick, one has the potentiality to lose one’s health *easily*.

⁴⁷⁷ Again, in keeping with Aristotle’s actual usage—as well as that of his commentators—I will only employ the term “capacity” (δύναμις) for this species, dropping the adjective “natural” and the sub-species incapacity (ἀδυναμία). I intend to refer to the species as a whole when doing so, unless otherwise noted.

⁴⁷⁸ Τῷ δύναντι ἔχειν φυσικὴν τοῦ ποιῆσαι τι ῥαδίως ἢ μηδὲν πάσχειν.

⁴⁷⁹ See *Meta.* Δ.12 on δύναμις where Aristotle distinguishes between what might be called *basic* potentiality—“a starting-point of κίνησις or μεταβολή either in another thing or in a thing insofar as it is other” (1019a15-16)—and a more specified sort of potentiality we might call *capacity*. The latter involves “the δύναμις to accomplish the thing in question well or in accord with deliberate choice” (1019a23-24) and “similarly too in the case of being-affected” (1019a26), or “the states (ἔξεις) in virtue of which something is wholly unaffected or unchangeable^m or not easily changed^k for the worse” (1019a26-28; all the above quotations are modified from the Reeve translation). Basic δύναμις is a mere starting-point for change; δύναμις as capacity, on the other hand, is about ease or difficulty of change (κίνησις or μεταβολή), and thus is not just bare ability but something *more*. Cats can potentially fly, but birds have an actual *capacity* to do so.

(3) Affective qualities (παθητικός ποιότης) or affections (πάθη), on the other hand, are qualities such as sweetness, bitterness, sourness, hotness, coldness, whiteness, darkness, etc. (9a29-31). They are “qualities” (ποιότητες) because “things that possess them are said to be qualified in virtue of them” (*Cat.* 9a31-33). But they are called “affective” (παθητικός) *not* because *what has them* has “been affected” (πεπονθέναι, 9b1),⁴⁸⁰ but “because each of the qualities mentioned is *productive of* an affection (πάθος) of the senses (τὰς αἰσθήσεις)” (*Cat.* 9b5-6).⁴⁸¹ Hence, while genuine qualities such as states and capacities, are inferable, they are not perceptible. Only affective qualities are capable of affecting the senses—hence they are elsewhere called αἰσθητά—*perceptible objects* or *perceptibles* (cf. *Cat.* 7 8a5-6, 8 9a28-31) as we will soon see.⁴⁸²

As for the fourth species listed in *Categories* 8, we have (4) shape (σχῆμα) and figure (μορφή). Here, Aristotle is speaking of geometric qualities of things such as straightness, triangularity, etc. (*Cat.* 10a11-16). While some commentators insist on a distinction between shape and figure, Aristotle does not, nor would such a distinction matter for our purposes.⁴⁸³

4.2.1 Capacities, States, Potentiality, and Actuality

With the four species of quality presented, let us move now to examine some of their features. I will be selective here, focusing on what will be pertinent for us moving forward. We

⁴⁸⁰ The verb πεπονθέναι is the *perfect* active infinitive of πάσχω—the same verb from which πάσχειν (*present* active infinitive) is derived.

⁴⁸¹ Τῷ δὲ κατὰ τὰς αἰσθήσεις ἐκάστην τῶν εἰρημένων ποιότητων πάθους εἶναι ποιητικὴν.

⁴⁸² This, of course, begs the question of perceivability of shape (σχῆμα) and form (μορφή). Aristotle discusses what he calls κοινὴ αἴσθησις (3.7 431b5) or “common perception” of κοινά (2.6 418a17) or “common perceptibles” in *De Anima* 2.6 and 3.1. These are objects which are not “proper” (ἴδιον, 2.6 418a10) to any one sense (e.g., color is proper to sight, sound to hearing, etc.) and *yet* can still be *perceived* by two or more of the five senses (418a19-20). The κοινά or common perceptibles include change, rest, number, magnitude, *and shape* (σχῆμα, 418a18). Shape, thus, is commonly perceivable, but not properly so unlike the affective qualities (παθητικός ποιότης). Cf. Shields, *Aristotle: De Anima*, 227.

⁴⁸³ According to Ammonius, in *Cat.* (88.1-4), these are not synonyms but rather shape (σχῆμα) is the wider term, encompassing other things in addition to form (μορφή). Cf. Philoponus, in *Cat.* 151.14-17. Aristotle continually uses both terms together (i.e., “shape and figure”) when speaking of the species, hence I do as well for consistency and clarity.

begin with a feature that often goes unnoticed, namely that states (ἔξεις) and conditions (διαθέσεις) are *actualities* while natural capacities (δυνάμεις) and incapacities (ἀδυναμίας) are *potentialities*.⁴⁸⁴ That this is so is clear not just from their names, but also from the list of Aristotle's examples.⁴⁸⁵ Paradigm examples of conditions (διαθέσεις) are sickness and health (νόσος καὶ ὑγία, 8b36-37), both of which are actualities. We say this of people who are *actually* sick or *actually* healthy. Paradigm examples of capacities (δυνάμεις) or incapacities (ἀδυναμίας), on the other hand, are being *potentially* healthy or *potentially* sickly (ὕγιεινούς ἢ νοσώδεις, 9a15). To have the natural *capacity* (δύναμις) to be healthy is to be *potentially* healthy⁴⁸⁶—that is, one “has a natural capacity for doing something easily” (*Cat.* 9a18-19). And what one “does” here easily is in the case of health is the *having* or *possessing* of the qualities of a healthy body, which is precisely what it is to be in a state (ἔξις): to *have* or *possess*.⁴⁸⁷

Hence, one has a capacity (δύναμις) to acquire a state (ἔξις) or condition (διάθεσις), the states and conditions being the actualities of the capacities which are *for* them. As Ammonius Hermiae—the teacher of both Simplicius and Philoponus in Alexandria—puts in his widely influential commentary on the *Categories*, at *in Cat.* 84.23-28:

The first species of quality (ποιότητος)—that of state (ἔξις) and condition (διάθεσις)—is manifested in actuality (ἐνεργεία θεωρεῖται), whereas the second [species is manifested] in potentiality (δυνάμει). For potential (δυνάμει) boxers or runners are said to have their aptitude (ἐπιτηδεσιότητα) with respect to natural capacity (δύναμιν φυσικήν) or incapacity (ἀδυναμίαν). But if there is a boxer or runner in actuality (ἐνεργεία), he is not so called

⁴⁸⁴ For a well-regarded recent account that misses this, see, e.g., Ackrill, *Aristotle's Categories and De Interpretatione*, 104–6.

⁴⁸⁵ By their names I mean only that “capacity” is a δύναμις or *potentiality*, whereas “state” is a ἔξις or a *having*.

⁴⁸⁶ Note again that “capacity” and “potentiality” are translations of the same Greek word, δύναμις. That these are distinct senses, see Ackrill, *Aristotle's Categories and De Interpretatione*, 105, 149.

⁴⁸⁷ Remember, of state and condition, I use the term “state” as inclusive of both in deference to Aristotle's usage.

with respect to natural capacity (δύναμιν φυσικὴν) or incapacity (ἀδυναμίαν), but rather [with respect to] state (ἔξιν) or condition (διάθεσιν).⁴⁸⁸

A potential runner *is not* called a runner; an actual runner, however, *is* called a runner. The former has only the *capacity* (δύναμις) for running; the latter has the *state* (ἔξις). Capacities and states, thus, are coordinate qualities. To have a state *presupposes* the having of its capacity; to have a capacity, on the other hand, *requires* a state for its actuality. States work *from* capacities, and capacities work *to* states. Not only are there implications here for qualitative change in relation to these two species of quality, but there are implications for contrariety among as well.

If states are actualities, then before moving on, it needs be asked what *sort* of actuality Aristotle takes states to be—first or second? Aristotle’s examples of knowledge and virtue are instructive here. He does not suggest that contemplation or virtuous *activity* are states, but merely knowledge (ἐπιστήμη) and virtue (ἀρετή, 8b29). This is not incidental. As he argues in *Nicomachean Ethics* 2.5, virtues are *states* (ἔξεις), not feelings (πάθη) or capacities (δυνάμεις) (1106a10-12). And virtue *qua* virtue is not action but rather *issues in action*: “virtues are *about* (περί) actions (πράξεις) and feelings” (2.3 1104b13-14).⁴⁸⁹ As such, “every virtue, regardless of what thing it is the virtue of, causes its possessor to be in a good state and to perform (ἀποδίδωσιν) their functions (ἔργον) well” (1106a 15-17).⁴⁹⁰ Virtue *qua* virtue is not action or performance but rather *issues in* action and performance. And what can be said here of virtue applies to knowledge as well. As Aristotle puts it in a passage we have previously discussed, *De Anima* 2.5 417b5-7:

⁴⁸⁸ και το μεν πρότον είδος της ποιότητος ενεργεία θεωρείται ή τε έξις και η διάθεσις το δε δεύτερον δυνάμει· οι γάρ δυνάμει πύκται ή ορομικοί επιτηδειότητα εις τούτο έχειν λέγονται κατά δύναμιν φυσικήν ή αδυναμίαν. εάν δε πύκτης ή ορομεύς ενεργεία ή, ουκέτι κατά δύναμιν φυσικήν ή αδυναμίαν λέγεται, αλλ έξιν και διάθεσιν.

⁴⁸⁹ έτι δ’ ει αι άρεται είσι περι πράξεις και πάθη. Irwin translation, modified.

⁴⁹⁰ πᾶσα άρετή, οὗ ἂν ἡ άρετή, αὐτό τε εὖ ἔχον ἀποτελεῖ και τὸ ἔργον αὐτοῦ εὖ ἀποδίδωσιν. Irwin translation, modified.

For whenever the one who has knowledge (ἐπιστήμην) comes to contemplate (θεωροῦν), he is either not altered (ἢ οὐκ ἔστιν ἀλλοιοῦσθαι), since this is a progression (ἐπίδοσις) into the same (εἰς αὐτὸ) and into actuality (ἐντελέχειαν), or this is a different kind of alteration (ἢ ἕτερον γένος ἀλλοιώσεως).⁴⁹¹

Whether or not the first to second actuality transition is properly called an alteration or not, first actuality knowledge (ἐπιστήμη) is the basis for second actuality contemplation (θεωρία)—the latter being the actuality (ἐντελέχεια) of the former. Moreover, as its actuality it is a “progression (ἐπίδοσις) *into the same* (εἰς αὐτὸ)” —“the same” here being the same *state* (ἕξις)—which is precisely what knowledge is.⁴⁹² Contemplating is not a progression away from the state of knowing, but further *into* that same state *as its fulfillment*. States (ἕξεις), thus, are *first* actualities—the ἐντελέχεια or ἐνέργεια of states being their second actuality fulfillments.⁴⁹³ A state, thus, is a *disposition*: a first actuality readiness to act or issue in action.⁴⁹⁴ Given that it was already shown that capacities and states are coordinate qualities such that to have a state presupposes the having of a capacity, capacities (δυνάμεις) must be first potentialities which are

⁴⁹¹ θεωροῦν γὰρ γίνεται τὸ ἔχον τὴν ἐπιστήμην, ὅπερ ἢ οὐκ ἔστιν ἀλλοιοῦσθαι (εἰς αὐτὸ γὰρ ἡ ἐπίδοσις καὶ εἰς ἐντελέχειαν) ἢ ἕτερον γένος ἀλλοιώσεως.

⁴⁹² Cf. the occurrences of ἕξις in *DA* 2.5 at 17a32 and 17b16—both in the context of speaking about knowledge. See too διάθεσις (condition) at 417a32. In this very passage, 417b5-7, Shields actually supplies the term “state” in his translation: “since this is a progression into the same *state* and into actuality.” See again, Alexander, *Quaest.* 3.3 84.20-24: “That from the state (ἕξις) to the actuality (ἐνέργεια) that is on account of it—as with exercising intellect and thinking, since it does not come about through teaching—is not alteration or κίνησις (οὐχ ἀλλοιώσις οὐδὲ κίνησις), but a different kind of μεταβολή; such a μεταβολή would [fall] under *generation* (γένεσις), if [that to which] being perfected (τελειοῦσθαι), and progression towards this, apply [is] in some way a thing that comes to be (γινόμενον).” Sharples translation, modified.

⁴⁹³ So Irwin, *Aristotle: Nicomachean Ethics*, 349: “A *hexis* is a *first actualization or activity*, and hence, in relation to complete activity, a type of capacity (*DA* 417a11-b16).” Italics mine. Cf. too the usage of ἕξις throughout *Phys.* 7.3 where first actuality is apparent. As for ἐντελέχεια and ἐνέργεια, Aristotle is using interchangeably in *DA* 2.5 (e.g., cf. 417a14-17 with 417a21), just as he does in *Phys.* 3.1-2 and many place elsewhere. On his interchangeable usage in *Physics* 3, see Hussey, *Aristotle’s Physics*, 66. For an a fine-grained analysis of this usage, see Wisnovsky, *Avicenna’s Metaphysics in Context*, 20ff.

⁴⁹⁴ Cf. William Charlton who consistently translates ἕξις as disposition for Philoponus: John Philoponus, *On Aristotle’s “On the Soul 2.1-6,”* trans. William Charlton (New York: Bloomsbury Academic, 2014). For “disposition” as the preferred translation of ἕξις in the *Physics* specifically, see Ursula Coope’s comments in Maso, Natali, and Seel, *Reading Aristotle*, 59–60.

of or for their first actuality states or dispositions—or better, *dispositional states*.⁴⁹⁵ Applied specifically to knowledge, we can update the first/second potentiality/actuality distinction with respect to the knowledge model as follows:

Capacity δύναμις	State/Disposition ἔξις	Actuality ἐντελέχεια/ἐνέργεια
(1) First Potentiality	→ (2) First Actuality	
	Second Potentiality	→ (3) Second Actuality
(1) Knower	→ (2) Knowing	→ (3) Contemplating

If first actuality knowledge belongs to quality as a state, what about first actuality perception?

While addressing knowledge and perception together in *Categories* 7 on relatives (πρός τι),

Aristotle does not treat of perception as he does of knowledge in ch. 8. He does, however, in ch.

10 on opposites (ἀντίκεινται) where he specifically recognizes “sight” (ἡ ὄψις) as a *state*

(12a27).⁴⁹⁶ We find the same thing in *De Somno* 1 where he adds hearing (ἀκοή) to the list along

with sight (453b27-31).⁴⁹⁷ The other species of perception are clearly called for here as well,

such as taste, touch, and smell.⁴⁹⁸ First actuality smelling is also first actuality *perception*, called

after its species rather than its genus. The same, clearly, applies to the other species as well: they

⁴⁹⁵ “Dispositional states” is a long phrase, but the reader should be aware that, unless otherwise specified, it is *precisely* what I mean when I use the terms “state” or “disposition” in the remainder of the chapter. Hence, the states I am referring to when I use the term “state” are the *dispositional* states; and when I use the term “disposition” I am also referring to these *same* dispositional states, but by another name. So, take state as *S* and disposition as *D* and dispositional state as *DS* and we have the following: $[(S=D) \ \& \ (S=DS) \leftrightarrow (D=DS)]$.

⁴⁹⁶ It does not get more clearer than *Cat.* 10 12a36: “for sight is a state.” ἔξις μὲν γάρ ἐστιν ἡ ὄψις.

⁴⁹⁷ *De Somno* 1 453b27-31: “For contraries, in natural as well as in all other matters, present themselves in the same subject, and to be affections of the same: examples are—health and sickness, beauty and ugliness, strength and weakness, sight and blindness, hearing and deafness.” ἀεὶ γὰρ τὰ ἐναντία καὶ ἐπὶ τῶν ἄλλων καὶ ἐν τοῖς φυσικοῖς ἐν τῷ αὐτῷ δεκτικῷ φαίνεται γινόμενα, καὶ τοῦ αὐτοῦ ὄντα πάθη, λέγω δ’ οἷον ὑγίεια καὶ νόσος, καὶ κάλλος καὶ αἰσχος, καὶ ἰσχύς καὶ ἀσθένεια, καὶ ὄψις καὶ τυφλότης, καὶ ἀκοή καὶ κωφότης.

⁴⁹⁸ Cf. *De Insomniis* 1 458b3-4: “The exercise of sight is seeing, that of the auditory faculty, hearing, and, in general that of the perception, perceiving” (Barnes translation, modified). ἡ χρῆσις ὀψεως ὄρασις, καὶ ἀκοῆς τὸ ἀκούειν, καὶ ὅλως αἰσθήσεως τὸ αἰσθάνεσθαι. At *Top.* 4.4 124a32-34, Aristotle specifies that χρῆσις is a *species* of ἐνέργεια (actuality/activity): “if the use of anything is an actuality, then to use it is to be actual, and to have used it is to have been actual” (Barnes translation, modified). εἴ τινος ἡ χρῆσις ἐνέργεια, τὸ χρῆσθαι ἐνέργειαν καὶ τὸ κεχρησθαι ἐνηργηκεναι. Cf. too *DA* 3.1 where Aristotle treats all five senses are together as a genus called “perception”, with five related but irreducible species demarcated by their special objects.

are all “perception,” just not always so-called. Thus given, if we treat of the genus as a whole rather than its species, we get the following:

Capacity δύναμις	State/Disposition ἕξις	Actuality ἐντελέχεια/ἐνέργεια
(1) First Potentiality	→ (2) First Actuality	
	Second Potentiality	→ (3) Second Actuality
(1) Perceiver	→ (2) Perceiver	→ (3) Perceiving

4.2.2 Three More Features: Likeness, Degreedness, and Contrariety

Having enumerated the species of quality and having specified to which first potentiality and first actuality/second potentiality knowledge and perception belong, we now turn to three other pertinent features of Aristotle’s account of quality, viz., contrariety (10b12), degreedness (10b26), and likeness (11b15-16).⁴⁹⁹ Aristotle offers these three features of the category of quality—in addition to the linguistic criterion we saw above⁵⁰⁰—as possible features which demarcate and unify the class.⁵⁰¹ As we shall see, of the three, only likeness is common to all instances of quality. Nevertheless, his discussion of contrariety and degreedness are both interesting for their implications for qualitative change, whether alteration or qualitative generation. Let us examine these three features beginning with likeness.

We examined at likeness (ὅμοια) before in our analysis of *De Anima* 2.5 in chapter 2 when discussing the like-like theory, i.e., that “like (ὅμοιος) is affected (πάσχειν) by like (ὅμοιος)” (416b35). As noted there, Aristotle addresses the like-like theory in detail in

⁴⁹⁹ 10b12: “There is contrariety in regard to qualification.” Ὑπάρχει δὲ καὶ ἐναντιότης κατὰ τὸ ποιόν. 10b26: “Qualifications admit of a more and a less.” Ἐπιδέχεται δὲ καὶ τὸ μᾶλλον καὶ τὸ ἥττον τὰ ποιὰ. 11a15-16: “It is in virtue of qualities only that things are called like and unlike” (Ackrill translation, modified). ὅμοια δὲ καὶ ἀνόμοια κατὰ μόνας τὰς ποιότητας λέγεται. NB. I borrow “degreedness” from Brian Leftow, *Time and Eternity* (Ithaca, NY: Cornell University Press, 2018), 95.

⁵⁰⁰ *Cat.* 8b25: “By quality (ποιός) I mean that in virtue of which things are said to be qualified (ποιότητα) somehow.”

⁵⁰¹ On the issue of whether all three of these features are essential, cf. Philoponus, in *Cat.* 157.21-161.28, esp. 161.5-28 and Ammonius in *Cat.* 89.14-90.4, 90.26-91.1.

Generation and Corruption 1.7 and even refers us back to that chapter in his first reference to the theory in *De Anima* 2.5 at 416b35-17a2. Likeness (ὅμοια), says Aristotle in *Categories* 8, is an essential feature of the category such that likeness is said of *all* qualities (i.e., shape and figure, state, capacity, and affective qualities) and of nothing but qualities (11a15-19):

Nothing so far mentioned is distinctive (ἴδιον) of quality (ποιότητος), but it is in virtue of qualities only (μόνας) that things are called like (ὅμοια) and unlike (ἀνόμοια); a thing is not like (ὅμοιον) another in virtue of anything but that in virtue of which it is qualified (ποιόν). So it would be distinctive (ἴδιον) of quality (ποιότητος) that a thing is called like (ὅμοιον) or unlike (ἀνόμοιον) in virtue of it.⁵⁰²

While this does not change or alter in any way our conclusions from above, it does solidify them. If *only* qualities can be like (ὅμοια) or unlike (ἀνόμοια), and if in perception the percipient is made *like* the perceptible, then perception is *necessarily* a qualitative change. Given that the like-like theory plays a role in the argument in three separate places in *De Anima* 2.5 alone (i.e., 416b35, 417a17-20, 418a5-6), the implication is clearly that *perceptual* changes are *qualitative* changes.

What about degreedness? Black and white, for example, both come in degrees or less and more. In fact, as we have previously stated, the intermediate colors are actually *composed* of the contraries. Gray, for instance, as an intermediate (μεταξύ) is a mixture of equal portions (i.e., *degrees*) of black and white. And Aristotle seems to think the same applies to the other intermediate colors such as red, yellow, green, blue, etc., as well.⁵⁰³ While black and white as contraries are *impossible* in the same subject at the same time and in the same manner, they

⁵⁰² Τῶν μὲν οὖν εἰρημένων οὐδὲν ἴδιον ποιότητος, ὅμοια δὲ καὶ ἀνόμοια κατὰ μόνας τὰς ποιότητας λέγεται· ὅμοιον γὰρ ἕτερον ἑτέρῳ οὐκ ἔστι κατ' ἄλλο οὐδὲν ἢ καθ' ὃ ποιόν ἐστιν. ὥστε ἴδιον ἂν εἴη ποιότητος τὸ ὅμοιον ἢ ἀνόμοιον λέγεσθαι κατ' αὐτήν.

⁵⁰³ See, e.g., *Meta.* I.7 1057b32-4.

are *compossible* when degreed in the intermediates as less and more. This surely makes sense when speaking of contraries of all sorts, not just qualities (e.g., hard and soft, up and down, etc.) as each contrary can be degreed such that it can compossibly characterize a subject when paired with its degreed opposite. Middle C just *is* composed of a specific admixture of the contraries high and low. Contraries admitting of intermediates, thus, do seem to be capable of degreedness.

What, however, of degreedness of contradictories? Substance has no contrary, Aristotle tells us (*Cat.* 5 3b24-32). And the substances man and horse do not come in degrees (3b33-4a9). All horses are horses—and there is no more or less with respect to them. The same applies to quantity as well, in that being four-footed does not have a contrary, nor does it come in degrees (3b28-32).⁵⁰⁴ To have more or less with regard to quantity would give you another definite number altogether. Less and more (i.e., degreedness), thus, appears to be closely related to contrariety—although perhaps not essentially so as we shall see below. And given that most qualitative change is alteration from contrary to contrary, we should not be surprised to see the tight association between degreedness and contrary qualitative change à la alteration in, e.g., *Physics* 5.2 226b1-5:

Change (μεταβολή) within the same species but with respect to the more and the less (τὸ μᾶλλον καὶ ἧττον) is alteration (ἀλλοίωσις) since it is κίνησις from a contrary to a contrary (ἐξ ἐναντίου ἢ εἰς ἐναντίον) whether unconditionally or to some degree (ἢ ἀπλῶς ἢ πῇ). For when it proceeds to the less (τὸ ἧττον), it will be said to be changing

⁵⁰⁴ This is not to say *in toto*, that quantity lacks contrariety. For if it did, change in quantity could not be an instance of κίνησις. Rather, Aristotle tells us, many and few, large and small may indeed be quantitative contraries, “but there still is nothing contrary to any *definite* quantity” (*Cat.* 5 3b31-32; τῶν δὲ ἀφορισμένων ποσῶν οὐδὲν οὐδενὶ ἐναντίον ἐστίν). Cf. Aristotle’s fuller discussion of contrariety in the category of quantity in *Cat.* 6, 5b11-6a19.

(μεταβάλλειν) to the contrary, and when to the more (τὸ μᾶλλον), from the contrary attribute itself.⁵⁰⁵

Change from more to less—degreed change—in the category of quality is kinetic alteration (ἀλλοιώσις) because it is always *from* (ἐκ) and *to* (εἰς) *contrary qualities*. We are liable, at this point, to say that this could not be otherwise. All contraries must admit of degrees, and all contradictories must not, such that degreedness becomes a metaphysical entailment of intercatagorial contrariety, *and* contrariety an entailment of degreedness. It is blocked, on the other hand, by intercatagorial contradictoriness. Hence, for example, shapes and figures do not admit of contrariety (*Phys.* 1.5 188b19-20),⁵⁰⁶ so neither do they admit of degrees:

Triangle and square do not seem to admit of a more (τὸ μᾶλλον), nor does any other shape (σχημάτων). For things which admit the definition (λόγον) of triangle or circle are all equally triangle or circles, while of things which do not admit it none will be called *more that* (ἐτέρου μᾶλλον) than another—a square is not more a circle than an oblong is, for neither admits the definition (λόγον) of circle. In short, unless both admit the definition (λόγον) of what is under discussion neither will be called more that (ἐτέρου μᾶλλον) than the other. Thus not all qualifications admit of a more and a less (τὸ μᾶλλον καὶ τὸ ἥττον).⁵⁰⁷

Again, we want to make this something like a biconditional. If C is contrariety and D is degreedness, then: $C \leftrightarrow D \ \& \ D \leftrightarrow C$. As we shall see below, this is not so as some (qualitative)

⁵⁰⁵ ἢ δ' ἐν τῷ αὐτῷ εἶδει μεταβολὴ ἐπὶ τὸ μᾶλλον καὶ ἥττον ἀλλοιώσις ἐστίν· ἢ γὰρ ἐξ ἐναντίου ἢ εἰς ἐναντίον κίνησις ἐστίν, ἢ ἀπλῶς ἢ πῆ· ἐπὶ μὲν γὰρ τὸ ἥττον ἰοῦσα εἰς τοῦναντίον λεχθήσεται μεταβάλλειν, ἐπὶ δὲ τὸ μᾶλλον ὥς ἐκ τοῦναντίου εἰς αὐτό. Reeve translation, modified.

⁵⁰⁶ Cf. Philoponus *in Cat.* 157.30-158.2 and Simplicius *in Cat.* 277.27-31.

⁵⁰⁷ τρίγωνον δὲ καὶ τετράγωνον οὐ δοκεῖ τὸ μᾶλλον ἐπιδέχεσθαι, οὐδὲ τῶν ἄλλων σχημάτων οὐδέν· τὰ μὲν γὰρ ἐπιδεχόμενα τὸν τοῦ τριγώνου λόγον καὶ τὸν τοῦ κύκλου πάνθ' ὁμοίως τρίγωνα ἢ κύκλοι εἰσίν, τῶν δὲ μὴ ἐπιδεχομένων οὐδὲν ἕτερον ἐτέρου μᾶλλον ῥηθήσεται· οὐδὲν γὰρ μᾶλλον τὸ τετράγωνον τοῦ ἑτερομήκου κύκλος ἐστίν· οὐδέτερον γὰρ ἐπιδέχεται τὸν τοῦ κύκλου λόγον. ἀπλῶς δέ, ἐὰν μὴ ἐπιδέχεται ἀμφοτέρω τὸν τοῦ προκειμένου λόγον, οὐ ῥηθήσεται τὸ ἕτερον τοῦ ἐτέρου μᾶλλον. οὐ πάντα οὖν τὰ ποια ἐπιδέχεται τὸ μᾶλλον καὶ τὸ ἥττον.

contradictories admit of degrees *and* some contraries are incapable of the *degreed* compresence necessary for the existence of intermediates (μεταξύ).

Let us put all this together with respect to degreedness. First, degreedness, unlike likeness, is *not* an essential feature of the category of quality.⁵⁰⁸ Shapes and figures do not possess it, even as affective qualities, capacities, and states do. Second, *even if* degreedness is an essential compliment of contrariety, its presence does not *entail* contrariety. There is, thus, no biconditional, as some contradictories are capable of degreed existence as well. Finally, if some contraries are incapable of degreed compresence in a subject, then *even if* they do undergo contrary to contrary change, such change is not thereby alteration. I further explicate and justify this final point below in our discussion of contrariety with which it is intertwined.

What, however, of the final feature: contrariety (ἐναντίωσις)? While Aristotle does initially suggest that contrariety is essential to quality, he quickly backs off this claim by raising various counterexamples: “But this is not so in all cases; for these is no contrary to red or yellow or such colors though they are qualifications” (Cat. 8 10b15-17). Intermediates (μεταξύ) thus, while genuine instances of the category, are exempt from the contrariety even as Aristotle repeatedly claims in *Physics* 5 that they can *act* as contraries to qualities in the same genus (e.g., colors, sounds, tastes, etc.) in instances of alteration.⁵⁰⁹ The examples given, however, are all affective qualities or perceptibles. What, thus, of the three other species of quality: shapes and figures, states, and capacities? He claims elsewhere that shapes do not admit of contrariety.⁵¹⁰

⁵⁰⁸ Cat. 8 11a14 “Thus not all qualifications admit of a more and a less.” οὐ πάντα οὖν τὰ ποιά ἐπιδέχεται τὸ μᾶλλον καὶ τὸ ἥττον.

⁵⁰⁹ See, e.g., *Phys.* 5.1 224b30-35, 225b3-5, 5.5 229b15-20, etc.

⁵¹⁰ *Phys.* 1.5 188b19-20: shape comes from shapelessness, i.e., *from* not-shape *to* shape—which is contradictory change. Shape here is the genus, hence we could specify this by the species as well with the same result: rectangle comes from non-rectangle, etc. Or even more fine-grained: from not-isosceles-triangle of size x to isosceles of size x. As all such changes of shape are this fine-grained, and as a change of shape would never be *from* an identical shape *to* an identical shape (how would that be a change?), there can never be non-contradictory changes of shape.

What of states and capacities? Given that both knowledge and perception are qualitative in precisely these ways, and given that kinetic alteration requires contrariety, this would seem to be a watershed issue for our QG account of “alteration of a sort.”

4.2.2.1 The Importance of the Contrariety Question for States and Capacities

Now, the presence of contrariety among states and capacities could go one way or the other for us. Even if contrariety is not essential to shapes and figures, it could still be essential for the other three species of quality. For these species of quality, contrariety would be just as essential as the linguistic criterion and qualitative likeness. If this were so, then it might seem to generate a problem for our QG account of “alteration of a sort.” Why would that be? Because if all contrary to contrary change is an instance of canonical alteration—or all contrary to contrary change^ω is an instance of canonical alteration^ω—then so must perception be. If, on the other hand, contrariety is not essential to the other three species of quality, then this fact might act to motivate our QG account. Again, why would that be? Because some qualities, in changing or having changed, *cannot undergo contrary to contrary alteration*—and necessarily so. If this is correct, then *all* change of states and capacities of persisting subjects would only be capturable via QG—a great boon for our thesis. So, which is it?

We can quickly dispatch with the problem in the paragraph above, viz., that if contrariety is essential for states and capacities just as for affective qualities, then the change of states and capacities would be contrary to contrary change or canonical alteration—and if this is so, then perception must be canonical alteration as well. This is a pseudo-problem. Even if all states and capacities were essentially characterized by contrariety, this would not entail that their change would be contrary to contrary alteration. Even affective qualities like the yellow can change from not-yellow to yellow, say, on a pane of transparent storefront glass. Just because yellow—or

sweet, or hot—has a contrary does not entail that it came to be *from* that contrary. And the same applies to perception. Just because I came to possess the state of first actuality sight—or the actuality which is the exercise of that state in seeing-yellow—does not mean that I came to have it from its contrary. As Aristotle specified in *De Anima* 2.5 via the knowledge model, it does not. Perception is an alteration in the sense of its being an instance of being-affected (πάσχειν) externally, but it is not an alteration in the sense of destructively transitioning from contrary to contrary. Coming to see a color—just as coming to know a subject—is a *preservation* of what it comes from, not a destruction. Hence, even if the color has a contrary, it does not entail that it comes *from* that contrary. Instead, given the preservationist nature of perception and knowledge, neither of them *can* come from contraries if contraries are mutually destructive of one another—or so our reading demands.

What, however, if we were to attack this from the other end? What if, instead of claiming that *De Anima* 2.5 requires QG given our specific reading of preservation (Weak QG), we could instead show that change of states or capacities is *necessarily* QG preservation (Strong QG)? On Strong QG, the question of the nature of “alteration of a sort” in *De Anima* 2.5 would no longer be an open one, but qualitative generation would instead be the *only* viable option. With the above problem dispatched, let us further motivate our QG reading of *De Anima* 2.5 with an analysis of states and capacities along these Strong QG lines. As I will show, the sort of contrariety here is not the sort amenable to alteration. Instead, states and capacities can *only* come to be in persisting subjects via the sort of generation capturable on Strong QG. If this is correct, then *even if* perception involves changes in contrary states and capacities, such changes *cannot* be kinetic alterations. In the following pages, I will make this Strong QG argument in detail from the *Categories* treatment of states. To this, we proceed.

4.3 Contrariety in States and Capacities

Shapes and figures differ from affective qualities on the issue of contrariety, as we have seen. One thing this will ensure is that a subject *cannot* undergo alteration with respect to a shape or figure but *can* with respect to an affective quality. Hence, while both alteration and qualitative generation are available for the changing of affective qualities, only qualitative generation is possible for shapes and figures. What now of states (ἕξεις) and capacities (δυνάμεις) in this regard? Are they more like shapes and figures or like affective qualities?

Given their tight coordination for Aristotle, as we saw above, it would seem that one could have a capacity for anything for which one could have a state.⁵¹¹ We already surveyed the states, but let us be reminded again. Knowledge and the virtues count as states, as do sickness and health (*Cat.* 8 8b26-37). Acquired skills too count as states, such as being a boxer or a runner (9a14-15).⁵¹² In a passage we will address in chapter 5 below, *Physics* 7.3, we find Aristotle again discussing his four species of quality, there distinguishing between states of the body and states of the soul. Examples of the former being health, fitness, beauty, and strength (246b3-8); examples of the latter being ethical virtues (247a7-8) and knowledge (247b2). If these then are all states, we can describe capacities in terms of the having of the potentiality for any of the states in question. For instance, if *justice* is a state then *potentially-just* is its coordinate capacity.⁵¹³

⁵¹¹ This is especially so if capacities are first potentialities which are *of* or *for* second actuality states—for how could one possess a potentiality for which there is no possible actuality, or an actuality for which there was no prior potentiality? Cf. *Top.* 4.5 125b20-27 where Aristotle refers to states and the capacities that “attend” (ἀκόλουθος) them—a term of logical correlation or consequence (cf. *Pol.* 6.8 1321b3-4).

⁵¹² This is, of course, on the supposition that anything one can have a capacity *for* one can also have a state *of*.

⁵¹³ Note again that while capacity and potentiality are translations of δύναμις, that these are distinct senses such that capacity denotes the stronger and more structured of the two. See, e.g., Ackrill, *Aristotle's Categories and De Interpretatione*, 105, 149.

With this in mind, let us look at what Aristotle says about the contrariety of states or dispositions. In *Categories* 8 10b12-17 in his discussion of contrariety with respect to the category of quality, Aristotle mentions justice (δικαιοσύνη) and injustice (ἀδικία) alongside white and black as examples of contraries (10b12-14).⁵¹⁴ He does so again a few lines later when making the claim that if one contrary belongs in the category of quality, so must the other as well (10b19-21).⁵¹⁵ Justice and injustice, thus, just as with beautiful and ugly, strength and weakness, etc., are all *contrary* qualities. Contrariety does, it would seem, belong to quality *qua* state. Not only are they in the same genus, but they are the furthest possible extremes of that genus as well.⁵¹⁶ Moreover, they are impossible as all contraries must be.⁵¹⁷ A person cannot have, e.g., the same virtue and vice *simultaneously*. One and the same person cannot possess both the virtue of courage and the vice of rashness with respect to the same thing at the same time. Contrary states are *impossible dispositions*. And so it is with beautiful and ugly, strength and weakness, and all the rest as well. We will return to this below.

4.3.1 Why Capacities Cannot Alter

What then of capacities? While at first sight, it might seem as though capacities are capable of contrariety, upon reflection, we can see that this just is not so. If one can have capacities for anything for which one can have a state, then one can have a capacity for, e.g.,

⁵¹⁴ *Cat.* 8 10b12-14: “For example, justice is contrary to injustice and whiteness to blackness, and so on.” οἷον δικαιοσύνη ἀδικία ἐναντίον καὶ λευκότης μελανία καὶ τᾶλλα ὡσαύτως.

⁵¹⁵ *Cat.* 8 10b19-21: “If justice is contrary to injustice and justice is a qualification, then injustice too is a qualification.” οἷον εἰ ἔστιν ἡ δικαιοσύνη τῇ ἀδικίᾳ ἐναντίον, ποιὸν δὲ ἡ δικαιοσύνη, ποιὸν ἄρα καὶ ἡ ἀδικία.

⁵¹⁶ Remember, Aristotle defines contraries as “the most different of the things in the same genus” (*Meta.* Δ.10 27-8). Οὐ καὶ τὰ πλεῖστον διαφέροντα τῶν ἐν τῷ αὐτῷ γένει. Cf. *Meta.* I.4 1055a27-8: “the things in the same genus that differ the most are contraries.”

⁵¹⁷ *Meta.* Γ.6 1011b15-18: “But since it is impossible (ἀδύνατον) for contradictories (ἀντίφασιν) to be true of the same thing at the same time, it is evident that contraries (τάναντία) cannot belong to the same thing at the same time either.” ἐπεὶ δ’ ἀδύνατον τὴν ἀντίφασιν ἅμα ἀληθεύεσθαι κατὰ τοῦ αὐτοῦ, φανερόν ὅτι οὐδὲ τάναντία ἅμα ὑπάρχειν ἐνδέχεται τῷ αὐτῷ. Cf. *Cat.* 6 5b39-6a1: “Nothing seems to admit contraries at the same time.” ἀλλ’ οὐδὲν δοκεῖ ἅμα τὰ ἐναντία ἐπιδέχεσθαι.

justice and a capacity for injustice. Just as the states of justice and injustice are contraries, so the capacities would seem to be as well, being “the most different of the things in the same genus” (*Meta.* Δ.10 27-8). That would indeed seem to be correct, the same insight applying to beautiful and ugly, strength and weakness as well. Nevertheless, capacities are *missing* the impossibility feature of contrariety. It is because of this feature that when one contrary comes the other must go—even if in degrees.⁵¹⁸ But this is not so with capacities. One and the same subject can be, e.g., potentially-just and potentially unjust with respect to the same thing at the same time.⁵¹⁹ Moreover, it is *because* of this *compossibility* that a change of capacities cannot be a kinetic change from contrary to contrary, except accidentally. Why would one be inclined to make this claim? Because if potentially-just is a true contrary of potentially-unjust, then the absence of one would result in the presence of the other—just as with the change from white to black.⁵²⁰ With capacities, however, this is not so. The loss of the capacity potentially-just does *not* result in the presence of the contrary capacity potentially-unjust. Rather, the change is from contradictory to contradictory, *viz.*, from potentially-just to not-potentially-just—potentially-unjust being *in no way* implicated in such a change, except, perhaps, accidentally.⁵²¹

“Contrary” capacities thus, cannot be contraries in Aristotle’s intended sense. A subject never transitions from contrary capacity to contrary capacity, except accidentally. “Mere contrariety,” thus, is not enough for kinetic change to be said to occur. A stronger, “robust

⁵¹⁸ See e.g., *EE* 2.3 1220b30-31: “For contraries destroy one another” (Barnes translation, modified). τὰ γὰρ ἐναντία φθείρει ἄλληλα; *EE* 7.1 1235b5-6: “For contraries destroy contraries” (Barnes translation, modified). φθαρτικὸν γὰρ τοῦ ἐναντίου τὸ ἐναντίον; and *De Longitudine* 3 465b3: “For contraries destroy attributes in a subject” (Barnes translation, modified). φθίρεται γὰρ τὰ μὲν ὑπάρχοντα τοῖς ἐναντίοις.

⁵¹⁹ Cf. *Meta.* Γ.5 1009a34-36: “For it is possible for contraries (ἐναντία) to potentially belong to the same thing as the same time, but not to do so *actually*.” δυνάμει μὲν γὰρ ἐνδέχεται ἅμα ταὐτὸ εἶναι τὰ ἐναντία, ἐντελεχείᾳ δ’ οὐ.

⁵²⁰ Remember, even white to yellow is an instance of white to black change as a) yellow is composed of a certain ratio of white and black and as such, b) yellow (and all other intermediate colors) can act as a stand-in *for* black. See *Phys.* 5.1 224b30-35 and the discussion above.

⁵²¹ For example, upon the death of a man we might have a change from potentially-just to not-potentially-just which is simultaneous with a change in potentially-unjust. Nevertheless, such a correlation is merely accidental.

contrariety” is required, viz., *impossible contrariety*. Thus given, if robust contrariety is necessary for instances of kinetic change, then it must also be necessary for instances of alteration (ἀλλοίωσις). As such, any species of quality that lacks robust contrariety cannot alter. Capacities, as we have seen, lack robust contrariety. They cannot, therefore, undergo alteration.

Capacities of persisting subjects do change, of course. Bruce Banner, for example, gained new capacities subsequent to his exposure to gamma rays: while persisting, *he* changed from being incapable of becoming the Hulk to becoming capable of becoming the Hulk. More mundanely, infants change from lacking the capacity to, say, speak or walk to developing the capacities as they mature. People who acquire diseases too, or lose limbs, etc., transition from being capable to incapable in various ways. Again, these changes cannot be alterations. Rather, as with change of shape (σχῆμα), a change of capacity must be an instance of contradictory to contradictory *metabolic* change. And if capacities are qualities as Aristotle designates them, then such changes must be instances of qualitative generation or destruction. As such, the QG account would necessarily apply to the acquisition or loss of capacities. Again, given that contrary to contrary change is requisite for alteration, this entails that their change cannot be alteration. Rather, when capacities come and go in a persisting subject, they can *only* do so via qualitative generation.

4.3.2 Contrariety in States—Again

With our QG conclusion concerning capacities in hand, let us return to the discussion of states. As we saw above, Aristotle explicitly mentions justice (δικαιοσύνη) and injustice (ἀδικία), alongside white and black, as examples of contraries (*Cat.* 8 10b12-14). Justice is a virtue, and virtues are states; hence, the virtue of justice is opposed to the vice of injustice just as

virtue and vice are opposed generally—as contrary states.⁵²² So far, so good. But do states possess robust contrariety such that they *can* alter? Unlike capacities, states are first actuality dispositions which are indeed impossible.⁵²³ A person cannot have, e.g., the same virtue and vice with respect to the same thing simultaneously—just as is required of robust contrariety.⁵²⁴ As we have seen with affective qualities, to lose black is to gain white, and that change can only be characterized as generation *accidentally*.⁵²⁵ This does not, of course, mean that affective qualities cannot undergo qualitative generation in addition to alteration—but that *either* means of qualitative change is available, and thus which one applies to any given must be determined by context.

Given the presence of robust contrariety among states, one would *expect* the changing of states to mimic the changing of affective qualities. But this is just not so. While robust contrariety is a necessary condition for alteration, it is not sufficient. Hence, while possessing the robust contrariety (i.e., impossible contrariety) which capacities lacked, states themselves lack an additional feature had by affective qualities: *degreed compresence*. Both features are necessary for alteration, and thus nothing that lacks *either* (a) impossible contrariety or (b) degreed compresence *can* undergo alteration. Shapes and figures lack contrariety *en toto*, so they

⁵²² Once again, Aristotle defines contraries as “the most different of the things in the same genus” (*Meta.* Δ.10 27-8). Οκαὶ τὰ πλεῖστον διαφέροντα τῶν ἐν τῷ αὐτῷ γένει. Not only are virtue and vice in the same genus but they are the extreme poles of that genus as well.

⁵²³ Again: *Meta.* Γ.6 1011b15-18: “But since it is impossible (ἀδύνατον) for contradictories (ἀντίφασιν) to be true of the same thing at the same time, it is evident that contraries (τάναντία) cannot belong to the same thing at the same time either.” ἐπεὶ δ’ ἀδύνατον τὴν ἀντίφασιν ἅμα ἀληθεύεσθαι κατὰ τοῦ αὐτοῦ, φανερόν ὅτι οὐδὲ τάναντία ἅμα ὑπάρχειν ἐνδέχεται τῷ αὐτῷ.

⁵²⁴ That is, the impossibility of contraries applies to *actuality* in a way it does not apply to potentiality—as we have seen: *Meta.* Γ.5 1009a34-36: “For it is possible for contraries (ἐναντία) to potentially (δυνάμει) belong to the same thing at the same time, but not to do so actually (ἐντελεχείᾳ).” δυνάμει μὲν γὰρ ἐνδέχεται ἅμα ταὐτὸ εἶναι τὰ ἐναντία, ἐντελεχείᾳ δ’ οὐ.

⁵²⁵ Once again, this is the view that the change from black to white is *describable* as both a change from black to not-black as well as a change from not-white to white. While describable in terms of a change from contradictory to contradictory, this is *accidental*, not “primarily” (πρῶτον) or *per se* (*Phys.* 5.1 224a26-28). The *per se* change is from black to white.

cannot alter. Capacities lack (a) impossible contrariety and (b) degreed compresence, so they cannot alter. States lack (b) degreed compresence, so they cannot alter. This brings us to the conclusion that of the four species of quality, *only* affective qualities can undergo alteration.

I summarized the section above on degreedness with the following three claims: first, that degreedness (i.e., less and more) is not an essential feature of the category of quality. Shapes and figures, for example, do not come in degrees. Second, that even if degreedness is an essential complement of contrariety, its presence does not entail contrariety as some *contradictories* are capable of degreed existence as well. And third, that if some contraries are incapable of degreed compresence in a subject, then *even if* they do undergo contrary to contrary change, such change is not thereby alteration. We now proceed to further explicate and justify this final claim—and in conjunction with the intertwined claim that degreed compresence is necessary for alteration. With these aims in mind, let us turn to *Categories* 10 where Aristotle discusses opposition among states in more depth. This will provide fresh grist for our argumentative mill. Reader beware: this argument is involved. But the outcome is more than worth the effort, as we shall see.

4.3.2.1 The Opposition Among States: The Three Sorts of *Categories* 10

Aristotle addresses four different species of opposition (ἀντικείμενοι) among the categories generally in *Categories* 10.⁵²⁶ The four species addressed are relatives (πρός τι), contraries (τὰ ἐναντία), privation and state (στέρησις καὶ ἔξις), and affirmation and negation (κατάφασις καὶ ἀπόφασις, 11b17-19). Neither relatives nor affirmation and negation concern us

⁵²⁶ Ammonius states the common view of the ancient commentators on the so-called Post-Predicamenta, i.e., *Categories* 10-15: “Aristotle’s aim is to teach us about the words mentioned in the doctrine of the categories that require some articulation and explanation, although from common usage they are not completely unknown to us” (*in Cat.* 93.9-11). Cf. Philoponus, *in Cat.* 167.20ff.

here.⁵²⁷ Our focus instead will be on contraries *qua* states, and on state and privation. Regarding states (ἕξεις) specifically—as captured under these headings—Aristotle says that they can be opposed in three different ways: as immediate contraries (IC), mediated contraries (MC), and as state and privation (S&P). Let us examine these one at a time.

Immediate contraries (IC) are natural (φύω) contrary (ἐνάντιος) states of an entity, one or the other of which it will necessarily (μὴ ἀναγκαῖος) have at all times (*Cat.* 11b38-12a9). Given that one or the other necessarily characterizes the entity in question, there can be no mean or middle state (μέσον, 12a2) of any kind. The example given is that of sickness and health (12a4). Either an animal body is sick, or an animal body is healthy, but as an IC it cannot be neither or both while remaining an animal.

Mediated contraries (MC), on the other hand, are natural (φύω) but not necessary (μὴ ἀναγκαῖος, 12a9-25). As such, one, the other, both, or neither may characterize an object for any amount of time or for no time at all. Black and white, for instance, are MCs. While a body may have one or the other of them naturally, it need not have them necessarily (12a11-13); it *could* be black or white—or even grey for that matter, which is an intermediate (μεταξύ) mixture of *both* black and white.⁵²⁸ Moreover, a body could be transparent like glass or water and thus be *neither* black nor white. Either way, there is a mean or middle position (μέσον, 12a11). Black and white, of course, are affective qualities, not states—so what of states specifically? The states given as examples here are good (σπουδαῖος) and bad (φᾶνλος, 12a13-14), just (δίκαιον) and unjust (ἄδικον, 12a24-25). Interestingly, while affective qualities like colors can be composed of

⁵²⁷ Relatives in relation to states we will address later. Affirmation and negation in the sense Aristotle intends here, refers to *statements*, not things (13a37-b12).

⁵²⁸ Intermediates proper, i.e., μεταξύ, are *composed* of specified ratios of their contraries. Cf., e.g., *Meta.* I.7 1057b30: “All the intermediates must be composed of the contraries.” ἅπαντ’ ἂν ἐκ τῶν ἐναντίων εἴη τὰ μεταξύ. This is something which not necessarily true of means or middle states (μέσον), as we will see in a moment.

mixtures of both contraries (e.g., grey), this is not so with states—even if MCs. While states have a mean or middle state (μέσον) just as affective qualities, they lack any possible *intermediate* (μεταξύ)—which is a certain species of μέσον.⁵²⁹ Hence, “between white and black are grey and yellow and all the other colors, but between the bad and the good the neither bad nor good” (12a17-20).⁵³⁰

The final sort of opposition for states is what Aristotle calls state and privation (S&P) (στέρησις καὶ ἔξις, 12a26). Interestingly, unlike with both IC and MC, Aristotle refuses to label S&P as an instance of contrariety (13a15-17).⁵³¹ While S&P is like both IC and MC in that the states in question here are *natural* (φύω, 12a28),⁵³² S&P is actually closer in character to IC than MC. Like ICs, S&P is necessary for the entity in question—but it is *not always* necessary (οὐδὲ ἀεί ἀναγκαῖον, 13a4-5). Sight (ἡ ὄψις), for example, is natural for a dog, and if not sight, then blindness (ἡ τυφλότης, 12a27).⁵³³ As with ICs health and sickness, one or the other is *necessary*, and there is no mean or middle state (μέσον, 13a8).⁵³⁴ But sight or blindness is *not always*

⁵²⁹ Based on Aristotle’s usage, a μέσον as a mean or middle state may be *either* (1) a *mixture* of contraries or an *intermediate* (μεταξύ) as when gray is a combination of white and black or (2) an *absence* of both contraries as when what is transparent is neither white nor black. Μέσον is thus a genus of which μεταξύ is a species. Cf. Polansky’s remark that μέσον “seems the wider term for whatever is between things” (Polansky, *Aristotle’s De Anima*, 333 n. 17).

⁵³⁰ Ackrill translation, modified. οἷον τοῦ μὲν λευκοῦ καὶ τοῦ μέλανος τὸ φαιδὸν καὶ ὠχρὸν καὶ ὅσα ἄλλα χρώματα, τοῦ δὲ φαύλου καὶ τοῦ σπουδαίου τὸ οὔτε φαῦλον οὔτε σπουδαῖον. Given the context, unlike Ackrill I take the δὲ to be adversative, not copulative. The point in context is not that grey and yellow are analogous to neither good nor bad, but that despite the difference both are μέσον—the former as a *both* (i.e., μεταξύ), the latter as a *neither*. Cf. ancient commentators who read it similarly: Ammonius, *In Cat.* 95.26-96.4 and Simplicius, *In Cat.* 386.18-30.

⁵³¹ “Hence it is clear that things opposed as privation and state are not opposed in either of the ways contraries are” (Akrill, modified). ὥστε δῆλον ὅτι κατ’ οὐδέτερον τῶν τρόπων ὡς τὰ ἐναντία ἀντίκειται τὰ κατὰ στέρησιν καὶ ἔξιν ἀντικείμενα.

⁵³² The privation, of course, is not natural: “we say that anything capable of receiving a state (ἔξεως) is deprived (ἐστερηθῆναι) of it when it is entirely absent from that which naturally (πέφυκεν) has it, and absent (μηδαμῶς) at the time when it is natural (πέφυκεν) for it to have it” (12a29-31). ἐστερηθῆναι δὲ τότε λέγομεν ἕκαστον τῶν τῆς ἔξεως δεκτικῶν, ὅταν ἐν ᾧ πέφυκεν ὑπάρχειν καὶ ὅτε πέφυκεν ἔχειν μηδαμῶς ὑπάρχει.

⁵³³ I should again flag the reader as to the importance of what Aristotle has just told us, viz., that sight is a *state*.

⁵³⁴ Cf. 13a7: “So that these would not be contraries of the sort that have nothing intermediate between them.” ταῦτα τῶν τοιούτων ἐναντίων ὧν οὐδὲν ἐστὶν ἀνά μέσον.

necessary for a dog—at least for the entirety of its lifespan. When a puppy and its eyes are still closed, for example, it has *neither* sight nor blindness.

4.3.2.1.1 The Opposition Among States: Resolution of Ambiguity

The distinctions here are complex, containing a mixture of modal, temporal, and predicative features, so let us trace them out here carefully. ICs are natural, always necessary, and there are no middle states. Health and sickness are the examples. There are four identifiable features of ICs here: (1) necessary, (2) always, (3) no middle state, and (4) natural. MCs are natural, not necessary, and have middle states. Justice and injustice are the examples given. We can likewise specify four features of MCs: (1) not necessary, (2) anytime, (3) have middle states, and (4) natural. S&P, on the other hand, are natural, not always necessary, and have no middle states. Sight and blindness are the examples. The four traits can be specified as follows: (1) necessary, (2) sometime, (3) no middle state, and (4) natural.

Immediate Contraries (IC)	Mediated Contraries (MC)	State and Privation (S&P)
1. Necessary	1. Not necessary	1. Necessary
2. Always	2. Anytime	2. Sometime
3. No middle state	3. Middle state	3. No middle state
4. Natural	4. Natural	4. Natural

The first thing to notice is that IC and S&P share far more in common than either do with MC. In fact, they share three of their four traits, the only difference being (2), the temporal feature. ICs are always, while S&Ps are sometimes. Both share only one feature, on the other hand, with MCs, (4), the natural feature. This begs the question, of course, why are both IC and MC considered to be contraries given their mutual differences, but not S&P given its similarity to IC? The answer is instructive.

In *De Somno* 1, Aristotle examines sleep in relation to its opposite, waking, noting as a starting point that one ought to take it that “waking and sleep appertain to the same part of the animal, inasmuch as they are opposites (ἀντίκεινται), and sleep is evidently a privation (στέρησις) of waking” (453b25-27).⁵³⁵ Waking here is a state, and sleep is its opposite as its *privation*. Sleep is not something over and above waking, but merely the *lack* of waking. To be asleep is to *not* be awake; the same does not apply to waking, however, as it is a positive state, not the mere lack of sleep. Waking and sleep, thus, constitute a clear instance of S&P. As such, we would expect them to be opposites but not contraries per *Categories* 10 13a15-17.⁵³⁶ But this is not what Aristotle says. In the very next line in *De Somno*, we find him calling instances of S&P *contraries* (ἐναντία, 453b27), listing the following examples of S&P contraries: “examples are—health and sickness, beauty and ugliness, strength and weakness, sight and blindness, hearing and deafness” (453b27-54a1).⁵³⁷

Notice that the paradigm example of IC, health and sickness, is mentioned here along with the paradigm instance of S&P, sight and blindness; and that the paradigm instance of S&P, sight and blindness, is called a *contrary*. Two things, I think, should be culled from this. First, just as sleep is the privation of waking, so blindness is the privation of sight, and deafness the privation of hearing. Likewise, with sickness: it is the privation of health—not a positive state

⁵³⁵ ὅτι τῷ αὐτῷ τοῦ ζώου ἢ τε ἐγρήγορσις ὑπάρχει καὶ ὁ ὕπνος· ἀντίκεινται γάρ, καὶ φαίνεται στέρησις τις ὁ ὕπνος τῆς ἐγρηγόρσεως.

⁵³⁶ Opposites (αντικείμενα), as we have seen, is the broad category which includes *both* contraries (ἐναντία) and contradictories (ἀντιφάσεις). Contraries, as we have said, (i) involve opposite pairs in the same genus (*Meta.* Δ.10 27-8), (ii) come in degrees called intermediates (μεταξύ) which are composed of their same-genus contraries (*Meta.* I.7 1057b32-4), and, (iii) each member of the pair is designated by an affirmation (κατάφασις) or positive term (e.g., black or white rather than non-black or non-white) (*Phys.* 5.1 225b3-5; cf. *Meta.* Λ.4 1070b18-21). We are seeing a modification of criterion (ii), of course, with ICs. Contradictories (ἀντιφάσεις), on the other hand, (i) admit of no intermediates as there is a logical antithesis (ἀντίθεσις) between the members of each pair (*Meta.* I.7 1057a33-6). Hence, if one term is true then the other *must* be false as the terms are opposed in an absolute sense (see, e.g., *De Interp.* 10 19b19-20a3). Finally, (ii) given that there are no intermediates, contradictories are signified by one positive term and one negative term, either A or ~A (see, e.g., *De Interp.* 6 17a25-6, 33-4).

⁵³⁷ λέγω δ' οἷον ὑγεία καὶ νόσος, καὶ κάλλος καὶ αἴσχος, καὶ ἰσχύς καὶ ἀσθένεια, καὶ ὄψις καὶ τυφλότης, καὶ ἀκοὴ καὶ κωφότης.

over and above health. This is not so with MCs which involve two contrary *positive* states (e.g., virtue and vice, good and bad, just and unjust).⁵³⁸ IC and S&P, thus, are far more alike than unlike. Second, when speaking in a less technical context here in *De Somno*, Aristotle is willing to call *both* ICs and S&Ps contraries. Once again, they are far more alike than different.

With this in mind, to the four features of IC and S&P we can add (5), *privative* opposition—and for MC (5), *positive* opposition. Hence, for MC we have (1) not necessary, (2) anytime, (3) middle state, (4) natural, and (5) *positive* opposition. For IC we have: (1) necessary, (2) always, (3) no middle state, (4) natural, and (5) *privative* opposition. And for S&P we now have (1) necessary, (2) sometime, (3) no middle state, (4) natural, and (5) *privative* opposition.

Immediate Contraries (IC)	Mediated Contraries (MC)	State and Privation (S&P)
1. Necessary	1. Not necessary	1. Necessary
2. Always	2. Anytime	2. Sometime
3. No middle state	3. Middle state	3. No middle state
4. Natural	4. Natural	4. Natural
5. <i>Privative opposition</i>	5. <i>Positive opposition</i>	5. <i>Privative opposition</i>

Once again, the *only* difference between IC and S&P is (2), the temporal feature (always or sometime). With these distinctions in hand, I now argue the following: not only is (2) the temporal difference along with (5) privative opposition is key to why Aristotle will not allow

⁵³⁸ See *Cat* 10 12a17-20, 24-25 for these two examples. Given that “bad” (κακός) here is a *positive* notion, this would make Aristotle, anachronistically, a Manichean on the issue of the ontological status of good and evil. This is suiting given that we do not have a *privative* account of evil in ancient philosophy until Plotinus, *five centuries after* Aristotle (see, e.g., *Enneads* 1, 8.3, 5, etc.). Hence, when Aristotle lists the two columns of the ten (paired) principles of being for the Pythagoreans in *Meta.* A.5 (986a22-26) which puts good in the same column as odd, one, and right (e.g.) and bad in the column with even, plurality, and left (e.g.)—he remarks that the Pythagoreans are *correct* in their supposition that “the contraries are the principles of *beings*” (ὅτι τὰναντία ἀρχαὶ τῶν ὄντων, 986b3) without ever suggesting in the analysis that follows that “bad” was not among them. Why say this without any later corrective, if he thought bad was actually a privation? For more on the “Manichean” ontological dualism of good and evil, see Suárez, *The Metaphysics of Good and Evil According to Suárez. Metaphysical Disputations X and Xi and Selected Passages from Disputation Xxiii and Other Works*, 34–35.

S&P to be technically classified as an instance of contrariety, but (5) privative opposition is key to why ICs and S&Ps have no middle states. Let us proceed to the argument.

4.3.2.1.2 The Opposition Among States: In Defense of Two Claims

As just noted, I think that (2) the temporal difference along with (5) privative opposition is key to why Aristotle will not allow S&P to be technically classified as an instance of contrariety (first claim), and I also I think that (5) privative opposition is key to why ICs and S&Ps have no middle states (second claim). Let us turn to the defense of these claims, taking the second claim first.

If sickness just is the privation of health as blindness is the privation of sight, then how could there be some middle state *between* a positive state (health or sight) and its *lack*? Given that privations as *absences* are necessarily entire or complete,⁵³⁹ it is difficult to see how there could be any middle state which contains *both* state and privation at the same time and in the same respect.⁵⁴⁰ As such, we shall never find them mingled or mixed as they are “mutually

⁵³⁹ It is worth keeping in mind that privations are analogous to *negations* for Aristotle, and both are characterized by *absence*: *Meta.* Γ.2 1004a13-16: “for the negation (ἡ ἀπόφασις) is the thing’s absence (ἀπουσία), and in the case of the privation (ἡ στέρησις) a certain nature (τις φύσις) is also involved that is the underlying subject (ὑποκειμένη) of which it is said (καθ’ ἧς λέγεται).”

⁵⁴⁰ Aristotle discusses contraries in *Meta.* Γ alongside his famous principle of non-contradiction (PNC). He states PNC as follows: “the same attribute cannot at the same time belong and not belong to the same subject in the same respect” (Γ.3 1005b19-20). The four conditions are (1) same attribute, (2) same time, (3) same subject, and (4) same respect. We can call these (1) the predicate identity condition, (2) the temporal condition, (3) the object identity condition, and (4) the same aspect condition (i.e., aspect being part and/or degree or extent. See *Soph. El.* 5 166b37-67a36 for a lengthy description of the ‘same respect’ condition cashed out in just these terms). Interestingly, Aristotle applies PNC conditions (2), (3), and (4) to the instantiation of *contraries* (Γ.3 1005b26-27, Γ.5 1009a22-24, 33-35, and Γ.6 1011b15-22). Condition (1), of course, does not apply as contraries (e.g., black and white) will necessarily be *different* attributes, and so lack (1) predicate identity. Nevertheless, we can say this of contraries: true contraries cannot be predicated (2) at the same time, (3) of the same object, and (4) in the same respect. This is the *exact* meaning of the impossibility of opposites for Aristotle. As such, intermediates (μεταξύ) are only possible by precisely specifying (4), the same aspect condition. Grey is only possible because *x* is not *totally* white or *totally* black—but white *and* black to such-and-such *degree*. Where degrees are not possible thus, there can be no intermediate. See this same judgment concerning the absence of a middle state between state in privation in *De Aeternitate Mundi Contra Aristotelem* frag. 66 as characterized by Simplicius at *in De Caleo* 123.6-7: “There is no intermediate (οὐδὲν μεταξύ), however, between form and privation, for both of them exist in matter, and matter is not an intermediate between them.” Translation from Christian Wildberg, trans., *Philoponus: Against Aristotle on the Eternity of the World* (Ithaca, NY: Cornell University Press, 1987), 80–81. Philoponus’ Greek reads as follows

canceling” of one another,⁵⁴¹ and categorically so. The presence of one in the slightest, most infinitesimal degree entails the absence of the other *entirely*; they are incapable of any sort of degreed compresence. Feature (5), privative opposition, thus explains feature (3), no middle state.

Now for the second claim, *viz.*, that (2) the temporal difference between IC and S&P is key to why Aristotle will not allow S&P to be technically classified as an instance of contrariety. We have seen that for both IC and S&P, there can be no middle state composed of *both* the state and privation. And as we also saw earlier, this is equally true of MCs: unlike with affective qualities such as sweet and sour or black and white, nothing can simultaneously be *both* dispositionally just and dispositionally unjust at the same time and in the same respect. Nevertheless, and unlike ICs on this score, MCs can be *neither*. Smith, e.g., could be *neither* just nor unjust. Both are positive states, and Smith could fail to have one or the other even if not capable of simultaneously possessing both. This is why MC states can be capable of a mean or middle state (μέσον) just as affective qualities (i.e., they can be *neither*), but they lack any possible intermediate (μεταξύ, i.e., they cannot be *both*).⁵⁴²

and can be found in Johan Ludvig Heiberg, ed., *Simplicii In Aristotelis De Caelo Commentaria*, vol. VII, *Commentaria in Aristotelem Graeca* (Berlin: Academiae Litterarum Regiae Borussicae, 1894), 123: εἶδους γὰρ καὶ στερήσεως οὐδὲν μεταξύ· ἐν τῇ ὅλῃ γὰρ τούτων ἐκάτερον, καὶ οἱ μεταξύ τούτων ἢ ὅλη.

⁵⁴¹ I borrow the phrase from Simplicius who uses it in a different context. See *In Cat.* 384.20. Cf. John of Damascus, who says they “mutually induce and cancel each other” (*Dialectica*, 57). This comes, of course, from Aristotle. See, e.g., *EE* 2.3 1220b30-31: “For contraries destroy one another” (Barnes translation, modified). τὰ γὰρ ἐναντία φθείρει ἄλληλα; *EE* 7.1 1235b5-6: “For contraries destroy contraries” (Barnes translation, modified). φθαρτικὸν γὰρ τοῦ ἐναντίου τὸ ἐναντίον; and *De Longitudine* 3 465b3: “For contraries destroy attributes in a subject” (Barnes translation, modified). φθεῖρεται γὰρ τὰ μὲν ὑπάρχοντα τοῖς ἐναντίοις.

⁵⁴² States are dispositions and either of two positive, contrary dispositions can indeed fail to apply to a given subject of which they might be natural; but they cannot also be merged. What would it mean, for example, to say that salt had both the disposition to dissolve in hot water and the disposition to resist such dissolution? The activity of one disposition (dissolving) excludes the activity of the contrary disposition (resisting dissolution)—and completely so. Surely where the second actuality activities of two states are incompatible (e.g., perceiving and not perceiving the same object, at the same time, in the same respect, etc.), so are the first actuality dispositional states of those activities. It seems rather vapid to posit a disposition which cannot be actualized due to another disposition which

What these restrictions entail is that in every conceivable case, MCs always remain contrary to one another—even when both are absent in the middle state, they remain opposed. Justice is no less contrary to injustice when neither may be predicated of a person whose character is neutral in that respect. The same cannot be said, however, for S&P. If they were always contrary like IC, then given (5) *privative* opposition, the absence of one (e.g., health) would entail the other (e.g., sickness). Instead—and despite (5) *privative* opposition—they act like MCs which are non-necessary. We would not properly call a puppy toothless or blind *before* they are naturally supposed to acquire teeth and sight—though they are indeed lacking both. Rather, the terms toothless and blind apply only *after* that point at which they were naturally supposed to have teeth and be able to see (12a31-34). Hence, despite (5) *privative* opposition shared with IC, they act like MCs characterized by (5) *positive* opposition because of (2) the temporal feature, *sometime*. What this means is there is a time when a puppy has *neither* sight nor blindness, just as Smith might be *neither* just nor unjust. Yet, blindness just is the privation of sight—and a state and the privation of that state should *always* be opposed, not compossible as is the case with the conjunction of not-seeing and not-blind in a puppy. This is why, I submit, Aristotle refuses to call S&P contraries: because unlike IC and MC, they are *not always* opposed as all contraries should be. Instead, they are only *occasional* contraries—being contrary only on certain occasions to the entities to which they (always) naturally apply.

4.3.2.1.3 The Opposition Among States: What the Two Claims Entail for Change

What we are concerned with here are the modes of opposition one finds with respect to states. And from what we have seen, there are only *two* sorts of opposition, privative (IC and S&P) and positive (MCs). Moreover, neither will allow for an intermediate (μεταξύ) mixture as

cannot also be actualized due to their incompatible activities. Better to say the entity in question has neither disposition in such a case, rather than both, each cancelling the other out.

do affective qualities, but just a middle state (μέσον) of “neither” in the case of MCs and, occasionally, S&Ps. Thus given, we can also add the following: contrary states of any sort—whether privative or positive—are incapable of *degreed compresence*, which makes them impossible *en toto*. In the case of sickness and health, for example, even though one can be more or less healthy and more or less sick, if one is sick at all, then one cannot be healthy, and vice versa. Such degreed presence of dispositional states in their objects do not allow for their degreed *compresence* with their opposite state—whether it be positive as with MCs or privative as with ICs and S&P. States are fundamentally unlike affective qualities in this regard.

There are several things that could be said at this point, but let us focus on our main concern which is *change* among states. We can do this by asking the following question: What does (a) the reduction of the opposition among states to *privative* and *positive* combined with (b) the impossibility of degreed compresence among opposite states mean for (c) the change of states from one opposite (e.g., health, virtue, sight) to the other (e.g., sickness, vice, blindness)? When it comes to IC and S&P, the answer is simple: any change from a state to that state’s privation is a change from A to $\sim A$, while any change from a state’s privation to that state is a change from $\sim A$ to A. Whether an instance of IC (e.g., health or sickness) or S&P (e.g., sight and blindness or hearing and deafness), any change of such a state involving privative opposites will be an instance of qualitative generation or destruction—and essentially so, not accidentally. Hence, QG will apply to states as well as capacities and shapes.

What, however, of MCs? To change from one positive contrary state to another just is κίνησις, and since states are qualities, this is a form of qualitative change or alteration, not generation or destruction. The claim here is that *unlike* ICs or S&Ps which necessarily change from A to $\sim A$ or $\sim A$ to A, MCs *can* change from A to B or from B to A. Perhaps this is not

germane for us as Aristotle has *already* identified first actuality perceptual qualities like sight and hearing as instances of S&P which necessarily change from contradictory to contradictory (i.e., A to $\sim$ A or $\sim$ A to A) and thus fall under metabolic QG rather than kinetic alteration.⁵⁴³ Nevertheless, I think a compelling answer can be given which would be instructive for the operation of states as a whole (whether instances of IC, S&P, or MC) and which will lead us to the same sort of conclusion we will find in chapter 5 when we turn to *Physics* 7.3, though from different principles than we find Aristotle starting from there.

4.3.2.1.4 The Case Mediated Contraries

Virtue and vice are instances of MC, and thus are both positive states which are contraries.⁵⁴⁴ Moreover, as contrary *states* capable of degreed existence (i.e., a person can be more or less virtuous or vicious),⁵⁴⁵ the degreed compresence of the states is impossible. Hence, as we have seen, while Smith can be *neither* virtuous or vicious, she cannot be *both*. Nevertheless, even if the degreed compresence of states is impossible, it would seem that Smith *could still* change *from* virtuous *to* vicious or vice versa. For instance, let us suppose that there are minimal degrees of viciousness (e.g., stinginess) and virtuousness (e.g., generosity) that one must possess in order to be said to have the disposition in question. Let us stipulate for

⁵⁴³ See the passages cited above in this chapter, and their associated footnotes for a brief discussion.

⁵⁴⁴ *Metaphysically* positive—not morally—where “metaphysically positive” means minimally: Df. An instance *x* is metaphysically positive only if (1) *x* exists, (2) *x* is a member of one of Aristotle’s ten categories, and (3) *x* is not a privation.

⁵⁴⁵ While Aristotle seems unsure as to whether states themselves can be degreed (i.e., more or less what they are, definitionally), he is nevertheless sure that *a person* (or object) can possess them to a greater or lesser degree. See *Cat.* 8 10b30-11a5: “It might be questioned whether one justice is more or less a justice than another, or one health more or less a health, though they say that one person has health less than another, justice less than another, and similarly with grammar and the other conditions. At any rate things spoken of in virtue of these unquestionably admit of a more and a less: one man is called more grammatical than another, juster, healthier, and so on.”
δικαιοσύνη γὰρ δικαιοσύνης εἰ λέγεται μᾶλλον ἀπορήσειεν ἂν τις, ὁμοίως δὲ καὶ ἐπὶ τῶν ἄλλων διαθέσεων. ἔνιοι γὰρ διαμφισβητοῦσι περὶ τῶν τοιούτων· δικαιοσύνην μὲν γὰρ δικαιοσύνης οὐ πάνυ φασι μᾶλλον καὶ ἥττον λέγεσθαι, οὐδὲ ὑγίειαν ὑγείας, ἥττον μὲντοι ἔχειν ἕτερον ἑτέρου ὑγείαν φασι, καὶ δικαιοσύνην ἥττον ἕτερον ἑτέρου, ὡσαύτως δὲ καὶ γραμματικὴν καὶ τὰς ἄλλας διαθέσεις. ἀλλ’ οὖν τὰ γε κατὰ ταύτας λεγόμενα ἀναμφισβητήτως ἐπιδέχεται τὸ μᾶλλον καὶ ἥττον· γραμματικώτερος γὰρ ἕτερος ἑτέρου λέγεται καὶ δικαιότερος καὶ ὑγιεινότερος, καὶ ἐπὶ τῶν ἄλλων ὡσαύτως.

convenience that these run from D₁ to D₁₀, with D₁ being that minimal degree. Let us also stipulate, as Aristotle does, that in order to *fully* possess the virtue or vice in question (i.e., D₁₀), one must at some consecutive time have possessed the virtue or vice at the level directly below the previous level (e.g., to possess D₁₀ one must have previously and consecutively have possessed D₉; and to possess D₉, one must have previously and consecutively have possessed D₈; so on and so forth down to D₁).⁵⁴⁶ Let us also stipulate that this goes both ways, regardless of the direction one is moving (i.e., whether towards more or less of the virtue or vice in question). Of two consecutive times T₁ and T₂, let us say that while it is not (given the metaphysics here) possible for Smith to change from D₁₀ stinginess at T₁ to D₁₀ generosity at time T₂ (nor any random degree such as from D₈ to D₂), surely it *would* be possible for her to change from D₁ stinginess at T₁ to D₁ generosity at time T₂. If so, then even if one could not fully possess the virtue or vice in question, one could *still* change from the minimal degree of one contrary to the minimal degree of the other contrary and properly categorize such change as a change from A to B, and only *accidentally* as a change from A to ~A. As such, this would be an instance of κίνησις and thus alteration, and so at least *some* states (i.e., MCs) would be capable of alteration (ἀλλοιώσις).

4.3.2.1.5 Mediated Contraries: An Alternative Analysis

⁵⁴⁶ See *Cat.* 10 13a23-31: “For it is possible for the healthy to fall sick and for the white to become black and the hot cold; and it is possible to become bad instead of good and good instead of bad. For the bad man, if led into better ways of living and talking, would *progress, if only a little*, towards being better. And if he once made even a little *progress* it is clear that he might either change *completely* or make really great *progress*. For however *slight* the *progress* to begin with, he becomes ever more likely to make still *more progress* and when this keeps happening it brings him over *completely* into the contrary state, provided time permits.” ὁ γὰρ φαῦλος εἰς βελτίους διατριβὰς ἀγόμενος καὶ λόγους κἂν μικρόν γέ τι ἐπιδοίη εἰς τὸ βελτίω εἶναι· ἐὰν δὲ ἅπαξ κἂν μικρὰν ἐπίδοσιν λάβῃ, φανερόν ὅτι ἢ τελείως ἂν μεταβάλῃ ἢ πάνυ πολλὴν ἂν ἐπίδοσιν λάβῃ· αἰεὶ γὰρ εὐκινητότερος πρὸς ἀρετὴν γίγνεται, κἂν ἡντινοῦν ἐπίδοσιν εἰληφὼς ἐξ ἀρχῆς ἦ, ὥστε καὶ πλείω εἰκὸς ἐπίδοσιν λαμβάνειν· καὶ τοῦτο αἰεὶ γιγνόμενον τελείως εἰς τὴν ἐναντίαν ἔξιν ἀποκαθίστησιν, ἐάνπερ μὴ χρόνος ἐξείργηται.

While alluring, I do not think this analysis is correct. States do come in degrees⁵⁴⁷ (even ICs and S&Ps, e.g., one can see better or worse, be more or less healthy, etc.), and while yet qualities, they do not alter. To see why, let us return to virtue and vice, paradigm instances of MCs.⁵⁴⁸ As dispositional states, virtue and vice are the first actualities which issue in second actuality activities.⁵⁴⁹ The virtue of generosity, for instance, issues in generous *actions*; the vice of stinginess, on the other hand, issues in stingy *actions*. These disposition-specific, second actuality activities act to maintain and/or perfect the disposition in question. Their contrary activities (e.g., stingy actions relative to the virtue of generosity), on the other hand, act to diminish or destroy the disposition in question. It is not just the perfection and destruction of virtues and vices which are wrought by such disposition-specific activities, but the very *acquisition* of the moral dispositions themselves.⁵⁵⁰ Both virtues (e.g., generosity) and vices

⁵⁴⁷ That this, they can be *possessed* in degrees per *Cat.* 8 10b30-11a5.

⁵⁴⁸ See, e.g., *Cat.* 10 12a24-25.

⁵⁴⁹ When Aristotle remarks at *DA* 2.1 412a25-26 that “as waking is analogous to contemplating, sleeping is analogous to having knowledge without exercising it” he is using *ἐνέργεια* (translated here as “exercise”) to distinguish a mere “first actuality” (*ἐντελέχεια ἡ πρώτη*, 412a27) such as knowledge and sleeping, from a second actuality/*ἐντελέχεια* like contemplating or waking. The compound of the two terms taken together in *second* actuality would be “the *ἐνέργεια* of the *ἐντελέχεια*.” If, as I have claimed in chapter 1 above, that Aristotle uses the terms as exact synonyms, then it would be desirable to translate them in a way that reflects this synonymy such as “the actuality of the actuality.” This generates more heat than light, however, so I have settled for translating instances of the pairing—explicit or implied—as “the *activity* of the actuality” or “the *exercise* of the actuality.” This might sound as though I have demoted *ἐνέργεια* from actuality to something less than that, a mere activity. This has not been my intention in the least, however, as I do indeed take *ἐντελέχεια* and *ἐνέργεια* to be exact synonymous with different etymologies. And were it not for the irritable and confusing redundancy of phrases like “the actuality of the actuality” for second actuality, then I would have refrained from doing so entirely. Nevertheless, for clarity I speak here and in other cases of “activity”, though the reader ought not read more into this than in there.

⁵⁵⁰ See, e.g., *EN* 2.1 1103a31-b2: “Virtues, by contrast [with the senses], we acquire, just as we acquire crafts, by having first activated them. For we learn a craft by producing the same product that we must produce once we have learned it; we become builders, for instance, by building, and we become harpists by playing the harp. Similarly, then, we become just by doing just actions, temperate by doing temperate actions, brave by doing brave actions.” τὰς δ’ ἀρετὰς λαμβάνομεν ἐνεργήσαντες πρότερον, ὥσπερ καὶ ἐπὶ τῶν ἄλλων τεχνῶν· ἃ γὰρ δεῖ μαθόντας ποιεῖν, ταῦτα ποιοῦντες μανθάνομεν, οἷον οἰκοδομοῦντες οἰκο-δόμοι γίνονται καὶ κιθαρίζοντες κιθαρισταί· οὕτω δὲ καὶ τὰ μὲν δίκαια πράττοντες δίκαιοι γινόμεθα, τὰ δὲ σώφρονα σώφρονες, τὰ δ’ ἀνδρεῖα ἀνδρεῖοι. Take a morally neutral person, say, Brown. Brown has *neither* the virtue of generosity nor the vice of stinginess. In fact, she has no dispositions one way or the other in this regard. How, then, might Brown acquire, say, generosity on according to Aristotle? The same way she maintains and perfects it once it is acquired: by performing disposition-specific activities such as donating money to the Salvation Army, or time to her local homeless mission, etc. The difference lies not in the identity of the activities themselves, but what they *do*. Subsequent to the acquisition of the virtue,

(e.g., stinginess) are acquired through disposition-specific activities which create (or destroy) the virtue or vice in question.

Let us call the activities of a certain *disposition-Δ*, *type-Δ* activities, and let us further call the activities of its contrary, *disposition-Φ*, *type-Φ* activities. There cannot be a time when I am actively performing activities of *type-Δ* in order to develop *disposition-Δ* when at that same time I actually possess *disposition-Φ* and per it should naturally be engaging in activities of *type-Φ*. As *Δ* and *Φ* are contraries, *type-Φ* activities will destroy *disposition-Δ*, but will not build *disposition-Φ* while I still possess *disposition-Δ*. Likewise, *type-Δ* activities will destroy *disposition-Φ* but will not build *disposition-Δ* while I still possess *disposition-Φ*. For instance, if I possess the disposition or virtue of generosity, then generous activities will develop the disposition, while stingy activities will diminish it. But if I perform stingy activities while *still* possessing the disposition of generosity, those activities will *not* simultaneously create and then develop the contrary disposition to the one I possess (i.e., stinginess). While in possession of generosity, stingy actions will not create stinginess; they will only diminish or destroy generosity. Likewise, while in possession of stinginess, generous actions will not create generosity; they will only diminish or destroy stinginess.

The principle at work would seem to be the following: a disposition's proper activities cannot perform two functions at once, viz., developing or diminishing, creating or destroying. Rather, the proper activities of states operate according to a one-function-at-a-time rule. Let us call this the disposition-activity Mono-Function Rule (MFR):

what disposition-specific activities do is *express* the first actuality disposition as its *second actuality* perfection. Prior to the acquisition of the first actuality disposition, however, what these activities do is *create* that first actuality disposition as *actualities simpliciter* themselves. The activities, once again, are identical, while their classification as actuality simpliciter or as second actuality is dependent on the *state* (or lack thereof) of the person from which they issue. I ignore this distinction in what follows for simplicities sake, but it should be kept in mind that not all *acts* of generosity are second actualities, just as they are not actualities simpliciter.

MFR Df: When *type-A* activities proper to *disposition-A* are destroying or diminishing contrary disposition- Φ , they cannot also be creating or developing *disposition-A*, nor vice versa. Rather, the proper activities of a disposition can only perform one function at a time, whether it be diminishing, destroying, creating, or developing.

What creates and then builds a disposition is the practice of its proper activities; what shrinks and eventually destroys a disposition is the practice of the activities of its contrary disposition. And per MFR, one can only build with *type-A* activities when they are no longer destroying and vice versa, and likewise for *type- Φ* activities. What this entails is the following: it is only once the dispositional slate has been cleared and *type-A* activities stop being, e.g., destructive, that they can *then* perform the function of creating and then developing *disposition-A*. As such, one can only create and then develop *disposition-A* when one *no longer* possesses *disposition- Φ* or, that is to say when one is *dispositionally neutral*. Put differently, unless and until the (dispositional) slate has been cleared, I cannot build, e.g., *disposition-A* by doing *type-A* as this requires a prior *dispositional neutrality*.

If this analysis is correct, then *even for positive MCs*, to lose a disposition is to move from A to $\sim$ A at time T₁, and then to gain a contrary disposition from $\sim$ B to B at time T₃, requires an intervening “neither” at time T₂, which was in a “state” of rest or dispositional neutrality composed of $\sim$ A and $\sim$ B.⁵⁵¹ Otherwise, the activities of *type-A* could not build but only destroy until and unless one reached a neutral point of “neither” when *type- Φ* activities could be used for the opposite purpose. Hence, it would *not* be possible for Smith to change from D₁ stinginess at T₁ to D₁ generosity at time T₂ as was suggested above. As such, we can add to our scheme that

⁵⁵¹ I put state in scare quotes because if disposition = state, then a state of dispositional neutrality would be a *state* of state neutrality. Hence, by “state” I intend something like a *state of affairs* rather than an Aristotelian state in the sense of a disposition.

D_0 is *required* before and after D_1 , where D_0 is a “state” of dispositional neutrality, and that in combination with the other metaphysical restrictions this entails that change from A to B is (metaphysically) impossible *even if* that change is from $A/\sim B$ (e.g., D_1 generosity and not-stinginess) to $B/\sim A$ (e.g., D_1 stinginess and not-generosity) and the degreed compresence of opposite states is not compromised. Hence, the gaining of a state is never (accidentally) the loss of another, nor vice versa. Because of MFR, it is always either *pure* gain or *pure* loss.

4.3.2.1.6 Conclusion and Implications

Whether an instance of privative IC (e.g., health or sickness) or S&P (e.g., sight and blindness or hearing and deafness), or positive MC (e.g., virtue and vice, good and bad), no change from one dispositional state to another *can* be an instance of contrary to contrary kinetic alteration (ἀλλοίωσις). Rather, it *must* instead be an instance of contradictory to contradictory metabolic generation or destruction. Moreover, as states or dispositions are qualities, so the change of states is an instance of *qualitative* generation or destruction. Hence, the QG account does not just hold for *all* capacities, as was showed above, but for *all* states as well. This is precisely the Strong QG thesis we set out to argue for above: all changes in states are *irreducibly and necessarily* changes from contradictory to contradictory and never from contrary to contrary. A change from state A to state B requires an intervening change from A to $\sim A$ *and then* from $\sim B$ to B. There is no *accidental* change from A to $\sim A$, thus, but only *per se* or primary QG among states.⁵⁵²

⁵⁵² I say expect accidentally as it could be that e.g., the change from black to white is *describable* as both a change from black to not-black as well as a change from not-white to white. While describable in terms of a change from contradictory to contradictory, this is *accidental*, not “primarily” (πρῶτον) or *per se*, as Aristotle describes it in *Phys.* 5.1 224a26-28. The *per se* change is from black to white. But it is merely *per accidens* that the same change can be described in terms of contradictories. As Ross opines here, “the *same* process may be described in either of two ways” (Ross, *Aristotle’s Physics. A Revised Text, with Introduction and Commentary*, 616), italics mine. For commentary and criticism of Ross’ view, see Rosen, “Motion and Change in Aristotle’s *Physics* 5.1,” 85–87.

The first major implication of Strong QG (i.e., the view that all changes of states or capacities in persisting subjects are necessarily instances of QG preservation) is that, despite the fact that (i) there are four species of quality and that (ii) alteration is seemingly indiscriminate change in the category of quality,⁵⁵³ changes in three of the four categories just *cannot* be instances of alteration. Perhaps this should have been expected given the more precise definition of alteration from *Physics* 5.2 226a26-29:⁵⁵⁴

Change (κίνησις) with respect to quality (ποιόν) we may call alteration (ἀλλοίωσις), since it has been joined to this common name. By quality (ποιόν) I mean not what is in the substance—for even the differentia is a quality (ποιόν)—but the affection (παθητικός) in virtue of which a thing is said to be being-affected (πάσχειν) or to be incapable of being affected (ἀπαθής).⁵⁵⁵

We will address this point again below. For now, let us just note that an implication of Strong QG is that alteration (ἀλλοίωσις) is only possible among *affective qualities*.⁵⁵⁶ For we have now demonstrated on the basis of Aristotle’s most basic kinetic principle, viz., *contrariety*, that states, capacities, and shapes and figures cannot alter; they can only be generated or destroyed. This is exactly what we find in *Physics* 7.3, as should be expected. But more on this in the next chapter.

The second major implication involves *De Anima* 2.5. As I noted at the beginning of the preceding argument, one could either argue for Weak QG or Strong QG with the result that *De Anima* 2.5’s “alteration of a sort” either *might* be qualitative generation given our specific

⁵⁵³ *Cat.* 14 15b11-12: “For alteration is change in qualification.” ἔστι γὰρ ἡ ἀλλοίωσις μεταβολὴ κατὰ τὸ ποιόν.

⁵⁵⁴ Perhaps this definition is canonical as well? See Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 164.: “In [*Physics* 5] Ch. 2 he formally defines alteration. Since one might assume that a definition in this context has canonical status, it deserves very careful study.”

⁵⁵⁵ Reeve (2016) translation, modified. ἡ μὲν οὖν κατὰ τὸ ποιὸν κίνησις ἀλλοίωσις ἔστω· τοῦτο γὰρ ἐπέζευκται κοινὸν ὄνομα. λέγω δὲ τὸ ποιὸν οὐ τὸ ἐν τῇ οὐσίᾳ (καὶ γὰρ ἡ διαφορὰ ποιότητος) ἀλλὰ τὸ παθητικόν, καθ’ ὃ λέγεται πᾶσχειν ἢ ἀπαθῆς εἶναι.

⁵⁵⁶ As stated previously, only affective qualities are capable of affecting the senses, they are very sensibly called elsewhere αἰσθητά, i.e., “perceptible objects” or “perceptibles” (cf. *Cat.* 7 8a5-6, 8 9a28-31, and *Phys.* 7.3 245b3-5).

reading of preservation (Weak QG) or *must* be qualitative generation as it is the only viable option available. If Strong QG is correct, I said, then *even if* perception involves changes in contrary states and capacities, such changes cannot be alterations—which would be a major boon for our interpretation. With Strong QG now demonstrated, we have our result: neither coming to possess first potentiality perception (capacity), nor coming to possess first actuality/second potentiality perception (state), nor coming to express that second potentiality state in second actuality perception (actuality or activity) *can* occur via contrary to contrary canonical alteration.⁵⁵⁷ Rather, all must be instances of contradictory to contradictory qualitative generation which *preserves* that from which it comes:

Capacity δύναμις	State/Disposition ἔξις	Actuality ἐντελέχεια/ἐνέργεια
(1) First Potentiality	→ (2) First Actuality Second Potentiality	→ (3) Second Actuality
(1) Perceiver <i>Able-to-be-able-to-see</i> <i>Not-able-to-see</i> <i>Not-seeing-white</i>	→ (2) Perceiver <i>Able-to-be-able-to-see</i> <i>Able-to-see</i> <i>Not-seeing-white</i>	→ (3) Perceiving <i>Able-to-be-able-to-see</i> <i>Able-to-see</i> <i>Seeing-white</i>

In sum, if this analysis is correct, then not only is it that *De Anima* 2.5’s “alteration of a sort”—whether in the occurrence of first or second actuality perception—cannot be canonical alteration, but it *must* be qualitative generation as captured by QG. There is just no other option available to us.

4.3.3 Summary and Conclusion

⁵⁵⁷ Second actuality perception would appear to just be the qualitative actuality of a first actuality state. If the state occurs via QG, then it stands to reason that the actuality of that state too must occur by the same means. If not, then while first actuality perception (state) comes to be by metabolic QG from first potentiality perception (capacity), second actuality perception (qualitative actuality of a state) would, contrarily, come to be by kinetic alteration from first actuality perception (state) which I find odd to say the least. As I argue in chapter 5, there is parity enough between first and second actuality perception such that the manner of coming to be of the one ought to be thought to be analogized in the other. I assume this here, though I recognize the point is still to be made in full.

We began by examining in detail the very category of quality and its four species from *Categories* 8. As we said, it is rather dissatisfying to conclude that second actuality perception occurs via qualitative generation without also specifying the sort of qualification we are claiming to be generated. Upon examining the seemingly haphazard category, we noted that it was unified by two essential features: the linguistic criterion and the universal feature of likeness.⁵⁵⁸ That is, qualities are qualities in virtue of being said to qualify something;⁵⁵⁹ and all qualities and only qualities are said to be like or unlike anything else.⁵⁶⁰ Two other features, while not essential, also play an important role: degreedness and contrariety.

Having already examined likeness via the like-like theory in *De Anima* 2.5 in chapter 2 above, we set out to explore these two additional features of the category with an eye towards their implications for qualitative change, whether alteration or qualitative generation. This was especially relevant given that, as was demonstrated in chapter 1, Aristotle takes contrariety—and by implication, degreedness—to be an essential feature of kinetic change and, thus, alteration. Our discussions of degreedness and contrariety then led us to argue for Strong QG, viz., the thesis that all changes of states or capacities in persisting subjects are necessarily instances of preservative QG generation. We attempted to confirm this thesis by showing that capacities lack the robust contrariety necessary for alteration (i.e., impossible contrariety), while states—regardless of variety—lack an additional necessary feature: degreed compresence. Given that

⁵⁵⁸ On the difficulty of unifying the species of the category via the linguistic criterion, see Wardy, *The Chain of Change: A Study of Aristotle's Physics VII*, 160–62.

⁵⁵⁹ *Cat.* 8 8b25: “By quality I mean that in virtue of which things are said to be qualified somehow.” Ποιότητα δὲ λέγω καθ’ ἣν ποιοῖ τινες λέγονται.

⁵⁶⁰ *Cat.* 8 11a15–19: “Nothing so far mentioned is distinctive of quality, but it is in virtue of qualities only that things are called like and unlike; a thing is not like another in virtue of anything but that in virtue of which it is qualified. So it would be distinctive of quality that a thing is called like (ὅμοιον) or unlike in virtue of it.” Τῶν μὲν οὖν εἰρημένων οὐδὲν ἴδιον ποιότητος, ὅμοια δὲ καὶ ἀνόμοια κατὰ μόνας τὰς ποιότητας λέγεται· ὅμοιον γὰρ ἕτερον ἐτέρῳ οὐκ ἔστι κατ’ ἄλλο οὐδὲν ἢ καθ’ ὃ ποῖόν ἐστιν. ὥστε ἴδιον ἂν εἴη ποιότητος τὸ ὅμοιον ἢ ἀνόμοιον λέγεσθαι κατ’ αὐτήν.

shapes and figures lack contrariety *in toto*, this leads us to the claim that of the four species of quality, only affective qualities can undergo alteration. We then applied this result to *De Anima* 2.5's "alteration of a sort" to further motivate our QG account of perception. For if this line of argumentation is correct, then *all* change of states and capacities of persisting subjects would only be capturable via QG, which would be a great boon for our thesis. These results are rather experimental, however, for while derived directly from Aristotle's own principles regarding change and entities in the category of quality, Aristotle nowhere makes the claims we have here—though, as we have previously stated, he *should* have. All the same, they are in need of further collaboration. Is it really the case that Aristotle thinks only affective qualities can undergo alteration but not capacities, states, or shapes and figures? I think that it is, but in order to make this case, we must turn in the next chapter to examine another place in the *Corpus* altogether, *Physics* 7.3.

CHAPTER 5: PHYSICS 7.3: ALL THE WAYS QUALITIES CAN CHANGE

5.1 Introduction to *Physics* 7

5.1.1 *Physics* 7.2-3: Alteration and the Contact Thesis

5.1.2 *Physics* 7.3: The Narrowing of Alteration

5.1.2.1 The Dilemma: Either Alteration or QG

5.1.2.1.1 The Case of Shapes and Figures

5.1.2.1.2 What States Are: Perfections and Relatives

5.1.2.1.3 The Case of Bodily States

5.1.2.1.4 Psychic States: Arational and Rational

5.1.2.1.5 The Arational, The Rational, and Change

5.1.2.1.5.1 The First Question: What is the ‘New Way’?

5.1.2.1.5.2 The Second Question: Why Embrace the ‘New Way’?

5.1.2.1.5.2.1 Sub-Question One: Parasitic on What?

5.1.2.1.5.2.2 Sub-Question Two: Merely Relative?

5.1.2.1.5.2.3 The Relevant Background

5.1.2.1.5.2.4 Second Question Redux: Why the ‘New Way’?

5.1.2.1.5.2.5 The Knowledge Model in Summary

5.1.2.2 Summary: All the Ways Qualities Can Change

5.1 Introduction to *Physics* 7

Book 7 is the oddest of the *Physics*. It anticipates many of the arguments in *Physics* 8, while seeming to interrupt the line of argument running from bks 5 and 6 to 8.⁵⁶¹ Moreover, its five chapters have been charged with a lack of cohesion and with engaging in substandard reasoning.⁵⁶² The first three chapters even come in an alternative version, the so-called *textus alter* or β , which often appears to be a concise—and sometimes clearer⁵⁶³—restatement of the primary text, α .⁵⁶⁴ While this *textus alter* is unique in the *Corpus*, it is by all evidence very ancient.⁵⁶⁵ It has also—whether α or β —long been thought to be authentic.⁵⁶⁶ Nevertheless,

⁵⁶¹ See e.g., Reeve, *Aristotle: Physics*, 305 n. 670. For an overview of the arguments, see Odzuck, *The Priority of Locomotion in Aristotle's Physics*, 25–31.

⁵⁶² Wardy, *The Chain of Change: A Study of Aristotle's Physics VII*, 85–87.

⁵⁶³ Cf. Cristina Viano's contribution to Maso, Natali, and Seel, *Reading Aristotle*, 97, 98.

⁵⁶⁴ Wardy, *The Chain of Change: A Study of Aristotle's Physics VII*, 87, 90–92; cf. 240–51 for a comprehensive comparison of the two versions.

⁵⁶⁵ See Wardy, 241, where he notes that it was in the early catalog of Aristotle's works by Diogenes Laërtius (AD 3rd century) and was presumably in the Alexandrian Library. The ancient commentators, too, e.g., Simplicius in

many scholars have also thought it to be early work of the Aristotelian *Corpus*—due, again, to the supposed substandard reasoning and lack of cohesion—on topics similar to those of *Physics* 8, and that does not properly belong *between* bks 6 and 8 due to the interrupted line of argument. Rather, it must have been so inserted by an early editor, they reason.⁵⁶⁷ Still, others have argued that it *does* bear its proper place in the *Physics* and is even *essential* to the arguments of bk 8, for if bk 7 is left out and one goes straight from bks 6 to 8, bk 8 becomes inexplicable.⁵⁶⁸ So, which is it?

I do not wish to weigh in on this discussion but will limit myself to just two points. First, given the dependency of *Physics* 7 on discussions in bks 5 and 6—and the latter’s dependence on bks 3-4⁵⁶⁹—bk 7 is not only conceptually *consistent* with the composite picture of change of *Physics* 3 and 5 discussed at length in chapter 1 but is actually *dependent* on such a framework.⁵⁷⁰ Second, in both *Physics* 7.2 and 3, Aristotle addresses the topic of qualitative change (ἀλλοίωσις) in a manner clearly congruent with—if not reliant on—his discussion of the

Phys. 1051.5, 1054.31, 1086.23, 1093.10 etc., wrote of it (*ibid.*, 87). Hence, Wardy’s conclusion: “We have strong evidence to believe that... [the *textus alter*] cannot be a late production” (*ibid.*, 241).

⁵⁶⁶ On the authenticity which he claims no one doubts, see Wardy, 86. For Wardy’s own similar appraisal of the authenticity of the *textus alter*, see Wardy, 240. According to Wardy, if the *textus alter* is not from Aristotle’s own hand, then worst case scenario, “a student engaged on his reading-course in natural philosophy produced β using α as his model” (*ibid.*, 242)—an idea Wardy credits to a suggestion from Burnyeat (*ibid.*, 242 n. 2). Cf. Simplicius’ view at *in Phys.* 1037.1-3 that while authentically Aristotelian, it is probably an earlier version of bk 8.

⁵⁶⁷ Ross, *Aristotle’s Physics. A Revised Text with Introduction and Commentary*, 3-4. Cf. Odzuck, *The Priority of Locomotion in Aristotle’s Physics*, 23-24.

⁵⁶⁸ The *locus classicus* here is the vigorous defense by Averroes in his *Questions in Physics* Q7.1-50. As he argues, “Neither one of these [the demonstrations in bks 7 and 8] is superfluous, rather, (each) demonstration is appropriate in its place” (Q7.2). See Helen Tunik Goldstein, *Averroes’ Questions in Physics* (AA Dordrecht, The Netherlands: Kluwer Academic Publishers, 1990), 15. Among contemporary scholars it is, preeminently, Wardy: “In VIII.5 Aristotle attempts to establish the thesis that whenever something is changed, but not changed by itself, the ultimate source of the κίνησις must be an agent which *does* change itself.... This crucial proposition, baldly asserted in 8, is the conclusion of 7.1’s *reductio*. Thus, VII.1’s proof (deepened and clarified by the discussion of VII.2-5) legitimates the argument of VIII.5. Since that argument contributes prominently to the establishment of the existence of a first, unmoved cosmic mover, the role of bk VII within the *Physics* is to provide reasoning *vital* to the defense of Aristotle’s cosmology” (Wardy, 89; final italic mine, all others original). Cf., similarly, Waterlow, *Nature, Change, and Agency in Aristotle’s Physics*, 236 n. 22.

⁵⁶⁹ Cf. Odzuck, *The Priority of Locomotion in Aristotle’s Physics*, 23.

⁵⁷⁰ For the dependency of bk 7 on bks 5 and 6, and of the latter on bks 3-4, see Ross, *Aristotle’s Physics. A Revised Text with Introduction and Commentary*, 9.

four species of quality from *Categories* 8.⁵⁷¹ Hence, despite the debate concerning the place—or lack thereof—of bk 7 in the *Physics* proper, it is undoubtably an authentic text written during an appropriate developmental stage in his philosophy to be of relevance for us here: *after* the major doctrinal developments in *Physics* 3 and 5 and the *Categories*, yet *before De Anima*.⁵⁷² Still, though, why consult *Physics* 7 at all to confirm, reinforce, and amplify our previous conclusions concerning Strong QG? Because, as Wardy has put it, what we have in *Physics* 7 likely “constitute[s] Aristotle’s most sophisticated study of qualitative change, and thus of... the distinct category of quality.”⁵⁷³ If we are going to consult *Categories* 8 and 10 on quality as we have, we must, for that very reason, consult *Physics* 7 as well, which treats of the same material but focuses instead on what is a more pertinent topic for us: qualitative *change*.

5.1.1 *Physics* 7.2-3: Alteration and the Contact Thesis

Having made a case for the inclusion of *Physics* 7 in our discussion, let us state from the outset that we will narrow our focus to chs 2 and 3, and especially the latter. Ch 1 is concerned to justify a necessary premise for Aristotle’s cosmological argument for the unchanged changer, viz., that there are no infinite causal chains (242b71-2). The argument takes the form of a *reductio* (242a49-43a31),⁵⁷⁴ which requires the premise that in *all* instances of κίνησις agent and patient either touch or are spatially continuous (242b59-63). This so-called “contact thesis” requires that there be nothing intervening between kinetic changers and their kinetic changes

⁵⁷¹ Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 143 n. 24. See also Benjamin Morison in Maso, Natali, and Seel, *Reading Aristotle*, 45.

⁵⁷² See chapter 1 above for the dating of *DA* in relation to the *Phys*. The reasoning here is that if it is subsequent to *Phys*. 3 and 5 and yet prior to bk 8, and if bk 8 is prior to *DA*, then *Phys*. 7 must likewise be prior to *DA*. For indications that *Phys*. 7 might anticipate *DA* 2.5 specifically, see Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 146–47. Cf. too Burnyeat where, after recommending Wardy’s text to the reader, comments that “I do not make the standard assumption that *Physics VII* is an early work” (“*De Anima II 5*,” 63 n. 95). Burnyeat was an early reader of Wardy’s text and was thanked for his input in the preface, so his position here is not surprising. See Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, ix.

⁵⁷³ Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 239.

⁵⁷⁴ Wardy, 88–89.

(243a32-34), and applies equally to the three categories where genuine contrary to contrary κίνησις occurs: place, quality, and quantity (243a35-39).⁵⁷⁵ With this *reductio* in mind, the burden of *Physics* 7.2 is to demonstrate that all instances of locomotion in the category of place, alteration in the category of quality, and increase and decrease in the category of quantity *require contact*.⁵⁷⁶ With this strategy in mind, Aristotle then treats of them in just this order: locomotion (243a11-44b2), alteration (244b2-45a11), and increase and decrease (245a11-16).

We are not concerned with this cosmological argument but more narrowly with what Aristotle says about changes in the category of quality. This applies to *Physics* 7.2 as well, where we are not concerned with his justification or application of the contact thesis but with what he thinks it *entails* for changes of quality. With this in mind, let us frame the discussion by asking this question: what exactly does the application of the contact thesis entail for qualitative change? Aristotle treats only of affective qualities or perceptibles (αἰσθητά) in ch 2 (i.e., the third species of quality from *Categories* 8), maintaining that in their case, the contact thesis always holds, whether of animate (ἔμψυχον) or inanimate (ἄψυχον) things (244b8-9).⁵⁷⁷ As noted previously, αἰσθητά are affective qualities. Not only do we see this identity in the *Categories*,⁵⁷⁸ but also here in *Physics* 7.2 where Aristotle uses affections (πάθη, 244b6), affective qualities (παθητικός ποιότης, 244b5a, b6) and perceptibles (αἰσθητά, 244b5b, 245a3) interchangeably in the matter of just a few lines.⁵⁷⁹

⁵⁷⁵ Notice that this listing of the categories of κίνησις is completely consistent with what Aristotle has said elsewhere across the *Corpus* about μεταβολή being limited to four of his ten categories, and κίνησις to these three specifically.

⁵⁷⁶ See e.g., Wardy, *The Chain of Change: A Study of Aristotle's Physics VII*, 121–22.

⁵⁷⁷ “Animate” of course, refers to things *with-soul* (ἔμψυχον), while “inanimate” to what is *without-soul* (ἄψυχον).

⁵⁷⁸ Cf. *Cat.* 7 8a5-6 (αἰσθητά) and 8 9a28-31 (παθητικός ποιότης καὶ πάθη), where the examples used are *identical*.

⁵⁷⁹ As for why he takes them to be synonymous, he tells us in the *Categories* that affective qualities are so called because they affect *the senses* (*Cat.* 8 9b5-9)—hence, it stands to reason that they might also be called *perceptibles*. See Morison in Maso, Natali, and Seel, *Reading Aristotle*, 43–44. Unsurprisingly, perceptibles (αἰσθητά) also make an appearance in the latter portion of *DA* 2.5, just when Aristotle begins to distinguish knowledge from perception. See the six occurrences at 417b21, 25, 26, 27, 418a1, and 4, respectively.

Before moving on it is worth reminding the reader of what exactly these affective qualities (or perceptibles) are supposed to be. A sample list from *Categories* 8 includes the following: sweetness, bitterness, sourness, hotness, coldness, whiteness, and darkness (9a29-31). And in *Physics* 7.2, he lists hot, sweet, dense, dry, and white (244b7-8). The unifying feature of this third species of quality is that they are all items that can be, in principle, detected by one of the senses as its own “proper perceptible” (ἴδιος αἰσθητός), which is “what cannot be perceived by another sense” (418a11-12).⁵⁸⁰ That is, they are, in principle, *perceptible* qualities. But this is not to say that they are, thereby, unreal or *merely* perceptual. They are real features of objects, not mere secondary qualities as in Descartes, Malebranche, Locke, Hume, and other modern philosophers.⁵⁸¹ As Wardy puts it, for Aristotle, “redness is neither reducible to nor constituted by material processes themselves imperceptible in principle. Redness is a simple feature of the world.”⁵⁸² Indeed, for as Aristotle argues in the *Categories*, perceptibles are actually *prior* to perception (7 8a8-12) as independent of any conscious percipient.⁵⁸³ And it is *these features*, Aristotle claims in *Physics* 7.2, that alter via contact between agent and patient—both in inanimate and animate bodies.

Aristotle maintains that the contact thesis always holds in the case of affective qualities or perceptibles, whether of animate or inanimate things (244b8-9). How so? In the case of the inanimate—and bodied things generally—Aristotle’s causal principles require contact for form

⁵⁸⁰ λέγω δ’ ἴδιον μὲν ὃ μὴ ἐνδέχεται ἑτέρῳ αἰσθῆσαι αἰσθάνεσθαι.

⁵⁸¹ We for just this point in chapter 6 below.

⁵⁸² Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 162. Wardy goes on: “When he explains that these qualities are called ‘affective’ because of their capacity to affect sense perception (9a35-9b9), he does not mean to stigmatise [sic] them as subjective epiphenomena: *sensations are of qualities in the world, not distant shadows of it*” (pp. 162-63, italics mine). Cf. Cristina Viano’s contribution in Maso, Natali, and Seel, *Reading Aristotle*, 94: “These [affective] qualities can affect the senses really and directly; sensations are not subjective *epiphenomena*, they correspond to qualities that exist in the outside world” (italics original).

⁵⁸³ This is why I say they are *in principle* perceptible—because on Aristotle’s view, while there could be a possible world of macroscopic bodies without perceivers, that world would *still* have perceptibles. Again, we make this case in chapter 6 below.

transmission as we already saw in chapter 1 above. Hence, whenever a patient transitions from being potentially x to actually x , they can only have done so because the agent of the change was already actually x , communicating its actuality to the patient *by contact* (*Phys* 3.2 202a5-7). This need not be so narrowly construed as to preclude a body's heating from a fire without direct contact with that fire. Presocratics like Empedocles proposed effluvia theories where particles of one body invisibly interact with external bodies without those external bodies being in direct contact with one another—and there is no reason why Aristotle might not have accepted such a theory in cases of radiating heat even as he rejected them in cases of perception.⁵⁸⁴ The idea, rather, is the forbidding of occult powers or action at a distance⁵⁸⁵—a rather modern concern akin to the likes of Descartes' mechanistic philosophy.⁵⁸⁶ The thought, thus, is if my cold body becomes hot, it is *because* the bathtub full of water with which I had direct contact was already actually hot. If a picket fence becomes white, it is *because* the brush with which it had direct contact was already actually white (via its paint), and so on and so forth.⁵⁸⁷ Affective qualities come and go—from agent to patient—in inanimate and animate material *bodies* just this way continually. Let us call this regular sort of alteration by/of perceptibles by contact *Sense 1* (S1) alteration.

⁵⁸⁴ While Empedocles is often mentioned in *DA* (especially book 1), his effluvia theory is not. In fact, the only place where the effluvia theory is mentioned by name in Aristotle is in his *Problemata* where Aristotle, at times, appears to think positively of it *qua* bodies (e.g., *Prob.* 27.1 965b25-1524) even if not *qua* perception as *DA* 2.7-11 shows.

⁵⁸⁵ On the application of this to perception, see below.

⁵⁸⁶ Cf. Descartes, *Principles* §69, 92., etc. where he requires body-to-body contact for change.

⁵⁸⁷ There are a plethora of counterexamples to this principle—both to the prior actuality and contact thesis—as noted by Lloyd, “The Principle That the Cause Is Greater than Its Effect.” Perhaps a more sophisticated version could be developed to allay concerns? Descartes seemed to have engaged in just this sort of enterprise with his distinction between eminent and formal containment which addresses the prior actuality thesis. See the *Second Set of Replies* to his *Meditations* in René Descartes, *The Philosophical Writings of Descartes*, trans. John Cottingham, Robert Stoothoff, and Dugald Murdoch, vol. 2 (New York: Cambridge University Press, 1985), 97. That he adopted this idea from the Late Medieval *Aristotelian*, Francisco Suárez, should not surprise us. See Roger Ariew, John Cottingham, and Tom Sorell, trans., *Descartes' Meditations: Background Source Materials* (New York: Cambridge University Press, 1998), 34–35.

What, however, of Aristotle’s claim concerning the application of the contact thesis to affective qualities with regard to *animate* things specifically? Surely animate things are affected by perceptibles in ways beyond the way mere inanimate objects are. I can S1 become red just as surely as can a piece of steel—yet I can also be affected by red in *another way* in which steel cannot: “Whatever way the inanimate can be altered (ἀλλοιοῦται), then, the animate can also [be altered], whereas not every way that the animate can [be altered] is a way the inanimate can—for it cannot be altered (ἀλλοιοῦται) with respect to the perceptual capacities (αἰσθήσεις)” (244b12-15).⁵⁸⁸ On this line, not only is the S1 becoming red of my body an instance of alteration by contact from agent to patient but *seeing* red is too: “For the perceptual capacities (αἰσθήσεις) themselves are also altered (ἀλλοιοῦνται) in a way (πῶς). For actual (ἐνέργειαν) perception (αἴσθησις) is a change (κίνησις) through the body,⁵⁸⁹ when the perceptual capacity (αἰσθήσεως) is affected (πασχούσης) in a certain way” (244b10-12).⁵⁹⁰ Notice the πῶς in “alteration *in a way*.” Aristotle is surely making room for himself here given the later claim in *De Anima* 2.5 that second actuality perception (i.e., “actual perception”) is not a canonical alteration strictly, but

⁵⁸⁸ καθ’ ὅσα μὲν οὖν τὸ ἄψυχον ἀλλοιοῦται, καὶ τὸ ἔμψυχον, καθ’ ὅσα δὲ τὸ ἔμψυχον, οὐ κατὰ ταῦτα πάντα τὸ ἄψυχον (οὐ γὰρ ἀλλοιοῦται κατὰ τὰς αἰσθήσεις).

⁵⁸⁹ Does this imply that perception *just is* the affection of a sense organ of a percipient? This is the rather reductive thesis that perception is numerically or strictly identical to the physical affection of a bodily sense organ. Simplicius did not think so but thought that it was *correlated* with a further change in the soul (see *in Phys.* 1058.30-1059.11). So, which is the “alteration in a way” referred to here, the κίνησις through the body or the affection of the perceptual capacity of the soul? While the former characterization is akin to Sorabji’s “literalist” view, the latter characterization is that of Burnyeat’s “spiritualist” view from chapter 3, the latter of which our QG account most closely affirms. We argue for a version of this matterless form reception account in Appendix 1.

⁵⁹⁰ ἀλλοιοῦνται γὰρ πῶς καὶ αἱ αἰσθήσεις· ἡ γὰρ αἴσθησις ἢ κατ’ ἐνέργειαν κίνησις ἐστὶ διὰ τοῦ σώματος, πασχούσης τι τῆς αἰσθήσεως. Reeve translation, modified. While he eventually denies it in the same chapter (i.e., *DA* 2.5 417b9-19), note that Aristotle classifies perception as κίνησις in *DA* 2.5 as well (i.e., 416b33-35). Hence, as he says of being-affected and being altered, viz., that it is necessary to use them “*as though* they were the appropriate names” (418a2-3), he eventually says of κίνησις as well in *DA* 3.7 431a6 where he speaks of perception as “a different *kind* of change^k” (ἄλλο εἶδος τοῦτο κινήσεως). Aristotle is most assuredly using κίνησις in the same loose sense here *in Phys.* 7.2 as he does in *DA* 3.7 431a6. Cf., too, what is almost identical language in *De Somno* 1 454a9-11 where perception is called “a *sort of change*^k of the soul through the body” (κίνησις τις διὰ τοῦ σώματος τῆς ψυχῆς). It would appear, therefore, that Aristotle makes room not just for “alteration of a sort” (ἀλλοιώσις τις), but “κίνησις of a sort” (κίνησις τις) as well. We argue for just this point with respect to *DA* 3.2 in chapter 6 below.

only an “alteration of a sort” (ἀλλοίωσις τις)” (416b34).⁵⁹¹ There is just no good reason for him to hedge here with πως were this is not the case. But if this is so and actual perception is not an instance of canonical alteration of perceptibles, why emphasize it here? As will become apparent, it is due to the specific context of *Physics* 7 and his defense of his cosmological argument: Aristotle is under enormous pressure from his *reductio*, and if he does not classify perception as an instance of alteration—even πως—then he will not be able to account for the change of *psychic states* in a way that preserves his cosmological argument. Nevertheless, he is apparently well aware of the point he later argues in *De Anima* 2.5, and so he hedges with πως:⁵⁹² second actuality perception, thus, is “alteration in a way.” Will this work? We shall see. What is important for now is the classification of perception as alteration in *Physics* 7. Let us call this perceptual sort of alteration by/of perceptibles by contact *Sense* 2 (S2) alteration. And what are the “perceptual capacities” affected by which is an S2 alteration “in a way” (πως)? Affective qualities or perceptibles: “For our assumption is that what is being altered (ἀλλοιούμενα) is altered (ἀλλοιοῦσθαι) by being-affected (πάσχοντα) with respect to its so-called affective qualities (παθητικὰς ποιότητας)” (244b5-5b).⁵⁹³ Perception is the coming to be of a perceptible

⁵⁹¹ It is exceedingly difficult not to notice the πως here in α given its absence in β (244b25), and not to correlate it with “alteration of a sort” (ἀλλοίωσις τις)” at *DA* 2.5 416b34. All indications are that it was very purposefully inserted. This leaves Aristotle wiggle room for the ultimate compatibility of *Phys.* 7.2 and *DA* 2.5. For a similar assessment, see Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 144–47, 221, 224, 225, 234 n. 113. Cf. Wardy’s introduction to Maso, Natali, and Seel, *Reading Aristotle*, 4–5. Perception is not, of course, canonical alteration which is destructive contrary to contrary change. Rather, it need be no more than *DA* 2.5’s preservative “alteration of a sort”, just so long as it is change of and by *perceptibles*. Hence, this is not an instance of Aristotle wavering on the issue but of the strictures of his natural philosophy forcing him linguistically to one side (the alteration side) in order to make an argument. Hence, Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 22: “Aristotle’s precise requirements in context readily explain the discrepancy between *Physics* 7 and *De Anima* on the nature of the changes involved in perception, and... in any case we need not presume that the accounts are strictly incompatible.”

⁵⁹² Again, there is just no good reason for him to hedge here with πως if this is not the case, *especially* in this context. All indications are that it was very purposefully inserted. By my lights, the burden rests on any commentator who would gainsay it.

⁵⁹³ ὑπόκειται γὰρ ἡμῖν τὸ τὰ ἀλλοιούμενα κατὰ τὰς παθητικὰς καλουμένας ποιότητας πάσχοντα ἀλλοιοῦσθαι. Reeve translation, modified.

quality *in* a percipient in a perceptible mode—“receiving the perceptible forms (αἰσθητῶν εἰδῶν) without the matter” (DA 2.12 424a18-19).⁵⁹⁴ Again, the unifying feature of the third species of quality— affective qualities or perceptibles—is that they are all items that can be, in principle, detected by one of the senses its own “proper perceptible” (ἴδιος αἰσθητός, 418a11-12).⁵⁹⁵ All perception is *of* one of these sorts of perceptibles (DA 2.5 417b24-26); otherwise, there would be nothing to perceive⁵⁹⁶—or nothing for perception to be *of* (Cat. 7 6b35-36).⁵⁹⁷ For perception and

⁵⁹⁴ τὸ δεκτικὸν τῶν αἰσθητῶν εἰδῶν ἄνευ τῆς ὕλης. cf. 2.12 424b2, 3.2 425b23-24, 3.4 429a15-16, 3.8 431b26-432a3, 3.12 434a29-30, 3.13 435a22, etc.

⁵⁹⁵ λέγω δ’ ἴδιον μὲν ὃ μὴ ἐνδέχεται ἑτέρᾳ αἰσθήσει αἰσθάνεσθαι.

⁵⁹⁶ This is the reason why, in the first chapter, I committed to very carefully mind the conceptual distinction between the English terms “perception” and “sensation”; for Aristotle very clearly intends to refer to the concept referred to by the former English term when using αἰσθησις, and not the latter. Again, this conceptual distinction is made exceptionally clear in Thomas Reid’s 1764 *An Inquiry Into the Human Mind on the Principles of Common Sense*, 6.20: “The same mode of expression is used to denote sensation and perception; and therefore, we are apt to look upon them as things of the same nature. Thus, *I feel a pain; I see a tree*: the first denoteth a sensation, the last a perception. The grammatical analysis of both expression is the same: for both consist of an active verb and an object. But, if we attend to the things signified by these expression, we shall find, that in the first, the distinction between the act and the object is not real but grammatical; in the second, the distinction is not only grammatical but real. The form of the expression, *I feel pain*, might seem to imply, that the feeling is something distinct from the pain felt; yet, in reality, there is no distinction. As *thinking a thought* is an expression which could signify no more than *thinking*, so *feeling a pain* signifies no more than *being pained*. What we have said of pain is applicable to every other mere sensation.... *When we attend to the sensation by itself, and separate it from other thing which are conjoined with it in the imagination, it appears to be something which can have no existence but in a sentient mind, no distinction from the act of the mind by which it is felt. Perception, as we here understand it, hath always an object distinct from the act by which it is perceived; an object which may exist whether it be perceived or not*” (italics mine). Perception is always of *perceptibles*—external objects real and distinct from the activity of perception itself. Very clearly, these are not mere sensations. This is not to deny that there are sensations for Aristotle, some of which regularly *accompany* perceptions. Pleasure and pain are instances of these sorts of mental goings-on—*activities* (EN 10.4 1174b19-23) which are *not* of perceptibles (10.3 1173b5-7), yet regularly *accompany* perception (10.4 1174b26-31). Perceptions, thus, have associated sensations while not being themselves sensations—an important identity vs. correlate distinction to make here, even if not required in conversational English. In this regard, Reid too was thoroughly Aristotelian; see his 1785 *Essays on The Intellectual Powers of Man*, 2.16: “Almost all our perceptions have corresponding sensations which constantly accompany them, and, on that account, are very apt to be confounded with them. Neither ought we to expect, that the sensation, and its corresponding perception, to be distinguished in common language, because the purposes of common life don’t require it.” Again quoted from the recent critical edition: Thomas Reid, *Essays on the Intellectual Powers of Man*, ed. Derek R. Brooks, A Critical Edition (University Park, PA: The Pennsylvania State University Press, 2002), 194.3-8.

⁵⁹⁷ This entails, of course, that perception and perceptibles are *relatives* as they are ‘of’ or ‘to’ or ‘by’ one another in a reciprocal fashion. While foreign to those of us expecting Aristotle to speak of *relations* as opposed to relatives, this ‘of’ relation is nonetheless precisely what the category is. So, Ackrill: “Aristotle has no noun meaning ‘relation’. ‘A relative’ translates a phrase [πρός τι] consisting of a preposition followed by a word which can function as the interrogative ‘what?’ or the indefinite ‘something’. In some contexts the preposition will be rendered by ‘in relation to’ or ‘related to’” (Ackrill, *Aristotle’s Categories and De Interpretatione*, 78; cf. p. 98). In precisely what sense perception and perceptibles are relatives will be worked out below, as will the issue of how in perception a *quality* can be classified as belonging to two categories at once.

perceptibles are relatives in a sense, relatives that *reciprocally correlate*.⁵⁹⁸ Sight, thus, is of the visible (ὁρατός, *DA* 2.7 418a26); hearing of sound (ἀκουστός, 2.9 421b4-5); smelling of the scented (ὀσφραντός, 2.9 421b4-5); taste of flavor (χυμός, 2.10 422a16-17); and touch of the tangible (ἅπτός, 2.11 422b17).⁵⁹⁹ All perceptibles belong to a category of such a sort, e.g., sweetness, bitterness, and sourness to flavor, hotness and coldness to the tangible, whiteness and darkness to the visible, etc.⁶⁰⁰ And all perception is of one of these classes of affective qualities as is proper to the sense modality in question, perception itself being the coming to be of a perceptible quality in a percipient in a perceptible mode. Hence, we can say in conclusion that

⁵⁹⁸ I say more about this relativity below. For now, see *Cat.* 7 6b28-36: “All relatives are spoken of in relation to correlatives that reciprocate. For example, the slave is called slave of a master and master is called master of a slave; the double double of half, and the half half of a double; the larger larger than a smaller, and the smaller smaller than a larger; and so on for the rest too. Sometimes, however, there will be a verbal difference, of ending. Thus knowledge is called knowledge of what is knowable, and what is knowable knowable by knowledge; perception perception of the perceptible, and the perceptible perceptible by perception.” Πάντα δὲ τὰ πρὸς τι πρὸς ἀντιστρέφοντα λέγεται, οἷον ὁ δοῦλος δεσπότου λέγεται δοῦλος καὶ ὁ δεσπότης δούλου δεσπότης λέγεται, καὶ τὸ διπλάσιον ἡμίσεος διπλάσιον καὶ τὸ ἥμισυ διπλασίου ἥμισυ, καὶ τὸ μείζον ἐλάττονος μείζον καὶ τὸ ἐλάττον μείζονος ἑλάττον· ὥσαύτως δὲ καὶ ἐπὶ τῶν ἄλλων· πλὴν τῇ πτώσει ἐνίοτε διοίσει κατὰ τὴν λέξιν, οἷον ἡ ἐπιστήμη ἐπιστητοῦ λέγεται ἐπιστήμη καὶ τὸ ἐπιστητὸν ἐπιστήμη ἐπιστητόν, καὶ ἡ αἴσθησις αἰσθητοῦ αἴσθησις καὶ τὸ αἰσθητὸν αἰσθήσει αἰσθητόν.

⁵⁹⁹ It is worth saying that Aristotle takes each sense to be properly of both the proper perceptible and its absence: “Hearing is of the audible and the inaudible; sight is of the visible and invisible; and smelling is of the scented and unscented” (2.9 421b4-6). ἡ μὲν τοῦ ἀκουστοῦ καὶ ἀνηκούστου, ἡ δὲ τοῦ ὁρατοῦ καὶ ἀοράτου, καὶ ἡ ὀσφρησις τοῦ ὀσφραντοῦ καὶ ἀνοσφράντου. The reason for this is spelled out in the following chapter, *DA* 2.10. So, e.g., specifically for sight: “Sight is of the visible and the invisible—for darkness is invisible, and sight discriminates this too” (422a20-21). ὥσπερ δὲ καὶ ἡ ὄψις ἐστὶ τοῦ τε ὁρατοῦ καὶ τοῦ ἀοράτου (τὸ γὰρ σκότος ἀόρατον, κρίνει δὲ καὶ τοῦτο ἡ ὄψις). The same applies to all the other senses as well per *DA* 2.10 422a20-31. For the sake of simplicity, I will refer only to the positive, e.g., the visible rather than the invisible.

⁶⁰⁰ While I am speaking here—and will continue to do so—only of proper perceptibles, it is worth noting that in *DA* 2.6 where Aristotle focuses specifically on perceptibles (αἰσθητά), that he distinguishes among three different sorts as we have maintained before: two varieties of καθ’ αὐτά perceptibles, viz., (a) “proper” (ἰδιόν) perceptibles and (b) “common” (κοινός) perceptibles; and one variety of (c) “accidental” (κατὰ συμβεβηκός) perceptibles. Instances of (b), common perceptibles, include change^k, rest, number, shape, and magnitude (418a17-18). Instances of (c), accidental or coincidental perceptibles, include *entities* or *objects* which themselves have proper or common perceptibles as features. See, e.g., Shields, *Aristotle: De Anima*, 227: “A witness asked what he saw at a crime scene might reasonably respond that he saw a red Jaguar speeding away. Which sense has as its exclusive [or proper] objects red Jaguars? Aristotle suggests that no sense, properly speaking, perceives any such object in its own right.... Rather, sight perceives red, and only insofar as the red object of sight co-insides with a car does Aristotle allow that one sees the Jaguar.... In so speaking, Aristotle is not maintaining that it is improper linguistically or otherwise to talk of *perceiving a red Jaguar*. On the contrary, he is allowing that we perceive such objects, but not in the manner of an exclusive [or proper] or common objects.”

whether we speak of what is merely inanimate (S1) or of what is animate and perceptive too (S2), *all* alteration occurs among perceptibles and by contact between agent and patient.

This, however, seems problematic. *Even if* perceptibles act as agents on patient percipients, they do not do so *by contact* as is required by the *reductio* (242a49-43a31) against infinite causal chains (242b71-2). Aristotle can claim all he wants that “actual perception is a change (κίνησις) through the body, when the perceptual capacity is affected (πασχούσης) in a certain way” (244b11-12), but this does not secure his requirement that they do so through *contact*. We must remember, however, that the contact thesis requires that in all instances of κίνησις agent and patient *either* touch *or* are spatially continuous (242b59-63). It is the latter that occurs in perception. For Aristotle *all* sense modalities operate *through a medium*⁶⁰¹—even touch and taste which *appear* to lack a medium.⁶⁰² Why flatten all five senses out in this way and require for all a medium, appearances to the contrary as Aristotle admits (2.11 423b1-3)? Presumably so as to secure the contact thesis of *Physics* 3.2 and 7.2 for *all* of perception. Otherwise, three of the sensory modalities would operate at a distance (i.e., sight, hearing, and smell), while only two would operate by contact (i.e., taste and touch). Requiring a medium of all,⁶⁰³ on the other hand, enables Aristotle to claim that *all* modalities operate in the same manner so that if taste and touch meet the contact criterion, then so do sight, hearing, smell. Hence, for all alike require a medium through which perceptibles are made *spatially continuous* with the percipient.⁶⁰⁴

⁶⁰¹ See DA 2.7 419a25-30 and 2.11 423b7-8.

⁶⁰² Neither does lack a medium, however—moisture being the medium of taste and skin the medium of touch; see DA 2.10 422a10-11 and 2.11 423b25-26, respectively.

⁶⁰³ See DA 2.11 423b3-12 for a strong statement of the thesis.

⁶⁰⁴ Hence, Aristotle says of the transparent in the case of sight: “If someone should place what has color upon the eye itself, it will not be seen. Rather, color moves the transparent, e.g., air, and the sensory organ is moved by this, which is continuous” (DA 2.7 419a12-15).

Let us state the conclusion again: Whether we speak of what is merely inanimate (S1) or of what is animate and perceptive too (S2), *all alteration* occurs among perceptibles and by contact (i.e., either touch or spatial continuity) between agent and patient as is required by the *reductio*. The contact thesis is secured by *either* S1 or S2 alteration, and so Aristotle concludes that “there can be nothing intermediate (μεταξὺ) between what is altered (ἀλλοιούμενου) and what alters it (ἀλλοιοῦντος)” (245a10-11).⁶⁰⁵

There is, however, a problem: What of the other three species of quality *besides* affective qualities? As we saw in *Categories* 8, the four species of quality (ποιός) are, in the order presented, (1) states (ἕξεις),⁶⁰⁶ (2) capacities (δυνάμεις), (3) affective qualities (παθητικός ποιότης), and (4) shape (σχῆμα) and figure (μορφή). Do they alter, and if so, do they do so by contact, or do they change by some other means? Aristotle recognizes this as an issue, noting towards the beginning of 7.3 that “for of the other [cases], someone would most of all suppose that alteration (ἄλλων) takes place in shapes and figures, and in states, and in the taking on and casting off of them: but in neither of them [is there alteration]” (245b6-8).⁶⁰⁷ As Wardy comments here: “And who, exactly, would be vulnerable to this rather recondite confusion? The reader of the *Categories*, for one.”⁶⁰⁸ Indeed, for to claim that *all* qualitative change requires contact and then to attempt to secure that thesis by the examination of only one of the four

⁶⁰⁵ ὥστ’ οὐδὲν ἔσται μεταξὺ τοῦ ἀλλοιούμενου καὶ τοῦ ἀλλοιοῦντος.

⁶⁰⁶ Again, while condition (διάθεσις) is technically the broader of the two such that it includes *all* states (*Cat.* 8 9a10-13), Aristotle does not always mind this distinction, often using “state” (ἕξις) to refer to *both* as he does here—a practice I have followed for the sake of clarity and consistency.

⁶⁰⁷ τῶν γὰρ ἄλλων μάλιστα ἂν τις ὑπολάβοι ἐν τε τοῖς σχήμασι καὶ ταῖς μορφαῖς καὶ ἐν ταῖς ἕξεσι καὶ ταῖς τούτων λήψεσι καὶ ἀποβολαῖς ἀλλοίωσιν ὑπάρχειν.

⁶⁰⁸ See Wardy in Maso, Natali, and Seel, *Reading Aristotle*, 6.

species of quality requires explanation—which is precisely what we find in *Physics* 7.3.⁶⁰⁹

Physics 7.3 is thus, as Wardy puts it, “Aristotle correcting himself.”⁶¹⁰

Before moving on, we should note a well-known ambiguity in the text just quoted—and the text to be examined—namely, the dual use of ἀλλοίωσις in the sentence “someone would most of all suppose (a) alteration takes place in shapes and figures, and in states and (b) in the taking on and casting off of them” (245b6-8). Whereas (a) would appear to refer to the *product* or result of alterations (i.e., shapes, figures, or states themselves) (b) appears to refer to the *process* of becoming or acquiring (i.e., taking them on, casting them off).⁶¹¹ If we plug this into the triple scheme distinctions, we have Aristotle here making a claim about first actuality states which are change *products*, not the change *process*, i.e., the *transition* from capacity to state⁶¹²—which fits nicely with our account at the end of chapter 3 with respect to the tense-test. I noted in chapter 1 that while not his usual practice, Aristotle is capable of using “change” and its cognates for products (e.g., baked bread) in addition to the usual referent, the process of change (e.g., baking bread)⁶¹³—the former always with the Greek omega (i.e., “ω”) superscript in this current work.⁶¹⁴ As I said there, we should assume that *unless* the context calls for it, when Aristotle uses the terms like κίνησις or μεταβολή, we should assume that he is referring to the *process* of

⁶⁰⁹ Cf. Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 152–53.

⁶¹⁰ Wardy in Maso, Natali, and Seel, *Reading Aristotle*, 6.

⁶¹¹ For recognition of this ambiguity, see, e.g., Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 211–12; cf. 220, 229; Benjamin Morison in Maso, Natali, and Seel, *Reading Aristotle*, 46; Ursula Coope in Maso, Natali, and Seel, 62–63; Bernd Manuwald, *Das Buch H Der Aristotelischen “Physik”*. Beiträge Zur Klassischen Philologie 36 (Meisenheim am Glan: Anton Hain Verlag, 1971), 70–72, etc.

⁶¹² I specify *states* here because neither shape nor form admits of the complex hylomorphism of the triple scheme. On the simple hylomorphism at play, we just have e.g., potential shape and actual shape *simpliciter*, but not some second actuality shape over and above the actuality of shape itself. I say more about these different versions of hylomorphism below.

⁶¹³ The examples given in chapter 1 of this product usage were *Phys.* 5.4 228b11–15 for κίνησις (cf. *EN* 10.4 1174a19–23); *Phys.* 6.5 236a7–10 for μεταβολή; and the multiple examples in *Phys.* 7.3 for ἀλλοίωσις.

⁶¹⁴ That is the superscripted “κίνησις^ω,” “μεταβολή^ω,” “change^ω,” “transformation^ω,” “mutation^ω,” “generation^ω,” “destruction^ω,” “alteration^ω,” etc. always indicate *product* changes, while the plain “κίνησις,” “μεταβολή,” “change,” “transformation,” “mutation,” “generation,” “destruction,” “alteration,” etc. always indicate *process* changes.

change which his definition attempts to pick out, not the product of that change. But *Physics* 7.3 sufficiently fulfills this “unless” clause given that Aristotle regularly uses ἀλλοίωσις to indicate alteration⁶¹⁵ in this chapter, speaking in other terms process (e.g., “taking on” and “casting off,” λήψεσι καὶ ἀποβολαῖς, 245b8), to indicate the *process* of alteration by which *product* alterations⁶¹⁶ come to be.⁶¹⁶ Given that this occurs so frequently in what appears to be “Aristotle’s most sophisticated study of qualitative change,”⁶¹⁷ this is not just fascinating but exceedingly helpful for our own case. For it provides a solution to a potential objection to our QG account of perception: Namely, that just by dint of the fact that Aristotle commonly refers to second actuality perception as an “alteration” entails that he is classifying it as a process change (as on Burnyeat’s account) rather than a product change⁶¹⁷ (as on our account). The term, rather, is ambiguous, and only the context where it is used can allow one to identify it as one or the other. As a result, Aristotle’s classification of perception as alteration in no way undermines our QG account. With this framing in hand, we turn now to the contents of *Physics* 7.3.

5.1.2 *Physics* 7.3: The Narrowing of Alteration

⁶¹⁵ See 245b6-8, 246a8-9, 246a10-11, 246a12, 246b1-3, 246b11-12, 246b12-14, 247a4-5, 247a16-18, 247b1, and 248a6-9.

⁶¹⁶ Coope is helpful here—even though she ultimately dissents from the view (Coope, in fact, offers another interpretive strategy here, but one that I think clearly fails when applied to 7.3 as a whole): “The word ἀλλοίωσις... as Aristotle uses it here, is ambiguous... [being used] both for the *process* of alteration and also the state that *results from* this process.... The English word “alteration” can, in fact, be ambiguous in a similar way. ‘I showed them the alterations to our house’ usually means: I showed them the *results* of the processes of alteration” (Coope in Maso, Natali, and Seel, *Reading Aristotle*, 63; italics mine). See too, Manuwald, *Das Buch H Der Aristotelischen “Physik,”* 71, who thinks it “very likely” (sehr wahrscheinlich) here that “ἀλλοίωσις means not only the *process* of a change in quality, but also its *result*” (ἀλλοίωσις bedeutet für den Verf. nicht nur den Vorgang einer Qualitätsveränderung, sondern auch deren Ergebnis) (Google AI translation, italics mine). It is hard to side-step the fact that this is precisely how Aristotle uses the “alteration” in *Phys.* 7.3 when he refers to *competed* shapes, figures, or states as “alterations” as he does in so many places in this chapter. Given the attendant language in many of these passages which *does* refer to a process (e.g., “taking on” and “casting off” (λήψεσι καὶ ἀποβολαῖς, 245b8), it is difficult to read ἀλλοίωσις as anything other than, in Coope’s phrase, “the results of the processes of alteration”, viz., *alteration*⁶¹⁷. Cf. from the same work, Morison’s comments in Maso, Natali, and Seel, *Reading Aristotle*, 46. Morison too dissents from which I here suggest (i.e., Wardy’s view), although I do not think Morison’s solution is viable—nor Coope’s—if consistently applied throughout the chapter—a problem my view does not have. For a decisive refutation of a view like Morison’s, see Manuwald, *Das Buch H Der Aristotelischen “Physik,”* 71.

⁶¹⁷ Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 239.

Physics 7.3 begins with a very clear statement of its aim, one on which Aristotle is keen to stay focused throughout the chapter (245b3-6):

That everything which is altered (ἀλλοιούμενον) is altered (ἀλλοιοῦται) by perceptibles (αἰσθητῶν), that is, that alteration (ἀλλοίωσις) takes place only in those things which are said to be affected (πάσχειν) in their own right by perceptibles (αἰσθητῶν), is to be seen from the following considerations.⁶¹⁸

If, as *Physics* 7.3 begins, “everything that is altered is altered due to perceptibles” (245b3-4) which are identical to real yet sensible affective qualities of objects such as tastes, colors, sounds, etc., *then* it is not the case that there is alteration of the remaining species of quality, viz., (1) states (ἔξεις), (2) capacities (δυνάμεις), or (4) shape (σχῆμα) and figure (μορφή). Hence, as Aristotle intends to show, “Alteration takes place *only* (μόνοις) in those things which are said to be affected in their own right by perceptible qualities” (245b4-5). This is, of course, the conclusion that we came to in chapter 4 above where we examined *Categories* 8 and 10, arguing that because the other species of quality lack contrariety (or the right *sort* of contrariety) they cannot undergo contrary to contrary κίνησις—and if not κίνησις then neither alteration (ἀλλοίωσις). Instead, as we argued, states, capacities, and shapes/figures, while qualities, are generated or destroyed via QG. As we now argue, this is *precisely* the same account we find here in *Physics* 7.3.⁶¹⁹

⁶¹⁸ δὲ τὸ ἀλλοιούμενον ἅπαν ἀλλοιοῦται ὑπὸ τῶν αἰσθητῶν, καὶ ἐν μόνοις ὑπάρχει τούτοις ἀλλοίωσις ὅσα καθ’ αὐτὰ λέγεται πάσχειν ὑπὸ τῶν αἰσθητῶν. Unless otherwise noted, English quotations of *Phys.* 7.3 are those of Stefano Maso and Gerhard Seel as published in Maso, Natali, and Seel, *Reading Aristotle*, 18–33. I stick with Reeve, nevertheless, for the rest of the *Physics* including *Phys.* 7.1-2.

⁶¹⁹ Aristotle does, of course, use a different line of argument than I do. Hence, while I argue that shapes and figures, states, and capacities cannot alter because they either lack contrariety or the right sort of contrariety, Aristotle employs other arguments such as how things are said, or how things are classified. I do not think this should worry us, however. In *EN* 1.6, Aristotle gives seven *different* arguments against the notion of a Platonic Form of the Good. Were he, at a later point, to center upon just one of these, would that invalidate the other six? Surely not. If, as I have argued, Strong QG follows from Aristotle’s own kinetic principles, then *even if* this is not the focus of his arguments

5.1.2.1 The Dilemma: Either Alteration or QG

In the remainder of *Physics* 7.3, Aristotle briefly addresses shapes and figures before spending the bulk of his time on states of different sorts. None of them, he argues, undergo alteration. Interestingly, he avoids any mention of capacities (δυνάμεις)—despite the fact that he is rather clearly drawing here from the taxonomy of quality from *Categories* 8.⁶²⁰ Why is that? A number of answers have been given, the most plausible by my lights being that, as Benjamin Morison suggests, “Aristotle thought that whatever account one offers of why the acquisition or loss of states does not count as alteration will also explain why the acquisition or loss of capacities does not either.”⁶²¹ While speculative, something like this would seem to be correct given the potentiality/actuality coordination between capacities and states, as noted in chapter 4. Or perhaps, as I suggest below, it has to do with the argument being made here in *Physics* 7 and how capacities, unlike the other species of quality, cannot be plausibly wrangled for these purposes. The reader can decide which is more plausible option when the time comes, and the argument has been made, at the conclusion of the chapter. Nevertheless, let us proceed to what

here, it should be seen as detracting from—but as *complementary to*—what we have already shown. There is no reason to suppose some sort of zero-sum game between arguments for the very same point based on the very same kinetic principles.

⁶²⁰ Wardy, *The Chain of Change: A Study of Aristotle's Physics VII*, 160–64; cf. 142–43. That Aristotle had not forgotten this early taxonomy of the category of quality is clear not only here in *Phys.* 7.3, but also from his disjunctive argument in *EN* 2.5 1105b19–1106a13 concerning the genus of virtue by a process of elimination: virtue is a quality, so it is either an affection (i.e., an affective quality or perceptible), a capacity, or a state (it cannot be a shape or figure, so he does not mention the option); it is neither an affection nor a capacity; therefore it is a state. This argument only works if Aristotle is *assuming* here—given an argument elsewhere—that these are the *only* four possible classifications of virtue. For the same sort of argument as I employ here see Martin Ostwald, *Aristotle: Nichomachean Ethics* (New York: Macmillan Publishing Company, 1962), 41 n. 16.

⁶²¹ Maso, Natali, and Seel, *Reading Aristotle*, 45–46. For a similar approach, see Aquinas' comments on the absence of capacities here in *Expositio libri Physicorum*, 7.5.914: “From this [above concerning shapes and figures and states, it] is also plain why he makes no mention of the second species of quality, i.e., natural potency and impotency [i.e., capacity/incapacity]. For it is clear that these latter are not received or lost without a change in the nature, which takes place through alteration. That is why he did not mention them.” Cf. Simplicius, in *Phys.* 1062.19–23, who offers something different: “He did not produce the argument concerning this species [i.e., capacities] because it is not known whether such things are qualities.” Ross thinks Simplicius' line is plausible, but thinks it more probable that *Phys.* 7 is earlier than *Cat.* and so “the fourfold division of ποιότητες had yet been worked by him” (Ross, *Aristotle's Physics. A Revised Text, with Introduction and Commentary*, 674). For criticism of Ross' dating criterion, see Wardy, *The Chain of Change: A Study of Aristotle's Physics VII*, 87 n. 7; cf. 290.

Aristotle does address in *Physics* 7.3, specifically the alteration of shapes and figures and states.

While I do not take the time to trace out Aristotle's arguments here as the details of the arguments are beyond the scope of our concerns, this has been done recently elsewhere.⁶²²

Instead, I focus on his conclusions which for us are far more germane.

So, what of his conclusions? Aristotle is clear: only affective qualities or perceptibles are capable of undergoing alteration (245b6-8):

For of the other [cases], someone would most of all suppose that alteration (ἀλλοίωσιν) takes place in shapes (σχήμασι) and figures (μορφαῖς), and in states (ἔξεσι), and in the taking on (λήψεσι) and casting off (ἀποβολαῖς) of them: but in neither of the two (οὐδετέροις) [is there alteration].⁶²³

Despite what one might suppose, in neither shapes and figures nor states is there alteration. But if they genuinely change without undergoing alteration, then *how* do they change? A helpful way of thinking though this is in terms of the following disjunctive argument (or dilemma, as we shall henceforward call it):

- 1) Shapes, figures, and states are qualities.
- 2) All genuine change of quality occurs via a) alteration or b) QG.⁶²⁴

⁶²² I speak of the 2012 collaborative work, Maso, Natali, and Seel, *Reading Aristotle*. It was the result of an international symposium of forty-one scholars focused solely on *Phys.* 7.3. It was held in Vitznau, Switzerland from April 12-15, 2007 (ibid., ix).

⁶²³ τῶν γὰρ ἄλλων μάλιστα ἂν τις ὑπολάβοι ἐν τε τοῖς σχήμασι καὶ ταῖς μορφαῖς καὶ ἐν ταῖς ἔξεσι καὶ ταῖς τούτων λήψεσι καὶ ἀποβολαῖς ἀλλοίωσιν ὑπάρχειν· ἐν οὐδετέροις δ' ἔστιν. Maso and Seel translation, modified. Recapitulating the point above, Aristotle ends this statement with the phrase “in neither of the two” (οὐδετέροις) is there alteration—i.e., in neither shapes and figures as a single species, *and* states as a species. The other, *third*, species of quality—capacity—is being neglected as we have said, and rather pointedly too. As this was already addressed, let us look at what he says of the two species to which he does refer here, shape/figure and state.

⁶²⁴ There is another option here, namely that the generation of qualities is actually *substantial* generation. But even in the case of the acquisition of a shape (e.g., when a lump of bronze becomes a statue), it would be absurd to say that a new *substance* has come to be. Statues are artifacts, not substances (see this distinction in *Phys.* 2.1, 192b5ff), and their generation is not *substantial*. Hence, Wardy, *The Chain of Change: A Study of Aristotle's Physics VII*, 184: “True generation must be restricted to the category of substance. Therefore if Aristotle is not to fall into absurdity, he cannot suppose that every case of σχημάτισις [shaping] is an instance of γένεσις.” What, then, is shaping? Wardy

- 3) Either shapes, figures, and states c) genuinely change or d) do not genuinely change.
- 4) Shapes, figures, and states genuinely change.
- 5) Shapes, figures, and states do not alter.
- 6) Therefore, shapes, figures, and states genuinely change as captured by QG.

If this dilemma captures the situation accurately—and everything we have examined so far indicates it does—then Aristotle needs to *either* affirm that shapes, figures, and states (and by proxy, capacities) are generated or destroyed, *or* that they do not genuinely change. And the same goes for states. What says Aristotle?

5.1.2.1.1 The Case of Shapes and Figures

Concerning shapes and figures, Aristotle is clear: “These instances of generation (γένεσεις) would not be alterations (ἀλλοιώσεις)” (246a3-4).⁶²⁵ This satisfies premise 2) from the dilemma: either a) alteration or b) QG. Not a), so b). But what of premise 3)? Either c) an instance of genuine change or d) not an instance of genuine change. Which is it according to Aristotle, c) or d)? For if c) then(b), whereas if d) then neither a) nor b). So, our c)/d) question: are changes of shape and figure *genuine* instances of change?

Perhaps, one could say, change of shape or figure is a sort of “accidental generation” as regularly occurs in instances of relative change. As an example, surely we would say that *sister-of* is a relative without a contrary—for what would to contrary to *sister-of*? Hence, when *x* becomes *sister-of*, *sister-of* comes to be from its contradictory, *not-sister-of*. By the lexical definitions of *Physics* 5.1, this is an instance of contradictory to contradictory generation, not κίνησις. Nevertheless, this generation of *sister-of* occurs between two relatives, one of which

clarifies on the next page: “σχημάτισις is a *variety* of γένεσις” (ibid., 185, italics mine). Even if Wardy lacks the category for it (see below), Aristotle does not: This is clearly an instance of QG γένεσις τις (*Phys.* 5.1 225a14-15). Hence, I exclude substantial generation (and destruction) from consideration here. More on this anon.

⁶²⁵ φανερόν ὅτι οὐκ ἂν εἶεν αἱ γενέσεις ἀλλοιώσεις.

genuinely changes, the other of which does not: the *sister* really does change (i.e., she is born), while what she is the sister of does not change except accidentally. This is mere ‘Cambridge’ change, occurring without any genuine coming to be in the subject which “changes.” As we discussed in chapter 1 above, Plato points out in the *Theaetetus* (155b4-c7) that relative change of *x* without any genuine *becoming* in *x*⁶²⁶ is not genuine change. It is, as we have put it following John McDowell following Peter Geach, mere “Cambridge coming to be.”⁶²⁷ When Socrates becomes shorter than Theaetetus because the latter grows, something comes to be true (and something else, false) of Socrates, but Socrates does not undergo any becoming and so does not thereby change for “without coming to be it is impossible to come to be” (155d2-3).⁶²⁸ Aristotle, too, takes this line as we saw in chapter 1.⁶²⁹ Speaking in terms of genuine (καθ’ αὐτὸ)

⁶²⁶ I have stated this previously in chapter 1, but it worth emphasizing again: I take the locution “change of *x*” to be equivalent to *extrinsic* becoming, while I take the locution “becoming in *x*” to be equivalent to *intrinsic* becoming. In the former, at least one *external* thing undergoes some sort of contrary to contrary or contradictory to contradictory becoming in at least one of its *monadic* properties. In the latter, the thing *itself* undergoes some sort of contrary to contrary or contradictory to contradictory becoming in at least one of its *monadic* properties. Hence, in “change of *x*” only a polyadic property comes to be in *x*, while no monadic property comes to be in *x*. In “becoming in *x*,” on the other hand, both a polyadic property comes to be in *x*, and a monadic property comes to be in *x*. As such, all “change of *x*” is parasitic on some “becoming in *x*.”

⁶²⁷ McDowell, *Plato: Theaetetus*, 136. Cf. the first use of the term “‘Cambridge’ change” or “mere ‘Cambridge’ change” in Geach, *God and the Soul*, 71–72: “The only sharp criterion for a thing’s having changed is what we may call the Cambridge criterion (since it keeps on occurring in Cambridge philosophers of the great days, like Russell and McTaggart): The thing called ‘*x*’ has changed if we have ‘*F(x)* at time *t*’ true and ‘*F(x)* at time *t*¹’ false, for some interpretation of ‘*F*’, ‘*t*’, and ‘*t*¹’. But this account is intuitively quite unsatisfactory. By this account, Socrates would after all change by coming to be shorter than Theaetetus; moreover, Socrates would change posthumously (even if he had no immortal soul) every time a fresh schoolboy came to admire him; and numbers would undergo change whenever e.g. five ceased to be the number of somebody’s children. The changes I have mentioned, we wish to protest, are not ‘real’ changes; and Socrates, if he has perished, and numbers in any case, cannot undergo ‘real’ changes. I cannot dismiss from my mind the feeling that there is a difference here; and I suggest that when we have a narrative proposition corresponding to a ‘real’ change, there is individual actuality—an imperfect actuality, Aristotle calls it—that is the change; but not, when a mere ‘Cambridge’ change is reported. (Of course there is a ‘Cambridge’ change whenever there is a ‘real’ change; but the converse is not true.)” (italics original).

⁶²⁸ ἄνευ γὰρ τοῦ γίνεσθαι γενέσθαι ἀδύνατον. See *ad loc.* Burnet, *Platonis Opera*.

⁶²⁹ *Meta.* N.1 1088a29-35: “An indication that a relative (πρός τι) is least of all a kind of real object (οὐσία) and existing thing (ὄν τι) is the fact that relatives alone are not generated (γένεσιν) or destroyed (φθοράν) or change (κίνησιν) in the way that increase and decrease (αὐξήσις καὶ φθίσις) occur in quantity, alteration (ἀλλοίωσις) in quality, locomotion (φορά) in place, generation and destruction (γένεσις καὶ φθορά) without qualification (ἀπλῇ) in the case of a real object. There is none of this with relatives (πρός τι). A thing will be greater or less or equal without itself changing (ἄνευ τοῦ κινηθῆναι) if another thing changes (θατέρου κινηθέντος) in quantity” (Annas translation, modified). σημείον δ’ ὅτι ἥκιστα οὐσία τις καὶ ὄν τι τὸ πρὸς τι τὸ μόνου μὴ εἶναι γένεσιν αὐτοῦ μηδὲ φθοράν μηδὲ

verses accidental (κατὰ συμβεβηκός) change (*Phys.* 5.1 224a21-28), Aristotle takes relative change to be merely accidental change because one of the relatives does not undergo becoming.⁶³⁰ Genuine change consists in instances of generation, destruction, alteration, increase, decrease, or locomotion. Relatives do not so change, but instead, their “change” is *parasitic* on some instance of genuine change occurring with respect to at least one of the *relata*. All genuine changes *are* instances of becoming,⁶³¹ whereas relative change is merely *correlated* with the becoming of at least one of a pair. As correlation is not identity, relative “change” is merely accidental and not genuine.⁶³² As a result, the generation of *sister-of* is not QG generation but rather mere Cambridge coming to be or *pseudo-generation*.

The question before us, thus, is this: *Is the generation of a shape or figure an instance of pseudo-generation or QG generation?* The question will be answered based on whether or not being shaped or configured is itself an instance of *becoming* (γίγνεσθαι) in what is shaped and figured. Again, Aristotle is clear. Speaking of what is shaped or configured, he says: “Those things which *come to be* (γινόμενά) are not being altered (ἀλλοιοῦται), nor is the generation

κίνησιν ὥσπερ κατὰ τὸ ποσὸν αὐξήσεις καὶ φθίσεις, κατὰ τὸ ποιὸν ἀλλοιώσεις, κατὰ τόπον φορά, κατὰ τὴν οὐσίαν ἢ ἀπλῇ γένεσις καὶ φθορά,—ἀλλ’ οὐ κατὰ τὸ πρὸς τι· ἄνευ γὰρ τοῦ κινήσθαι ὅτε μὲν μεῖζον ὅτε δὲ ἔλαττον ἢ ἴσον ἔσται θατέρου κινήθέντος κατὰ τὸ ποσόν. For excellent commentary, see Sorabji, *The Philosophy of the Commentators, 200-600 AD*, 3: Logic and Metaphysics:80–81.

⁶³⁰ Cf. *Phys.* 5.2 225b11-13 and 7.3 246b10-12.

⁶³¹ For the broadest sense of γινόμενον (participle) or, abstractly, γίγνεσθαι (infinitive verb), see *Phys.* 1.7 where Aristotle breaks it down into two sorts: (1) γίγνεσθαι (τόδε) τι and (2) γίγνεσθαι ἀπλῶς (190a31-33, 190b9-12). (1) γίγνεσθαι τι is “coming to be *this*” (or “becoming *this*”) and includes all instances of κινήσεις, *viz.*, qualitative, quantitative, and spatial, in addition to the qualitative instances of γένεσις τις (*Phys.* 5.1 225a12-17)—which are instances of μεταβολή but not κινήσεις as we have seen (see *Phys.* 5.1 225a34-b3). (2) γίγνεσθαι ἀπλῶς is “coming to be *simply*” or “*unconditional* becoming”, and *only* includes substantial generation (*Phys.* 1.7 190a32-33). γένεσις ἀπλῶς is, thus, a direct synonym for γίγνεσθαι ἀπλῶς (5.1 225a12-17; cf. Bonitz, *Index Aristotelicus*, 154–55; cf. 147–48). If this is correct, then even if change and becoming are not identical they are at least related via a biconditional such that for all changes *x* and for all becomings *y*, *x* iff *y*, and *y* iff *x*. Or, to put it differently, if different then there is a mere formal distinction between changing and becoming, but no real distinction. I doubt, however, that Aristotle takes them to even be formally distinct. Cf. Simplicius, in *Phys.* 1074.25-26: “It is obvious that anything which does not change at all itself in its own right does not come to be in its own right either, for every coming to be is a change.” δ μέντοι μηδέν αὐτό καθ’ αὐτό μεταβάλλει, δηλονότι οὐδε γίνεται καθ’ αὐτό αὐτό, πάσα γάρ γένεσις μεταβολή.

⁶³² Cf. *Phys.* 5.1 224b26-28.

(γένεσις) of them alteration (ἀλλοιώσις)” (246a8-9).⁶³³ Shapes and figures, unlike relatives, really *do* come to be. Hence, per our dilemma above, shapes and figures c) genuinely change; such genuine change is not a) alteration. Therefore, it is b) an instance of QG.⁶³⁴

Clearly, this QG move vindicates Aristotle’s stated goal, viz., that shapes and figures do not *alter* because alteration is only of affective qualities which change by contact. In fact, it would be absurd to claim that actual triangles need to touch or be continuous with potential triangles in order for the latter to come to be triangles—or even that triangles must come from other triangles. To claim, therefore, that they do not alter but are generated when they come to be saves the contact thesis. *But at what cost?* If the generation of shapes and figures is occult in some sense of the term (e.g., the cause is at a distance or perhaps hidden), then might their generation (and destruction) also be random? The cost of ‘saving’ the contact thesis by means of

⁶³³ οὐ μέντοι τὰ γιγνόμενά γε ἀλλοιοῦται, οὐδ’ ἡ γένεσις αὐτῶν ἀλλοιώσις ἐστίν.

⁶³⁴ Cf. Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 184–85. Given that γένεσις and γένεσις τις are the only varieties of γένεσις Aristotle acknowledges (*Phys.* 5.1 225a12-17), what else could a *non*-substantial variety of γένεσις be? While Wardy recognizes this point in the case of changes in shapes and figures, he jettisons this view in the case changes in states (*ibid.*, 216–20, esp. 219). Why the inconsistency? Unfortunately, Wardy takes the background for *Phys.* 7.3 to be *GC* 1.1 (*ibid.*, 169–78, esp. 169 & 173) and Aristotle’s criticism of Presocratic atomism which reduces all alteration to generation (*GC* 1.1 314b5-10) rather than the composite account of change from *Phys.* 3 and 5 as do I. Reading just this *GC* background into *Phys.* 7.3 causes him to admit that Aristotle takes changes of shape to be instances of generation (γένεσις) (*ibid.*, 185), but *not* changes of states as these merely come to be (*ibid.*, 217–18). Rather, *qua* relatives the comings and goings of states are instances of mere “Cambridge change” (*ibid.*, 214). How then, do states “change”? As mere supervenient relatives, states only “change” when their subvenient material bases change—either by alteration or *substantial* generation (*ibid.*, 205–07 & 217–18). For on Wardy’s account there is no *qualitative* generation (γένεσις τις) from *Phys.* 5.1 as he does not take the composite account of change from *Phys.* 3 and 5 to be the requisite background for *Phys.* 7.3. Hence, he reads *every* instance of generation (γένεσις) in *Phys.* 7.3 (*sans* shape and figure) as *substantial* generation—which is not about supervenient states but the change of their *subvenient* material base (*ibid.*, 166, 178–79, 181–85, 188, 202–04; cf. 218 & 228–29). Not only do ancient commentators such as Ammonius (*in Cat.* 83.3–24) and Simplicius (*in Phys.* 1064.28–30, 1068.26–11, 1070.17–71.4, 1071.6–18, 1071.30–72.15, 1073.25–13) take generation (γένεσις) in this context to be *non*-substantial (Ammonius even calls it γένεσις τις at 83.19)—even as they may not read this exactly as I do—but more importantly there is also *no indication in the text of Phys.* 7.3 that Aristotle intends *substantial* generation when he claims that shapes and states undergo γένεσις. Moreover, this narrow, “substantialist” reading leads to an interpretive problem for Wardy as well (although he takes it to be Aristotle’s problem, “an important flaw”), viz., “that there are two ways to acquire (or lose) a ἕξις [i.e., as a *relative* and as a *quality*], and that Aristotle takes account of only the one with which his argument can cope [i.e., the former]” (*ibid.*, 219). The problem vanishes, however, when one takes *Phys.* 5.1 (and QG), not merely *GC* 1.1, to be the relevant background γένεσις τις from *Phys.* 5.1 as a genuine, *sui generis* pathway for qualitative change. In what follows, thus, I part ways with Wardy, despite his indispensable commentary on *Phys.* 7 in most other respects.

QG seems to be just this: you invite serious questions of the causal ordering—questions serious enough to disrupt Aristotle’s entire project here in the *Physics*, viz., to ground all natural change in the cosmic change of the unchanged changer.⁶³⁵

Unsurprisingly, Aristotle has a solution for this, too: He will require that all instances of non-kinetic QG of all non-perceptibles be *accompanied by either* the S1 or S2 alteration of perceptibles. We shall call this *the accompaniment thesis* (AT). Of the generation of shapes he says, “But perhaps (μὲν ἴσως) it is necessary (ἀναγκαῖον) that each comes to be (γίγνεσθαι) with something being altered (ἀλλοιουμένου), e.g., the matter being condensed or rarefied, or heated or cooled” (246a6-8).⁶³⁶ That is *when* certain S1 material alterations occur (e.g., condensation, rarefaction, heating, cooling, etc.), *then* shapes come to be via QG. This is Aristotle invoking AT. And notice that on AT, says Aristotle, there is no QG without S1 or S2 alteration—even as S1 or S2 cannot be reduced to generation.⁶³⁷ Via the introduction of AT, not only is the contact thesis secured but the causal order is as well.⁶³⁸

The logic of all this is important here. If *all* alteration must occur via contact as the *reductio* against infinite causal chains requires, then Aristotle must either say: (a) The first, second, and fourth species of quality (i.e., states, capacities, and shapes and figures) alter by

⁶³⁵ See the beginning of chapter 1 above for a statement of this project. Cf. Ross, *Aristotle’s Physics. A Revised Text with Introduction and Commentary*, 85: “The subject of the *Physics* is nature; and nature is an internal principle of movement. Thus the *Physics* reaches its culmination in book viii whose object is to account for the presence of movement in the world and for its having the characteristics it has. The argument of book viii is essentially an argument from the eternal existence of change to the existence of an unmoved mover *which causes it*” (italics mine). See too *ibid.*, 88: “If an infinite regress is to be avoided, there must be a first cause of movement which causes movement not by virtue of being moved by anything else; in other words, which is either self-moved or unmoved.”

⁶³⁶ ἀλλὰ γίγνεσθαι μὲν ἴσως ἕκαστον ἀναγκαῖον ἀλλοιουμένου τινός, οἷον τῆς ὕλης πυκνουμένης ἢ μανουμένης ἢ θερμαινομένης ἢ ψυχόμενης.

⁶³⁷ On Aristotle’s stance “anti-reductionism” here, see Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 152–55. Cf. *ibid.*, 221: “Accompaniment is not identity.”

⁶³⁸ So, on the equally applicable subject of states of the soul, Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 224: “Aristotle strives to maintain a precarious balance: he must deny that change in ethical ἔξις is alteration, but must convincingly associate such change with strict ἀλλοίωσις, even if at a remove” (italics original). Cf. Cristina Viano’s contribution in Maso, Natali, and Seel, *Reading Aristotle*, 92.

contact just like the fourth species, perceptibles; (b) the three non-perceptible species of quality do not alter or change at all; or (c) the three non-perceptible species of quality change but do not alter—although whenever they do change, there is *of necessity* an accompanying S1 or S2 alteration of perceptibles. Option (c), of course, is AT. Again, Aristotle’s *reductio* against infinite causal chains—the very *crux* of bk 7—is at stake, so he is forced to press this rather odd line. So, how does Aristotle treat changes of the three non-perceptible species of quality? Does he employ strategy (a), (b), or (c)? He will never employ (a) as he struck down this option in the first lines of 7.3 at 245b3-8. Hence the options are down to (b) and (c). As we have just seen, he employs (c) or AT in the case of shapes and figures. What is interesting about this account is just how the “perhaps necessary” (ἀναγκαῖον, 246a6-7) attempts to secure AT with force of *necessity*. Shapes and figures are generated *only when* the underlying matter is perceptibly S1 altered (246a6-8). As such, *all generations* of shape and figure are necessarily accompanied or precipitated by S1 *alteration* of perceptibles. The contact thesis is thus secured by (c) or AT for shapes and figures with the force of necessity. Again, this might seem an odd point to press, but the contact thesis being crucial for his *reductio* against infinite causal chains requires that he do so. And as we shall see, AT is just the strategy Aristotle will follow throughout this chapter, eventually dropping the cautious μὲν ἵσως as he presses forward.

5.1.2.1.2 What States Are: Perfections and Relatives

Before moving on to Aristotle’s account of the change of states here in 7.3, we must first address two preliminary matters in order to make this account clear. The first is that states are either perfections or defects of a thing in accordance with its nature, and the second is that in addition to qualities, states are also relatives. Let us take these suppositions in order.

First, the supposition that states are perfections or departures. Immediately after canvassing the subject of alteration and generation with respect to shapes and figures, Aristotle moves on to examine the status of states (ἕξεις) generally (246a10-b3). This analysis gives him fodder for his analysis of three types of states to come, namely bodily states (246b3-20), states of the soul (247a1-19), and finally, states of the intellect (247b1-48a9). He begins this section very sternly: “Nor indeed are states, either of the body (τοῦ σώματος) or of the soul (τῆς ψυχῆς), alterations (ἀλλοιώσεις)” (246a10-11).⁶³⁹ Again, we should be struck by the fact that Aristotle is clearly using ἀλλοιώσεις to refer to product alterations^o. As the rest of chapter 3 confirms, he is under no illusions that states are anything other than first actuality products of first potentialities, not the *transitions* from one to the other.⁶⁴⁰ This is, of course, consonant with our claim at the end of chapter 3 that on the QG account first and second actuality perception are actualities, not transitions to actuality—yet they are also instances of “alteration of a sort.” This is not a confusion on Aristotle’s part, but rather just part of the inherent flexibility of the terms. But more on this later. Back to our current query: If states are not alterations^o then what then are they? States are to their bearers “excellences” (ἀρεταὶ) or “defects” (κακίαι)—neither of which is an alteration^o.⁶⁴¹ Rather, “excellence is a kind of perfection (τελείωσις τις)” (246a13) while “defect, on the other hand, is a destruction (φθορά) and departure (ἔκστασις) from this (τούτου)”

⁶³⁹ ἀλλὰ μὴν οὐδ’ αἱ ἕξεις οὐθ’ αἱ τοῦ σώματος οὐθ’ αἱ τῆς ψυχῆς ἀλλοιώσεις.

⁶⁴⁰ Morison, for instance, suggests that we should read “states” as the *process of acquiring or losing* a state (Maso, Natali, and Seel, *Reading Aristotle*, 46). But this makes for a tortured reading of *Phys.* 7.3. Better is the approach taken here (as we have already indicated): states are *perfections* or *completions*, terminology Aristotle uses of actualities, not actualizing potentialities (i.e., incomplete actuality).

⁶⁴¹ The words ἀρετή and κακία are often used for virtue and vice respectively (e.g., *Cat.* 11 14a23, *EN* 7.1 1145a25-26, *Meta.* Δ.14 1020b18, etc.), but Aristotle seems to mean something broader here than just the moral domain as he is speaking of these sorts of states *of body* as well as soul. Hence, I will continue to use the broader terms “excellence” and “defect” to refer to them. As for whether *all* states are *either* virtues or vices for Aristotle, it is unclear. On both points, see Coope in Maso, Natali, and Seel, 59. On the latter question, see Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 209–10.

(246a16-17).⁶⁴² But what does it mean to say that a virtue is a τελειώσις and a vice a ἑκστασις?

The key term here is τελειώσις, as ἑκστασις just is the displacement or loss of τελειώσις.⁶⁴³

While rare, Aristotle lets us in on his intended meaning at 246a13-16:

For in each case, when something has acquired its own excellence (ἀρετήν), then it is called perfect (τέλειον)—for then it is most in accordance with [its own] nature (κατὰ φύσιν)—just as a circle is perfect (τέλειος), when it has become a circle in the highest degree and [has become] best (βέλτιστος).⁶⁴⁴

This is precisely the same account that we see in Aristotle's treatment of το τέλειον⁶⁴⁵ in the philosophical lexicon in *Metaphysics* Δ.16 as well at 1021b23-25: "Things which have reached their fulfillment (τέλος), when it is worthwhile, are called complete (τέλεια), for they are complete (τέλεια) by virtue of having attained their fulfillment (τέλος)."⁶⁴⁶ Or, as we have it in *Physics* 7.3 246a15, to be perfect is to be complete, fulfilled, at a thing's proper end "in accordance with [its own] nature."⁶⁴⁷ Perfections are always perfections of some specified

⁶⁴² 246a13: ἡ μὲν ἀρετὴ τελειώσις τις. 246a16-17: ἡ δὲ κακία φθορὰ τούτου καὶ ἑκστασις. Cf. 247a2-3: "The excellences are perfections and the defects are departures from perfection." αἱ μὲν ἀρεταὶ τελειώσεις, αἱ δὲ κακαὶ ἐκστάσεις.

⁶⁴³ Hence, the LSJ's first entry for ἑκστασις gives "displacement". While rare in Aristotle (it occurs only fourteen times in the entire *Corpus*), cf. *Cat.* 8 10a2-3 where he speaks of ἐκστάσεις as "aberrations that are not natural" (ὅσαι ἐκστάσεις μὴ φυσικαί)—that is, *departures* from the normal or natural.

⁶⁴⁴ ὅταν γὰρ λάβῃ τὴν αὐτοῦ ἀρετὴν, τότε λέγεται τέλειον ἕκαστον—τότε γὰρ ἔστι μάλιστα [τὸ] κατὰ φύσιν—ὥσπερ κύκλος τέλειος, ὅταν μάλιστα γένηται κύκλος καὶ ὅταν βέλτιστος.

⁶⁴⁵ Το τέλειον ("the complete") is a substantive adjective while τελειώσις—and the less frequent τελειότης ("completion/completeness")—are both abstract nouns.

⁶⁴⁶ ἔτι οἷς ὑπάρχει τὸ τέλος, σπουδαῖον <ὄν>, ταῦτα λέγεται τέλεια· κατὰ γὰρ τὸ ἔχειν τὸ τέλος τέλεια. Kirwin translation, modified.

⁶⁴⁷ Coope is persuasive here. She takes the τούτου in reference to "departures" at 246a17 to refer back to "being in accordance with nature" (κατὰ φύσιν) at 246a15 with this result: "The point, then, would be that becoming excellent is becoming *most* in accordance with nature, while becoming defective is departing from being in accordance with nature" (Coope in Maso, Natali, and Seel, *Reading Aristotle*, 64–65). I am not persuaded, however, by her contention that τελειώσις refers to a *process* rather than the *product* or *result* of that process on the thin evidence of the process-use of τελειώσις at *Meteo.* 379b18 (*ibid.*, 62; although cf. Wisnovsky, *Avicenna's Metaphysics in Context*, 38). Consistently applied to *Phys.* 7.3, it would result in tortured reading and excessive inconsistency. The product-use of τελειώσις is further established by parallels in *Meta.* Δ.16, as we shall see.

nature.⁶⁴⁸ We find this ‘nature’ language too in *Metaphysics* Δ.16, and also applied to excellences:

Excellence (ἀρετή) is a kind of perfection (τελείωσις τις), for each thing is complete (τέλειον) and every substance (οὐσία) is complete (τελεία) when in respect of the species (εἶδος) of its own proper excellence (ἀρετῆς) no portion of its natural magnitude (φύσιν μεγέθους) is deficient” (1021b20-23).⁶⁴⁹

Alexander comments here: “[Each thing is perfect] when no portion of the excellence proper to the species to which to which it belongs is lacking, [no portion, that is] ‘of its natural magnitude’, since a man is complete if he is deficient in no aspect of human excellence” (*in Meta.* 411.9-11).⁶⁵⁰ Presumably, this is why Aristotle calls them completions or perfections “*of a sort*” (τελείωσις τις)—used only in these two passages in the *Corpus*: if perfection proper refers to the *no deficiency in excellency whatsoever* (i.e., the entire species-specific range or complete set), then a *sort* of perfection would refer to a smaller range or subset. So, here: Any given excellence is less than the whole, but *qua* a species-specific fulfillment, it is a *sort* of perfection of a thing “in accordance with its nature.” Perfection, thus, is actuality—or a perfection is *an* actuality, first or second. In the ancient commentators, hence, perfection (τελείωσις or τελειότης) becomes a *gloss* for actuality (ἐντελέχεια or ἐνέργεια).⁶⁵¹

⁶⁴⁸ This will, of course, make perfections and departures *relatives*—even when they are qualities like states. As for *how* any entity can belong to two categories at once, see the discussion below.

⁶⁴⁹ Kirwin translation, modified. ἡ ἀρετὴ τελειώσις τις· ἕκαστον γὰρ τότε τέλειον καὶ οὐσία πᾶσα τότε τελεία, ὅταν κατὰ τὸ εἶδος τῆς οἰκείας ἀρετῆς μηδὲν ἐλλείπη μόνιον τοῦ κατὰ φύσιν μεγέθους.

⁶⁵⁰ ἀντὶ τοῦ ὅταν ταύτης τῆς τοῦ εἶδους ἐν ᾧ ἐστὶν οἰκείας ἀρετῆς μηδὲν ἐλλείπη μόνιον τοῦ κατὰ φύσιν μεγέθους. Dooley translation, modified. Brackets original.

⁶⁵¹ See Wisnovsky, *Avicenna’s Metaphysics in Context*, 39, 41, 52, etc.

Not only are excellences perfections in this sense, but so too are product changes⁶⁵². As we saw in chapter 1, while process change is “*incomplete* actuality” (ἀτελής ἐνέργεια),⁶⁵² product change⁶⁵³ is “*complete* actuality” (τέλεια ἐνέργεια)⁶⁵³—something that has *already* arrived at its end, something *already* complete or perfect with respect to its actuality. In change⁶⁵⁴—whether κίνησις⁶⁵⁴, μεταβολή⁶⁵⁴, generation⁶⁵⁴, destruction⁶⁵⁴, or alteration⁶⁵⁴—there is just no remaining potentiality to be actualized.⁶⁵⁴ They are the *results* of having changed, not changes themselves. Likewise with excellencies and (by transference) defects:⁶⁵⁵ they are perfections or departures from perfection. And in neither case is such a state an alteration⁶⁵⁶ or the result of an alteration.⁶⁵⁶

⁶⁵² *Phys.* 3.2 201b32, 5.4 228b14, 8.5 257b9, 8.9 265a22, *Meta.* Θ.6 1048b29, K.9 1066a21, *DA* 2.5 417a16, *EN* 10.4 1174a26, etc.

⁶⁵³ The only genuine instances of the phrase occur at *EN* 10.4 1174b17 and *EE* 2.1 1219a38-39, the former of which cites (3) second actuality perception as an instance. It also occurs in Iamblichus’ citation of Aristotle’s lost *Protrepticus* where he is quoted as saying that contemplation (θεωρητική) is an instance of “complete actuality” (B87.1-2). See too the passages referenced in support of this point in chapter 1: *Phys.* 5.4 228b11-15: “Further, [a κίνησις] is also said to be one when it is *complete* (τέλειος), whether in genus, in species, or in substance, and, just as in the other cases, completeness (τέλειον) and wholeness (ὅλον) belong to what is one. Sometimes, though, even an *incomplete* (ἀτελής) [κίνησις] is said to be one, but only if it is continuous.” Cf. *EN* 10.4 1174a19-23: “For every change (κίνησις), such as constructing a building, takes time, and aims at some end, and is *complete* (τέλεια) when it produces the product it seeks, or [in other words, is complete] in this whole time [that it takes]. And in the parts and in the time they are all incomplete (ἀτελείς), and they differ in form from the whole and from each other” (Irwin translation, modified). See too, *Phys.* 6.5 236a7-10: “But there are two ways of talking about that in which something has first changed (πρώτῳ μεταβέβληκε). On the one hand it may mean the first time at which the change (μεταβολή) is *completed* (ἐπετελέσθη)—the moment when it is correct to say ‘it has changed’ (μεταβέβληκεν); on the other hand it may mean the first time at which it began to change (μεταβάλλειν).”

⁶⁵⁴ Cf. Simplicius in *Cat.* 307.9-15: “Change (κίνησις) in general is called incomplete (ἀτελής) by the ancients by way of contrast with ἐνέργειας; for it was not ἐνέργεια but ἐντελέχεια which was called incomplete (ἀτελής), because although one sort of ἐντελέχεια is a containment of perfection (τελειότης) in respect to form (εἶδος), the other [sort of actuality] is a drawing on of the potentially changeable (δυνάμει κινητού) into the form (εἶδος), and this [sort of actuality], being change (κίνησις), is called incomplete actuality (ἀτελής ἐντελέχεια) by way of contrast with complete actuality (τέλειαν ἐντελέχεια).” Gaskin translation, modified. Simplicius makes too much of the difference between ἐνέργεια and ἐντελέχεια I think, especially as Aristotle uses ἀτελής ἐντελέχεια and ἀτελής ἐνέργεια interchangeably. Cf. e.g., *Phys.* 3.2 201b32 and 8.5 257b9 for both uses.

⁶⁵⁵ *Meta.* Δ.16 1021b25-28 “And since fulfillment is something ultimate, we also say, by transferring it (μεταφέροντες) to the case of worthless things, that a thing has been completely spoiled and completely destroyed when there is no deficiency in its destruction and badness but it has reached the ultimate.” καὶ ἐπὶ τὰ φαῦλα μεταφέροντες λέγομεν τελείως πολωλέναι καὶ τελείως ἐφθάρθαι, ὅταν μηδὲν ἐλλείπη τῆς φθορᾶς καὶ τοῦ κακοῦ ἀλλ’ ἐπὶ τῷ ἐσχάτῳ ᾗ.

⁶⁵⁶ Cf. Wisnovsky, *Avicenna’s Metaphysics in Context*, 43: “Aristotle... almost always uses *teleiōsis* to refer to states such as ‘excellences’ (*aretai*) that present themselves *following transitions* (such as not-contemplating to contemplating) which are *not* changes of quality (*alloiōseis*).” It is worth noting here that Aristotle parlays the fact that excellences are perfections into an argument *against* them coming to be by alteration (see 246a17-b3). The details, however, are beyond our concern as Aristotle does not there specify what they are instead alterations⁶⁵⁶.

As the ancient commentators noted,⁶⁵⁷ if “perfection” or “completion” (τελείωσις) applies to (2) *first* actuality states, how much *more* will it apply to their (3) *second* actuality activities? Again, we are not specifying the (1) to (2) or (2) to (3) transitions here, but the *products* of those transitions—the *changes*^ω. The remaining issue here is that if states are qualities and they do not come to be by alteration, then *how* do they come to be? This is the question on which we will focus below.

Second, the supposition that states are both qualities *and* relatives. As we have noted in detail, states (ἔξεις) and conditions (διαθέσεις) belong to the first species of *quality*, nay, *are* the first species of quality. Hence, Aristotle on the topic of qualities in *Categories* 8: “one kind of quality (ποιότητος) let us call states (ἔξεις) and conditions (διαθέσεις)” (8b26-27). The sense here is clear and of what the species consists is perspicuous. The problem, however, is that in the preceding chapter on relatives, *Categories* 7, Aristotle had listed states and conditions as belonging to the category of *relative* (6b4-8):

The following, too, and their like, are among relatives (πρός τι): state (ἔξις), condition (διάθεσις), perception (αἴσθησις), knowledge (ἐπιστήμη), position (θέσις). For each of these is called what it is (and not something different) *of* something else. A state is called

Nevertheless, for an argument outline and the argumentative details, see Coope in Maso, Natali, and Seel, *Reading Aristotle*, 57–58, 64–71.

⁶⁵⁷ So, e.g., as Philoponus states in several places, perfection (τελειότης—a synonym in Aristotle for τελείωσις) is (3) second actuality (*in DA* 302.13-14, 303.9-15) as well as (2) first actuality/second potentiality, the latter of which is “perfection in a way” (τελειότητα πως, 304.27). Perfections, thus, are (2) first or (3) second actualities which are the *products* of the (1) to (2) transition and the (2) to (3) transition. Cf. Wisnovsky, *Avicenna’s Metaphysics in Context*, 42: “The Neoplatonists [i.e., Ammonius, Philoponus, Simplicius, etc.] subscribed generally to the understanding of *teleiôtês* [τελειότης] as endedness.” The same applies too for the Peripatetic, Alexander, who “appeals to *teleiôtês* [τελειότης] whenever he wishes to gloss *entelekheia* [ἐντελέχεια]” (*ibid.*, 43; cf. 45). According to Burnyeat (“De Anima II 5,” 63, n. 92.), “‘perfecting’ is standard in the ancient commentators [for actuality].” He immediately goes on to reference Alexander (*Quaest.* 3.2, 82.13-17, 84.27), Themistius (*in DA* 56.12), and Philoponus (*in DA* 304.24) in this regard.

a state *of* something, knowledge knowledge *of* something, position position *of* something, and the rest similarly.⁶⁵⁸

But how can this be? This might work with relative categories like position (κεῖσθαι) and having (ἔχειν), as both are intrinsically relative as we saw in chapter 1.⁶⁵⁹ For with respect to position and having there is nothing barring them from being classified as both—in part because both categories would appear to be specifications of the category of relative itself.⁶⁶⁰ Qualities and relatives, on the other hand, would seem to have conflicting intrinsic features so as to make them mutually exclusive. Qualities, for instance, would seem just what they are in themselves, whereas relatives are what they are relative to something else.⁶⁶¹ Aristotle recognizes this as a concern later on in *Categories* 8: “We should not be disturbed lest someone may say that though we proposed to discuss quality (ποιότητος) we are counting many relatives (πρός τι)—since states (ἕξεις) and conditions (διαθέσεις) are relatives (πρός τι εἶναι)” (11a20-23).⁶⁶² But *why not* be so concerned? The answer is rooted in the fact that Aristotle has two definitions of relative, an initial definition (Df 1) from *Categories* 7 and a final definition (Df 2) from later in the chapter.⁶⁶³ Let us take a look.

⁶⁵⁸ ἡ γὰρ ἕξις τινὸς ἕξις λέγεται καὶ ἡ ἐπιστήμη τινὸς ἐπιστήμη καὶ ἡ θέσις τινὸς θέσις, καὶ τὰ ἄλλα δὲ ὡσαύτως. πρὸς τι οὖν ἐστὶν ὅσα αὐτὰ ἄπερ ἐστὶν ἐτέρων λέγεται, ἢ ὅπως οὖν ἄλλως πρὸς ἕτερον.

⁶⁵⁹ On κεῖσθαι, see *Cat.* 7 6b11-14; on ἔχειν see *Meta.* Δ.20 1022b4-10.

⁶⁶⁰ Cf. Aquinas, *Expositio libri Physicorum*, 5.3.662: “*Situs* [position] denotes order of parts, and order is a relation; in like manner, *habitus* [having] bespeaks a relationship existing between a body and what is adjacent to it. Hence there can be no motion in *situs* and *habitus* any more than in relation.” Blackwell, Spath, and Thirlkel translation, modified. Cf. Simplicius *In cat.* 334.14-20 & 365.8-9.

⁶⁶¹ To use G.E. Moore’s example, “Good is good, and that is the end of the matter”—no matter whether there is something *comparatively* bad. Large, however, is *only* large *relative to* something smaller. See G. E. Moore, *Principia Ethica*, 1968 Reprint (New York: Cambridge University Press, 1903), 6.

⁶⁶² Οὐ δεῖ δὲ ταράττεσθαι μή τις ἡμᾶς φήσῃ ὑπὲρ ποιότητος τὴν πρόθεσιν ποιησαμένους πολλὰ τῶν πρὸς τι συγκαταριθμεῖσθαι· τὰς γὰρ ἕξεις καὶ τὰς διαθέσεις τῶν πρὸς τι εἶναι.

⁶⁶³ On the two definitions see Sorabji, *The Philosophy of the Commentators, 200-600 AD*, 3: Logic and Metaphysics: 79–88, esp. 79. For a similar account, see David Sedley, “Aristotelian Relativities,” in *In La Style de La Pensee*, ed. Monique Canto-Sperber and Pierre Pellegrin (Paris: Les Belles Lettres, 2002), 332–339.

Df 1 is the broader of the two definitions, capturing all sorts of things in its net: “We call relatives all such things as are said to be just what they are, *of* or *than* other things, or in some other way in relation to something else” (8a36-37).⁶⁶⁴ While Aristotle initially assumes the accuracy of Df 1, he later becomes bothered in that it would make *substances* (or their parts) relatives as well (8a26-28), undermining his entire categorial theory, which requires the absolute basicity of the category.⁶⁶⁵ Aristotle solves this problem (8a35ff) with the more stringent Df 2: “Those things are relatives for which being is *the same as* being somehow related to something” (8a31-32).⁶⁶⁶ These two definitions give us the distinction between what David Sedley has termed “soft relatives” and “hard relatives.”⁶⁶⁷ What is the difference?

It is not a *de dicto* vs. *de re* distinction, as Sedley makes clear, for Aristotle too frequently moves back and forth between how things are “said” and how they actually *are* for this to be the distinction he is making here.⁶⁶⁸ A better option is as follows. A soft relative on Df 1 is that which, as Sedley puts it, “*x* is *F* requires a completion”; one cannot just say *x* is *F*, but one must *complete* the sentence with “*x* is *F of y, than y, for y*” or something of that sort.⁶⁶⁹ Knowledge is always knowledge *of* something. Perception, as we have seen, is always perception *of* some perceptible.⁶⁷⁰ Excellences and defects too are relatives, *qua* perfections or departures *of* a

⁶⁶⁴ Πρὸς τι δὲ τὰ τοιαῦτα λέγεται, ὅσα αὐτὰ ἅπερ ἐστὶν ἐτέρων εἶναι λέγεται ἢ ὁπωσοῦν ἄλλως πρὸς ἕτερον.

⁶⁶⁵ See this same analysis in Sedley, “Aristotelian Relativities,” 325.

⁶⁶⁶ ἔστι τὰ πρὸς τι οἷς τὸ εἶναι ταυτόν ἐστι τῷ πρὸς τί πως ἔχειν. The surrounding lines read as follows (8b28-33): “Now if the definition of relatives which was given above was adequate, it is either exceedingly difficult or impossible to reach the solution that no substance is spoken of as a relative. But if it was not adequate, and if those things are relatives for which being is the same a being somehow related to something, then perhaps some answer may be found.” εἰ μὲν οὖν ἱκανῶς ὁ τῶν πρὸς τι ὀρισμὸς ἀποδέδοται, ἢ τῶν πάνυ χαλεπῶν ἢ τῶν ἀδυνάτων ἐστὶ τὸ λῦσαι ὥς οὐδεμία οὐσία τῶν πρὸς τι λέγεται· εἰ δὲ μὴ ἱκανῶς, ἀλλ’ ἔστι τὰ πρὸς τι οἷς τὸ εἶναι ταυτόν ἐστι τῷ πρὸς τί πως ἔχειν, ἴσως ἂν ρηθεῖη τι πρὸς αὐτά.

⁶⁶⁷ Sedley, “Aristotelian Relativities,” 334.

⁶⁶⁸ Sedley, 332–33.

⁶⁶⁹ Sedley, 334.

⁶⁷⁰ Cf. *Cat.* 7 6b34-36: “Knowledge is called knowledge *of* what is knowable, and what is knowable knowable *by* knowledge; perception perception *of* the perceptible, and the perceptible perceptible *by* perception.” ἢ ἐπιστήμη

specific nature. Anything that can be said to be *of* or *than* something else will be classed as a soft relative.⁶⁷¹ Hard relatives on Df 2, however, are “those properties which consist in a relation *and nothing more*.”⁶⁷² Double and larger *are nothing more than* the relation between two things.⁶⁷³ But not anything that can be said to *of* or *than* something else will be classed as a hard relative. As Sedley goes on to point out:

Soft relatives, unlike hard relatives, are characterized primarily by *an intrinsic condition*, such as the mental state of the *epistēmōn* [knower], or, in the case of *aisthēsis* [perception], the kind of modification undergone by the perceiver’s sense-organ. To that extent, the soft-relative state is *not merely* a function of its external correlate.⁶⁷⁴

Relatives such as states like knowledge, perception, and virtue are Df 1 *soft* if they are primarily characterized by an intrinsic condition. Relatives such as double and larger are Df 2 *hard* if they are what they are due to the mere arraignment of external correlates. Is there a test by which we can tell in difficult cases just what exactly is what? Perhaps we can plainly see that knowledge is not *just* a relative, nor perception. There is always an *intrinsic* state which underlies the comings and goings of these things, as Sedley points out in the quotation above. But perhaps the states of virtue and vice might seem more like instances of hard relatives to one. Wardy, for instance, takes this line:

ἐπιστητοῦ λέγεται ἐπιστήμη καὶ τὸ ἐπιστητὸν ἐπιστήμη ἐπιστητόν, καὶ ἡ αἴσθησις αἰσθητοῦ αἴσθησις καὶ τὸ αἰσθητὸν αἰσθήσει αἰσθητόν.

⁶⁷¹ Cf. Ackrill’s point that “Aristotle has no noun for ‘relation’ but exploits a preposition having the force ‘relative to’, ‘in relation to’” (Ackrill, *Aristotle’s Categories and De Interpretatione*, 98); cf. *ibid.* 78: “Aristotle has no noun meaning ‘relation’. ‘A relative’ translates a phrase [πρός τι] consisting of a preposition followed by a word which can function as the interrogative ‘what?’ or the indefinite ‘something’. In some contexts the preposition will be rendered by ‘in relation to’ or ‘related to’.”

⁶⁷² Sedley, “Aristotelian Relativities,” 334.

⁶⁷³ As Sedley points out (*ibid.*, 334), Aristotle gives two lists at the beginning of *Cat.* 7, which in retrospect sure seem to map on to this hard/soft relative distinction; namely, double and larger at 6a37-b2, and then state, condition, perception, knowledge, etc. at 6b2-3.

⁶⁷⁴ Sedley, “Aristotelian Relativities,” 338. Italics mine. Cf. Simplicius *in Cat.* 166.15-29, from whom Sedley draws.

Remove a plump Eskimo⁶⁷⁵ from his arctic home and subject him to equatorial conditions, and his bulk becomes a handicap. Since the fat has been transformed from a good to bad condition without undergoing any intrinsic alteration, it is plausible to conclude that the shift from healthy to unhealthy character is just Cambridge change.⁶⁷⁶

But is this correct? How could one tell? Sedley suggests the following test: “A relative property is a hard-relative if it is subject to what is nowadays called Cambridge change, that is, if its bearer can acquire and lose it without undergoing any intrinsic alteration, simply because something external has altered.”⁶⁷⁷ Hence, in Wardy’s case perhaps a dispositional state’s abstract *status* as either “good” or “bad” *for a thing in situ* is a hard relative.⁶⁷⁸ But *the disposition itself* surely is not a hard relative. While it is either a perfection or a departure of a thing’s *fixed nature*, this only makes it a *soft* relative. Its *being* is not the same as its being related to something—for it is something *in its own right*. Hence, it is immaterial whether a virtue abstractly helps or harms its subject in situation *x* as opposed to *y*. Such external conditions are not what *make* a virtue a virtue. Rather, as *mere soft relatives*, virtues and vices are internal dispositional states which are what they are *intrinsically* for what has them. To undergo change with respect to knowledge or perception is not mere Cambridge change because for either to come to be or cease to be *in the subject*, some underlying condition must genuinely change. The

⁶⁷⁵ I should like to point out that here, Wardy’s book, written in 1990, shows its age. As Lawrence Kaplan, Professor Emeritus and former director of the Alaska Native Language Center at the University of Alaska Fairbanks, points out: “Although the name ‘Eskimo’ was commonly used in Alaska to refer to Inuit and Yupik people of the world, this usage is now considered unacceptable by many or even most Alaska Natives.... ‘Inuit’ is now the current term in Alaska and across the Arctic, and ‘Eskimo’ is fading from use” (italics mine). See his article “Inuit or Eskimo: Which name to use?” (undated) on the Alaska Native Language Center website at https://www.uaf.edu/anlc/resources/inuit_or_eskimo.php.

⁶⁷⁶ Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 219. While he himself finds problems with the sort of “hard” relative analysis in the next few lines, Wardy nevertheless takes this to be *Aristotle’s* position in *Phys.* 7.3. We will note our disagreement when the time comes.

⁶⁷⁷ Sedley, “Aristotelian Relativities,” 340–41.

⁶⁷⁸ I specify *abstract* because if it is concretely good or bad it will either be the result of—or result in—genuine change of the subject, i.e., alteration of its body, its death, etc.

same applies to virtue and vice. It is not enough for the external conditions to change as when Socrates “becomes” shorter than Theaetetus without himself changing, but rather *the disposition itself* must come and go if one is to change with respect to such things.

Returning to states generally, let us conclude with this. While states are indeed relatives, they are not *merely* relatives. As soft relatives, they are qualities as well. Knowledge is *both* a quality and a relative—but only because it is a *soft* relative; perception, too, as well as excellence and defect. As Aristotle concludes in *Categories* 8: “Moreover, if the same thing really is a *qualification* and a *relative* there is nothing absurd in its being counted in both genera” (11a37-38).⁶⁷⁹ Or, as Simplicius puts it, “State has one mode of being among relatives and another among qualified things” (*in Cat.* 292.9-10).⁶⁸⁰ The same could never be said of hard relatives as, per Df 2, their being *just is* “the same as” being related in some way. Applied to change, this means that hard relatives must change *only* as relatives—which is to say their “becoming” is mere *Cambridge becoming*, in McDowell’s phrase. Relative “change” is pseudo-change which is always parasitic on some more basic change of one of the four canonical modes: substantial, qualitative, quantitative, or locomotive.⁶⁸¹ But this is not so with soft relatives. While surely they *do* “change” as relatives *qua* relative, *they are qualities too*. And that means that *when* they undergo pseudo-change *qua* relative, they also *genuinely* change *qua* quality. For any Cambridge change in soft relatives *qua* relative will *always* be parasitic on with some genuine change in that very same entity *qua* quality with which it is simultaneous. Hence, even if *qua* relative knowing and perceiving are Cambridge changes, they are not merely so. There is always some subvenient quality that will come to be or cease to be either by alteration or qualitative generation or

⁶⁷⁹ ἔτι εἰ τυγχάνει τὸ αὐτὸ ποιὸν καὶ πρὸς τι ὄν, οὐδὲν ἄτοπον ἐν ἀμφοτέροις τοῖς γένεσιν αὐτὸ καταριθμεῖσθαι.

⁶⁸⁰ ἄλλως μὲν ἢ ἐξίς ἐσται ἐν τοῖς πρὸς τι, ἄλλως δὲ ἐν τοῖς ποιού.

⁶⁸¹ See chapter 1 above for an analysis.

destruction, as our dilemma has shown. Hence, even if, to use Simplicius' language, in the 'mode of being among relatives' the "change" undergone is mere Cambridge change or *per accidens*, in the 'mode' of being among qualities the change is genuine or *per se*.⁶⁸² In the case of perception, for instance, second actuality perceiving (3) is a relative change, but not *just* a relative change. It is a relative change parasitic on a *per se* change in the percipient, viz., an S2 alteration from (2) state to (3) activity, which is the coming to be of an affective quality in the percipient in a perceptual mode.⁶⁸³ As we will discover, however, things are much more complicated with knowledge. With these two preliminary distinctions in hand, let us return to *Physics* 7.3 and the case of coming to be of bodily states.

5.1.2.1.3 The Case of Bodily States

Aristotle began *Physics* 7.3 with the case of shapes and figures: they do not S1 or S2 alter but are generated and destroyed—even as via AT they are *accompanied by* S1 alterations. This we have seen. But what now of the remaining species of quality, *states*?⁶⁸⁴ We know from the beginning lines of the chapter that Aristotle will not allow them to alter (245b3-8);⁶⁸⁵ only perceptibles alter, in keeping with the contact thesis of chapter 2. We have also seen from the argument from contrariety from *Categories* 10 that the application of Aristotle's kinetic principles to states yields genuine qualitative generation and destruction *al la* QG, not alteration. But what says he here? If states change, then per our dilemma, they are either c) genuine

⁶⁸² See this *per accidens/per se* distinction applied to false versus genuine change at *Phys.* 5.1 224a21-28, 224b22-24, 26-28; cf. 5.2 225b11-13.

⁶⁸³ That is, the perceptible red is not generated in the percipient (or not merely so), but *seeing* red. On seeing specifically, see *DA* 3.2 426a13-14; on perception generally, see *De Sensu* 1 436b6-8 and *De Somno* 1 454a7-11.

⁶⁸⁴ Assuming, as was posited above, that what is said here of states applies just as well to capacities, *qua* potentialities of states.

⁶⁸⁵ "That everything which is altered (ἀλλοιούμενον) is altered (ἀλλοιοῦται) by perceptibles (αἰσθητῶν), that is, that alteration (ἀλλοίωσις) takes place only in those things which are said to be affected (πάσχειν) in their own right by perceptibles (αἰσθητῶν), is to be seen from the following considerations. For of the other [cases], someone would most of all suppose that alteration (ἄλλων) takes place in shapes and figures, and in states, and in the taking on and casting off of them: but in neither of them [is there alteration]."

instances of change as captured via QG, or their comings and goings are instances of d) pseudo-generation. Which is it? The results are mixed.

Speaking first of states of the body (τοῦ σώματος, 246b4)—e.g., health, fitness, beauty, strength, etc.—he notes that while belonging to the category of quality (ποιόν), states *also* belong in the category of relative (πρός τι, 246b3-4).⁶⁸⁶ States are *of* something else: states of the body are *of* the body; states of the soul are *of* the soul—and as bodily excellences (246b3-4) they are perfections *of* a certain nature. Under Df 1, such states of the body are clearly relatives, and given that any relative “change” is merely accidental, there can be no genuine change of such states. Instead, as we have seen, relative “change” is parasitic on some genuine change involving real, intrinsic becoming. Thus given, it stands to reason that such states cannot change at all. Speaking specifically of states of the body, Aristotle declares: “Since, then, the relatives (πρός τι) are neither alterations (ἀλλοιώσεις) themselves, nor is there an alteration (ἀλλοίωσις) of them, nor [is there] generation (γένεσις), or any change (μεταβολή) whatsoever [of them]” (246b10-12).⁶⁸⁷ Relatives are not static, product alterations^o (“alterations themselves”) nor, consequently, can they *undergo* process alteration (“nor is there alteration of them”).⁶⁸⁸ Nor, he goes on, are they generated, or even changed *at all*. Notice, Aristotle is using here the broadest possible term

⁶⁸⁶ While Aristotle does not state this both/and here directly, that this is the in view is made plain by the following considerations: (1) *Phys.* 7.3 is *solely* treating the subject of alteration which only occurs among *qualities*; (2) Aristotle is treating one of the four main species of qualities from *Cat.* 8 as he clearly recognizes (and as is recognized by virtually every commentator); and (3) he is telling us that they are *also* relatives—which is the same story from *Cat.* 7 and 8. Any commentator who takes Aristotle to *just* be addressing states *as* relatives here not only has the burden of proof, but also has a great deal of evidence to overturn.

⁶⁸⁷ Bracketed material original to the Maso and Seel translation, which has been modified. ἐπεὶ οὖν τὰ πρὸς τι οὔτε αὐτὰ ἐστὶν ἀλλοιώσεις, οὔτε ἔστιν αὐτῶν ἀλλοίωσις οὐδὲ γένεσις οὐδ’ ὅλως μεταβολή οὐδεμία.

⁶⁸⁸ An alternative way to read the “alterations themselves” clause would be to have it refer to relatives *qua* processes. But who would think that such that Aristotle would need to abuse them of it? Would anyone besides an extreme Heraclitian think that, say, sister-of is a process change rather than a static fact? *Pari ratione* all other relatives.

for change here, μεταβολή, which includes *all* change—either from contrary to contrary or contradictory to contradictory per *Physics* 5.1.

The idea here is as follows: There are no changes that do not involve *intrinsic becoming* (γινόμενον). Relatives do not involve intrinsic becoming. Hence, relatives in no sense change.⁶⁸⁹ This we have seen. But does this mean that *because* bodily states are relatives that they cannot change at all? Of course not. For states are soft relatives, not *merely* (or even *mostly*) relatives, but a *bona fide* species of quality. It is in *this* vein that Aristotle continues in the very next lines (246b12-16):

It is clear that neither the states (ἔξεις), nor the loss (ἀποβολαί) or the acquisition (λήψεις) of states (ἔξεων) are alterations (ἀλλοιώσεις), but perhaps (μὲν ἴσως) it is necessary that (i) they come into being (γίγνεσθαι) and perish (φθείρεσθαι) (ii) when some [other] things undergo alteration (ἀλλοιουμένων), just as proved to be the case for form (εἶδος) and figure (μορφήν).⁶⁹⁰

Notice that Aristotle does not deny that states *come to be* or *become* (γίγνεσθαι).⁶⁹¹ As this would be impossible were states of the body Df 2 hard relatives of which there is “not any change (μεταβολή) whatsoever” (246b12),⁶⁹² it is clear that Aristotle does not take them as suCh. Rather, states are Df 1 *soft* relatives under. Hence, we should actually *expect* him to say that while *qua* relative states cannot change, *qua* quality they do—which is precisely what we find here in

⁶⁸⁹ Again, see *Meta.* N.1 1088a29-35 for the requirement that changes *require* intrinsic becoming. While change and becoming are not identical, they are related via a biconditional such that for all changes *x* and for all becomings *y*, *x* iff *y*, and *y* iff *x*. Or, to put it differently, there is formal distinction between changing and becoming, but no real distinction.

⁶⁹⁰ Maso and Seel translation, modified. φανερόν ὅτι οὐθ’ αἱ ἔξεις οὐθ’ αἱ τῶν ἔξεων ἀποβολαὶ καὶ λήψεις ἀλλοιώσεις εἰσὶν, ἀλλὰ γίγνεσθαι μὲν ἴσως αὐτὰς καὶ φθείρεσθαι ἀλλοιουμένων τινῶν ἀνάγκη, καθάπερ καὶ τὸ εἶδος καὶ τὴν μορφήν.

⁶⁹¹ The verb γίγνεσθαι is just the infinitive, and γινόμενον the participle, of γίγνομαι, “come into being” or “become”.

⁶⁹² οὐδ’ ὅλως μεταβολὴ οὐδεμία. Again, see *Meta.* N.1 1088a29-35 for the requirement that changes *require* intrinsic becoming.

246b14-15 with “but perhaps (μὲν ἴσως) it is necessary that they come into being (γίγνεσθαι) and perish (φθείρεσθαι).”

The reader will immediately recognize, however, that Aristotle appears to hedge a bit here with “but perhaps” (μὲν ἴσως). But notice that he could be hedging on *either* of two claims made in the clause, (i) or (ii). The first claim (i) is that states come to be and perish; the second (ii) is that states come to be or perish *when something else undergoes alteration*. The latter, (ii), would be option (c) or the AT requirement he stipulated of shapes and figures,⁶⁹³ viz., that all instances of non-kinetic QG of all non-perceptibles by necessity be accompanied by the S1 or S2 alteration of perceptibles (246a6-8).⁶⁹⁴ Since *only* perceptibles alter, *perhaps* (ἴσως) states—and shapes and figures, and even capacities—come to be (γίγνεσθαι) *when perceptibles S1 or S2 alter*. This would certainly appear to be what he means here given that he adds in the final line “just as proved to be the case for form and figure”⁶⁹⁵ and the repeated “but perhaps” (μὲν ἴσως) from 246a6.

⁶⁹³ From above: Aristotle must either say: (a) the first, second, and fourth species of quality (i.e., states, capacities, and shapes and figures) alter by contact just like the forth species, perceptibles; (b) that the three non-perceptible species of quality do not alter or change at all; or (c) that the three non-perceptible species of quality change but do not alter, although whenever they do change there is *of necessity* an accompanying S1 or S2 alteration of perceptibles. Option (c) is AT.

⁶⁹⁴ For the suggestion that this would be something like a supervenience claim, see Wardy, *The Chain of Change: A Study of Aristotle's Physics VII*, 204–6. As Jaegwon Kim points out, there are at least two versions of the supervenience thesis: weak and strong. Weak supervenience merely posits the covariance of two different sets of things (properties, events, etc.); strong supervenience adds to covariance a one-way dependency relation of the supervenient on the subvenient (Jaegwon Kim, *Philosophy of Mind*, Second Edition (Cambridge, MA: Westview Press, 2006), 8–10). While Wardy initially rejects the supervenience claim (weak or strong) between states and perceptible alterations (Wardy, *The Chain of Change: A Study of Aristotle's Physics VII*, 206–7), he ends up embracing—rather confusingly—the *strong* version with respect to states of the body (ibid., 216–17) and states of the soul (ibid., 224–25), which I think is entirely unwarranted. As such, he ignores *Cat.* 7–8 and sees both states of the body and states of the soul as *mere* or *hard* relatives, which is clearly a mistake. The ultimate reason for this, I think, is that he does not recognize *Phys.* 5.1 QG as the primary background of *Phys.* 7, but posits instead (mistakenly in my view) *GC* 1.1 (see ibid., 169–73). Had he recognized QG, the interpretive difficulties he conjures (see, e.g., ibid., 219) would have vanished. I present this objection in more detail below.

⁶⁹⁵ He uses τὸ εἶδος καὶ τὴν μορφήν instead of his usual τὸ σχῆμα καὶ τὴν μορφήν, presumably intending εἶδος to be understood as a synonym of σχῆμα here as the LSJ suggests.

If “but perhaps” is modifying (ii) as it appears, what is the sense here? The idea seems to be something like this: states always come to be in conjunction *with*—and perhaps *by*—the S1 *alteration* of perceptible qualities of the very body in which the state comes to be. Hence, just as shapes are generated *only when*, e.g., the underlying matter is S1 altered (e.g., condensation, rarefaction, heating, cooling, etc.), so it is with *bodily* states. The state of beauty, for example, is generated upon the occasion of the S1 alteration of certain bodily perceptibles such as the complexion of the skin, the sheen of the hair, the proportion of the face, etc.⁶⁹⁶ While such states are *not reducible* to any set of perceptible S1 alterations^o, there does seem to be a causal relation of sorts.⁶⁹⁷ Now, the precise characterization of AT here is beyond the scope of our interests.⁶⁹⁸ Our point, rather, is that on *either* interpretation of Aristotle’s “but perhaps”—and I suspect it is modifying (ii) the AT claim in the clause given the final line of “just as proved to be the case for form and figure”—he is open to the *becoming* of states. Relatives do not become in any way, as we have seen—and Aristotle would surely not suggest that they do in the context of an emphatic denial (246b10-12). But *qua* qualities, states do become—or at least *can*.⁶⁹⁹

⁶⁹⁶ Simplicius, in *Phys.* 1068.26-11.

⁶⁹⁷ Neither are shapes reducible to any set of bodily alterations. Moreover, in instances of states of the soul like virtue and vice, the causal relation would seem to go both ways as well: certain actions which usually require perceptible alterations (e.g., an act of generosity might cause a green slip of paper to move from the hand of one person to another) cause the state to come to be; once the state is, *qua* disposition, it *causes* certain perceptible alterations to occur when in second actuality.

⁶⁹⁸ Although cf. István Bodnár’s interesting analysis in Maso, Natali, and Seel, *Reading Aristotle*, 79–81.

⁶⁹⁹ *Contra* Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 216–20, esp. 219. On Wardy’s account, as we have seen, there is no *qualitative* generation (γένεσις τις) from *Phys.* 5.1, only *substantial* generation. Hence, states only “change” when their subvenient material bases change—either by alteration or *substantial* generation (ibid., 205-07). Interestingly, this causes Wardy (ibid., 217-18) to gloss over the claim that bodily states “come into being (γίγνεσθαι) and perish (φθείρεσθαι)” (246b12-15), even as Aristotle had in the previous line claimed that relations cannot do this sort of thing (246b10-12). Aristotle nowhere else claims that relatives come to be (γίγνεσθαι)—even arguing explicitly against the point at *Meta.* N.1 1088a29-35. So what are we to make of the claim that Wardy ignores here, viz., that bodily states “come into being and perish”? István Bodnár at least notes the line, even though it is with puzzlement (Maso, Natali, and Seel, *Reading Aristotle*, 77). I think the best—and only consistent—way to read it is as Aristotle referring to γένεσις τις and φθορά τις. Here is the argument. As we have said, γινόμενον breaks down into two sorts (see *Phys.* 1.7 190a31-33, 190b9-12; cf. Bonitz, *Index Aristotelicus*, 154–55; cf. 147–48): (1) γίγνεσθαι τι (“coming to be *this*”) which includes all instances of κίνησις, including non-kinetic γένεσις τις (*Phys.* 5.1 225a12-17; cf. 225a34-b3), and (2) γίγνεσθαι ἀπλῶς (“coming to be *simply*”) which

Notice that if *all* genuine change requires intrinsic becoming (γιγνόμενον), and states *do* genuinely become, then states *must* change.⁷⁰⁰ And this, of course, takes us back to the dilemma we faced in the case of shapes and figures:

- 1) Shapes, figures, and states are qualities.
- 2) All genuine change of quality occurs via a) alteration or b) QG.
- 3) Either shapes, figures, and states c) genuinely change or d) do not genuinely change.
- 4) Shapes, figures, and states genuinely change.
- 5) Shapes, figures, and states do not alter.
- 6) Therefore, shapes, figures, and states genuinely change as captured by QG.

Again, contextually Aristotle is aiming to secure the contact thesis for the sake of his *reductio* against infinite causal chains. This is the burden of *Physics* 7.3. Hence, Aristotle must either say: (a) the three non-perceptible species of quality (i.e., states, capacities, and shapes and figures) alter by contact just as perceptibles; (b) that the three non-perceptible species of quality do not alter or change at all; or (c) AT, i.e., that the three non-perceptible species of quality change but do not alter—which in the context of qualities entails QG per 2) in the dilemma above—although whenever they do change there is *of necessity* an accompanying S1 or S2 alteration of perceptibles. Aristotle barred (a) at the beginning of the chapter, so only (b) and (c) are left open to him. Option (b) is, on its face, absurd, given that dispositions of persisting continuants really do come and go. Hence, he takes AT or option (c) just as he did in the case of shapes and figures,

includes *only* substantial generation (*Phys.* 1.7 190a32-33) or γένεσις ἀπλῶς (5.1 225a12-17). If *all* γιγνόμενον is of either of these types, and if changes of states *qua* qualities is not (2) γίγνεσθαι ἀπλῶς, then if it becomes as Aristotle claims at 246b14, its becoming must be an instance of (1) γίγνεσθαι τι. If in addition states cannot change via alteration (246a12-14) and yet they *still* become (246b14), then as an instance of (1) γίγνεσθαι τι the becoming of states must be an instance of non-kinetic γένεσις τις. Hence, this is another instance of the interpretive problems caused by Wardy's narrow "substantialist" reading of *all* (sans shapes and figures) instances of γένεσις in *Phys.* 7.3.

⁷⁰⁰ As we have said before, change and becoming, while not identical, are biconditionally related such that for all changes *x* and for all becomings *y*, *x* iff *y*, and *y* iff *x*.

and now with bodily states. What other option has he? Again, Aristotle is emphatic that states do not undergo (a) alteration. He is also emphatic that *qua* relatives, states do not in any way change per (b). Hence, if states do indeed “become” and thus do genuinely change, then they must do so *qua* qualities via QG and (c) AT. There is no other intelligible way to read this passage given the context. For if bodily states undergo QG *only when* perceptibles alter as per AT, then the contact thesis is preserved for the *reductio* against infinite causal chains, and the argumentation of *Physics* 7.3 is successful at precisely the point where he needs it to be. What more could one ask of Aristotle given the tight situation in which he finds himself?

A pertinent question here is whether *bodily* states admit of the triple scheme distinctions of (1) first potentiality, (2) first actuality/second potentiality, and (3) second actuality. Take beauty, for instance. To have the (1) first potentiality of beauty would be to be *potentially* beautiful. To have (2) first actuality/second potentiality beauty, on the other hand, would be to be *actually* beautiful. But what, then, would (3) *second* actuality beauty be if first actuality beauty is to *already* be actually beautiful? It is difficult to see how (2) first actuality beauty would not already be the use and exercise of (3) second actuality beauty. If this is correct, then there is *no* first/second potentiality/actuality distinction with respect to beauty. Rather, just as with shapes and figures, there is potential beauty and actual beauty *simpliciter*.⁷⁰¹ Strength is more difficult. To have (1) first potentiality strength is to be potentially strong. To have (2) first actuality/second potentiality strength is to be actually strong but not exercising or using that strength. To be (3) second actuality strong is to be exercising one’s strength. If this is correct, then there *is* a triple scheme distinction with respect to strength, even if not for beauty. *Bodily* states, thus, seem to be

⁷⁰¹ As noted above, while states *generally* admit the complex hylomorphism of the triple scheme, neither shapes or figures do. Rather, on the simple hylomorphism at play there, we just have e.g., potential shape and actual shape simpliciter, but not some second actuality shape over and above the actuality of shape itself. The same simplicity applies to certain bodily shapes as well, it would seem.

hit or miss on this in a way that *psychic* states may not, as we shall soon see. More importantly for us here, however, is the point that for the state of beauty to come to be is for a body to be actually beautiful with no remaining potentiality, whereas for a state of strength to come to be is for a body to be merely (2) *dispositionally* strong without necessarily exercising that strength. What would Aristotle say about (3) the *exercise* or *use* of the state of strength in *feats* of strength? Are those qualitative actualities of states preservative generations per QG, or destructive alterations?⁷⁰² It seems to me that there would be absolutely no reason for Aristotle to tell a different story here. For what motive would Aristotle have for giving one line concerning (2) first actualities but another line concerning (3) second actualities? If the state of beauty is *generated* when a body changes from potentially beautiful to actually beautiful, and if the state of strength is *generated* when a body changes from (1) potentially strong to (2) actually strong, then why would the exercise of that state in a further, second actuality of the state in (3) not also be a QG generation? It is surely not the case that (3) the exercise of the state is destructive of a contrary as with kinetic alteration. Rather, what we have here is preservative contradictory to contradictory metabolic change, viz., from (1) not-dispositionally-strong to (2) dispositionally-strong, and from (2) not-exercising-strength to (3) exercising-strength. And again, if the transition from potentiality to actuality in one case is a change and a generation, then what would preclude the same being said in any other case? This is especially so given that AT would apply here too: of one who has acquired (2) the dispositional state of strength and then further

⁷⁰² I say “qualitative actualities” for lack of a better *general* term. The second actuality activity of the first actuality/second potentiality dispositional state of sight is *seeing* (DA 3.2 426a13-14), and the same sort of distinction applies to other cases as well, e.g., hearing, tasting, touching, smelling—even when there is no name for them (426a14-15). As the second actuality of e.g., *seeing* “comes to be” (γίνεται, 2.7 419b17-18; and similarly with all second actuality perception generally; see *De Sensu* 1 436b6-8, *De Somno* 1 454a7-11, etc.) and is clearly *qualitative* (“receiving perceptible forms without the matter”, DA 2.12 424a18-19), it is a qualitative coming to be. If the actuality is a product rather than a process—just states are products rather than processes—it will be a product change^o which results from a process change, “alteration of a sort.”

actualizes that state by (3) exercising it, such an exercise will surely be accompanied by an S1 alteration of perceptibles. How else would one exercise *bodily* strength without altering perceptible things in the process?⁷⁰³ If this is correct, then we have an answer as to *why* Aristotle fails to mention this sort of (2) to (3) first-to-second-actuality qualitative change here: he just does not need to. For unless there is a relevant difference between the (1) to (2) transition and the (2) to (3) transition, it is plainly question-begging to treat them differently.⁷⁰⁴ Let us summarize our findings via the following chart before moving on:

SPECIES OF QUALITY	MODE OF CHANGE	CONTACT THESIS OPTION
Perceptibles/ Affective Qualities	Alteration	(a) – S1 Destructive Alteration <i>Or</i> – S2 Preservative ‘Alteration’
Shapes & Figures	Qualitative Generation	(c) – S1 Accompaniment Thesis
Bodily States	Qualitative Generation	(c) – S1 Accompaniment Thesis

5.1.2.1.4 Psychic States: Arational and Rational

While we have been examining Aristotle’s take on states of the body thus far, he proceeds in the next section to what he calls “states of the soul” (τῶν τῆς ψυχῆς ἕξεων, 247a1) and, in the final section of the chapter, “states of the intellectual part” (τοῦ νοητικοῦ μέρους, 247b1). The examples given for the first part are states of ethical virtue and vice (247a2-4), whereas the solitary example given for a state of the latter part is knowledge (247b2).⁷⁰⁵ As both

⁷⁰³ The fact the causal arrows change directions here is an excellent reason to reject the view that AT is some sort of *strong* supervenience claim. See Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 206–7. *Weak* supervenience that merely posits the covariance of two different sets of things without priority, however, is entirely plausible. For the difference, see the discussion above.

⁷⁰⁴ This reasoning appears to be confirmed later in the 7.3 when Aristotle explicitly addresses the (2) to (3) transition with respect to (3) the exercise of intellectual states in the case of knowledge (247b7-10, 13-17, 248a3-6)—for there he does so because in this case it *does differ* from all else that precedes it in the chapter.

⁷⁰⁵ Although Aristotle does not treat it here, another possible example of a state of the intellectual part might be a state of imagining (φαντασία) as it is what makes mental “conception” (ὑπόληψις) possible (DA 3.3 427b14-16). For like contemplation, use of the imagination is internal and thus “up to us, whenever we wish” (427b17-18).

sorts of states are psychic states, it will be instructive to treat them together. But first, what is the difference between them generally?

In *De Anima* 2.3, Aristotle discusses the various faculties of the soul, mentioning five: the nutritive faculty, the perceptual faculty, the desiderative faculty, the faculty of locomotion, and the faculty of understanding or intellect (414a31-32).⁷⁰⁶ He also suggests the possibility of a possible sixth faculty, the faculty of imagination (414b16).⁷⁰⁷ As he goes on to say, while it is the nutritive faculty alone that belongs to plants (414a32-33), and the nutritive, perceptual, and desiderative faculties—and for some, the faculty of locomotion (415a6-7)—to animals (414b33-b2), *all* of the faculties (i.e., the nutritive, perceptual, desiderative, locomotive, and intellective) belong “to humans and to anything else there may be of this or of a more elevated sort” (414b18-19; 415a7-10). Humans, thus, have all six faculties. To this, we may add what is said in *Nicomachean Ethics* 1.13, where Aristotle distinguishes between the arational (ἄλογον) and rational (λόγον) parts of the soul (1102a27-28).⁷⁰⁸ Given that the rational part consists *only* in the faculty of understanding or intellect (6.1 1139a5-15), it would appear that *all* of the other faculties—i.e., the nutritive faculty, the perceptual faculty, the desiderative faculty, and the faculty of locomotion—can be said to belong to the arational part of the soul. While there are further divisions of both the arational (1102a32-1103a3) and rational (1139a5-15) parts, this simple division suffices to explain *why* in *Physics* 7.3 Aristotle would be inclined to treat “states of the soul” (τῶν τῆς ψυχῆς ἕξεων, 247a1) and “states of the intellectual part” (τοῦ νοητικοῦ μέρους, 247b1) separately: while both belong to the *soul*, they are nevertheless of relevantly

⁷⁰⁶ δυνάμεις δ’ εἵπομεν θρεπτικόν, αἰσθητικόν, ὀρεκτικόν, κινητικὸν κατὰ τόπον, διανοητικόν.

⁷⁰⁷ Φαντασία. NB. All of this is modified later in *DA* 3, but just how is unimportant for our purposes.

⁷⁰⁸ I translate ἄλογος as “arational” rather than “irrational” due to the narrowness of the latter. For while “arational” can mean either (1) “without reason” (i.e., “nonrational”) or (2) “against reason,” “irrational” appears indicative of only (2), “against reason”. For the distinction and the difference it can make, see G. E. M. Anscombe, *The Collected Philosophical Papers of G.E.M. Anscombe: Metaphysics and the Philosophy of Mind* (Minneapolis: University of Minnesota Press, 1981), 224–25.

different parts (i.e., the arational and the rational); and states belonging to relevantly different parts must be relevantly different. Hence, if ethical virtues and vice are primarily states of the arational desiderative faculty (*EN* 6.2 1139a17-36),⁷⁰⁹ whereas knowledge states are of the rational faculty of understanding or intellect (6.6 1140b31-41a8), then we should expect this relevant difference. The same will apply to perception too when we treat it in the light of this complex analysis. If perception belongs to the perceptual faculty of the arational part of the soul, then this should affect our analysis of its functions despite the analogy with the intellectual part in *De Anima* 2.5.

Treating both sorts of psychic states together, we are confronted with similarities and differences. As with states of the body, arational and rational states of the soul both are qualities *and* relatives (247a1-2, 247b2-3).⁷¹⁰ This we should expect given our discussion above. As perfections or departures, they are always *of* what they are (247a2-3)—some certain nature. This entails per Df 1 that they are necessarily soft relatives, which allows them to be dual-category entities. This was just as it was with states of the body, which enabled them to be incapable of change *qua* relative, but capable *qua* quality via QG generation or destruction. So, to our question: Do states of the arational or rational parts of the soul undergo genuine becoming or mere Cambridge becoming—and if the former, is it alteration or QG?

Interestingly, there is a divergence here. Here are the claims, the first coupled again with AT, but this time without the cautious “but perhaps” we saw with shapes and figures and bodily states (247a17-19):

⁷⁰⁹ Cf. *EN* 1.13 1102b28-03a10 and esp. 6.2 1103a4-5: “Decision [προαίρεσις] is either understanding combined with desire or desire combined with thought.” διὸ ἢ ὁρεκτικὸς νοῦς ἢ προαίρεσις ἢ ὄρεξις διανοητική. Cf. 3.2 1111b5-6 “for decision [προαίρεσέως] seems to be most proper to virtue.”

⁷¹⁰ Again, while Aristotle does not state this both/and here directly, it is clearly implied by the context.

It is evident that when something is altered (ἀλλοιουμένου) necessarily (ἀνάγκη) also these [states] are lost (ἀποβάλλειν) or acquired (λαμβάνειν). Thus, though their generation (γένεσις) is accompanied by an alteration (ἀλλοιώσεως), they themselves are not alterations (ἀλλοιώσεις).⁷¹¹

Virtues and vices are *generated*, not altered—but *only* when something else is itself is (presumably) S1 or S2 altered as per (c) or AT. Again, this must be QG as is demanded by our dilemma.⁷¹² What, however, of states of the intellectual part of the soul, specifically knowledge? Aristotle is clear: “The states (ἔξεις) of the intellectual part [of the soul] are not alterations (ἀλλοιώσεις) either, nor is there any generation (γένεσις) of them” (246b1-2).⁷¹³ States of the arational part of the soul do not alter, but they do undergo generation as per (c) or AT, while states of the rational part do neither as per (b). The question before us now is, why the divergence with respect to the two types of *psychic* states, arational and rational? The answer is fascinating, having to do in part with the very context of *Physics* 7 as a whole, itself in the context of the strictures of Aristotle’s natural philosophy. Before exploring the details, let us chart these differences as follows:

SPECIES OF QUALITY	MODE OF CHANGE	CONTACT THESIS OPTION
Arational Psychic States	Qualitative Generation	(c) – S2 Accompaniment Thesis
Rational Psychic States	No Coming to Be	(b) – No Alteration or Change at all

⁷¹¹ φανερόν ὅτι ἀλλοιουμένου τινὸς ἀνάγκη καὶ ταύτας ἀποβάλλειν καὶ λαμβάνειν. ὥσθ’ ἡ μὲν γένεσις αὐτῶν μετ’ ἀλλοιώσεως, αὐταὶ δ’ οὐκ εἰσὶν ἀλλοιώσεις.

⁷¹² Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 220, strains to explain this on his narrow, “substantialist” reading of generation. Once it is recognized that γένεσις is a homonym and that *Phys.* 5.1 and not *GC* 1.1 is the relevant background, the problem evaporates. On homonymy, see Aristotle’s discussion at *Top.* 1.15 107a3-17, esp. 3-5: “Look also at the classes of the predicates signified by the term, and see if they are the same in all cases. For if they are not the same, then clearly the term is homonymous.”

⁷¹³ ἀλλὰ μὴν οὐδ’ αἱ τοῦ νοητικοῦ μέρους ἔξεις ἀλλοιώσεις, οὐδ’ ἔστιν αὐτῶν γένεσις.

5.1.2.1.5 The Arational, The Rational, and Change

As we have just seen, Aristotle sees no problem with the generation (or destruction) of virtue and vice states of the arational part of the soul for the *reductio*, so long as one does not say that such things are *alterations* as on option (a). Hence, Aristotle does not need to appeal to either (a) or (b) here. Instead, he can appeal to option (c) or AT, and without imperiling his cosmological argument. Virtues and vices *qua* qualities *do* genuinely change via QG—and via AT their change is necessarily accompanied by S1 or S2 alteration.⁷¹⁴ This is the same story we saw in the case of shapes and figures and bodily states, but with a twist. Shapes and figures and bodily states are all *external* things—exterior features of the things that have them. And to change an *external* state requires an S1 alteration in *external* perceptibles. Surely, though, virtues and vices cannot be accessed by such means. They are not *external* to the soul nor bodily, but specifically *internal* and psychic.⁷¹⁵ So the question is, what *sort* of alteration can Aristotle *plausibly* associate with such interior, psychic QGs? Would he really want to make the absurd claim that every time a person acquires, e.g., (2) the first actuality state of generosity that there is some associated change in exterior perceptibles? It seems not, for it is precisely here that he brings in the S2 alteration by perceptibles with respect to “perceptual capacities” (αἰσθήσεις) (7.2 244b10-12). As we have seen, he calls this “alteration in a way,” using the πῶς (244b11) to hedge against a full-on classification of second actuality perception as canonical alteration.⁷¹⁶ It is, instead, as he says in *De Anima* 2.5, only ἀλλοίωσις τις (416b34), “alteration of a sort.”⁷¹⁷

⁷¹⁴ Again, *weak* supervenience that merely posits the covariance of two different sets of things without priority would seem to be in view here.

⁷¹⁵ Cf. this very external/internal contrast in *DA* 2.5 417b16-28.

⁷¹⁶ Again, there is just no good reason for him to hedge here with πῶς if this is not the case, *especially* in the context of *Physics* 7. All indications are that it was very purposefully inserted. By my lights, the burden rests on any commentator who gainsays it.

⁷¹⁷ For a similar assessment concerning their compatibility, see Wardy, *The Chain of Change: A Study of Aristotle's Physics VII*, 144–47, 221, 224, 225, 234 n. 113.

Nevertheless, as we have pointed out, Aristotle’s *reductio needs* active perception to be classified as an instance of the alteration of perceptibles, which is precisely what we find here, despite the hedging *πῶς*. So, arational “states of the soul” (τῶν τῆς ψυχῆς ἕξεων, 247a1) come to be in conjunction *with*—or *by*—the S2 ‘alteration’ of the perceptual part by perceptibles (247a4-7):

So these will not be alterations (ἀλλοιώσεις), nor will the loss (ἀποβολαὶ) or acquisition (λήψεις) of them be such. But it is necessary (ἀναγκαῖον) that they come to be (γίγνεσθαι) when the perceptual part (αἰσθητικοῦ μέρους) [of the soul] is altered (ἀλλοιούμενου). And this is altered (ἀλλοιωθήσεται) by perceptibles (αἰσθητῶν).⁷¹⁸

This may seem a strange move, but what other option has Aristotle at this point? Given that he is keen to ensure the contact thesis holds in *all* cases for his *reductio*, this would appear to be his only move here; he is plainly boxed. Hence, virtues and vices are generated *only when* perceptibles causes perception in the soul, itself an alteration “in a way” (πῶς, 7.2 244b11).⁷¹⁹ And this is “necessary” (ἀναγκαῖον, 247a6), so the contact thesis is again secured by (c) AT for arational psychic states with the force of necessity.

Hence, what we have here in the case of arational psychic states can be summarized as follows: the (2) first actuality state of virtue (or vice) comes to be *qua* quality, but does not come to be *qua* relative as one would expect of a Df 1 soft relative, a dual-category entity such as a

⁷¹⁸ Maso and Seel translation, modified. ὥστ’ οὐδ’ αὐταὶ ἔσονται ἀλλοιώσεις· οὐδὲ δὴ αἱ ἀποβολαὶ καὶ αἱ λήψεις αὐτῶν. γίγνεσθαι δ’ αὐτὰς ἀναγκαῖον ἀλλοιούμενου τοῦ αἰσθητικοῦ μέρους. ἀλλοιωθήσεται δ’ ὑπὸ τῶν αἰσθητῶν.

⁷¹⁹ While beyond our scope here, the *mechanism* by which perception causes the generation of states of virtue and vice is pleasure and pain (247a7-8, 14-18). The theory seems odd, but again, Aristotle is in dire straits here given the constraints of his cosmological proof. Accordingly, I think, Ross is uncharitable here in taking this to be an immature account of pleasure and pain which is later corrected (Ross, *Aristotle’s Physics. A Revised Text, with Introduction and Commentary*, 676). Simplicius is much more charitable (*in Phys.* 1073.11-22), as is Wardy who thinks that “in light of Aristotle’s obvious, pressing motivation... [this is] an excusable simplification of more subtle ideas” (Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 225). For my own part, I side with the Simplicius and Wardy. For an impressive overview of the issues at hand, see Cristina Viano in Maso, Natali, and Seel, *Reading Aristotle*, 89–93.

state. We are not told about the (3) second actuality exercise of the state in *action* (e.g., generous *activity*), but as with bodily states, there is no reason to tell a different story.⁷²⁰ When (2) the state comes to be, it preserves rather than destroys that from which it is, (1) the capacity. Likewise, when a (3) virtuous action comes to be, it preserves rather than destroys that from which it is, (2) the state. For just as (2) is the actuality of (1), so (3) is the actuality of (2)—and neither actuality is a contrary of what it is from. As such, of course, they do not change as contraries would, *kinetically* from x to y per (a). Rather, while they do genuinely change, it is *metabolically* from not-x to x: from not-virtuous to virtuous, or from not-acting-virtuously to acting-virtuously. Thus given, the “coming to be” (γίγνεσθαι) in question in both cases is the metabolic *qualitative generation* of QG (along with (c), S2 AT), not kinetic alteration. Of course, *qua* relative neither (2) nor (3) is the result of a change. But (2) virtuous states and (3) virtuous action are not mere relatives. They are qualities too, and their change *qua* quality must be accounted for—which is precisely what Aristotle does.

So far, so good. While we might find the argument strange or implausible on contemporary metaphysical assumptions,⁷²¹ this would seem to work for Aristotle’s purposes in *Physics* 7.3 in the confines of the broader context of his natural philosophy; for not only does it solve the problem at hand, but it does so without violating Aristotle’s own metaphysical principles, nor derail his *reductio*. But things are less perspicuous in the case of rational psychic states. One would expect that the transition from (1) the capacity for knowledge to (2) the first

⁷²⁰ As was discussed above in the case of the complex hylomorphism of bodily states such as strength, what motive would Aristotle have for giving one line concerning (2) first actualities, but another line concerning (3) second actualities? If the former as preservative metabolic change is a QG generation rather than a destructive alteration, then what would preclude the latter from being likewise? Again, this is especially so given that AT would apply here too. Given that there is no relevant difference, it would be plainly question-begging to treat (2) first actuality and (3) second actuality here differently.

⁷²¹ With traditional British understatement, Wardy calls this AT move “positively fascinating” (Wardy in Maso, Natali, and Seel, *Reading Aristotle*, 6) at a point when the more plain spoken among us might be inclined to use more incredulous adjectival descriptions.

actuality state of knowledge would *mimic* the change of states like virtue. That is, *qua* quality, when (2) the state comes to be, it preserves (1) the capacity as its actuality, and likewise when (3) contemplation comes to be, it too preserves (2) the state as its actuality. Neither (2) nor (3) come to be *kinetically* from contrary to contrary (from x to y), but both *metabolically* from not-x to x as potentiality to actuality. Hence, while *qua* quality, this “coming to be” is clearly qualitative generation per QG, while *qua* relative neither (2) nor (3) come to be in any basic, non-parasitic way. But this is not what we find. Rather, Aristotle openly *rejects* what we find in the case of arational psychic states like virtue—let us call this the “virtuous model”—instead, embracing an entirely new way in the case of rational psychic states like knowledge. Two questions occur at this point: (i) *What is this ‘new way’?* And (ii) *Why embrace the new way with respect to knowledge?*

5.1.2.1.5.1 The First Question: What is the ‘New Way’?

To question (i) first, just what exactly is this new way? We have already seen that rational psychic states do not alter and are not generated (247b1-2)⁷²²—which already sets them apart from arational psychic states. So, what is it that happens when, say, Smith goes from (1) potentially knowing French grammar to (2) actually knowing French grammar? While we can readily see what Aristotle is claiming in α (see below), it is in the textus alter or β that he actually tells us: He is treating knowledge, a dual-category entity, “mostly” (μάλιστα) (247a29) as a relative.⁷²³ Relatives, as we know, do not come to be or change in any way; rather, they “come to be” accidentally without the entity in question undergoing any intrinsic, *per se* becoming

⁷²² “However, the states of the intellectual part [of the soul] are not alterations either, nor is there any generation of them.” ἀλλὰ μὴν οὐδ’ αἱ τοῦ νοητικοῦ μέρους ἔξεις ἀλλοιώσεις, οὐδ’ ἔστιν αὐτῶν γενέσεις.

⁷²³ “For that which know is mostly said as a relative.” τὸ γὰρ ἐπιστημον μάλιστα τῶν πρὸς τι λέγεται. 247a29.

itself.⁷²⁴ Hence, immediately after telling us that rational psychic states do not alter and are not generated (247b1-2), he gives us this further explanation at 247b2-7:

For we much rather say that that which knows (τὸ ἐπιστήμον) is in [the category of] being related (πρὸς τι) somehow to something. And further, it is evident that there is no generation (γένεσις) of them. For that which (1) potentially knows (δύναμιν ἐπιστήμον) becomes (γίγνεται) that which (2) [actually] knows (ἐπιστήμον) not because it has changed itself (αὐτὸ κινηθὲν), but because something else is present (ἄλλο ὑπάρχει). For when the particular (τὸ μέρος) comes to be (γένηται), [that which knows] [2] knows in a way that universal (καθόλου) by means of the particular (τῷ μέρει).⁷²⁵

Notice how Aristotle here characterizes relative “change” in terms of “presence” and, by implication, “absence.”⁷²⁶ One comes to be in (2) the state of knowing from (1) the mere capacity when *something else is present*, i.e., the universal item of knowledge in the particular (τὸ μέρος, 247b6). The “presence” of the particular leads to the relational “change” of knowing the universal as the former *contains* the latter (DA 3.8 432a3-6). While he does not say it this way—and we shall soon see why—the sense might seem to be that *only when* the particular comes to be, so the relative “change” occurs.⁷²⁷ This would seem to be S2 AT again, for the particular coming to be is precisely *in perception* as Aristotle (and his commentators too) is keen

⁷²⁴ *Meta.* K.12 1068a11-13 “Nor is there [change^k] of relation; for when one of the relatives is changing^m, the other relative may cease to be true although it is not changing^m, and so change^k of relatives is accidental” (Apostle translation, modified). οὐδὲ τοῦ πρὸς τι (ἔστι γὰρ θατέρου μεταβάλλοντος μὴ ἀληθεύεσθαι θάτερον μηδὲν μεταβάλλον, ὥστε κατὰ συμβεβηκὸς ἢ κίνησις αὐτῶν).

⁷²⁵ πολὺ γὰρ μάλιστα τὸ ἐπιστήμον ἐν τῷ πρὸς τι πῶς ἔχειν λέγομεν. ἔτι δὲ καὶ φανερόν ὅτι οὐκ ἔστιν αὐτῶν γένεσις· τὸ γὰρ κατὰ δύναμιν ἐπιστήμον οὐδὲν αὐτὸ κινηθὲν ἀλλὰ τῷ ἄλλο ὑπάρχει γίγνεται ἐπιστήμον. ὅταν γὰρ γένηται τὸ κατὰ μέρος, ἐπίσταται πῶς τὰ καθόλου τῷ ἐν μέρει.

⁷²⁶ Cf. Wisnovsky, *Avicenna’s Metaphysics in Context*, 24, who cites precisely this passage as an instance in Aristotle of relative ‘change’ via “the presence or absence of a relation.”

⁷²⁷ Cf. Simplicius in *Phys.* 1074.22-25: “For one must always remember that Aristotle denies coming to be (γένεσιν) and change (μεταβολήν) *per se* (καθ’ αὐτὸ) to relatives, though admitting that they do come to be (γένεσθαι) and change (μεταβολεῖν) accidentally (κατὰ συμβεβηκός)” (Hagen translation, modified). See *Phys.* 5.1 224a21-28.

to point out (DA 2.5 417b22).⁷²⁸ The perceptible comes to be in the percipient in a perceptible mode. Let us call this particular a *precept*. The knower transitions from (1) capacity to (2) state *only when* the precept comes to be. Its “presence” in the knower is that on which (2) “comes to be”; knowers (2) know *in the presence of the precept*. When the particular *x* is before me, I know the universal *x*; when *x* was absent, I knew not *x*. The transition from [1] knower to [2] knowing is a relative “change,” not an alteration or a generation—for it is merely the presence or absence of the object of thought to the knower.⁷²⁹ But if this is correct, then AT is *not* required—whether S1 or S2. Remember, AT features in *Physics* 7.3 in order to secure the contact thesis for the *reductio*. Hence, every instance of qualitative change of any species of quality must either (a) alter by contact just as with perceptibles; (b) not alter or change at all; or (c) QG via S1 or S2 AT. Aristotle stipulated (c) AT with respect to the QG of shapes and figures, the QG of bodily states, and the QG of arational psychic states. This is just as one would expect given that (a) is only open to perceptibles and (b) would appear absurd. Yet, as we have seen, (b) is precisely what Aristotle stipulates in the case of rational psychic states, and now we know *why*: (b) they do not alter or change at all for the comings and goings of (2) dispositional states of knowledge are mere (or “mostly”) *relative* “changes,” not qualitative changes at all. Despite their dual-category *ontological* status (quality *and* relative), they only have a single-category *metabolic* status or

⁷²⁸ Cf. *APo.* 1.31 87b28–88a2, 2.19 100a6–b1, *Phys.* 1.5 189a5–8, *Meta.* Z.15 1039b28–40a7, M.10 1087a19–20, etc. For commentators, see Alexander *ap. Simplicium in Phys.* 1075.4–10, Simplicius, *in Phys.* 1074.26–1075.3, 1075.10–20, Aquinas, *Expositio libri Physicorum*, 7.6.923, Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 227ff, Frans A. J. de Haas in Maso, Natali, and Seel, *Reading Aristotle*, 103, Shields, *Aristotle: De Anima*, 217, 221, etc. While τὸ μέροϛ is used at 247b6 to refer to the particular, whereas in DA 2.5 417b22 it is τὸν ἑκαστον, see *Phys.* 1.5 189a5–8 where ἑκαστον and μέροϛ are used interchangeably in the context of this very discussion.

⁷²⁹ See Wisnovsky, *Avicenna’s Metaphysics in Context*, 24. “[Aristotle] wants to avoid implying that the transitions from ignorance to knowledge, and from knowledge to contemplating, represent changes, and particularly alterations or changes of quality (*alloiôseis*). Instead, the contrast between ignorance and knowledge and knowledge and contemplating should be seen as indicating *the presence or absence of a relation*, namely, the relation to object of thought” (italics mine).

status with respect to *change*. Hence, when Aristotle says that one transitions to (2) knowledge from its (1) capacity when the particular comes to be, he is not stating another necessary (c) S2 AT condition—for he is not embracing (c) at all. Rather, he is very forcefully embracing (b) and stipulating that the thing that comes to be *present* which allows for the relative (1) to (2) “change” is the universal knowledge contained in the particular precept. *That* is the new item “present” to the knower, which allows for the relative “change” to occur. And as we have seen *ad nauseum* now, relative “change” is never genuine or *per se* change, but always pseudo-change or change *per accidens* (*Meta.* K.12 1068a11-13). But this option too, along with (a) and (c) and strange as it may seem, saves the *reductio*.

The same story too applies in the transition from the (2) state of knowing to (3) the contemplation of what one knows.⁷³⁰ As Aristotle points out in the next lines, 247b7-9:

Again, there is no generation (γένεσις) of (3) the use (χρήσεως)⁷³¹ and actuality (ἐνεργείας) [of the state], unless one believes that there is a generation (γένεσις) of opening one’s eyes (ἀναβλέψεως) and touching (ἄφῃς), for using (χρηῆσθαι) and being in actuality (ἐνεργεῖν) are similar (ὅμοιον) to these.⁷³²

⁷³⁰ For complications with this story and a discussion of various modes of interpretation, see Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 227ff.

⁷³¹ At *Top.* 4.4 124a32-34, Aristotle specifies that *χρήσις* (also used at 248a5) is a *species* of ἐνεργεια (actuality/activity): “If the use of anything is an actuality, then to use it is to be actual, and to have used it is to have been actual” (Barnes translation, modified). εἴ τινος ἡ χρήσις ἐνεργεια, τὸ χρηῆσθαι ἐνεργεῖν καὶ τὸ κεχρηῆσθαι ἐνηργηκεναι. Given that Aristotle does not use ἐντελέχεια for either first or second actuality in *Phys.* 7.3 as he does in both *DA* 2.1 and 2.5, but ἐνεργεια, he needs another term *besides* ἐνεργεια in order to refer to the *activity* of second actuality—which he specifies in *DA* 2.1 as the ἐνεργεια of the ἐντελέχεια (412a25-26). The point, hence, seems to be specificatory: *χρήσις* with ἐνεργεια specifies second actuality activity, and thus this is the role that *χρήσις* plays here.

⁷³² πάλιν δὲ τῆς χρήσεως καὶ τῆς ἐνεργείας οὐκ ἔστι γένεσις, εἰ μὴ τις καὶ τῆς ἀναβλέψεως καὶ τῆς ἀφῆς οἶεται γένεσιν εἶναι· τὸ γὰρ χρηῆσθαι καὶ τὸ ἐνεργεῖν ὅμοιον τούτοις.

Now, not only is it interesting that this is the first explicit reference to second actuality in *Physics* 7.3,⁷³³ but what is also interesting is the usage of the *perceptual* couplet “opening one’s eyes” (ἀναβλέψεως) and “touching” (ἅφῃς) rather than “seeing” (ὄρασις) “touching” (ἅφῃς)—but more on this anon. For now, however, we should note the absence of any hint of S2 AT. It is not an (a) alteration of perceptibles, nor (c) an instance of QG via S1 or S2 AT. Again, because Aristotle is embracing (b): no alteration or change at all. Rather, relative “change” or pseudo-change is all we have—mere Cambridge coming to be.

Hence, what we have with arational psychic states is not what we have with rational psychic states—whether it be the second actuality (3) use and activity or one’s first actuality (2) state of knowledge. For in both cases, one comes to know when *something else is present*, viz., the object of knowledge or thought. There is nothing else but this “presence” or “absence,” and no further *per se* change—whether alteration or QG generation—but mere accidental change in the form of this *de novo* relative, whether first actuality knowledge and or second actuality contemplation. Just as the universal item of knowledge comes to be when the particular (τὸ μέρος, 247b6) is *present*, so the contemplation comes to be when the universal item of knowledge comes to be *present* to thought. Opening the eyes (ἀνάβλεψις) and reaching out (ἅφῃ, 247b8) are “similar” (ὅμοιον, 247b9) in this regard, to contemplating.⁷³⁴ Both are about *pairing* object to object—eye to color, hands to surface, or thought to object. And when described in

⁷³³ See, e.g., de Haas in Maso, Natali, and Seel, *Reading Aristotle*, 99.: “For the first time in *Phys.* 7.3, Aristotle adds that there is no generation of the use and actuality of the state either (247b7-9). Here he employs a distinction he makes in *De Anima* 2.5, viz., between the presence of a state, e.g., the possession of a piece of knowledge (first actuality) and the use of the state in the application of that piece of knowledge in thinking about a particular case [second actuality].” See too, *ibid.*, 103: “In the third paragraph (247b7-9) Aristotle proceeds to claim that the transition from states of the intellectual part of the soul to their use and actuality is no generation either.... It is for the first time in *Phys.* 7.3 that Aristotle addresses the generation of second actuality.” NB. In both quotations, Haas’ references to Aristotle have been reformatted to match my own and his numbering system excised.

⁷³⁴ Cf. *DA* 2.5 417b18-19: “Actually perceiving is spoken of in a way similar (ὁμοίως) to contemplation.” τὸ κατ’ ἐνέργειαν δὲ ὁμοίως λέγεται τῷ θεωρεῖν.

terms of absence or presence, they are exhaustively described. There is no further activity or actuality—there is *just* absence or presence of one object relative to another. That is, there is just a relative “change” at hand, and nothing more. *This* is what it means to treat rational psychic states “mostly” (μάλιστα) (247a29) as a relative rather than a quality. Robert Wisnovsky is extremely helpful here, and I quote him at length:⁷³⁵

According to Aristotle change occurs between two contraries, and knowledge and contemplation are not contraries, but rather indications of the presence or absence of a relation. In this case, the relation which is present or absent is the relation to the object of thought. When I am contemplating—when, that is, I am in a state of second perfection—the relation between my soul and the object of thought is *present*. When I am not contemplating—when, that is, I am in a state of first perfection—the relation between me and the object of thought is *absent*. For example, when I am contemplating the Pythagorean theorem, my soul is in a state of second perfection, since the relation between my soul and the object of thought—the Pythagorean theorem—is present. But when I am watching television, my soul is in a state of first perfection, since the relation between my soul and the object of thought—the Pythagorean theorem—is absent. *No change takes place*: Just as mentioned, the transition from *knowing* the Pythagorean theorem (i.e., *the state* of possessing the capability to think about the Pythagorean theorem), to *contemplating* the Pythagorean theorem (i.e., *actively exercising* that

⁷³⁵ Interestingly, Wisnovsky was a student of Burnyeat’s during the latter’s visiting appointment at Princeton, and was later a research assistant of Sorabji’s at Kings College London, working on the Ancient Commentators on Aristotle project. See Wisnovsky, *Avicenna’s Metaphysics in Context*, vii.

capability to think about the Pythagorean theorem) is *not a change* from one contrary to another, *but rather the appearance of a relation where previously there had been none*.⁷³⁶

States, as we have seen, are excellences or defects (246a11-12), and excellences (moral or otherwise) are perfections (246a13) while defects are departures from perfection (246a16-17)—and not just first actuality states but their second actuality activities too are perfections, perhaps even preeminently so (*EN* 10.4 1174b14-19).⁷³⁷ First and second actualities, *qua* perfections, are *species-specific* fulfillments, departures being their opposites. And these actuality-perfections are always *of a species, of some nature* (246a15).⁷³⁸ This entails, of course, that they are Df 1 soft relatives—relative merely in virtue of being *of* or *to* something. But, of course, this does *not* entail that they are not *also* qualities, and as qualities, everything that entails for their being and changing. Again, this we have seen. But what we have not seen is this ‘new way’ of treating such dual-category entities, which is to treat entities such as a (2) states or (3) the qualitative actualities of states in their use *only qua* relative, and not at all *qua* quality, to say that despite their *dual-category ontological* status (quality *and* relative), they only have a *single-category metabolic* status. That is, to treat a Df 1 soft relative (i.e., what is merely *of* or *to* something) as one would a Df 2 hard relative (i.e., its being consists in merely being related).⁷³⁹ But this is

⁷³⁶ Wisnovsky, 30–31. Italics mine.

⁷³⁷ As Philoponus, for instance, states in several places, perfection (τελειότης) is second actuality (*in DA* 302.13-14, 303.9-15) as well as first actuality/second potentiality, the latter of which is “perfection in a way” (τελειότητα πως, 304.27). For Philoponus, why does first actuality take the diminutive position, whereas second actuality is perfection preeminently? This is a reconstruction of my own here, but part of this may be tied to Aristotle’s general methodological point that actuality always has ontological priority to potentiality (*Meta.* Θ.8 1049b4-1051a3) for Philoponus, and part to Aristotle’s phrasing in *Meta.* Δ.16 1021b20-23 where he calls excellences *qua first actuality* states τελειώσις τις, “a kind of perfection” or “perfection of a sort.” As we have seen repeatedly, Aristotle employs τις (or even πως) when he wants to hedge against full-fledged identification or classification. So too, here? If so, what is τελειώσις proper if not *second actuality*?

⁷³⁸ As I pointed out above, in later commentators—Greek, Arabic, and Latin—*perfection* (τελειώσις or τελειότης) became a *gloss* for *actuality* (ἐντελέχεια or ἐνέργεια), both first and second actuality. See Wisnovsky, *Avicenna’s Metaphysics in Context*, 39, 41, 52, etc.

⁷³⁹ Df 1 soft relatives are “*also* relatives”—dual-category entities which are, say, qualities and *also* relatives. And one treats them metabolically as one treats them ontologically, *qua* both categories. Df 2 hard relatives are “*mere*

precisely what we see on what we might call the “knowledge model”. On the knowledge model of psychic states, as opposed to the virtue model of psychic states, when a quality such as a state or activity of a state is said to be “mostly” a relative, this is an indication that even its *change* is subsumed into the major category.⁷⁴⁰ Evidently, such things can no longer change *qua* their other class, but only according to the contours of their major class. This, evidently, is option (b), and strange as it may seem, it too, along with (a) and (c), saves the *reductio*.

5.1.2.1.5.2 The Second Question: Why Embrace the ‘New Way’?

This leads us to our second question, (ii) Why embrace this new way with respect to knowledge? That is, why embrace the knowledge model? While I have done my best to present the model as persuasively as possible, serious questions linger—two of which stand at the forefront: First, if (2) knowing and (3) contemplating are both qualities and relatives that only “come to be” *qua* relative, then what more fundamental genuine changes are these relative “changes” parasitic on? Second, what of the intrinsic character of both (2) knowing and (3) contemplating, for on the knowledge model, it seems to entirely replaced by mere extrinsic relativity. As we shall soon see, the answer to the second sub-question of (ii) Why embrace the knowledge model will emerge in the process of answering these two further sub-questions, which we will in this context call sub-questions. With this in mind, let us unpack them.

5.1.2.1.5.2.1 Sub-Question One: Parasitic on What?

relatives”— pure single-category entities or *mere* relatives. And one treats them metabolically as one treats them ontologically, as relatives.

⁷⁴⁰ Nor is this an isolated point made solely for argumentative purposes in *Phys.* 7.3. For instance, see *DA* 3.4 429a13-18, where this same point is made, viz., that in reasoning (*νοεῖν*) the mind (*τὸν νοῦν*) remains “unaffected” (*ἀπαθής*) while yet “receiving the form” (*δεκτικὸν δὲ τοῦ εἶδους*). How, exactly? By “the mind (*τὸν νοῦν*) being *relative to* (*πρὸς*) the intelligibles (*τὰ νοητά*).” To be affected (*πάσχειν*) is to be qualitatively changed, as we have seen. *Πάσχειν* is a synonym for *ἀλλοίωσις* (alteration), and thus for *qualitative* change. Not so in cases of reasoning (*νοεῖν*) or knowing (*γινώσκω*, 429a10)—for in both cases we *only* have relative “change”, mere Cambridge coming to be, no alteration or affection or even QG. That is, the mind knows when something comes to be related to it, but itself does not undergo change.

The first sub-question turns on the analysis of relatives given in chapter 1. There we said—along with virtually every commentator past and present⁷⁴¹—that it was Aristotle’s strong doctrine that there are only four species of genuine, irreducible change: Substantial, qualitative, quantitative, and spatial.⁷⁴² And these, of course, occur in four of Aristotle’s ten categories,⁷⁴³ viz., substance (οὐσία), quality (ποιόν), quantity (ποσόν), and place (ποῦ/τόπος). What of the other six categories? As we noted, they either do not genuinely and irreducibly change, or they are components of change itself. Components of change, we noted, were time (πότε), agency (ποιεῖν), and patiency (πάσχειν). Categories where no genuine, irreducible change occurs were listed as relative (πρός τι), position (κεῖσθαι), and having (ἔχειν). And of the latter, as we showed, there is no genuine, irreducible change as all are relatives involving two or more objects,⁷⁴⁴ and all relative “change” is parasitic on some genuine change with respect to substance, quantity, quality, or place.⁷⁴⁵ So, back to our first sub-question: If (2) knowing and (3) contemplating are both qualities and relatives that only “come to be” *qua* relative, then what more fundamental genuine changes are these relative “changes” parasitic on? It would seem that we can immediately strike substantial, quantitative, and spatial change from the lists as these would be foreign to any single, existing mind in its operations. Moreover, as knowledge (a state)

⁷⁴¹ Cf. Simplicius’ remarks on this restriction in *Phys.* 3.1 in his commentary on the *Physics*, in *Phys.* 408.15-20: “But it is worth inquiring why... change is in only four kinds of being, substance, quality, quantity and place, and not also in the others.... This distinction was made in the *Categories* and he will take the trouble to demonstrate it in the fifth book of this work [i.e., the *Physics*].”

⁷⁴² *Phys.* 3.1 200b32-33, *Meta.* H.1, 1042a32-b3, L.2 1069b9ff, *GC* 1.4 319b31ff, etc.

⁷⁴³ *Cat.* 4 1b25-27 “Of things said without any combination, each signifies either substance (οὐσία) or quantity (ποσόν) or quality (ποιόν) or relative (πρός τι) or place (ποῦ) or time (πότε) or position (κεῖσθαι) or having (ἔχειν) or acting (ποιεῖν) or being acted upon (πάσχειν).” τῶν κατὰ μηδεμίαν συμπλοκὴν λεγομένων ἕκαστον ἤτοι οὐσίαν σημαίνει ἢ ποσὸν ἢ ποιὸν ἢ πρὸς τι ἢ ποῦ ἢ ποτὲ ἢ κεῖσθαι ἢ ἔχειν ἢ ποιεῖν ἢ πάσχειν.

⁷⁴⁴ Position is the relation between a substance and a place (i.e., posture). See *Cat.* 7 6b11-14. Having is the relation between two substances (e.g., a body and a cloak). See *Cat.* 15 15b17ff.

⁷⁴⁵ That is, any *extrinsic*, relative “change” R which is also correlated with an *intrinsic* change Q, will only occur *because* S first (ontologically) changed with respect to Q, not because S “changed” with respect to R. And any change with respect to Q (an intrinsic property) will be a change of substance, quantity, quality, or place. Hence, if, accidentally, there is “change” in S simultaneous with a change of S, it is because of an *ontologically prior* change with respect to substance, quantity, quality, or place.

and contemplation (the actuality of a state) are qualities, it would stand to reason that their changes must be qualitative. But what is it that undergoes qualitative change here? It cannot be the mind (ὁ νόος), for Aristotle says it does not qualitatively change (*DA* 3.4 429a15-18).⁷⁴⁶ Nor, it would seem, can it be the mind's objects, the intelligibles (τὰ νοητά, 429a18) or universals (καθόλου, *Phys.* 7.3 247b6-7),⁷⁴⁷ for as necessary entities universals most certainly do not intrinsically change merely in virtue of being thought of (*APo* 1.33 88b30-36)—and *all* knowledge (ἐπιστήμη) is of universals (*Meta.* M.10 1087a10-11).⁷⁴⁸ Does the quantity two change upon analysis? Does any definition? Or universal? So, what is it, the *action* of choosing to think?⁷⁴⁹ This seems to be the *cause*, not the ontologically prior (but temporally simultaneous) change. What is it that *moves* in order to make the relative change possible? It seems it must be the mind in *thought* (τὴν διάνοιαν, *Phys.* 7.3 247b11), and yet Aristotle cannot say this. Changes in what are now called 'mental states' or 'states of consciousness' (e.g., desires, beliefs, thoughts, sensations, etc.) cannot be the ontological bases on which the *de novo* relative between subject and object the parasitically "comes to be."⁷⁵⁰ That is, for Aristotle, a change in my thinking—a *per se* qualitative change—cannot be the underlying basis by which my mind becomes *per accidens* related to some object of thought. But why not?

5.1.2.1.5.2.2 Sub-Question Two: Merely Relative?

⁷⁴⁶ See the comments on this passage above.

⁷⁴⁷ Cf. *DA* 2.5 417b22-23.

⁷⁴⁸ 1087a10-11: "For all knowledge is universal" (Reeve, modified). τὸ δὲ τὴν ἐπιστήμην εἶναι καθόλου πᾶσαν. Cf. 1086b33: "Knowledge is of universals, as is clear from demonstrations and definitions." (Reeve, modified). ἡ δ' ἐπιστήμη τῶν καθόλου· δῆλον δ' ἐκ τῶν ἀποδείξεων καὶ τῶν ὀρισμῶν.

⁷⁴⁹ *DA* 2.5 417b24-27 "Consequently, reasoning is up to oneself, whenever one wishes." διὸ νοῆσαι μὲν ἐπ' αὐτῷ, ὅποτε βούληται, αἰσθάνεσθαι δ' οὐκ ἐπ' αὐτῷ.

⁷⁵⁰ If a thought object were presented to the mind without the mind's awareness of it in thought, there would be no mental relation. Rather, thought itself must be the originating basis *by which* the relation between mind and thought object can "come to be." They are undoubtedly temporally simultaneous (thought comes to be precisely when the relative between mind and thought object "comes to be"), but thought it is clearly the ontologically prior entity in that there must be thought as an ontological basis before there can ever be any thought *of*.

To attempt an answer to this sub-question, we will need to proceed to the second sub-question of this section, viz., what of the intrinsic character of both (2) knowing and (3) contemplating? On the knowledge model, as we have seen, Aristotle wants to maintain that ontologically we have on our hands dual-category soft relatives which metabolically function as hard relatives. That is, while (1), (2), and (3) on the triple scheme are all qualities and relatives metaphysically speaking, the *transitions* from (1) capacity to (2) state and from (2) state to (3) use are mere Cambridge changes, pseudo-changes, “changes” *per accidens*. It would seem, hence, that on the knowledge model, the character of both ‘mental states’ of (2) dispositionally knowing and (3) contemplating are not intrinsic, qualitative changes in thought, but are *mere* extrinsic relatives: knowing *just is* the mind being dispositionally related to a universal; contemplating *just is* the mind being contemplatively related to said universal. And neither (2) nor (3) is any more than this mere extrinsic relativity of one object to another. But this is a mistake. Knowing *does* have an intrinsic character. So does contemplating. Both are intrinsic *qualities*, after all, which is why they are treated in *Physics* 7.3 and why he describes them in this very context as “mostly” relatives, not *mere* relatives. As we saw above in Sedley,

Soft relatives, unlike hard relatives, are characterized primarily by *an intrinsic condition*, such as the mental state of the *epistêmôn* [knower], or, in the case of *aisthêsis* [perception], the kind of modification undergone by the perceiver’s sense-organ. To that extent, the soft-relative state is *not merely* a function of its external correlate.⁷⁵¹

Whether (2) or (3) on the knowledge model, we have Df 1 soft relatives on our hands, not Df 2 hard ones. What, then, is the cause of Aristotle’s reluctance when it comes to their *change*? Why does he not just say, as he did on the virtue model, that, whether for (2) dispositionally knowing

⁷⁵¹ Sedley, “Aristotelian Relativities,” 338. Italics mine.

or (3) contemplating, we have mere Cambridge coming to be *qua* relative, but *qua* quality we have genuine, metabolic *qualitative* generation per QG?

5.1.2.1.5.2.3 The Relevant Background

This is where things get interesting. As we have seen repeatedly and explored as part of the composite picture of change in chapter 1, Aristotle requires that all instances of change involve both an agent and a patient (*Phys.* 5.1 224a34-b1). Of agent and patient, we are told in *Metaphysics* Θ.1 that both have unique potentialities which are requisite for change. Specifically, patients have the potentiality to be acted upon in some certain manner, while agents have the potentiality to act in said manner (1046a9-31). For example, a particular patient, e.g., salt, might have the potentiality to be dissolved. A particular agent, e.g., water, on the other hand, might have the potentiality to dissolve. This, however, seems to pose a problem. If *both* agent and patient have potentialities requisite for some one change, then *both* agent and patient have *actualities* of these potentialities as well. To have dissolved (agent) and to have been dissolved (patient) are both actualities. But if change just is an actualizing potentiality (*Phys.* 3.1 201a10-11) or an “incomplete actuality” (ἀτελής ἐνέργεια, *Phys.* 3.2 201b31-32), then *both* actualities would be *changes*^ω—*two* changes^ω. Pairs of potentialities entail pairs of actualities which entail a pair of changes for every single change (colloquially)—one of the agent and one of the patient. Hence, on this score, the being dissolved of the patient and the dissolving of the agent are both changes.

This implication does not set well with the very *conclusion* of Aristotle’s cosmological argument, which is the climax of the *Physics* as a whole: the existence of “an eternal unchangeable changer” (*Phys.* 8.6 260a15).⁷⁵² If every time an agent acts on a patient there is a

⁷⁵² Traditionally, an “unmoved mover” (ἀκινήτου κινεῖται ἁϊδίου). Cf. *Physics* 3.1 201a25-27.

change both of the patient *and the agent*, then there can be no unchanged changers. *Every* changer changes precisely in causing change. If Aristotle is to avoid this conclusion, he must explain how the pairs of potentiality and thus actuality in agent and patient do not preclude the possibility of an unchanged changer by necessitating infinite causal chains via the specification that there are two changes every single change (colloquially). Again, the very climax of the *Physics* depends on this point. So, what has he to say?

Aristotle directly addresses this issue in *Physics* 3.3, treating it as an ἀπορία or puzzle (202a13-14) concerning agent (τὸ ποιοῦν, τὸ κινεῦν) and patient (τὸ πάσχον, τὸ κινούμενον). The solution he conjures to the *aporia* is fascinating. While there are indeed two potentialities—one in the patient and the other in the agent (202a22-24)—there is only *one* actuality (μία ἐνέργεια 202a36), and thus only *one* change (202b21). According to Aristotle's doctrine here, the single process change operates on the dual potentialities, binding them into a single actuality or product change^o. That is, a single *complete* actuality entails a single *incomplete* actuality, regardless of the number of potentialities involved.

If all instances of efficient causation require there to be a pair of potentialities, a pair of actualities, and a pair of changes belonging to agent and patient, then we can see the problem this would entail for the very possibility of an unchanged changer. Each changer also changes in *causing* change, and thus each changer changes necessarily. If, on the other hand, the pair of potentialities belonging to agent and patient coalesce into a single actuality and thus change, we can see how this alleviates the pressure. But *only if* the change and result complete actuality occur *in the patient*. For if it occurs in the agent, the problem for unchanged changers resurfaces. What says Aristotle? Exactly what he should say here: The sole subject of change is the patient,

the patient being that *in which* the change resides (202b5-8).⁷⁵³ As has become common to say, the actuality *of* the agent and the actuality *of* the patient are both *in* the patient as one and the same actuality⁷⁵⁴—incomplete or complete, process or product. But while they are one in actuality (μία ἐνέργεια, 202a36) and one in change (κίνησις, 202b21), they are not “distinct in account” (εἶπερον τῷ λόγῳ, 202b22). How so? Taking our salt and water example again, the actuality *of* the agent—the dissolving—and the actuality *of* the patient—being dissolved—consist in only a single change and complete actuality *in* the patient: that is, it is *the salt* (the patient) that *dissolves* (process change) and is finally *dissolved* (product change^o). Of course, the account of the action of *dissolving* is not the same account as that of *being dissolved*. One is an account of action and the other an account of passion, and they will be two different accounts. But they do not occur apart from one another. The road from Athens to Thebes is one and the same as the road from Thebes to Athens, even as their account will differ (202b13-14). An uphill slog on one is a downhill jaunt on the other, but two roads they are not.

5.1.2.1.5.2.4 Second Question Again: Why the ‘New Way’?

Returning to the two questions which we began this section, we have seen from the first that there is no qualitative change on which the relative “change” of (2) knowing or (3) contemplating are parasitic. This would seem to lead to the conclusion that (2) knowing and (3) contemplating consists in *mere* extrinsic relativity with no intrinsic content, but that is not so. As we saw in examining our second question, there is indeed *qualitative* content in both—nor does Aristotle deny this. After all, he is treating (2) and (3) here and introducing this knowledge

⁷⁵³ *Physics* 3.3 202b5-8: “Or, is rather that it is not absurd for the actuality of one thing to be *in* another thing, since teaching is the actuality of the one who can teach, but occurring *in* something, and not cut adrift, but of *this* occurring *in that*” (Reeve, 2018, translation modified). ἢ οὐτε τὸ τὴν ἄλλον ἐνέργειαν ἐν ἑτέρῳ εἶναι ἄτοπον (ἔστι γὰρ ἡ δίδαξις ἐνέργεια τοῦ διδασκαλικοῦ, ἐν τινι μέντοι, καὶ οὐκ ἀποτετμημένη, ἀλλὰ τοῦδε ἐν τῷδε). Cf. *Phys.* 5.1 224b4-6 and 224b24-26.

⁷⁵⁴ See Coope, “Aristotle’s Account of Agency in *Physics* III.3,” 206 n.9.

model precisely in the chapter on *alteration*, *Physics* 7.3, telling us that despite their qualitative ontological status, he is treating them “mostly” as relatives. This is the “new way” with respect to psychic states, the knowledge model. And now we are in a position to answer our second main question, (ii) Why embrace this new way with respect to knowledge? The straightforward answer is that he *must* do so because of the contours of the causal account we just examined, viz., that the two potentialities of agent and patient coalesce in a single change and actuality *in the patient*. That is, changers do not themselves change in causing change in their patients—as needs be for his cosmological argument. Let us examine how this causal principle applies in the case of knowledge.

On the triple scheme, (1) capacity for knowledge, (2) dispositional state of knowing, and (3) occurrent use of one’s state of knowledge in contemplation, are all qualitative possessions of some one mind or soul (*DA* 2.5 417a21-b2). *Someone* knows or can know or contemplates. The objects of knowledge, on the other hand, are intelligibles (τὰ νοητά, *DA* 3.4 429a18) or universals (καθόλου, *Phys.* 7.3 247b6-7). If Smith transitions from being (1) capable of knowing some geometric intelligible to (2) actually knowing said intelligible in the dispositional sense so that *in Smith*, the (2) state arises from (1) capacity when the intelligible comes to be present, then what can we say belongs on the patient side of the ledger, and what on the agent side? That is, what acts as the agent and what is acted on as the patient when Smith comes to know?

It would appear from the fact that *Smith* comes to possess the state that it is the intelligible that is the agent and Smith the patient. The geometric intelligible acts on Smith such that Smith, in the requisite sense, comes to know. But such an appearance would be false. According to Aristotle’s considered account, the intelligible does not act on Smith in making the (1) to (2) or (2) to (3) transition, but Smith on the intelligible. *Knowers are the agents* and

intelligibles the patients in all instances of actual knowing. *Because* intelligibles are universals are *in* particulars (DA 3.8 432a3-6) which are themselves acquired *before thinking* via the coming to be of some particular precept (*Phys.* 7.3 247b6-7), intelligibles are already “*in* the soul” in some appropriate sense (DA 2.5 417b23-24). As such, they are internal to the person and accessible to them *prior* to thought. Yet, this fact alone does not entail the relative “change” that results in either (2) dispositionally knowing or (3) contemplating. What, then, makes the universal “present” (ὑπάρξει, *Phys.* 7.3 247b5) to the mind in the senses requisite for (2) or (3) given that it is *already* internal? Reason itself does. *Because* intelligibles are internal prior to thought, Aristotle says in *De Anima* 2.5 in a passage we have already examined at length, “consequently, reasoning (νοῆσαι) is up to oneself (ἐπ’ αὐτῷ), whenever one wishes (βούληται)” (417b24).⁷⁵⁵ The mind or the soul’s “faculty of understanding or reason” (τὸ διανοητικόν καὶ νοῦς, 414b18) acts to “reason” (νοῆσαι, 417b24) “at will,” so to speak. That is, it is reason itself, acting as agent, that ranges over the intelligibles pre-possessed by and internal to the soul and generates from them knowledge. As Aristotle puts it in one of the dedicated chapters on the subject in *De Anima*, 3.4, the rational part of the soul (ἡ νοητική) is “a place of the forms” (τὴν ψυχὴν εἶναι τόπον εἰδῶν), not in actuality (ἐντελεχεία) but in potentiality (δυνάμει, 429a27-29).⁷⁵⁶ How then does it move from potentiality to actuality? “Whenever it becomes (γίνεται) each thing in the manner in which one who knows (ἐπιστήμων) in actuality (ἐνέργειαν) is said to do so—this occurs whenever one is able to move to actuality (ἐνεργεῖν) *though oneself* (δι’

⁷⁵⁵ διὸ νοῆσαι μὲν ἐπ’ αὐτῷ, ὅποταν βούληται.

⁷⁵⁶ “Therefore, they speak well, further, who say that the soul is a place of the forms—except that it is neither the whole soul, but rather the rational soul, nor the forms in actuality, but rather in potentiality.” καὶ εὖ δὴ οἱ λέγοντες τὴν ψυχὴν εἶναι τόπον εἰδῶν, πλὴν ὅτι οὔτε ὅλη ἀλλ’ ἡ νοητική, οὔτε ἐντελεχεία ἀλλὰ δυνάμει τὰ εἶδη.

αὐτοῦ)” (429b5-7).⁷⁵⁷ That is, reasoning is “up to oneself, whenever one wishes” (417b24) as we just saw in *De Anima* 2.5, or, as Shields puts it, “reason is a sort of *self-mover*.”⁷⁵⁸ Why? Because *it* acts on its contents to create knowledge, not the other way around. For as Simplicius recognizes, the “objects of knowledge are not agents (ποιητικά)” (*In de an.* 124.6).⁷⁵⁹

We can now see precisely why the knowledge model has been set forth to account for the comings and goings of states and their actualities for a certain subset of psychic states and in opposition to the virtue model. Specifically, with regard to rational psychic states and their actualities, such qualities are *features of the agent which “come to be” when the agent acts on its patient*. When, e.g., Smith comes to know some intelligible, say, that yellow is lighter than purple, or that kindness is a virtue, Smith is the agent, and the intelligible is the patient. That is to say, *Smith acts* on the pre-possessed intelligible by reasoning about it. Not only does this action cause Smith—or Smith’s mind—to come to be *of* the intelligible such that a *de novo* relative is formed by the “presence” (in the appropriate sense) of the intelligible to the mind in thought such that Smith can now be said to *know*, but *because* Smith is the agent Aristotle cannot say that *Smith* thereby qualitatively changes. Agents do not themselves change just in acting on their patients. Nor, interestingly, can he say the intelligible changes *qua* patient, for intelligibles (τὰ νοητά), as we have seen, are *universals* (καθόλου). And not only is all *all* knowledge (ἐπιστήμη) of universals (*Meta.* M.10 1087a10-11), but universals are themselves necessary and hence unchanging (*APo* 1.33 88b30-36). Hence, whether Smith comes to possess knowledge in sense (2) or (3), Aristotle *cannot* say that she thereby qualitatively changes nor that Smith’s patient

⁷⁵⁷ ὅταν δ’ οὕτως ἕκαστα γένηται ὡς ὁ ἐπιστήμων λέγεται ὁ κατ’ ἐνέργειαν (τοῦτο δὲ συμβαίνει ὅταν δύνηται ἐνεργεῖν δι’ αὐτοῦ). Cf. 429b9, “and then it is able to reason *through itself*”. καὶ αὐτὸς δι’ αὐτοῦ τότε δύναται νοεῖν. See the textual note on δι’ αὐτοῦ in 429b9 in Shields, *Aristotle: De Anima*, 305–6.

⁷⁵⁸ Shields, 305. Italics mine.

⁷⁵⁹ οὐκέτι δὲ τὰ ἐπιστητά ποιητικά εἰσιν.

changes, for agents do not themselves change merely in exercising their agency, nor is the patient, in this case, something that is capable of change. Thus boxed in on either side by his very own principles, Aristotle appeals to the only thing he can appeal to in this case: *relative* “change.” And in so doing, he saves the *reductio* for his cosmological argument.

5.1.2.1.5.2.5 The Knowledge Model in Summary

To sum up, let us pair each question from this section with its answer. First, (i) what is the “new way” to account for the comings and goings of rational psychic states and their actualities? Answer: it is the knowledge model, which is where an *ontologically* dual-categorized entity, a Df 1 soft relative, which is also a quality, is treated *metabolically* as a Df 2 hard relative such that it *only* “changes” *qua* relative but not *qua* quality. Now for sub-question one: if (2) knowing and (3) contemplating are both qualities and relatives that only “come to be” *qua* relative, then what more fundamental genuine changes are these relative “changes” parasitic on? Answer: even though it seems as though Aristotle should want to say that it is the mind in *thought* (τὴν διάνοιαν, *Phys.* 7.3 247b11), he cannot say this. For a change in my thinking which is a *per se* qualitative change, cannot be the underlying basis by which my mind becomes *per accidens* related to some object of thought. The relative “change” is rather free-floating in some sense. Now to sub-question two: does this mean that on the knowledge model, the intrinsic character of both (2) knowing and (3) contemplating is *entirely* replaced by mere extrinsic relativity such that (2) knowing *just is* the mind being dispositionally related to a universal and (3) contemplating *just is* the mind being contemplatively related to said universal? Answer: not at all. Knowing *does* have an intrinsic character, and so does contemplating. Both are intrinsic *qualities* of the knower, which is why they are treated in *Physics* 7.3 and why he describes them in this very context as “mostly” relatives, not *mere* relatives. Now for our second main question

of this section: (ii) why embrace this new way with respect to knowledge? Answer: Aristotle is under severe pressure from his very own system. On the one hand, every change requires an agent acting on a patient, while on the other, the result of the agent's action and the patient's passion is a single change and actuality in the patient. Taken together with the fact that minds are agents which act by thought on intelligibles which are patients, this entails that despite their qualitative ontological status, the coming to be of neither (2) nor (3) can be instances of qualitative change, whether kinetic alteration or metabolic QG generation. As such, the comings and goings of knowledge states can *only* be instances of relative "change." This is what it means for Aristotle to treat knowledge "mostly" as a relative—not that it ceases to be a quality as well, but that the strictures of his very own theory will not allow him to consider under any other guise.

5.1.2.2 Summary: *All the Ways Qualities Can Change*

The options are now all before us. The various species of qualities can change in a variety of ways, although there are limitations per species. Before moving on to summarize and contextualize these results, let us combine our previous charts with the full range of options:

SPECIES OF QUALITY	MODE OF CHANGE	CONTACT THESIS OPTION
Perceptibles/ Affective Qualities	Alteration	(a) – S1 Destructive Alteration <i>Or</i> – S2 Preservative 'Alteration'
Shapes & Figures	Qualitative Generation	(c) – S1 Accompaniment Thesis
Bodily States	Qualitative Generation	(c) – S1 Accompaniment Thesis
Arational Psychic States	Qualitative Generation	(c) – S2 Accompaniment Thesis
Rational Psychic States	No Coming to Be	(b) – No Alteration or Change at all

Starting from the top, affective qualities can either kinetically alter if there is contrariety or, absent contrariety, they can metabolically generate via QG—and always by contact.⁷⁶⁰ This is in part what S1 and S2 alteration capture: S1 is *destructive*, canonical alteration between contraries, whereas S2 is *preservative* ‘alteration,’ “alteration of a sort” or “in a way,” which, absent contrariety, is between contradictories. While S1 destructive alteration involves what is inanimate, S2 preservative ‘alteration’ applies to the animate via *perception*. That is not to say, of course, that inanimate items cannot also undergo preservative ‘alteration’, but it will not be S2 ‘alteration’ as it will not involve *perceptual* change as S2 necessarily does given what the distinction is tracking. Rather, it will just be QG generation or destruction, which while *preservative* is not *perceptual*.⁷⁶¹ Perhaps we could call S1* preservative ‘alteration’, although it matters not for our purposes here. What matters, rather, is that per Aristotle’s purposes in *Physics* 7, S1 and S2 both count as forms of *alteration* (ἀλλοιώσεις) that change via *contact* between agent and patient. For it is through them and the accompaniment thesis, AT, that Aristotle can ensure that the contact thesis necessary for the *reductio* holds in all cases of qualitative change.

Hence, in the case of changes of shapes and figures, we saw “these instances of generation (γενέσεις) would not be alterations (ἀλλοιώσεις)” (246a3-4). Shape need not make contact with shape nor be continuous with it to make something shaped. Moreover, shape and figure lack contrariety, as we saw in chapter 4 above, and so *cannot* alter but only undergo generation or destruction via QG. Does this entail the defeat of the contact thesis and thus the *reductio*? Not at all. For any time something becomes shaped or is configured such that the shape

⁷⁶⁰ We must remember that the contact thesis required that all instances of κίνησις *either* touch *or* be spatially continuous (*Phys.* 7.2 242b59-63). The latter is the case in perception. For Aristotle, *all* sense modalities operate *through a medium*. See e.g., *DA* 2.7 419a25-30 and 2.11 423b7-8.

⁷⁶¹ That is, qualitative generation or destruction from contradictory to contradictory, e.g., from not-red to red or from red to not-red, as when a transparent window is painted with an advert, or removed to make room for something new.

is generated from what was not previously thus, that thing is *also altered*. As Aristotle puts AT in his initially hesitant manner, “But perhaps (μὲν ἴσως) it is necessary (ἀναγκαῖον) that each comes to be with something being altered, e.g., the matter being condensed or rarefied, or heated or cooled” (246a6-8).⁷⁶² When certain S1 material alterations occur (e.g., condensation, rarefaction, heating, cooling, etc.), *then* shapes and figures come to be via QG. The material alterations occur by contact, so the contact thesis is secure even here via AT.

Bodily states are treated next. States—all states—belong to the category of quality *and* relative per Df 1, as he is keen to note.⁷⁶³ That is, such qualities are always perfections *of* some certain nature. Relatives, of course, do not alter or change in any way: “Since, then, the relatives (πρός τι) are neither alterations (ἀλλοιώσεις) themselves, nor is there an alteration (ἀλλοίωσις) of them, nor [is there] generation (γένεσις), or any change (μεταβολή) whatsoever [of them]” (246b10-12).⁷⁶⁴ Hence bodily states *qua* relative also do not change. But, *qua* quality they act just as shapes and figures (246b15-16); that is, they do not alter (246b12-14)—because, as we argued in chapter 4, states are incapable of degreed compresence which is necessary for alteration—but they do undergo generation via QG and AT: “But perhaps (μὲν ἴσως) it is necessary that they come into being (γίγνεσθαι) and perish (φθείρεσθαι) when some [other] things undergo alteration (ἀλλοιουμένων)” (246b14-15).⁷⁶⁵ *Qua* qualities, bodily states “come to

⁷⁶² ἀλλὰ γίγνεσθαι μὲν ἴσως ἕκαστον ἀναγκαῖον ἀλλοιουμένου τινός, οἷον τῆς ὕλης πυκνουμένης ἢ μανουμένης ἢ θερμαινόμενης ἢ ψυχόμενης, οὐ μέντοι τὰ γιγνόμενά γε ἀλλοιοῦται, οὐδ’ ἡ γένεσις αὐτῶν ἀλλοιώσις ἐστίν.

⁷⁶³ Why is he so keen to note this? I think we can now in retrospect see that it is to avoid the appearance of begging the question in the case of rational psychic states. If he treats states—whether bodily, psychic arational, or psychic rational—as *both* qualities and relatives in all cases, then when he claims that rational psychic states are “mostly” to be treated *qua* relative rather than *qua* quality, the *qua* relative focus does not seem so odd. I will leave it to the reader to determine whether or not he is indeed successful in this regard.

⁷⁶⁴ Bracketed material original to the Maso and Seel translation, which has been modified. ἐπεὶ οὖν τὰ πρὸς τι οὔτε αὐτὰ ἐστὶν ἀλλοιώσεις, οὔτε ἔστιν αὐτῶν ἀλλοίωσις οὐδὲ γένεσις οὐδ’ ὅλως μεταβολὴ οὐδεμία.

⁷⁶⁵ Maso and Seel translation, brackets original. ἀλλὰ γίγνεσθαι μὲν ἴσως αὐτὰς καὶ φθείρεσθαι ἀλλοιουμένων τινῶν ἀνάγκη.

be” and “perish”⁷⁶⁶ *when* something else undergoes alteration, which is precisely the AT requirement. That is, bodily states always come to be in conjunction *with*—and even *by*—the S1 alteration of perceptible qualities of the very body in which the state comes to be. Hence, even though, e.g., the beautiful does not become beautiful by contact or being continuous with what is beautiful, the perceptible alterations which necessarily accompany the QG generation of this state *do* occur by contact, so again, the contact thesis is secure via AT and the *reductio* safe.

What about the coming to be of psychic states? It depends, of course. Breaking them down into arational and rational, he works his solution as follows in two different models: the virtue model and knowledge model. Arational psychic states such as dispositional moral virtues and vices—and even their second actuality perfections in action—are, again, both qualities and relatives just as in the case of bodily states. Relatives do not come to be or perish in any intrinsic, *per se* sense, but only *per accidens* or extrinsically. Hence, *qua* relative, they do not change. *Qua* quality, on the other hand, they do not alter (247a19)—again, because, as we argued in chapter 4, states are incapable of degreed compresence which is necessary for alteration. But they do undergo generation via QG and AT: “It is evident that when something is altered (ἀλλοιουμένου) necessarily (ἀνάγκη) also these [states] are lost (ἀποβάλλειν) or acquired (λαμβάνειν). Thus, though their generation (γένεσις) is accompanied by an alteration (ἀλλοιώσεως)” (247a17-19).⁷⁶⁷

Again, the AT requirement: They are generated or destroyed *when* something else undergoes

⁷⁶⁶ Even if Aristotle *can* use γίγνεσθαι and its cognates with reference relative pseudo-change or mere Cambridge coming to be in the case of knowledge as he does in this very chapter (i.e., *Phys.* 7.3 247b5 and 247b18)—and even in *De Anima* at times (e.g., *DA* 2.5 417a30 and 3.4 429b6)—he never uses the pairing of γίγνεσθαι *with* φθείρεσθαι to indicate anything other than genuine *per se* change. Elsewhere in the *Physics*, for instance, γίγνεσθαι together with φθείρεσθαι indicates *generation* and destruction, whether substantial, QG, or even κίνησις in an extended sense (8.3 254a11-12); but it *never* indicates *per accidens* relative “change”. See, e.g., *Phys.* 1.8 191a27, 2.1 193a27-28, 6.6 238a19, 8.1 250b19, 8.6 258b26-27, and 8.7 260b27-28. Why would the two instances of the γίγνεσθαι and φθείρεσθαι pairing in *Phys.* 7.3 (i.e., at 246b10 and here at 246b14-15) be any different in this regard than the rest of the *Physics* and without any indication? Clearly, this is a *per se* use of γίγνεσθαι here, not *per accidens*.

⁷⁶⁷ φανερόν ὅτι ἀλλοιουμένου τινὸς ἀνάγκη καὶ ταύτας ἀποβάλλειν καὶ λαμβάνειν. ὥσθ' ἡ μὲν γένεσις αὐτῶν μετ' ἀλλοιώσεως.

alteration. But this time, it is not S1 destructive alteration but S2 preservative ‘alteration’, i.e., *perceptual* ‘alteration’: “But it is necessary (ἀναγκαῖον) that they come to be (γίγνεσθαι) when the perceptual part (αἰσθητικοῦ μέρους) [of the soul] is altered (ἀλλοιουμένου). And this is altered (ἀλλοιωθήσεται) by perceptibles (αἰσθητῶν)” (247a4-7).⁷⁶⁸

Why not stick with S1 alteration in the case of psychic states? Perceptibles are external to the soul as the sensory features of bodies. Moreover, while one could make the case that shapes and figures are directly *caused* by the alteration of perceptibles, and perhaps that bodily states are actually *composed* of perceptible alterations^o, one cannot run a parallel line of reasoning with respect to nonbodily *psychic* states such as virtue, vice, and the like. There is no question with respect to their composition, and to claim that they are caused by the alteration of bodily perceptibles would lead to absurdity. Does the dispositional state of justice, say, *look* a certain bodily way? What body part or parts can be altered to acquire it? These are absurd questions, as Aristotle recognizes; hence he needs something that is *internal* to the soul to play this correlational role.⁷⁶⁹ And this, of course, is precisely the role that S2 perceptual ‘alteration’ plays. Virtues and vices are always acquired in conjunction with S2 perceptual ‘alterations.’ Hence, even though, e.g., the just does *not* become just by contact or being continuous with what

⁷⁶⁸ Maso and Seel translation, modified. γίγνεσθαι δ’ αὐτὰς ἀναγκαῖον ἀλλοιουμένου τοῦ αἰσθητικοῦ μέρους. ἀλλοιωθήσεται δ’ ὑπὸ τῶν αἰσθητῶν. Note: The bracketed line, “of the soul,” could also be read as “of the body,” in which case he would be referring to ‘alteration’ of a sensory organ. But this is clearly not the case given a) the *psychic* concern of the present context and b) his stipulation perception is indeed ‘alteration’ of the soul in the concluding lines of 7.3 at 248a6-9: “Thus it is evident from what has been said that being altered and alteration occur in perceptible qualities and in the perceptual part of the soul (τῷ αἰσθητικῷ μορίῳ τῆς ψυχῆς), and in nothing else except accidentally” (Maso and Seel translation, modified). φανερόν οὖν ἐκ τῶν εἰρημένων ὅτι τὸ ἀλλοιοῦσθαι καὶ ἡ ἀλλοίωσις ἐν τε τοῖς αἰσθητοῖς γίγνεται καὶ ἐν τῷ αἰσθητικῷ μορίῳ τῆς ψυχῆς, ἐν ἄλλῳ δ’ οὐδενὶ πλὴν κατὰ συμβεβηκός. Cf. a similar point in Jonathan Barnes, “Aristotle’s Concept of Mind,” *Proceedings of the Aristotelian Society* 72, no. 1 (1972): 110 n 8: “It should be noted that Phys. 244b7-15 goes out of its way to assert that αἴσθησις is an ordinary case of ἀλλοίωσις; but it also explicitly says that ἀλλοίωσις is not physical (cf. 248a7-9).”

⁷⁶⁹ I say “correlational” here to be inclusive of composition, causation, and anything else that might be caught by the term but is looser than composition and causation such as mere co-variance. This is especially important here in the case of virtues as they seem to work in two ways as we noted before—both being caused by S2 alteration and their exercise *causing* S1 and S2 alterations. Correlational works to capture precisely this relationship.

is just—nor *could* it *qua psychic* dispositional state. The S2 perceptual ‘alterations’ which necessarily accompany *do* occur by contact. So, again, the contact thesis is secure via AT and the *reductio* safe.⁷⁷⁰ This, thus, is the virtue model for psychic states and their actualities: *Qua* relative, they do not change. *Qua* quality, on the other hand, while they do not alter, they do undergo generation via QG.

Finally, we come to rational psychic states and the knowledge model. We have spent the most time here, and I will not belabor the point beyond a quick summary. Despite an ontological status as a dual-category entity which is simultaneously a quality and a relative, rational dispositional states like (2) knowledge and its active usage in (3) contemplation are to be treated “mostly” as relatives. How so? While they do indeed have an intrinsic qualitative character, they do not change *qua* quality, but only *qua* relative—which is to say, their comings and goings are to be considered instances of mere Cambridge coming to be or pseudo-change. On the knowledge model, thus, despite the ontological character of the psychological entity in question, its modification is treated *only* as relative, *per accidens* “change” and never as qualitative, *per se* change as on the virtue model. This, too, odd as it may seem, saves the contact thesis and thus the *reductio*. For if all qualitative change requires the contact only S1 or S2 alteration can provide, then either the quality in question must itself be an instance of S1, S1*, or S2 alteration, be an instance of QG in which, via AT, alteration is necessarily correlated, or the quality cannot change at all *qua* quality. Or, as we put it above in a different order, Aristotle must either say: (a) The quality must alter by contact; (b) the quality does not alter or change at all; or (c) AT, i.e., the quality changes via QG but does not alter, although it is necessarily accompanied by S1 or S2

⁷⁷⁰ As we have said, the contact thesis requires that all instances of κίνησις *either* touch *or* be spatially continuous (*Phys.* 7.1 242b59-63) and Aristotle requires that *all* sense modalities alike require a medium through which perceptibles are made *spatially continuous* with the perceiver. See *DA* 2.7 419a25-30 and 2.11 423b7-8.

alteration. The knowledge model, of course, takes (b), while the virtue model, despite being *psychic*, acts just as with bodily states, taking (c). Everything is accounted for, even at enormous strain on the system, and Aristotle concludes with what he could stipulate at *Physics* 7.2: “For in every case (ἅπασι) we find that the last thing that alters something is together with the first one that is altered” (244b3-5).⁷⁷¹ And again, this only works if (a), (b), and (c) are our options, as we have seen.

This may be, in fact, why he does *not* discuss the first species of quality from *Categories* 8 here in *Physics* 7.3, capacities (δυνάμεις). It is not because *Physics* 7 is an early work, as Ross suggested, nor even that capacities fell from the qualities list as a species.⁷⁷² Rather, capacities just cannot be plausibly worked into these (a), (b), or (c) scheme. They do not alter but instead undergo QG generation or destruction as saw in chapter 4, for they lack impossible contrariety, as we said there. So (a) is not an option here. Moreover, while they clearly change, their change cannot be relegated to mere relative pseudo-change as on (b). What would be absent or present such that a capacity could be said come to be *per accidens*? Powers or abilities such as capacities are not mere relatives, nor can their change be considered as such, for they are not relatives at all. Aristotle at no point categorizes capacities as dual-category qualities and relatives as he does with states. After all, mere capacities are never perfections of any nature, which, as we have said, is precisely why states are considered to be Df 1 soft relatives. Rather, capacities are just simply qualities and thus must change as qualities. And again, given that they cannot alter their comings and goings must be instances of QG generation or destruction, both of which are *per se* changes. Hence, (b) is not an option either. But what about (c), AT? While it may work well with bodily shapes and even arational psychic states as on the virtue model, how could

⁷⁷¹ ἐν ἅπασι γὰρ συμβαίνει ἅμα εἶναι τὸ ἔσχατον ἀλλοιοῦν καὶ τὸ πρῶτον ἀλλοιούμενον.

⁷⁷² For both options see Ross, *Aristotle's Physics. A Revised Text with Introduction and Commentary*, 674.

one run a similar line for capacities using AT? Perhaps in certain cases one could correlate the generation or destruction of capacities with the alteration of perceptibles. For instance, when a caterpillar transforms into a butterfly in metamorphosis, the substance in question loses the capacity to, say, crawl on its belly on five pairs of legs, but gains the capacity for winged flight. Or, in another example, a human infant, upon birth, loses the capacity to take in nutrition via an umbilical cord and gains the capacity to do so through the mouth. While both sets of changes are instances of QG generation and destruction of the capacities of an enduring substance (i.e., an insect or a human being), they also would appear to be correlated with the alteration of perceptibles. That is, *when* the capacities come or go, the substance in question perceptibly alters—by losing legs and growing wings, by exiting the womb and severing the cord, etc. AT would seem to have a place in these cases—but, interestingly, not in all cases.

According to Aristotle's account in *Metaphysics* Δ.12, not only can the term "capacity" be used in a variety of ways (1019a32-33), but there are at least three different types of capacities: capacities to act in specific ways (agency), capacities to be acted upon in specific ways (patency), and capacities to act and be acted upon *by choice* (προεῖλοντο, 1019a25). Let us assume for the sake of argument that the capacities for agency and patency of any given subject are either set by nature for life; or, when they do change, it is always in accordance with AT. But what about the third sort, the volitional capacities? Surely I cannot, *by choice*, think of a triangle until I know what one is—until I am appropriately related to the intelligible form. That is, prior to the presence or possession of intelligible in knowledge, I lack the capacity to choose to think of it, even as I at the time possess the capacity to have the intelligible itself. Likewise, for squares, rectangles, and pentagons, for different forms of government, for ethical ends or virtues, geographical features of a landscape, so on and so forth. Every child, for instance, possesses the

capacity to have the intelligible form of these things, but until that form is acquired, one *lacks* the capacity to think of these things *by choice*. Upon acquisition of the intelligible in knowledge, however, the child *gains* the capacity to think by choice, upon that which they have learned—whatever that thing may be. For a child, the coming to be of these capacities is as numerous as the intelligibles a child can learn. But more importantly, there is no possible way to associate these with AT and the alteration of perceptibles.

Perhaps one might say that because the universal required for knowledge comes to be present *in* the particular precept, which is itself the result of an S2 ‘alteration,’ that there is a pathway for AT from S2 perceptual ‘alteration’ to the QG generation of a volitional capacity. While I do not think this is correct, let us take a theological example which will set this in a clearer light, free of any associations with knowledge. Christ is said to be impeccable as, *qua* God, the God-man lacks the capacity to be able to *choose* sin. Sin is, for Christ, metaphysically impossible. The same cannot be said for creatures, however—whether human or angelic. Take the original human pair, Adam and Eve. According to the Western theological tradition beginning with Augustine, the first pair were, in their paradisiac condition, considered to be both able to sin and able not to sin by choice (*posse peccare, posse non peccare*).⁷⁷³ That is, they had the capacity to choose to sin *and* the capacity to refrain from choosing to sin. In their postlapsarian condition, however, they *lost* the latter capacity (i.e., being able *not* to sin) and were left only with the former (i.e., able to sin). This capacity in isolation meant that the first pair were now *not* able not to sin (*non posse non peccare*). With the first coming of Christ in the incarnation, however, the human condition changed yet again, at least for the redeemed. Now they were able to choose *not* to sin again (*posse peccare, posse non peccare*), *gaining* the

⁷⁷³ I draw here heavily from Augustine’s *Enchiridion* 118 and Antonie van den Beld, “Non Posse Peccare: On the Inability to Sin in Eternal Life,” *Religious Studies* 25, no. 4 (1989): 521–35.

capacity they lost in the Lapsis. In the final, eschatological state at the second coming of Christ, however, they will lose another capacity, but not the one lost in the Lapsis. Rather, instead of losing the capacity to refrain from sinning, redeemed humanity will *lose* the capacity to sin itself, now being eternally in a condition of not able to choose to sin (*non posse peccare*)—finally becoming impeccable just as the God-man, but without being in any sense divine.

The question for us here is what perceptible alterations occur in correlation with the gain or loss of these volitional peccability capacities? Is there a change in the hue of the skin or in the brightness of the eyes? Is there the condensation or rarefaction of any of the bodily matter, or its heating or cooling? These are absurd questions precisely because these are psychic capacities without any identifiable perceptible correlates. Nothing perceptible alters when, in the Lapsis, the first human pair lose the *posse non peccare* capacity, the capacity to choose to refrain from sinning. QG destruction occurs, but AT is useless to connect it to any alteration; likewise, when they regain the same *posse non peccare* capacity upon redemption. QG generation occurs, but AT is of no use. And as we have seen in the above knowledge examples, such examples are only copious. But more than copious, as psychic capacities that lack identifiable perceptual correlates when they are QG generated, they are readily apparent as *counterexamples* to the AT claim of *Physics* 7.3. Why, then, avoid the mentioning of capacities, the first species of quality, in this context? So as to avoid the falsification of the contact thesis and thus the *reductio*. In sum, this is a clever evasion on Aristotle's part.

CHAPTER 6: CONFIRMATION, CLARITY, & CONCLUSIONS: PERCEPTION AS QG

6.1 A Final Dilemma: Classifying Perception

6.2 The Virtue Model or The Knowledge Model? The Curious Case of Perception

6.2.1 A Perceptual Difference?

6.2.2 In Defense of The Virtue Model

6.2.3 The Virtue Model: Three Key Passages and Two Lines of Inquiry

6.2.3.1 Inquiry One: *De Anima* 2.12 on Agency and Patency in Perception

6.2.3.1.1.1 *De Anima* 2.12 on Form, Matter, and Matterless Form Reception

6.2.3.1.1.2 Conclusion to Inquiry One: The Location of Change

6.2.3.1.1.1.1 A Problem with Matterless Form Reception?

6.2.3.2 Inquiry Two: *De Anima* 3.2 and the Metabolic Status of Perception

6.2.3.2.1 Is ‘One and The Same, but Distinct in Being’ *Contradictory*?

6.2.3.2.2 Is ‘One and The Same, but Distinct in Being’ *Meaningful*?

6.2.3.2.3 The ἀπορία of *Physics* 3.3 and SDD Solution

6.2.3.2.4 *De Anima* 3.2 in the Context of *Physics* 3.3 and SDD Solution

6.2.3.2.4.1 Problem 1: Is Aristotle an Antirealist Concerning Unperceived Perceptibles?

6.2.3.2.4.2 Problem 2: How Are Potential Perceptibles Compatible with Realism?

6.2.3.2.4.3 Problem 3: How Can Perception Both be a Product and a Process Change?

6.2.3.2.5 Conclusion to Inquiry Two: The Metabolic Status of Perception

6.2.4 Conclusion: QG Vindicated

6.1 A Final Dilemma: Classifying Perception

Every option has now been accounted for with regard to the change of qualities. So now for the crucial question: *Where in this picture does perception fit?* Perception is a qualitative change, as we have repeatedly seen, and despite the fact that Aristotle classifies it in *Physics* 7.2 as “alteration in a way,” there is no reason to think this as anything but the “alteration of a sort” from *De Anima* 2.5. Which means, as we argued in both chapters 3 and 4, that it is an instance of preservative QG generation rather than destructive, canonical alteration. But as we have seen, this may be too quick. We saw three instances of preservative triple scheme progressions in our analysis of *Physics* 7.3, only two of which involved change: bodily states and arational psychic states. The third sort, on the other hand, decidedly did not: rational psychic states. Given the

similarities between the first two, we can jointly categorize them under what we have called the virtue model. The third sort, of course, is the knowledge model, although it need not be exclusive to knowledge as other psychic phenomena might also be so categorized, e.g., the progressions of the sub-faculty of imagination (φαντασία).

If the virtue model and the knowledge model exhaust the options for preservative triple scheme progressions for Aristotle as it would seem, then we can put our question above regarding perception even more sharply: Given that perception too is a triple scheme progression, to which model does perception belong? This question and the implications of its answer will bring us to the close of this chapter and, indeed, this dissertation, whence we shall return to finally answer the puzzle with which chapter 1 began regarding Aristotle's statement, viz., that "perception (αἴσθησις) consists in both being changed (κινεῖσθαι) and being-affected (πάσχειν), as has been said; for it seems to be alteration of a sort (ἀλλοίωσις)" (DA 2.5 416b33-5).⁷⁷⁴ But first, back to our question: To which model does perception belong, the virtue model or the knowledge model?

6.2 The Virtue Model or The Knowledge Model? The Curious Case of Perception

Just as with all instances of triple scheme progression, perception consists at multiple stages of dual-categorized entities. This is necessarily the case as the triple scheme *itself* consists in various of Aristotle's species of quality. Hence, first potentiality consists in the quality of capacity; first actuality or second potentiality consists in the quality of state; and second actuality consists in some qualitative actuality of a state.⁷⁷⁵ Even if we have good reason to deny that

⁷⁷⁴ Shields translation, modified with suggestions from Burnyeat, "De Anima II 5," 34 & n15 & 16.

⁷⁷⁵ I say "qualitative actuality of state" for lack of a better *general* term. As we previously saw, both beauty and strength are bodily *states*, which are themselves the actualities of their corresponding capacities. But in the case of beauty there is no further actuality beyond the state, whereas in the case of strength there is a further actuality beyond the state, namely the qualitative actuality of the state in the *exercise* or *use* of the state of strength in *feats* of

capacities are dual-categorized qualities, states and their qualitative actualities certainly are as *qua* perfections they are Df 1 soft relatives. Hence, just as in the case of virtues and vices and knowledge and imagination, what we have in our hands in the case of perception is a series of hierarchically arranged qualities operating in a sequential, preservative, fulfillment pattern—the latter two stages of which consists in the dual-categorized entities themselves. The question, then, is not that of the *ontological* status of the various stages of perception but of the *metabolic* status of the transitions from stage to stage. Or, put differently, the question now is to which model is perception generally more akin, the virtue model or the knowledge model?

Maybe again, we are moving too quickly, however. Perception is very regularly associated with knowledge both in *De Anima* and even in *Physics* 7.3. In fact, *De Anima* 2.5 is centered on the very analogy itself of perception with knowledge. Is it not then clear from this that the knowledge model is that which Aristotle has in view? Ross thinks it is. Hence, in his commentary on the *Physics*, he says in commenting on 7.3: “Aristotle often points out that there is no generation of sense-perception; at one moment we do not perceive, at another we do, and that is all.”⁷⁷⁶ On the virtue model, both virtuous dispositions and virtuous acts (i.e., first and second actuality) are QG *generated qua* quality, but *qua* relative, they undergo mere Cambridge coming to be, change *per accidens*—the latter parasitic on (but simultaneous with) the former. On the knowledge model, on the other hand, dispositional knowledge and contemplation (i.e.,

strength. As we previously argued, if the state is quality then so is the *actuality* of a state. Otherwise, we would have an instance of something the actuality of which was categorially different than the potentiality from which it comes. The actuality need not be perceptible as would a feat of strength, just qualitative. The second actuality of a psychic state, say, the virtue of practical wisdom (φρόνησις) would itself be an *imperceptible*, psychic qualitative actuality of that state, not a perceptible quality (cf. *EN* 6.5 1140b4-6). If the third species of quality, affective qualities, are nothing but perceptibles as seems to be the case, then *even if* some second actualities do end of being correlated with to some perceptible (or some set of perceptibles), this does not by itself entail that all are. Rather, some second actualities are imperceptible yet necessarily qualitative, thus ruling out any relationship with perceptibles altogether.
⁷⁷⁶ Ross, *Aristotle's Physics. A Revised Text with Introduction and Commentary*, 676. In context, he is specifically commenting on 247b8-9, a passage we shall soon examine.

first and second actuality), while possessing qualitative content, *only* “change” *qua relative*, and thus there is no QG generation, just Cambridge coming to be or relative pseudo-change. Just as one moment there is no knowledge or contemplation and the next moment there is *sans* QG generation, based on whether something is present or absent, so with perception, says Ross: “At one moment we do not perceive, at another we do, *and that is all*.” That is, all perceptual change is relative pseudo-change, mere Cambridge coming to be. Or, the knowledge model is *the* model for perception. Furthermore, says Ross, this is clear enough from Aristotle’s frequent references and comparisons of perception in the context of discussions about knowledge and vice versa.

Interestingly, Ross does not tell us here where “Aristotle *often* points out there is no generation of sense-perception.” Neither does Ross do so in his commentary on *De Anima*, even as that is where Aristotle develops the knowledge model and applies it to perception most thoroughly. Rather, he just posits it here. And rightly so, for there are *not* many—if *any*—places where Aristotle makes such a claim there is *no* generation (γένεσις) of sense-perception. Nor does he say that there *is* γένεσις of sense-perception. Rather, Aristotle is curiously silent on the whole affair. To assume from this silence concerning the relationship between second actuality perception and γένεσις that there is no relationship is an argument from silence, not from evidence. Surely this is not favorable to Ross’ assumption of the knowledge model.

6.2.1 A Perceptual Difference?

Nevertheless, it is worth asking why Aristotle is willing to use becoming or coming to be (γίγνεσθαι) and its cognates with reference perception, but not generation (γένεσις). After all, he does this with knowledge as well, as on the knowledge model, there is no *per se* change, just *per accidens* coming to be (γίγνεσθαι). An easy answer to this would be that Aristotle employs γίγνεσθαι but avoids γένεσις so as to maintain the analogy of alteration of a sort (i.e.,

preservative ‘alteration’) with alteration itself (i.e., destructive alteration), given the importance of its role in the cosmological argument via the *reductio* in *Physics* 7.2-3. If via AT, he is going to use S2 preservative ‘alteration’ in the place of S1 destructive alteration, then S2 had better be *analogous* to S1 in the right sort of way; otherwise, the project of the *Physics* with its conclusion of the cosmological argument fails. And it *is* analogous in the way that matters for him in *Physics* 7.2 in that the S2 preservative ‘alteration’ of perception involves the ‘alteration’ of perceptibles *by contact* (i.e., precepts can only come to be because percipients and external perceptibles are *spatially continuous*).⁷⁷⁷ So long as the contact thesis is secured and perceptibles change by this means, *alteration* is indeed an appropriate term, even if it is “of a sort” (*DA* 2.5 416b34), “in a way” (*Phys.* 7.2 244b11), or has to be designated by scare quotes as in ‘alteration.’ Aristotle needs perceptual change to be *like* canonical alteration (ἁλλοίωσις), and so he does not shy from the term even if he does shy away from generation (γένεσις), since it is unlike alteration by not requiring contact (*Phys.* 7.1 243b9-10, 244a14-b2). Nor, of course, does he shy away from γίγνεσθαι as both alterations and generations are instances of coming to be as we have previously seen—even if he can *also* use the term in the loosest of senses to refer to relative pseudo-change as in the case of knowledge (*Phys.* 7.3 247b5, 247b18, *DA* 2.5 417a30, 3.4 429b6, etc.). But notice, the difference is between *per se* and *per accidens* senses of γίγνεσθαι, which are very different senses indeed.

Interestingly, this points to a consequential disanalogy between perception and knowledge: while Aristotle is willing to use ἁλλοίωσις of perception (and in technical places), he is not so willing to use it of knowledge. Again, it is second actuality *perception* which is called

⁷⁷⁷ Of the transparent in the case of sight, he says: “If someone should place what has color upon the eye itself, it will not be seen. Rather, color moves the transparent, e.g. air, and the sensory organ is moved by this, which is continuous” (*DA* 2.7 419a12-15). Percipient and perceptible always “touch”, so to speak, through a medium which is what makes perception possible. See *DA* 2.7 419a25-30 and 2.11 423b7-8 for rather general statements.

“alteration of a sort” in *De Anima* 2.5, *not* second actuality contemplation—even as he initially considers that *both* might be instances of canonical alteration (416b34, 417a31-32).⁷⁷⁸ And in *Physics* 7.2-3, it is perception again which is “alteration in a way” (244b11) or “alteration” (247a6-7), not knowledge (247b1-2). As Aristotle sums it up in the final lines of *Physics* 7.3: “Thus it is evident from what has been said that being altered (ἀλλοιοῦσθαι) and alteration (ἀλλοίωσις) come to be (γίγνεται) in perceptibles (αἰσθητοῖς) and in the perceptive part of the soul (αἰσθητικῷ μορίῳ τῆς ψυχῆς), and in nothing else except accidentally” (248a6-9).⁷⁷⁹ Hence, while Aristotle can loosely use alteration in certain contexts to refer to stage transitions on the knowledge model, he refuses to do so *technically*. There are only two sorts of technical application of ἀλλοίωσις: for canonical, destructive, kinetic alteration from contrary to contrary; and its extended use for preservative, metabolic QG ‘alteration’ from contradictory to contradictory. This is alteration in senses S1 and S2, of course, and Aristotle will not allow the term to be extended any further.

By itself, surely this linguistic fact tells in favor of the virtue model over the knowledge model. For, as Aristotle had told us previously in *Physics* 7.3, the Cambridge coming to be of relatives is in *no case* classifiable as an alteration, nor a change of any kind: “since, then, the relatives (πρός τι) are neither alterations (ἀλλοιώσεις) themselves, nor is there an alteration (ἀλλοίωσις) of them, nor [is there] generation (γένεσις), or any change (μεταβολή) whatsoever [of them]” (246b10-12).⁷⁸⁰ As we have pointed out before, Aristotle is using the broadest possible term for change here, μεταβολή, which includes *all* change—either from contrary to

⁷⁷⁸ Aristotle uses “alteration of a sort” (ἀλλοίωσις τις) at both *DA* 2.4 415b24 and 2.5 416b34, but without telling us what this might mean. It is *DA* 2.5 itself which explains the meaning, and while he is happy to continuing using the term “ἀλλοίωσις” with respect to perception (418a2-3), he refuses to do so with knowledge (417b8-12).

⁷⁷⁹ φανερόν οὖν ἐκ τῶν εἰρημένων ὅτι τὸ ἀλλοιοῦσθαι καὶ ἡ ἀλλοίωσις ἐν τε τοῖς αἰσθητοῖς γίγνεται καὶ ἐν τῷ αἰσθητικῷ μορίῳ τῆς ψυχῆς, ἐν ἄλλῳ δ’ οὐδενὶ πλὴν κατὰ συμβεβηκός.

⁷⁸⁰ ἐπεὶ οὖν τὰ πρὸς τι οὔτε αὐτὰ ἐστὶν ἀλλοιώσεις, οὔτε ἐστὶν αὐτῶν ἀλλοίωσις οὐδὲ γένεσις οὐδ’ ὅλως μεταβολή οὐδεμία. Bracketed material original to the Maso and Seel translation, which has been modified.

contrary or contradictory to contradictory per *Physics* 5.1. Does he now abandon these qualms about associating relative pseudo-change with alteration, or is he telling us something else altogether by his willingness to associate perception and alteration? Surely it is the latter, for not only would the former be *ad hoc* and question-begging, but it would fail to take into account contrary data from the rest of the *Corpus*. Hence, *even if* Aristotle is willing to use γίγνεσθαι and its cognates with reference to relative pseudo-change or mere Cambridge coming to be in the case of knowledge as he does in this very chapter (i.e., *Phys.* 7.3 247b5 and 247b18)—and even in *De Anima* at times (e.g., *DA* 2.5 417a30 and 3.4 429b6)—he refuses to use *alteration* in such a way. Hence, while he does standardly use learning (μανθάνω)—gaining *knowledge*—as an example of alteration (e.g., *Phys.* 3.1 201a15-19, 3.3 202a28ff, 5.2 226a14-16, 19-22, 5.4 227b11-14, *GC* 1.3 318a35, 319a11, a16, etc.), all the unambiguous instances are early. Never does he say this later in the *Physics* nor anywhere in *De Anima*.⁷⁸¹ He seems to have spotted the problem during the writing of the *Physics* and then avoided the implication from there on. Coming to know in learning is not an alteration even in name, nor is exercising one's knowledge in contemplation. But again, even as he spots the problem and changes his practice with respect to knowledge, he *continues* to use the term with respect to perception. Why? Because they are relevantly different.

In sum, even if Aristotle does use γίγνεσθαι (coming to be) with respect to both perception and knowledge, this does not entail a univocal sense. Rather, he would appear to intend the *per se* use of γίγνεσθαι with respect to perception, but the *per accidens* use with respect to knowledge. As for γένεσις (generation), he avoids the term with respect to perception

⁷⁸¹ Ambiguous cases are two: *Phys.* 8.4 255a30-b5 and 8.5 257a6-14 (cf. 8.5 257b2-6), although they may be written with the *proviso* from *Phys.* 7.3 in mind given the dependency of *Phys.* 8 on 7. See Wardy, *The Chain of Change: A Study of Aristotle's Physics VII*, 89.

to avoid the denial of the contact thesis, using ἀλλοίωσις instead—with the addition of “in a way”—with the intention of *combining* QG generation with the contact thesis. Contrary to Ross’ account, this surely counts in favor of *the virtue model*: Perception possesses for Aristotle both a dual-categorized ontological status *and* a dual-categorized metabolic status. Hence, as Victor Caston comments on this very point:

Recognizing the relational nature of perception does *not* imply, however, that the change involved is a *merely* relational one, a ‘mere Cambridge change’, where an object is said to undergo a change solely in virtue of changes in its relation to other objects rather than due to any modification intrinsic to itself.⁷⁸²

Ross is wrong, and the evidence for the knowledge model is not just underdetermined but contrary to it. But can we go further than this and actually provide positive support for the virtue model rather than just negative support against the knowledge model? I believe so. In fact, with the following two arguments, the case becomes decisive. Answering this question more than any other will clarify the position that perception, whether (2) state or (3) precept, is an instance of QG. But first, why might one be inclined to think that the virtue model applies so readily to perception as we are supposing? Before turning to our next two considerations, let us briefly examine this preliminary question.

6.2.2 In Defense of The Virtue Model

While the dilemma presented above between two models of preservative triple scheme progression should allow us to be decisive given that the options are exhaustive, it would do us well to also note the analogy that Aristotle himself draws between virtue and perception. While rarer and more nuanced than comparisons to knowledge, they are relevant. But what we find is

⁷⁸² Victor Caston, *Alexander of Aphrodisias: On the Soul: Part I: Soul as Form of the Body, Parts of the Soul, Nourishment, and Perception* (New York: Bloomsbury Academic, 2012), 138 n. 344. Italics, original.

that even in the case of acquired capacities like virtues, the trifold structure of capacity, state, and exercise emerges once the process has begun, functioning in the same fashion.

In *Nicomachean Ethics* 2.1, for instance, while contrasting natural and acquired states, Aristotle notes that the ordering between state and actuality is *reversed*. Because the state for perception is *natural*, the state is itself prior to its actuality, and the actuality in no way gives rise to the state (ἐξίς): “For we did not acquire them [the states] by frequent seeing or hearing, but we already had them when we exercised them, and did not get them by exercising them” (1103a28-31).⁷⁸³ For *acquired* states, on the other hand, the actuality comes first and then gives rise to the state by repetition: “In the case of virtues, on the other hand, we acquire them as a result of prior activities (ἐνεργήσαντες)⁷⁸⁴—and this is just like the case with crafts” (1103a31-32).⁷⁸⁵

Nevertheless, the analogy does indeed hold between virtue and perception; for once the virtuous state (e.g., for bravery) is generated by the repetition of the relevant activities (e.g., brave actions)—for again, activities generate the state (ἐξίς) of virtue itself, for “it is by similar activities that states (ἐξείς) come to be” (1103b21-22)⁷⁸⁶—it then is *the state* which gives rise to the activities just as in the case of perception, doing so rather naturally with minimal executive oversight.⁷⁸⁷ As such, even acquired dispositional states can be generated such that once in place their operation comes to resemble natural states.

⁷⁸³ οὐ γὰρ ἐκ τοῦ πολλάκις ἰδεῖν ἢ πολλάκις ἀκοῦσαι τὰς αἰσθήσεις ἐλάβομεν, ἀλλ’ ἀνάπαλιν ἔχοντες ἐχρησάμεθα, οὐ χρησάμενοι ἔσχομεν. Irwin translation, modified.

⁷⁸⁴ Participle of the verb ἐνεργέω, “to be in action or activity, operate” (LSJ)—from ἐνέργεια, *actuality*.

⁷⁸⁵ τὰς δ’ ἀρετὰς λαμβάνομεν ἐνεργήσαντες πρότερον, ὥσπερ καὶ ἐπὶ τῶν ἄλλων τεχνῶν. Apostle translation, modified.

⁷⁸⁶ ἐκ τῶν ὁμοίων ἐνεργειῶν αἱ ἐξείς γίνονται. Apostle translation, modified.

⁷⁸⁷ That is, while second actuality contemplation is “up to us” in that we choose to transition from state to exercise, the same cannot be said with respect to virtue *once the state or disposition has been generated*. For once generated, it is *the state* operating in a specific environmental context which generates the activity, not necessarily our choice. If Jones has acted bravely so many times that she has developed the state of bravery, her choice is certainly responsible for the existence of the state and of those state-*prior* activities. But once the state comes to be, it is the state which is acted upon *by the environmental context* as a sort of agent (e.g., a dangerous situation where a person can be rescued only at the risk of harm to the rescuer), and both agent and patient together—without choice *in that*

Once acquired, though, what does such a state do? Precisely what a natural state does: issues in *activity*. And just what are these activities? *Actions* (πράξεις), preeminently (2.2 1104b13-14).⁷⁸⁸ The difference between what is natural and acquired being that the activity an acquired state issues in is *also* the very activity that led to the generation of the state in the first place. As Aristotle goes on to put it in *Nicomachean Ethics* 2.3, “its activity (ἐνεργεῖ) is concerned with the same actions as those from which it came to be” (1105a15-16).⁷⁸⁹ So, once a virtue is *developed*, it is a (2) first actuality state rooted in a (1) first potentiality capacity which issues in a (3) second actuality action.⁷⁹⁰ The dispositional state (i.e., the virtue) resides in the middle between capacity and activity and enables the latter—*just* as is the case with perception: “every virtue makes that of which it is the virtue be in a good state and makes it perform its function well; e.g., the virtue of an eye both makes the eye a good eye and makes it perform its function well, for it is by the virtue of the eye that we see well” (2.6 1106a15-19).⁷⁹¹ The question is not “Can the virtue model be applied to perception?,” for the virtue model is just as apropos as the knowledge model. Rather, the question is, “Which model does Aristotle take to

moment—give rise to the second actuality exercise of bravery in brave *action*. For a statement of something of this sort in Aristotle, see e.g., *EN* 2.4 1105a31-34; 2.5 1106a2-3, and esp. 3.5 1114b26-1115a2. Hence, *prior* to the generation of the state the person is the agent and the environmental context the patient; but *posterior* to the generation of the state, the polarities are *somewhat* reversed and the environmental context becomes the activating agent and the person the activated patient. Or, at least, something of this sort occurs in the case of virtue, enabling a fuller comparison of it with perception. For a similar account of ‘historical’ freedom and responsibility where it is the person’s *past* free actions for which they are responsible which make them responsible for *later* actions that might be rather spontaneous or even determined, see the ‘virtue libertarianism’ account in Kevin Timpe, *Free Will in Philosophical Theology* (London: Bloomsbury Academic, 2014), 103–18.

⁷⁸⁸ “Feelings” (παθη), of course, are a part of the equation as well (cf. *EN* 3.1 1109b30), but are beside the point given our present concerns.

⁷⁸⁹ καὶ ὅτι ἐξ ὧν ἐγένετο, περὶ ταῦτα καὶ ἐνεργεῖ. Apostle translation, modified. “Actions” (πράξεις) is supplied from 1105a6-7. Cf. *EN* 3.5 1114b28: “Certain actions produce them, and they cause us to do these same actions in accord with the virtues themselves” (Irwin translation).

⁷⁹⁰ For the equation of πράξις with ἐνέργεια in Aristotle, see *EN* 1.1 1094a1-6, 1.7 1098a12-14 (cf. 10.7 1177a12), *MM* 1.34 1197a3-10, and *Pol.* 7.3 1325a32. While he also identifies it with a form of κίνησις (*EE* 2.3 1220b26-27, ἢ πράξις κίνησις), this is undoubtedly in the sense of *Meta.* Θ.6 1048b18-35, a passage we will address later in this chapter.

⁷⁹¹ ῥητέον οὖν ὅτι πᾶσα ἀρετή, οὗ ἂν ἦ ἀρετή, αὐτὸ τε εὖ ἔχον ἀποτελεῖ καὶ τὸ ἔργον αὐτοῦ εὖ ἀποδίδωσιν, οἷον ἡ τοῦ ὀφθαλμοῦ ἀρετὴ τὸν τε ὀφθαλμὸν σπουδαῖον ποιεῖ καὶ τὸ ἔργον αὐτοῦ· τῇ γὰρ τοῦ ὀφθαλμοῦ ἀρετῇ εὖ ὁρῶμεν. Apostle translation, modified.

apply to perception?” With this in hand, we now turn to our two final considerations in favor of the virtue model.

6.2.3 The Virtue Model: Three Key Passages and Two Lines of Inquiry

All change involves agent and patient. This was a crucial part of our composite account of change from chapter 1 and was even imbedded in Aristotle’s most comprehensive statement of his definition of change which morphs from “change is the actuality of that which potentially is, *qua* potentially”⁷⁹² at *Physics* 3.1 201a10-11 to that at *Physics* 3.3 202b26-27: “more intelligibly (ἔτι δὲ γνωριμώτερον), it [change] is the actuality of the potential agent and the potential patient, *qua* potentially.”⁷⁹³ In the case of knowledge, we have already seen how this was applied: knowers act as agents on knowables (universals), which are patients. This, as we pointed out, was crucial for *why* Aristotle devised a ‘new way’ to treat the comings and goings of certain psychic states which were not suitable for his AT *reductio*-saving solution: the knowledge model. When an agent acts on a patient, it is the patient that changes, not the agent. That is, the change is “in” the patient, not in the agent. Otherwise, to say that an agent changes *just in acting* would commit Aristotle to the undoing of his very own cosmological argument as it would require that the unchanged changer itself changes in the act of *causing* change. Faced with this problem of the undoing of either the *reductio* or the cosmological argument, Aristotle creates this ‘new way.’ The pressure on his system is real, and the solution, clever. The question for us here is, does he face this same pressure with respect to *all* psychic states, or only a subset of them, *viz.*, rational psychic states? Interestingly, Aristotle is clear on this point: the same pressure that required the devising of the knowledge model is *not* present in the case of

⁷⁹² ἡ τοῦ δυνάμει ὄντος ἐντελέχεια, ἣ τοιοῦτον, κίνησις ἐστίν. Hussy translation, modified.

⁷⁹³ ἔτι δὲ γνωριμώτερον, ἡ τοῦ δυνάμει ποιητικοῦ καὶ παθητικοῦ, ἣ τοιοῦτον. Coope translation, modified. “Actuality” (ἐντελέχεια), is supplied from the previous line and is clearly in reference here.

perception. Rather, with the agent-patient polarities in each case reversed, the problem is ameliorated.

While we can see this situation in *De Anima* 2.5, two other passages from key chapters on perception are more crucial for us in this regard and must be examined: 2.12 424a17-24 and 3.2 425b26-426a19. In both places, Aristotle zeros in on the nature of the causal relationship between percipient and perceptible and what the nature of this causal relationship entails for active perception itself.⁷⁹⁴ In addition, we must examine *Physics* 3.3 202a13-202b22 in detail, a key chapter on change, as only in light of it can we make any metabolic sense of *De Anima* 3.2. The benefit of undertaking this analysis is that by it we will more firmly establish the virtue model classification of actual perception by eliminating from our consideration the candidacy of the knowledge model. While this will involve a close exegesis of the texts, it will result in a fine-grained causal analysis of active perception, which will allow us to make our case. We will do this by engaging in the two following lines of inquiry: *First, who plays patient to agent in active perception, and what does this entail for the direction of the causal arrows? Second, what does the direction of the causal arrows entail for the metabolic status of active perception?* What we will establish are two crucial points: first, that there are indeed important differences between active perception and contemplation due to the fact that the agent-patient polarities between each are reversed. And second, that this difference has definite implications for the metabolic status of perception and thus the fittingness of the virtue model over and above that of the knowledge model. To these passages, we now turn.

6.2.3.1 Inquiry One: *De Anima* 2.12 on Agency and Patiency in Perception

⁷⁹⁴ That is, second actuality perception. See the phrase ἐνέργειαν αἰσθησις (“active perception”) in this sense at *DA* 2.5 417b22, *Phys.* 7.2 244b11, *De Sensu* 7 447b15, and *De Insomn.* 2 459b4-5.

Aristotle is firm on the fact that active perception occurs as a result of a causal relationship between percipient and perceptible *through* the sense organs.⁷⁹⁵ But who plays

⁷⁹⁵ To see that we are dealing here with the percipient (i.e., the perceiver proper or soul) and not merely the sense organs (e.g., eyes and ears), compare two passages from *DA* 3.2, (1) 425b23-24 and (2) 426a10-11, keeping in mind that both are discussing *active* (i.e., second actuality) perception. While in (1) we are told that “the *sensory organ* (αἰσθητήριον) is in each case receptive of the perceptible (αἰσθητοῦ) without its matter” (see below 2.12 424a17-19 where αἰσθησις replaces αἰσθητήριον in what is virtually the same sentence and 2.5 418a3-4 where τὸ αἰσθητικόν plays the very same role), in (2) we have instead that “the actuality of the perceptible (αἰσθητοῦ) and of the percipient (αἰσθητικοῦ) [are] in (ἐν) *the percipient* (αἰσθητικῶ)” (Shields’ translation, modified). To which of these does the matterless perceptible (αἰσθητός) belong, the sensory organ (τὸ αἰσθητήριον) or the percipient (τὸ αἰσθητικόν)? *Both*, it seems—for in active perception the percipient is perceptually affected precisely *by* the perceptible *through* the sensory organ—which is precisely how Aristotle puts the matter in *De Sensu* 1 436b6-7: “perception comes to be *in the soul through* (διὰ) *the body*” (Barnes translation, modified; ἡ δ’ αἴσθησις ὅτι διὰ σώματος γίνεταί τῃ ψυχῇ). The reason that *both* must “receive” the perceptible in a manner is given by Aristotle in *DA* 2.12 424a24-25: “the primary sense organ (αἰσθητήριον) is that *in which* (ἐν ᾧ) this sort of [perceptual] capacity (δύναμις) resides. [The sense organ and the perceptual capacity are, then,] the same (ταὐτόν), though their being is different (τὸ δ’ εἶναι ἕτερον)” (Shields’ translation, modified). The “capacity” (δύναμις) here, refers to the dispositional (i.e., first actuality) *state* (ἔξις) of perception (see *DA* 2.5 417b16-18 and esp. 3.3 428a3-5 where Aristotle actually *identifies* the faculty/δύναμις with the state/ἔξις), and Aristotle’s point is that while not numerically or strictly identical, the perceptual state and the sensory organ are *correlative*. That is, they are, as Shields puts it, “extensionally equivalent but non-identical” (Shields, *Aristotle: De Anima*, 250; cf. 3.2 426b8-9 for what may be a similar line of thought). This can clearly be seen through the fact that they are separable in the sense that if one’s sensory organ were destroyed that would not entail the destruction a specific perceptual part of one’s soul, but rather would just render it inoperable. To cut out one’s tongue is not to thereby destroy the gustatory part of one’s soul. Hence, body part (organ) and soul part (faculty) are separable in potential being, but inseparable in operation (actual being)—which is precisely what I take Shields to mean in saying they are “extensionally equivalent but non-identical.” What this ends up entailing is that while there are *two* things affected by the perceptible, only one of those affections is properly called *perceiving*. This is made exceptionally clear in the discussion in *DA* 1.1 of “affections of the soul” (τὰ πάθη τῆς ψυχῆς, 403a3) which include *perceiving* (αἰσθάνεσθαι, 403a7), and the subsequent claim made there that “*all* affections of the soul *involve* the body” (τὰ τῆς ψυχῆς πάθη πάντα εἶναι μετὰ σώματος, 403a16-17), “for *at the same time as these*, the body is affected *in some way*” (ἅμα γὰρ τούτοις πάσχει τι τὸ σῶμα, 403a18-19). See too *De Somno* 1 454a7-11: “But since when one perceives it does not belong to soul or body exclusively (ἴδιον), then—since the subject of actuality is identical with that of potentiality, and what is called perception is an actualized sort of change^k of the soul *through* (διὰ) the body—it is clear that it is not an affection of the soul exclusively, and that a soulless body has not the potentiality of perception” (Barnes translation, modified; ἐπεὶ δὲ οὔτε τῆς ψυχῆς ἴδιον τὸ αἰσθάνεσθαι οὔτε τοῦ σώματος (οὗ γὰρ ἡ δύναμις, τούτου καὶ ἡ ἐνέργεια· ἡ δὲ λεγομένη αἴσθησις ὡς ἐνέργεια κίνησις τις διὰ τοῦ σώματος τῆς ψυχῆς ἐστὶ), φανερόν ὡς οὔτε τῆς ψυχῆς τὸ πάθος ἴδιον, οὐτ’ ἄψυχον σῶμα δυνατόν αἰσθάνεσθαι). Again, *two* things are affected by the perceptible, but while their affections are correlative and even simultaneous, only one of those affections (i.e., the one in the soul) is properly called *perceiving*. Hence, while one sees *though* one’s eyes, it is not one’s eyes that see—nor one’s tongue that does the tasting, ears that do the hearing, etc. The organs play an instrumental role while seeing, tasting, hearing, tactile feeling, and smelling proper belong to the percipient (cf. Plato, *Theaet.* 184b4-d5). Finally, see too our discussion above of *Phys.* 7.2 244b10-12 for a similar account which references perception as a “change^k *through* (διὰ) the body” (κίνησις ἐστὶ διὰ τοῦ σώματος, 244b11-12) and the affection of the percipient’s perceptual capacity (πασχούσης τι τῆς αἰσθήσεως, 244b12). Which is it? Again, it is *both*, for the sensory organ *and* the psychic capacity (i.e., state) are affected, although only the latter is ‘altered’. For as Aristotle clarifies in *Phys.* 7.3, perceptual ‘alterations’ occur in the “perceptual part” (τοῦ αἰσθητικοῦ μέρους, 247a6-7)—specifically “in the perceptual part of the soul and in *nothing else* except *per accidens*” (ἐν τῷ αἰσθητικῷ μορίῳ τῆς ψυχῆς, ἐν ἄλλῳ δ’ οὐδενὶ πλὴν κατὰ συμβεβηκός, 248a7-9). If perception is form reception and is an ‘alteration of a sort’ which can *only* occur in the soul, then it would seem that the percipient and not the sensory organ are the locus of the perceptual activity proper. This would appear to be another point in favor of Burnyeat and against Sorabji. For a

patient to agent in this arrangement? I have indicated that it is the reverse of what we find in the case of knowledge. Nevertheless, the burden is on us to demonstrate this. Hence, to answer this question more firmly, we now turn to our first passage in this section with its famous wax and signet ring analogy, from *De Anima* 2.12. It is important to note contextually that ch. 12 acts as a bookend to what began in ch. 5, both aimed at speaking “universally” (κοινῇ, 2.5 416b32, καθόλου, 2.12 424a17) about perception with six intervening chapters which speak of it very specifically.⁷⁹⁶ With this in mind, here is our passage from 424a17-24:

It is necessary to grasp, concerning the whole of perception (αἰσθήσεως) generally (καθόλου), that perception (αἴσθησις) is what is capable of receiving (δεκτικὸν) perceptible forms (αἰσθητῶν εἰδῶν) without the matter (ὕλης), as (οἷον) wax receives (δέχεται) the seal of a signet ring without the iron or gold. It acquires (λαμβάνει) the golden or the metallic seal, but not insofar (οὐχ ἥ) as it is gold or metal. In similar way (ὁμοίως), perception (αἴσθησις) is also in each case affected by (πάσχει) what has the color or taste or sound, but not insofar (οὐχ ἥ) as each of these is said to be something,

similar correlative reading of changes in the body with simultaneous changes in the soul, see Simplicius, *in Phys.* 1058.30-1059.11. See too, the Appendix below for a more thorough analysis.

⁷⁹⁶ Viz., *DA* 2.6 covers the types of perceptibles, while 2.7 sight, 2.8 hearing, 2.9 smell, 2.10 taste, and 2.11 touch. Cf. e.g., Polansky, *Aristotle's De Anima*, 338: “Having worked out the outline account of each of the particular senses... Aristotle is ready to pull together a refined universal account [in *DA* 2.12] applicable to every sense.... Such a universal account was begun back in [2.5].”

but rather insofar (ἀλλ' ἢ) as each is of a certain quality (τοιονδί),⁷⁹⁷ that is (καί),⁷⁹⁸ according to their form (λόγον).⁷⁹⁹

The first two points to make here come from the first sentence are both terminological. First, notice that Aristotle uses the term “perceptible forms” (αἰσθητῶν εἰδῶν, 424a18), which only occurs twice in the entire *Corpus*.⁸⁰⁰ Its usage is not as perplexing as its rarity might seem to indicate as just a few lines later he refers to “the forms of perceptibles” (2.12 424b2)⁸⁰¹ and just two chapters later replaces the two-word phrase with the simple term “perceptible” (αἰσθητοῦ) in what is virtually the same sentence.⁸⁰² We will address the issue of form (εἶδος) soon. For now, let us focus on the first term in the phrase, “perceptible”: to what does this refer? Perceptibles (αἰσθητά), as we have seen, are affections (πάθη) or affective qualities (παθητικός ποιότης) by another name—one of the four species of quality from *Categories* 8. The species include qualities such as sweetness, bitterness, sourness, hotness, coldness, whiteness, darkness, etc. (9a29-31), which are *real* features of the things that have them. As Aristotle puts it, perceptibles are genuine “qualities” (ποιότητες) of things in that the “things that possess them are said to be

⁷⁹⁷ The term τοιόσδε is often used by Aristotle to reference universals (*Meta.* 1039a2, 16) or forms (*Meta.* 1033a22) when contrasting them with a “this” (τόδε/τόδε τι) or particular (*Meta.* 1003a9). Granting the context here it should be rendered as “such” given that it is used as a synonym for *quality*—a sense which is prevalent in contexts where substance is also called a “this” (τόδε) and quantity called a “so much” (τοσόνδε). See, e.g., *Meta.* 1089a11-12, 14-15, *Phys.* 3.1 200b27-28, 201b26-27, 202a9-10, etc. Cf. Polansky, *Aristotle's De Anima*, 344.

⁷⁹⁸ For evidence that this καί is exegetical, see Polansky, 344. One should note, however, that Polansky thinks it “might” also be conjunctive, even if this is a secondary function (*ibid.*, 344). See too Shields, *Aristotle: De Anima*, 249, who calls the line after the καί a “gloss” on what came before, and R. D. Hicks, *Aristotle De Anima* (Cambridge, UK: The University Press, 1907), 416–17, who calls the καί “explanatory.”

⁷⁹⁹ Καθόλου δὲ περὶ πάσης αἰσθήσεως δεῖ λαβεῖν ὅτι ἡ μὲν αἴσθησις ἐστὶ τὸ δεκτικὸν τῶν αἰσθητῶν εἰδῶν ἄνευ τῆς ὕλης, οἷον ὁ κηρὸς τοῦ δακτυλίου ἄνευ τοῦ σιδήρου καὶ τοῦ χρυσοῦ δέχεται τὸ σημεῖον, λαμβάνει δὲ τὸ χρυσοῦν ἢ τὸ χαλκοῦν σημεῖον, ἀλλ' οὐχ ἢ χρυσοῦς ἢ χαλκός· ὁμοίως δὲ καὶ ἡ αἴσθησις ἐκάστου ὑπὸ τοῦ ἔχοντος χρῶμα ἢ χυμὸν ἢ ψόφον πάσχει, ἀλλ' οὐχ ἢ ἑκάστον ἐκείνων λέγεται, ἀλλ' ἢ τοιονδί, καὶ κατὰ τὸν λόγον. Shields' translation, modified.

⁸⁰⁰ Cf. *DA* 3.8 432a4-5: “The objects of reason are in perceptible forms.” ἐν τοῖς εἶδεσι τοῖς αἰσθητοῖς τὰ νοητὰ ἐστί.

⁸⁰¹ 424b2: τὰ εἶδη τῶν αἰσθητῶν. Here, τὰ εἶδη is in the accusative while τῶν αἰσθητῶν is in the genitive such that it is not “the perceptible of the form” but rather “the form of the perceptible.” More on this in the Appendix.

⁸⁰² *DA* 3.2 425b23-24: “For the sensory organ (αἰσθητήριον) is in each case receptive (δεκτικὸν) of the perceptible (αἰσθητοῦ) without its matter.” Shields' translation, modified. τὸ γὰρ αἰσθητήριον δεκτικὸν τοῦ αἰσθητοῦ ἄνευ τῆς ὕλης ἑκάστον.

qualified in virtue of them” (9a31-33).⁸⁰³ Unlike Modern theories of secondary qualities from Galileo and Descartes to Locke and Hume, Aristotle is a *realist* who takes it that things really are red or green, soft or hard, or sweet or bitter. That is, things in the world really do have these features and are thereby qualified in virtue of having them.⁸⁰⁴ Now, while the other species of quality (i.e., condition and state, capacity, and shape and figure) also *qualify* things that possess them, what sets perceptibles apart is that they are *affective* (παθητικός) “because each of the qualities mentioned is productive of an affection (πάθος) of the senses (τὰς αἰσθήσεις)” (9b5-

⁸⁰³ The definition of quality from the beginning of *Cat.* 8 at 8b25 invokes a linguistic criterion for what counts as a quality and what counts as qualified: “By quality I mean that in virtue of which things are said to be qualified somehow” (Ποιότητα δὲ λέγω καθ’ ἣν ποιοῖ τινες λέγονται). Qualities are those things in virtue of which things are “said to be qualified.” Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 160, comments on the passage as follows: “Apparently Aristotle invokes a linguistic criterion in order to demarcate the category of quality: whatever is said to be ‘such’ [τοιόσδε] is qualified, and the diverse types of ποιότης [quality] reflect the heterogeneous semantics of quality-language.” While the net cast by this linguistic criterion is wide, it is undoubtedly related to the “said of” distinction featured in *Cat.* 2 where what is “said of a subject” (1a20, καθ’ ὑποκειμένου τινος λέγεται) is opposed to what is “not said of a subject” (1b3-4, οὔτε καθ’ ὑποκειμένου λέγεται). Of the latter, Aristotle continues, “things that are individual (ἄτομα) and numerically one (ἐν ἀριθμῷ) are, without exception, not said of any subject” (1b6-7, ἀπλῶς δὲ τὰ ἄτομα καὶ ἐν ἀριθμῷ κατ’ οὐδενὸς ὑποκειμένου λέγεται). What this sets up is a *narrowing* of the linguistic criterion via the particular/universal distinction, which is precisely how Aristotle specifies this “said of” distinction in *Meta.* Z.13 1038b15-16: “Substance is said to be what is *not said of* a subject, whereas a universal is always *said of* a certain subject” (Reeve translation, modified; ἔτι οὐσία λέγεται τὸ μὴ καθ’ ὑποκειμένου, τὸ δὲ καθόλου καθ’ ὑποκειμένου τινος λέγεται ἀεὶ). With this in mind, Aristotle’s linguistic criterion for qualities is far clearer and perhaps less wide than one might gather at first glance. To be classified as Wardy puts it, as some sort of “such” is to have some *universal* characteristic which other things are likewise capable of possessing. This is why Aristotle says of quality later in *Cat.* 8 that the lone characteristic of all species of quality besides the linguistic criterion is that “it is in virtue of qualities only that things are called *similar* or *dissimilar*” (11a15-16, ὁμοία δὲ καὶ ἀνόμοια κατὰ μόνας τὰς ποιότητας λέγεται). For things are similar in virtue of having the same universal (e.g., red), or dissimilar, among other reasons, for lacking it. After all, it is universals that can be in many places at the same time, not particulars. Pulling this together we can say that while all substances are surely count as a ‘this’, they are not merely so. Rather, they are genuinely *said* to be qualified by some universal via predication (1b10, κατηγορεῖται). For instance, a red fire engine is both a “this” (a particular truck) and a “such” (a particular truck of which the universal red is genuinely *predicated*). That is, it is a “this-such” (τόδε τοιόνδε, *Meta.* Z.8 1033b23-24), as are all individual substances. Notice too the modal tense here: *is predicated of*, not *can* or *will be* predicated of. A red fire truck is actually red *now*, not potentially so—a point which will become important for us in a moment.

⁸⁰⁴ See, e.g., Terence Irwin, *Aristotle’s First Principles* (New York: Oxford University Press, 1988), 311–12: “Aristotle accepts a realist view of perception, since he claims that the perceiver absorbs the form of some quality that the object has whether or not it is being perceived.... [For] Aristotle assumes that the colours, sounds, etc. of external bodies exist in the bodies before they are perceived.” As Irwin goes on to point out (*ibid.*, 591 n24), “Aristotle describes perceptible objects in realist terms at [DA] 418a3, 31, 419a8, 19, 421a26, 422a10, 16, b15, 423b27, 424a22, 425b22. He uses ‘white’ etc. (as in other works; see 4n5, 10n5, 45) for the perceptible quality and for the subject that is perceptible qua white (see 418a21–3, 425a24–7).” I make good on Irwin’s realist claims below.

6).⁸⁰⁵ That is, unlike the other non-affective species of quality, perceptibles can uniquely and *sensorily affect* a percipient.⁸⁰⁶ The reason this is important for us here should be obvious: by this terminological usage, Aristotle is already indicating to us in the first sentence the roles of agent and patient in perception. Perceptibles as *affective* qualities are not just genuine features of things but are causally affective *agents* to boot.⁸⁰⁷ And this leads us to our second terminological point, which can be stated much more briefly. If perceptibles fall on the agent side of the equation as can readily be gleaned from the term and its cognates, it is unsurprising that we find a similar situation with respect to what lies on the *patient* side of the coin. Again, in the first sentence, we read that “perception is what is capable of receiving perceptible forms without the matter” (424a18).⁸⁰⁸ Notice that it is not just that perceptibles *affect*, but also that percipients *receive* (δεκτικόν)—and to receive is to be *acted upon*.⁸⁰⁹ Hence, already in the first lines of our passage,

⁸⁰⁵ Τῷ δὲ κατὰ τὰς αἰσθήσεις ἐκάστην τῶν εἰρημένων ποιοτήτων πάθους εἶναι ποιητικὴν.

⁸⁰⁶ On the question of the perceivability of shape (σχῆμα) and form (μορφή), Aristotle discusses what he calls κοινὴ αἴσθησις (3.7 431b5) or “common perception” of κοινά (2.6 418a17) or “common perceptibles” in *De Anima* 2.6 and 3.1. These are objects which are not “proper” (ἴδιον, 2.6 418a10) to any one sense (e.g., color is proper to sight, sound to hearing, etc.) and yet can still be *perceived* by two or more of the five senses (418a19-20). The κοινά or common perceptibles include change, rest, number, magnitude, and *shape* (σχῆμα, 418a18). Shape, thus, is ‘commonly perceivable’, but not properly so unlike the affective qualities (παθητικός ποιότης).

⁸⁰⁷ See, e.g., Wardy, *The Chain of Change: A Study of Aristotle’s Physics VII*, 162–63: “[For Aristotle, e.g.,] redness is neither reducible to nor constituted by material processes themselves imperceptible in principle. When he explains that *these qualities are called ‘affective’ because of their capacity to affect sense perception* (9a35-9b9), he does not mean to stigmatise [sic] them as subjective epiphenomena: sensations are of qualities in the world, not distant shadows of it” (italics mine). Cf. Cristina Viano’s contribution in Maso, Natali, and Seel, *Reading Aristotle*, 94: “*these [affective] qualities can affect the senses really and directly*: sensations are not subjective epiphenomena, they correspond to qualities that exist in the outside world” (italic, mine).

⁸⁰⁸ ἡ μὲν αἴσθησις ἐστὶ τὸ δεκτικὸν τῶν αἰσθητῶν εἰδῶν ἄνευ τῆς ὕλης.

⁸⁰⁹ Cf. Polansky, 340: “‘To be receptive’ adds to the wide notion of *being acted upon* the taking of something definite” (italics mine). See *ibid.*, 341 for an interesting analysis of the term from the *Coprus* as well as *ibid.*, 347: “The sense is receptive *and thus passive* and in potentiality rather than active and in actuality” (italics mine). See too Hicks, *Aristotle De Anima*, 416: “Sense is ‘receptive’ as being ‘passive’ or ‘acted upon’ and also as being potentially what the object is actually.” Cf. Irwin, *Aristotle’s First Principles*, 312: “Though we speak of the object ‘being perceived’, suggesting that it is a patient, the passive verb is misleading, since it is really the object that affects the perceiver.” And John I. Beare, *Greek Theories of Elementary Cognition: From Alcmaeon to Aristotle* (Oxford: Clarendon Press, 1906), 227: “The object sets up a change in the percipient. The former is in this relation *active*, and the latter *passive*” (italics mine). See too the summative points of W. D. Ross, *Aristotle: De Anima. Edited, with Introduction and Commentary* (Oxford, UK: Clarendon Press, 1961), 24: “Perception is for Aristotle essentially something *passive*. He speaks of it as an ἀλλοίωσις, i.e. a being altered (415b24, 416b34), and as consisting in being moved or acted upon (416b33, 417a14-20, 418a5-6)” (italics mine).

the agent and patient roles in perception have already been identified. From this, too, the direction of the causal arrows follows very clearly, flowing from perceptible to percipient. This result, of course, already establishes the answer to our first line of inquiry above (i.e., who plays patient to agent and the direction of the causal arrows). Nevertheless, this might seem slim based on terminology alone. Let us, hence, press on to the following lines of the passage and fill out our answer in even more convincing detail. While this analysis will come with a problem of its own, I address this in Appendix 1 and I refer any unconvinced readers there.

6.2.3.1.1 *De Anima* 2.12 on Form, Matter, and Matterless Form Reception

In perception, a percipient is said to “receive the perceptible form with the matter.” We know what a perceptible is, and we know that to “receive” is to play the part of a patient. But what about the bit here about ‘perceptible form without matter’? This is where the wax and signet ring analogy comes into play.⁸¹⁰ Three analogous features between the cases need to be ferreted out. First, notice that in this case, too, we have a causal exchange and established roles of agent and patient. So, just as it is the signet ring that impresses and the wax that receives, so it is the perceptible that in-forms and the percipient that receives.⁸¹¹ Hence, the ring and perceptible are agents, while wax and percipient are patients. Second, notice *what* in each case is given and received: generically “form” (εἶδος), but always of some specific sort. In the case of the signet ring, the “seal” (σημεῖον, 424a20) or three-dimensional “shape” is the “form” (εἶδος),⁸¹² whereas in the case of perception the “form” (εἶδος, 3.4 429a15-16, 3.12 434a29-30) or “perceptible

⁸¹⁰ “Perception is what is capable of receiving perceptible forms without the matter, *as* (οἷον) wax receives the seal of a signet ring without the iron or gold.” On the precise meaning of this “as” (οἷον) in 424a19, see the LSJ entry for οἷος at V.2.b on its analogical usage.

⁸¹¹ In *DA* 3.2 the percipient is said to be “receptive of *the perceptible* without its matter” (425b23-24). δεκτικὸν τοῦ αἰσθητοῦ ἄνευ τῆς ὕλης.

⁸¹² See e.g., *Phys.* 7.3 246b12-16 where εἶδος is used interchangeably with μορφή and σχῆμα for three-dimensional shape. See too the excellent treatment of these terms as extended to this context in Beare, *Greek Theories of Elementary Cognition*, 218–19.

form” (αἰσθητός εἶδος, 2.12 424a17-19) is the “perceptible” (αἰσθητός, 3.2 425b23-24). Finally, notice *how* each form is transmitted by the agent and received by the patient: without the agent’s “matter” (ὕλη). As Aristotle makes plain, the idea here is that just as a signet ring of *any* metal—gold or bronze or iron—can impress its form (i.e., three-dimensional shape) into whatever is appropriately impressionable *without leaving behind any of the metal itself*, so can a perceptible object transmit its form (i.e., a perceptible) to whatever can receive it and *without leaving behind any of the matter of the perceptible object*.

What this comes to can be put in plainer terms. There are at least two ways of ‘having the seal’ (i.e., form) of a specific signet ring: (1) to have the ring itself or some part of it with the seal intact (matter + form); or (2) to have the seal of the ring but not the ring or any material part (form only). Likewise, there are at least two ways of (e.g.) ‘having the green perceptible’ (i.e., form) of a specific tree: (1) to have the tree itself with the green or some green part of it such as its leaves (matter + form); or (2) to have the green of the tree but not the tree or any material part (form only). Notice that in both cases, only (2) is an instance of ‘having the form without the matter’ as with both instances of (1) one has the form only *because* one also has its matter. If Aristotle intends a different sense of ‘having’ here than is materially intended, then this is precisely how he should say it.⁸¹³ As he later points out at 3.8 431b28-432a1, “it is necessary that they [i.e., knowables or perceptibles] be either these things themselves *or* their form (εἶδη). It is certainly not the things themselves, however: for the stone is not in the soul, but rather *its form*

⁸¹³ For the *eight* different senses of the term “having” (ἔχειν), see *Cat.* 15 15b17-32. Interestingly, the first sense listed involves “having as a state and condition or some other quality—[for] we are said to have knowledge and virtue” (15b17-19, ἡ γὰρ ὥς ἔστιν καὶ διάθεσιν ἢ ἄλλην τινὰ ποιότητα,—λεγόμεθα γὰρ ἐπιστήμην ἔχειν καὶ ἀρετήν), whereas the fourth sense involves having something on a part of the body, “like a ring on a hand” (15b22-23, οἷον ἐν χειρὶ δακτύλιον). Both our senses, thus, are included. For what is undoubtedly the most insightful and comprehensive commentary on the neglected homonym and category of ἔχειν, see Simplicius in *Cat.* 365.1-377.8 and 436.13-438.36. We should also note that Aristotle *does* want a different sense of ‘having’ here than the material sense as the next quote from *DA* 3.8 431b28-432a1 indicates.

(εἶδος).”⁸¹⁴ To ‘have’ in this special way is not to have *materially* as on Empedocles influential “ingestion model” where one (e.g.) ‘ingests’ in vision the material “effluences” (ἀπορροαί) emitted by visible objects.⁸¹⁵ Rather, Aristotle is self-consciously rejecting such a material model—which he thinks “absurd” (*De Sensu* 3 440a15-17)⁸¹⁶—in favor of a purely ‘formal’ model.⁸¹⁷ This, in fact, is precisely why Aristotle calls the perceptibles had in perception “perceptible *forms*” (αἰσθητα εἶδη, 424a18) in 2.12 just before adducing the signet ring analogy—because what is received are not particles of matter imbued with perceptibles, but the *matterless* forms of the perceptibles actually had by their bearers.⁸¹⁸

Aristotle specifies this further in the final lines after presenting the signet ring analogy. “Similarly” (ὁμοίως), he says, the perceptual faculty is affected (πάσχει) by [A] “what has the color or taste or sound”—all affective qualities—[B] “but not insofar as (οὐχ ἧ) each of these is said to be something, but rather insofar as (ἀλλ’ ἧ) each is of a certain quality, [C] that is (καί), according to their form (λόγον)” (424a21-24). Why does Aristotle insert clause [B]? It would seem that he does so in order to *explain* [A], that the percipient is affected by ‘*what has the x*’ (x being some affective quality), which is going to be some individual thing or *matter-form*

⁸¹⁴ ἀνάγκη δ’ ἡ αὐτὰ [i.e., τὸ ἐπιστητὸν τὸ δὲ τὸ αἰσθητόνῃ, 431a27-28] τὰ εἶδη εἶναι. αὐτὰ μὲν δὴ οὐ· οὐ γὰρ ὁ λίθος ἐν τῇ ψυχῇ, ἀλλὰ τὸ εἶδος.

⁸¹⁵ Mark Eli Kalderon, *Form without Matter: Empedocles and Aristotle on Color Perception* (New York: Oxford University Press, 2015), 3–7. Cf. *Prob.* 22.1 906a23-29, 37.1 966a20-25, and *De Sensu* 5 443a21-b2 for convincing evidence that Aristotle thinks ἀπορροαί to be *material*.

⁸¹⁶ Cf. too *DA* 2.10 422a14-15: “Color is not seen in this way, [i.e.,] by being mixed, nor by means of emanations.”

⁸¹⁷ See Kalderon, *Form without Matter*, 15–16: “While denying that sight involves the assimilation of material effluences, Aristotle retains Empedocles’ conception of sensory awareness as a mode of assimilation, it is just that we assimilate form without matter.” What model then does Aristotle adopt to explain this assimilation if not the ingestion model? As we shall see, Kalderon goes on to argue that of Aristotle’s choosing is that of “the model of qualitative alteration” (*ibid.*, 212).

⁸¹⁸ See Polansky, *Aristotle’s De Anima*, 339: “The use of ‘forms’ in ‘sensible forms’ facilitates ready contrast with ‘matter.’ Later, in dealing with the intellect, Aristotle will refer to ‘intelligible forms’ and analogously to sense (429a13-18, 3.8). Mind is likely also receptive to forms without the matter, and hence the difference in the definition of sense must refer explicitly to *sensible* forms, even at the risk of some circularity. The use of ‘forms’ and especially ‘sensible forms’ is essential and an indication that Aristotle takes pains here with his wording.” Cf. too just a few lines later in 2.12 where Aristotle speaks of “the forms of perceptibles” (424b2, τὰ εἶδη τῶν αἰσθητῶν). It is clearly perceptibles *qua* qualities he wants to isolate, not perceptibles *qua* enmattered.

composite. His point is that it is not *matter-form composites* that cause perception, otherwise, this would be a return to the ingestion model and its material requirement. Rather, it is the *x*'s of composites—their *affective* qualities or perceptibles—that cause perception. The function of clause [B], thus, is to explain that a *composite* (e.g., a green leaf) does not perceptually affect a percipient as an enmattered thing, but its *x* (i.e., *green*) does “insofar as it is a *quality*.”⁸¹⁹ Stated more traditionally, it is not the form *qua* (οὐχ ᾗ) matter-form composite that does the perceptual affecting or in-forming, but the form *qua* (ἀλλ' ᾗ) quality.⁸²⁰ This, in turn, explains the epexegetical comment in [C], that what does the affecting are not enmattered perceptible forms but *just* the forms now designated as λόγοι.⁸²¹ The λόγος/εἶδος equivalence was already made in *De Anima* 1.1, where both were set in contrast to matter (ὕλη).⁸²² To specify that perceptibles are to be considered as perceptible forms (αἰσθητα εἶδη) and then to designate them as λόγοι is to hammer home that *they* are affective precisely in being *matterless*, not enmattered.

⁸¹⁹ “Quality” here is actually τοῖόςδε or “such”, which is a synonym for quality as can be seen from the examples given of color (white or black), taste (bitter or sweet), and sound (flat or sharp). Cf. *Meta.* 1089a11-12, 14-15, *Phys.* 3.1 200b27-28, 201b26-27, 202a9-10, etc. for similar qualitative usages of τοῖόςδε.

⁸²⁰ See Hicks, *Aristotle De Anima*, 416. Commenting on [B] he says, “this means that the object acts upon sense not in so far as it is a concrete object, but in so far as it is coloured or flavoured, or sonorous: e.g. when we perceive the wight rose by sight, it is not the rose *qua* rose, but the rose *qua* white, which acts upon sight. The ring impresses the wax, not *qua* metal, but in so far as it has a particular shape. τὸ ἔχον χρώμα [i.e., “what has color”, from *DA* 2.7 419a12] is some particular object, τόδε τι, yet it is not as τόδε τι or τοῦτο [a ‘this’ or individual] that it acts upon sense, but solely as τοῖόςδε [a ‘such’ or quality], coloured.” As we see below, saying that forms perceptually affect “*qua* quality” as I have, is not quite accurate as there is another element which is left unstated.

⁸²¹ See Polansky, 344: “If the καί is explanatory (epexegetical), as indicated, then Aristotle refers directly to the sensible forms as *logoi*. His point is that the sense is receptive to and moved by sensible forms only as unenmattered forms.” See too Shields, *Aristotle: De Anima*, 249, who notes that λόγος here is meant for “the quality taken *abstractly*” (italics mine). That is, abstracted from matter. It should be noted that Shield’s also intends something else here as well—per his “structuralist” interpretation—but he certainly does not mean any less. For more on this interpretation, see Polansky, *Aristotle’s De Anima*, 349, esp. n 19.

⁸²² *DA* 1.1 403b1-2: “Of these [two descriptions], one describes the matter and the other the form or account” τούτων δὲ ὁ μὲν τὴν ὕλην ἀποδίδωσιν, ὁ δὲ τὸ εἶδος καὶ τὸν λόγον. On the equation of λόγος/εἶδος, see Hicks, *Aristotle De Anima*, 417: “The terms λόγος and εἶδος are *equivalent*, but the former gives prominence to the notion or character, that which the definition seeks to express in words” (italics, mine). Cf. the more modest Polansky, *Aristotle’s De Anima*, 56: “The flexibility of the term λόγος, which can mean speech, reason, notion, definition, account, form, ratio, and so on, serve the philosopher’s purposes. When Aristotle says passions are enmattered *logoi* [τὰ πάθη λόγοι ἐνυλοὶ εἰσιν, *DA* 1.1 403a25], he surely means they are enmattered *forms* (see 403b1-2 for evidence that *logos* may have to do with form)...” (italics, mine).

This is precisely what we should have expected given the data of *De Anima* 2.6. There, Aristotle specifies that the term “perceptible” (αἰσθητὸν) is said to be spoken of in three ways: two sorts which can be perceived “in their own right” (καθ’ αὐτά), and one sort which is perceived “accidentally” (κατὰ συμβεβηκός, 418a8-9). The first sort of καθ’ αὐτο “perceptible” he calls “proper” (ἴδιον, 2.6 418a10), and specifies it is what is perceived by some particular sense. So, he says, “sight is of color, hearing is of sound, and taste is of flavor, whereas touch has a number of different objects” (418a12-14).⁸²³ The second sort of καθ’ αὐτο “perceptible” he calls “common” for they are “common to them all” (κοινὰ πάσαις, 418a19), i.e., perceived by two or more senses (418a19-20). The κοινὰ or common perceptibles include “change^k, rest, number, shape, and magnitude” (418a17-18).⁸²⁴ Finally, the third manner in which the term “perceptible” can be used is in reference to what is perceived κατὰ συμβεβηκός, or “accidentally.” Here one perceives κατὰ συμβεβηκός when, for example, you “suppose the white is the son of Diares” (418a21).⁸²⁵

Very clearly, “perceptible” in its *proper* or *characteristic* sense (ἴδιον) refers to the third species of quality from *Categories* 8, affective qualities (παθητικός ποιότης) which, as we noted earlier in this chapter, are soft relatives (i.e., qualities *and* relatives) which reciprocally correlate with a particular sense.⁸²⁶ Sight is *of* the visible (ὁρατός, 2.7 418a26); hearing *of* sound (ἀκουστός, 2.9 421b4-5); smelling *of* the scented (ὀσφραντός, 2.9 421b4-5); taste *of* flavor (χυμός, 2.10 422a16-17); and touch *of* the tangible (άπτός, 2.11 422b17). And all proper

⁸²³ οἷον ὄψις χρώματος καὶ ἀκοὴ ψόφου καὶ γεῦσις χυμοῦ, ἢ δ’ ἀφ’ ἑλπίους [μὲν] ἔχει διαφορὰς.

⁸²⁴ κοινὰ δὲ κίνησις, ἡρεμία, ἀριθμός, σχῆμα, μέγεθος.

⁸²⁵ Reeve translation, modified. οἷον εἰ τὸ λευκὸν εἶη Διάρχου υἱός.

⁸²⁶ *Cat.* 7 6b28-36: “All relatives are spoken of in relation to correlatives that reciprocate. For example, the slave is called slave of a master and master is called master of a slave; the double double of half, and the half half of a double; the larger larger than a smaller, and the smaller smaller than a larger; and so on for the rest too. Sometimes, however, there will be a verbal difference, of ending. Thus knowledge is called knowledge *of* what is knowable, and what is knowable knowable *by* knowledge; perception perception *of* the perceptible, and the perceptible perceptible *by* perception.”

perceptibles (i.e., affective qualities) are species of a genus of such a sort, e.g., sweetness, bitterness, and sourness to flavor, hotness and coldness to the tangible, whiteness and darkness to the visible, etc. Things called “perceptible” in the *common* sense, however, are *not* species of any genus of affective quality but are other items in the world (sometimes even other species in the category of quality, such as shape) which do not belong to or reciprocally correlate with any sense, but are somehow “commonly perceived” (αἰσθησιν κοινήν, 3.1 425a27) by two or more acting in unison (425a14-30). Things called “perceptible” in the *accidental* sense, i.e., external objects, however, are not even commonly perceived, much less properly so. Rather, it is merely *accidental* or *coincidental* that such things are called “perceptible” at all, for (e.g.), the son of Diares is never what is perceived, but rather perception is of *what he has*, viz., his qualities.

Aristotle puts the point about external objects such as the son of Diares, this way at 418a21-24:

There is accidental (κατὰ συμβεβηκός) perception of him, *because* (ὅτι) he coincides (συμβέβηκε) with *the white, of which there is perception* (οὗ αἰσθάνεται). For this reason, one is *not affected* (οὐδὲν πάσχει) by a perceptible insofar as (ἥ) it is such a thing as the son of Diares.⁸²⁷

External objects are not perceived, says Aristotle here, just as we gathered from *De Anima* 2.12.

Rather, what in-forms percipients in perception—what they *receive*—is the *qualitative form* of the perceptible (e.g., the white) without any of the matter of its possessor (e.g., the son of Diares). That is, as Aristotle puts it both here and in 2.12, percipients receive the perceptible form *qua* (ἥ) εἶδος/λόγος, not *qua* Diares. Perceptibles in the first sense in 2.6, affective qualities or “proper” perceptibles, are the agents in perception, *not* the external objects which possess

⁸²⁷ κατὰ συμβεβηκός γὰρ τούτου αἰσθάνεται, ὅτι τῷ λευκῷ συμβέβηκε τοῦτο, οὗ αἰσθάνεται· διὸ καὶ οὐδὲν πάσχει ἡ τοιοῦτον ὑπὸ τοῦ αἰσθητοῦ. Shields translation, modified.

them.⁸²⁸ For in perception, it is perceptibles *qua* affective qualities that *act on* or *affect* percipients, not external objects *with* such qualities.

6.2.3.1.2 Conclusion to Inquiry One: The Location of Change

We are now ready to draw a conclusion to our first line of inquiry. But before bringing this discussion to a close, a further connection needs be made. We should also note here that this immaterial form reception account we have been examining from the latter bookend in 2.12 is actually *a gloss* on the account of perception from the final lines of the first bookend in 2.5, 418a3-6 where perception is spelled out in terms of actuality-potentiality (ἐντελέχεια-δύναμις), likeness (ὁμοιός) and being-affected (πάσχειν):⁸²⁹

What is capable of perceiving (αἰσθητικόν) is in potentiality such as the perceptible (αἰσθητοῦ) is already in actuality, as was just said. Hence, it is affected (πάσχει) while being unlike (οὐχ ὁμοιον) what affects it, but when it has been affected (πεπονθός), it has been made like it (ὁμοίωται) and is such as what affected it is (ἐκεῖνο).⁸³⁰

We parsed these lines in chapter 2. What we should now like to point out, however, is the *sense* of ὁμοίωται (“been made like”) from line 5. The term is the perfect passive tense of ὁμοιόω, the verbal form of the adjective ὁμοιός meaning “likeness” or “sameness.” While “homo” type terms are prevalent in English, perhaps only the Latin terms have had more influence on our language.

⁸²⁸ As Aristotle concludes in the final lines of *DA* 2.6 at 418a24-25: “Among things perceptible in their own right (καθ’ αὐτὰ αἰσθητῶν), proper perceptibles are perceptible in the full sense; and it is to these that the essence of each sense is naturally relative” (Shields translation, modified). τῶν δὲ καθ’ αὐτὰ αἰσθητῶν τὰ ἴδια κυρίως ἐστὶν αἰσθητά, καὶ πρὸς ἃ ἡ οὐσία πέφυκεν ἐκάστης αἰσθήσεως.

⁸²⁹ On the relation of *DA* 2.12 424a17-24 and 2.5 418a3-6, see Polansky, *Aristotle’s De Anima*, 343. See too Irwin, *Aristotle’s First Principles*, 307–10, where he takes Aristotle to be progressively sharpening his account via three formula. So, F1: “The perceiver becomes like the object” (2.5 417a18); Aristotle then transitions to F2: “The perceiver that was potentially F (e.g. white) becomes actually F when it perceives the actually F object” (2.5 418a3); and finally, Aristotle ends and completes his account with F3: “The perceiver acquires the form, but not the matter, of the object” (2.12 424a18-24). On Irwin’s account, F2 is a modification of F1, and F3 of F2. While I am unsure if Aristotle takes F1 to be a genuine formula meant to differ from F2, I do agree that F3 is a gloss on F2.

⁸³⁰ τὸ δ’ αἰσθητικὸν δυνάμει ἐστὶν οἷον τὸ αἰσθητὸν ἤδη ἐντελεχεία, καθάπερ εἴρηται. πάσχει μὲν οὖν οὐχ ὁμοιον ὄν, πεπονθός δ’ ὁμοίωται καὶ ἐστὶν οἷον ἐκεῖνο.

Hence, for the adjective ὅμοιος it is *similis*, from which we derive the word “similar,” while for the verb ὁμοιόω we have *assimilatum*—from *ad* (“to”) + *similis*, from which we derive the word “assimilation” or “to make similar or like.”⁸³¹ Likeness, as we saw in chapter 4, was one of what were only two essential features of the category of quality in the *Categories*, the other being the linguistic criterion. As Aristotle put it ch. 8 on quality at 11a15-19:

Nothing (οὐδέν) so far mentioned is distinctive (ἴδιον) of quality (ποιότητος), but it is in virtue of qualities (ποιότητας) *only* (μόνας) that things are called *like* (ὅμοια) or *unlike* (ἀνόμοια); a thing is not like (ὅμοιον) another in virtue of anything (κατ’ ἄλλο οὐδέν) but that in virtue of which it is qualified (ποιόν). So it would be distinctive (ἴδιον) of quality (ποιότητος) that a thing is called “like” (ὅμοιον) or “unlike” (ἀνόμοιον) in virtue of it (κατ’ αὐτήν).⁸³²

In the most accurate sense of the term, therefore, “to assimilate” is “to *make* qualitatively like” whereas “to be assimilated” is “to *be made* qualitatively like”—both with respect to some one of the species of the category.⁸³³ This is precisely what the formula of “to receive the perceptible form with the matter,” along with the signet ring analogy, makes so clear. Aristotle is not so much interested in the ‘having’ of a quality by means of some quantity of matter in which the quality is embedded (e.g., green *leaves*) as on Empedocles’ “the ingestion model,” but in ‘having’ *just* the quality *qua* εἶδος/λόγος (e.g., green *simpliciter*) as on what Mark Kalderon calls

⁸³¹ For the Latin usage, see Aquinas’ usage in *Sentencia libri De anima*, II.5.12.382. For the etymology of “assimilate” see the term’s entry in e.g., William Grimshaw, *An Etymological Dictionary* (Philadelphia: Lydia R. Bailey, 1821).

⁸³² Τῶν μὲν οὖν εἰρημένων οὐδὲν ἴδιον ποιότητος, ὅμοια δὲ καὶ ἀνόμοια κατὰ μόνας τὰς ποιότητας λέγεται· ὅμοιον γὰρ ἕτερον ἐτέρῳ οὐκ ἔστι κατ’ ἄλλο οὐδὲν ἢ καθ’ ὃ ποῖόν ἐστιν. ὥστε ἴδιον ἂν εἴη ποιότητος τὸ ὅμοιον ἢ ἀνόμοιον λέγεσθαι κατ’ αὐτήν.

⁸³³ See *DA* 1.5 410a23-b4 where Aristotle attacks Empedocles’ *material* version of the like-like theory again as “absurd” (ἄτοπον, 410a23) in the case of perception as it would seem that if material co-likeness is all that is in needed for perception then bones should perceive bones, hair perceive hair, etc. Cf. 1.2 404b11-15 where he quotes a line from Empedocles to just this affect: “For by earth we *see* (ὁπώπαμεν) earth, by water water, by aether godlike aether, and yet by fire annihilating fire, by love love, and strife by sad strife.”

“the model of qualitative alteration.”⁸³⁴ This involves, of course, a *preservative* ‘alteration of a sort’ rather than destructive canonical alteration, as we—and even Kalderon⁸³⁵—have noted, but alteration is still the model nonetheless. So, not only do we arrive at a straight answer to our first line of inquiry above concerning the agency and patiency involved in perception and the direction of the causal arrows, but we also have answered *how* this is done as well via “the model of qualitative alteration.” In sum, perceptible forms as affective qualities of external objects play the active role of agent, while percipients *through* their sense organs play the passive role of patient. And as the causal arrows flow from agent to patient general, so in this case, they flow from affective quality to percipient, the former assimilating the latter to itself.

6.2.3.1.1 A Problem with Matterless Form Reception?

Before transitioning to our second line of inquiry, a rather technical problem must be addressed. On this “model of qualitative alteration,” perception as we have just seen, perception as matterless form reception is specified in terms of both content and causation. In terms of content, perception is fleshed out as (1) the reception of perceptible forms of external objects without any quantity of the matter of those objects. In terms of causation, it involves (2) the matterless qualitative forms of external objects acting *qua* form rather than *qua* matter-form composite.⁸³⁶ While this certainly clarifies matters, it also presents us with a problem. If perception consists in matterless qualitative form *reception* on the part of the patient percipient, then, conversely, it must also consist in matterless qualitative form *transmission* on the part of the agent perceptible. “Form transmission” and “form reception” are just opposite sides of the

⁸³⁴ Kalderon, *Form without Matter*, 212.

⁸³⁵ See Kalderon, 213: “The exercise of our perceptual capacities may involve qualitative assimilation, but it is not the destruction of something by its contrary, the replacement of one quality by a contrary from a common genus, but a preservative change.”

⁸³⁶ For both of these components (i.e., content and causation) as being derived *from*, and as specifications *of*, the phrase “reception of the perceptible form without the matter” and its signet ring *explanans*, see the excellent discussion in Polansky, *Aristotle’s De Anima*, 341–44.

same coin—the former from the point of view of the agent, the latter from that of the patient—and both referring to the exact same thing. That is, there is a distinction of reason, but not a real distinction, between form transmission and form reception.⁸³⁷ But as we noted in chapter 1 and again in chapter 3, ‘form transmission’ is a core component of *change* even in its broadest sense, μεταβολή—which, of course, includes all instances of κίνησις. As such, ‘form transmission’ is a core component of *alteration*, too, whether of the destructive kinetic or of the preservative metabolic varieties. If this is correct, then by specifying perception as he has in terms of (1) content and (2) causation does not just construe perception along the lines of some “*model* of qualitative alteration,” but rather on such an account, perception *just is* qualitative alteration. This would seem to be a serious problem but is just too tangential to pursue here. It should be addressed, however, so I spell out both the problem and a proposed solution in detail in Appendix 1 and refer readers there. As a preview, I take the solution to be that perception must be a certain *sort* of form reception, specifiable in terms of its content (form reception without any matter from the *agent*), causation (by the *perceptible*, not what has the perceptible), means (*through* a sense organ which has a mean), and mode (received by the percipient but not in the *patient’s* matter). These specifications, all spelled out by Aristotle in *De Anima* 2.12, solve the

⁸³⁷ As Aristotle would put the point, “these things are one (ἓν), but their account (λόγος) is not one” (*Phys.* 3.3 202a20, ταῦτα γὰρ ἓν μὲν ἔστιν, ὁ μὲντοι λόγος οὐχ εἷς). Cf. *Phys.* 3.3 202b9, b12, b16, b22, *DA* 2.12 424a25–26, 3.2 425b26–27, 3.7 431a19–20, and 28–29. For I take it that when Aristotle says that something is “one and the same” (ἡ αὐτὴ ἐστὶ καὶ μία, *DA* 3.2 425b26–27) and yet *not* the same in “account” (λόγος, *Phys.* 3.3 202b9; cf. b12, b22) or “essence” (τὸ τί εἶναι, *Phys.* 3.3 202b12; cf. b9, b16, *DA* 2.12 424a25, 3.2 425b27, 3.7 431a19, and 29), I take him to be making this exact point. A real distinction would be of two terms refer to those things which *not* one and the same *nor* the same in account. A distinction of reason, on the other hand, occurs when two terms refer to that which *is* one and the same but *not* the same in account. That is, there is a distinction of reason (i.e., a *conceptual* distinction) between the two terms, even as *neither* is capable of independent existence from the other. For a discussion of the real distinction vs the distinction of reason (and the formal distinction) in Scholastic discussions, as well as centrality of the criterion of separability in marking the difference between the two, see Edward Feser, *Scholastic Metaphysics: A Contemporary Introduction* (Heusenstamm, DE: editiones scholasticae, 2014), 72–77.

problem that threatens and gives far greater content to his theory of perception as immaterial form reception. Again, I direct interested readers to Appendix 1 for the details.

6.2.3.2 Inquiry Two: *De Anima* 3.2, *Physics* 3.3, and the Metabolic Status of Perception

So far, we have established the answer to our first line of inquiry in spades. Very clearly, it is the perceptible that plays the agent, the percipient the patient, the causal arrows flow from the former to the latter, and we can see exactly *how* this is supposed to occur in terms of content, causation, means, and mode as is previewed just above and detailed in the Appendix. Now for our second line of inquiry: *what does this entail for the metabolic status of perception?* Fortunately, this is itself fairly easy to establish from another important passage on perception, this time from *De Anima* 3.2 425b26-426a19. As we shall see below, the story here is familiar—and it should be as it is a direct application of Aristotle’s account of agents and patients in change from *Physics* 3.3. As discussed above with respect to the knowledge model, Aristotle’s ‘new way’ was a result of the tension created by his causal doctrine—carved out for the “eternal unchangeable changer” (*Phys.* 8.6 260a15)—that when agents act on patients as is required in all instances of change (*Phys.* 5.1 224a34-b1), then change is *in* the patient while the agent itself remains unchanged. We spelled this out above and the puzzles it creates for Aristotle per the specification in *Metaphysics* Θ.1 1046a9-31 and elsewhere (e.g., *Phys.* 3.3 202a22-24, *Meta.* Δ.12 1019a15-20, 32-b11) that both agent and patient have unique potentialities which are then actualized in change, and, one would think, give rise to *two* actualities—one in the agent and the other in the patient. This would bar, however, *any* unchanged changer, for *everything* would change merely in the course of causing change if this were so. Aristotle’s solution is that which he presents in *Physics* 3.3: despite the fact that there are *two* potentialities, there is only *one* actuality and thus only one *change*, both of which is “in” *the patient*. Agents in *causing* change

remain themselves unchanged. Remember, process change just is “*incomplete* actuality” (ἀτελής ἐνέργεια, *Phys.* 3.2 201b31-32) whereas product change⁸³⁸ is “*complete* actuality” (τέλεια ἐνέργεια)⁸³⁹—so if there is only one process change, then there can only one product change⁸³⁹, and vice versa. Hence, one actuality in the patient entails, for Aristotle, one change, likewise in the patient. While this will need to be worked out in more detail, and we will do so below, this is the doctrine that Aristotle applies to *all* genuine instances of change (3.3 202b23-29). Hence, if this *Physics* 3.3 account is indeed applied to perception in *De Anima* 3.2, then it would seem that straightforward identification by Aristotle of perception as a genuine instance of change. If this is correct, then Aristotle does *not* take the ‘new way’ of the knowledge model with respect to perception, but rather applies to it the QG virtue model instead. Not only would this weigh heavily in favor of the virtue model over the knowledge model with respect to the classification of perception, but the details of the account might tell us *why* it is that Aristotle thinks this is the appropriate classification—if we can understand them.

A crucial question at this point, however, lingers: why should we think that Aristotle is referencing *Physics* 3.3 in *De Anima* 3.2? Apart from the fact that this has been recognized by virtually every major commentator both past and present,⁸³⁹ the telltale sign that the doctrine is being employed is in the very first line of the passage: “the actuality (ἐνέργεια) of the perceptible and of the perceptual faculty are one (μία) and the same (ἡ αὐτή), but there being (τὸ δ’ εἶναι) is

⁸³⁸ The only genuine instances of the phrase occur at *EN* 10.4 1174b17 and *EE* 2.1 1219a38-39, the former of which cites active perception as an instance. See too, *Phys.* 6.5 236a7-10.

⁸³⁹ See, e.g., Themistius, in *DA* 84.4-8; Philoponus in *DA* 473.30-474.1; Simplicius in *DA* 192.25-28; Averroes *Commentarium magnum In Aristotelis De anima libros* II.139; Aquinas *Sentencia libri De anima* III.2.592; Hicks, *Aristotle De Anima*, 438; Sorabji, *Time, Creation, and the Continuum*, 144–45; Irwin, *Aristotle’s First Principles*, 312; Polansky, *Aristotle’s De Anima*, 386–87; and Shields, *Aristotle: De Anima*, 268–69. So far as I know, no commentator disputes this connection, although the omissions by Ross, Apostle, and Reeve are notable.

different” (425b26-27).⁸⁴⁰ Notice, there is just *one* actuality of the *two* potentialities of two separate things (i.e., perceptible and percipient), yet they are in some sense “one and the same.” Likewise, in *Physics* 3.3, where he first crafts this doctrine, he takes it that in all cases of change that there is a single actuality in the patient from the two potentialities of agent and patient, and that “these things are one (ἐν), but their account (λόγος) is not one (μέντοι)” (202a20).⁸⁴¹ While he uses variations of this line multiple times throughout the *Corpus*⁸⁴² and can mean it in various senses,⁸⁴³ it is plain that the sense of both lines here is the same: while there *is* a distinction of a certain sort between the actuality of the agent and the actuality of the patient, there is also *no* distinction of a certain sort between the actualities. Let us call this the Sameness-Difference Doctrine (SDD). Does this doctrine actually make sense? Some, like Jacob Rosen, have criticized the SDD as either contradictory *or* meaningless (I cannot exactly tell which, so I will take him to mean both): “unfortunately, many philosophers, including myself, will not be sure what it means. How must we imagine the world as being if we are to imagine that it is true? It would be helpful to have a direct answer to the question of identity.”⁸⁴⁴ If Rosen is correct on either charge (i.e., SDD is either contradictory or meaningless), then Aristotle is in a heap of trouble. But, contrary to Rosen, I think there is good reason to think that both charges fail and

⁸⁴⁰ ἡ δὲ τοῦ αἰσθητοῦ ἐνέργεια καὶ τῆς αἰσθήσεως ἡ αὐτὴ μὲν ἐστὶ καὶ μία, τὸ δ’ εἶναι οὐ τὸ αὐτὸ αὐταῖς. Shields translation, modified.

⁸⁴¹ ταῦτα γὰρ ἐν μὲν ἐστὶν, ὁ μὲντοι λόγος οὐχ εἷς. See too *Meta.* Θ.1 1046a19-22: “It is evident, then, that *in a way* the capacity to act and to be affected are one (μία) (for something is capable either by itself having a capacity to be affected or by another thing having the capacity to be affected by it), whereas *in another way* they are distinct (ἄλλη), since the one capacity in is what is affected.” φανερόν οὖν ὅτι ἐστὶ μὲν ὡς μία δύναμις τοῦ ποιεῖν καὶ πάσχειν (δυνατὸν γὰρ ἐστὶ καὶ τῷ ἔχειν αὐτὸ δύναμιν τοῦ παθεῖν καὶ τῷ ἄλλο ὑπ’ αὐτοῦ), ἐστὶ δὲ ὡς ἄλλη.

⁸⁴² See *Phys.* 3.3 202b9, b12, b16, b22, *DA* 2.12 424a25-26, 3.2 425b26-27, 3.7 431a19-20, 28-29, etc.

⁸⁴³ For instance, I do not think that the distinction made in *Phys.* 3.3 202a20 is the same as that made in *DA* 2.12 424a25-26; the former is marking the lack of a *material* distinction, whereas the latter the lack of only an *operational* distinction.

⁸⁴⁴ Rosen, “Motion and Change in Aristotle’s *Physics* 5.1,” 68. Frustratingly, the paper Rosen cites after making this statement does not address these “one and the same but different in being” passages in the context of a long discussion of various *other* aspects of Aristotle’s theory of identity. See Nicholas P. White, “Aristotle on Sameness and Oneness,” *The Philosophical Review* 80, no. 2 (1971): 177–97. Nor does Rosen address the matter up again after this dismissal. As we will see below, this is a mistake.

SDD is neither contradictory nor meaningless. And, moreover, that it is spelled out in *De Anima* 3.2 in such a way that it is also exceedingly *helpful*.

Let us now outline the steps we shall take below in order to acquire an answer to this second inquiry. First, we shall try to understand the phrase in which the SDD is couched. Not only will this help to elucidate the doctrine, but it will also enable us to answer both of Rosen's charges. Second, we shall turn to Aristotle's presentation of the doctrine in *Physics* 3.3, detailing both the puzzle that gives rise to it and the single actuality solution of which the SDD is a key component. Finally, we shall turn to the *De Anima* 3.2 passage as we will now be in a position to verify whether or not the claim made above about the relationship between the two passages holds. For if it does as I claim, then Aristotle does *not* take the 'new way' of the knowledge model with respect to perception but rather applies to it the QG virtue model as I have maintained. Moreover, examining these details might tell us just *why* it is that thinks the virtue model rather than the knowledge model is the appropriate classification for perception. In fact, I think it does. But we will not pursue this question until our third inquiry. With this argumentative structure in mind, let us turn now to the SDD.

6.2.3.2.1 Is 'One and The Same, but Distinct in Being' Contradictory?

There are two parts to the SDD, of course, *sameness* and *difference*. While Aristotle is fairly consistent in his claim that the items captured by the SDD have *sameness* either by being "one" (ἐν/μία, *Phys.* 1.7 190a15-16, 3.3 202a18, 202a20, *DA* 3.7 431a19-20), "the same" (τὸ αὐτό/ταυτόν, *Phys.* 3.3 b16, *DA* 2.12 424a25), or both "one and the same being" (μίαν... τὴν αὐτὴν εἶναι, *Phys.* 3.3 202b8-9; cf. *DA* 3.2 425b26-27, 3.7 431a28-29), he is far less consistent on that by which they have *difference*. Hence, they may differ by (1) "being" (εἶναι, *Phys.* 3.3 202b8-9, *DA* 2.12 424a25, 3.2 425b26-27, 3.7 431a19-20), (2) "account" (λόγος, *Phys.* 1.7

190a15-17, 3.3 202a20, b12, b22), (3) “essence” (τὸ τί ἦν εἶναι, *Phys.* 3.3 b12), (4) “form” (εἶδος, *Phys.* 1.7 190a15-17), (5) “strictly” (*Phys.* 3.3 b20), or (6) combinations of these such as account and “essence” (*Phys.* 3.3 b12) or account and form (*Phys.* 1.7 190a15-17). How are we to understand all of this?

Let us address the easy part first. There is sufficient overlap between the terms for sameness—as well as clarity in the applicable passages when taken as a whole—such that I think it is clear that we ought to spell out the sameness here in terms of, as he puts it in one place, the “numerical oneness” (ἀριθμῶ ἐστιν ἓν, *Phys.* 1.7 190a15-16) of the item in question; or, as we would now say, “numerical identity.”⁸⁴⁵ Whether of a substance like a man (*Phys.* 1.7 190a17) or of a qualitative actuality (*DA* 3.2 425b26-27) or any sort of actuality involved in a change (*Phys.* 3.3 202a18) such as the same dog (Chester) or human (Elenore), or the same quality instance (*that yellow, that heat*), quantity (*that two, that less or more*), or place (the Lyceum, Main St.), etc.,⁸⁴⁶ whatever the item is, it is *a singular entity*—“one and the same being” (μίαν... τὴν αὐτὴν εἶναι, *Phys.* 3.3 202b8-9)—which lacks any actual division as a concrete item. Not that it lacks the *potential* to be divided—although in some sense it may—but that it is *not actually* so. It is and functions as a coherent unity and would either lose its full range of function or cease to be if divided.⁸⁴⁷ The parts of what is “one and the same being” are thus potentially separable (in some sense), although not actually so. The “sameness” in SDD, hence, is numerical identity.⁸⁴⁸

But what of *difference*? This is, at first glance, far more problematic. For how can what is “one and the same being” (μίαν... τὴν αὐτὴν εἶναι, *Phys.* 3.3 202b8-9) differ too by “*being*”

⁸⁴⁵ See, e.g., Lowe, *A Survey of Metaphysics*, 23–24.

⁸⁴⁶ For quality instances in Aristotle, see *Cat.* 2 1a25-28 and *DA* 2.5 417a24-25, 29,

⁸⁴⁷ See e.g., *Meta.* Z.10 1035b9-13, 22-25: “For the semicircle is defined by the circle and so is the finger by the whole, since a finger is a such-and-such sort of part of a human.... These bodily parts, then, are in a way prior to the compound, but in a way not, since they cannot even exist when they are separated. For it is not a finger in any and every state that is the finger of an animal, rather, a dead finger is only homonymously a finger.”

⁸⁴⁸ Cf. Hussey, *Aristotle's Physics*, 66: “What is indicated by ‘the same’ here is straightforward identity.”

(εἶναι, 202b9), as Aristotle puts it at one point? Is this not directly contradictory, giving credence to Rosen’s worry about the question of identity with respect to SDD? Only on a facile reading. In the philosophical lexicon of *Metaphysics* Δ, Aristotle notes in ch. 7 that “being” (τὸ ὄν)⁸⁴⁹ refers not just substances (1017a13-16) but to the things which are signified in instances of predication such as qualities, quantities, relatives, and tokens of other accidental categories (1017a23-28), as well as truths or affirmations generally (1017a31-35). Another sort of “being” ought to be included here as well as we shall see below, but the point is that “being” is said in many ways’ (*APr.* 1.36 48b2-4, 1.37 49a6-10, *Meta.* K.3 1060b32, *EN* 1.6 1096a23-29, etc.), and thus to say that what is one and the same “being” also *differs* in “being” is not to utter nonsense unless the senses of εἶναι are the same.⁸⁵⁰ This appears to be what Rosen assumes, but why think *that*? There is certainly excellent reason not to.

Notice that the way in which items *differ* is not *just* described in terms of εἶναι, but in other terms as well. At *Physics* 3.3 b12, both “account” (λόγος) and “essence” (τὸ τί ἦν εἶναι) are used interchangeably to refer to that which differs, while we are told at *Physics* 1.7 190a15-17 that by “form” (εἶδος) he means “account” (λόγος)—which is precisely what we saw in *De Anima* 2.12 with respect the perceptible εἶδος as it too was called a λόγος.⁸⁵¹ In light of this and despite Aristotle’s variegated vocabulary, I think we are warranted in consolidating terms here. We already know that he is willing, in this context, to use λόγος and εἶδος interchangeably as well as λόγος and “essence”—even if he does not indicate that εἶδος and “essence” are so

⁸⁴⁹ Of course, τὸ ὄν is the present participle of εἰμί, while εἶναι is the infinitive form.

⁸⁵⁰ See, e.g., *EN* 1.6 1096a23-29: “Good is spoken of in as many ways as being (τῷ ὄντι) [is spoken of]: in what-it-is (τῷ τί), as god and mind; in quality, as the virtues; in quantity, as the measured amount; in relative, as the useful; in time, as the opportune moment; in place, as the [right] situation; and so on. Hence, it is clear that the good cannot be some common and single universal; for if it were, it would be spoken of in only one [of the types of] predication, not in them all” (Irwin translation, brackets original).

⁸⁵¹ See too *DA* 1.1 403b1-2: “Of these [two descriptions], one describes the matter and the other the form or account” τοῦτων δὲ ὁ μὲν τὴν ὕλην ἀποδίδωσιν, ὁ δὲ τὸ εἶδος καὶ τὸν λόγον.

interchangeable. Nevertheless, given the transitivity of identity if λόγος = εἶδος *and* λόγος = “essence,” then εἶδος = “essence.” There is no reason for us not to make this move, nor to think Aristotle would not as well. Hence, the onus is on Rosen and his ilk to show us why it should *not* be made, especially given the clarity it provides with respect to the SDD, as we shall see below.

The three of the terms (i.e., λόγος, εἶδος, and “essence”) are now consolidated, but what of the fourth, εἶναι? I think this term, too, warrants consolidation with the other three, although the reason for doing so is hidden from view by our terminology. I have been employing the term “essence” in quotation marks for a very specific reason: the term itself is shorthand and not Greek in origin. In fact, the English word “essence” derives from the Latin abstract noun *essentia*, itself derived from the verb *esse*, *to-be*, or *being*.⁸⁵² What is worth noting is that this singular Latin word was meant to translate a *phrase* in Greek: τὸ τί ἦν εἶναι, “the what it is to be” or the-what-it-is-to-be. In Latin, this cumbersome phrase was translated as *quod quid erat esse*, which was then *shortened* using a freshly coined paronym “*essentia*” from the final word of the phrase, *esse*.⁸⁵³ Interestingly, as Aquinas points out, shortening was done with another word in the phrase as well, specifically, *quid* from which *quidditas*—in English “quiddity” or “whatness”—was derived.⁸⁵⁴ While *both* refer to what we would now call “the essence” of a

⁸⁵² Coined by Cicero (see Seneca, *Letter* 58.6-7) in a work now lost to us (see Tobias Reinhardt and Michael Winterbottom, eds., *Quintilian: Institutio Oratoria Book 2* (New York: Oxford University Press, 2006), 219–21), *essentia* was popularized by Augustine in his various Trinitarian writings, having been fairly rare before him, and was explicitly connected by him to Aristotle’s οὐσία from *Cat.* 5, just as in Seneca (*Letter* 58.6). See the discussion in Lewis Ayres, *Augustine and the Trinity* (New York: Cambridge University Press, 2010), 200–202.

⁸⁵³ For the Latin phrase and the derivation of *essentia* from *esse* in this phrase, see Aquinas’ *De ente et essentia* 1.4. For paronyms in Aristotle, see *Cat.* 1 1a12-15: “When things get their name from something, with a difference of ending, they are called paronymous. Thus, for example, the grammarian gets his name from grammar, the brave get theirs from bravery.”

⁸⁵⁴ Aquinas’ *De ente et essentia* 1.27-34, 49-52: “Because the definition telling what a thing is signifies that by which a thing is located in its genus or species, philosophers have substituted the term ‘quiddity’ (*quidditatis*) for the term ‘essence’ (*essentiae*). The Philosopher [Aristotle] frequently calls this ‘what something is to be’ (*quod quid erat esse*); that is to say, that which makes a thing be ‘what it is’ (*esse quid*).... The term ‘quiddity’ (*quidditatis*) is derived from what is signified by the definition, while ‘essence’ (*essentia*) is used because through it, and in it, that which is has being (*esse*).” See Arthur Hyman, James J. Walsh, and Thomas Williams, eds., *Philosophy in the*

thing or the-what-it-is-to-be, they emphasize it via different words and even aspects which they use as shorthand for the phrase, *esse*, and *quid*, respectively.

What is the point behind mentioning the above etymologies? Only this: just as both *essentia* and *quidditas* capture different ends and aspects of the Latin translation of the phrase τὸ τί ἦν εἶναι, so the same appears to be the case here for Aristotle as well. Specifically, the “to-be” bit of the-what-it-is-to-be is captured by εἶναι (the infinitive of τὸ ὄν, *to-be* or *being*) just as in Latin with *essentia*, while the “what-it-is” is captured by λόγος and εἶδος just as with *quidditas*. Evidence for this is not just in the sense it makes of the SDD, but in *Physics* 3.3 as well where Aristotle uses εἶναι (202b9) and then λόγος and τὸ τί ἦν εἶναι (202b12) in the course of a few lines to refer to the exact same thing, *difference*.⁸⁵⁵ If this analysis is correct—and the burden is on those who would gainsay it—then again by the transitivity of identity: if λόγος = εἶδος = τὸ τί ἦν εἶναι and if τὸ τί ἦν εἶναι = εἶναι, then λόγος = εἶναι and εἶδος = εἶναι. All four terms (i.e., λόγος, εἶδος, τὸ τί ἦν εἶναι, and εἶναι) are now consolidated. And this, of course, brings new meaning to the phrase “[these things] are one (μία) and the same (ἡ αὐτὴ), but there being (τὸ δ’ εἶναι) is different” (*DA* 3.2 425b26-27).⁸⁵⁶ For rephased with our new understanding, we ought

Middle Ages: The Christian, Islamic, and Jewish Traditions, 3rd Edition (Indianapolis, IN: Hackett, 2010), 451. The Latin can be found in: Thomas Aquinas, *De Principiis Naturae, De Aeternitate Mundi, De Motu Cordis, De Mixtione Elementorum, De Operationibus Occultis Naturae, De Iudiciis Astrorum, De Sortibus, De Unitate Intellectus, De Ente et Essentia, De Fallaciis. De Propositionibus Modalibus*, vol. 43, Sancti Thomae de Aquino Opera Omnia Iussu Leonis XIII P. M. Edita (Rome: Editori di San Tommaso, 1976), 369–70. Et quia illud per quod res constituitur in proprio genere vel specie est hoc quod significatur per diffinitionem indicantem quid est res, inde est quod nomen essentiae a philosophis in nomen quidditatis mutatur; et hoc est etiam quod Philosophus frequenter nominat quod quid erat esse, id est hoc per quod aliquid habet esse quid.... quidditatis vero nomen sumitur ex hoc quod per diffinitionem significatur. Sed essentia dicitur secundum quod per eam et in ea ens habet esse.

⁸⁵⁵ Cf. Themistius, in *Phys.* 78.19-20: “for their accounts and what-it-is-to-be differ” (Todd translation, modified). διάφοροι γάρ αὐτῶν οἱ λόγοι καὶ τὸ τί ἦν εἶναι. See too Sorabji, *Time, Creation, and the Continuum*, 145, referring to the SDD in *Phys.* 3.3, which we examine below: “But he spells out very carefully what kind of identity is to be found here. It is *not*, he says five times, an *identity of essence* [*Phys.* 3.3 202a20; b9; b12; b16; b22].... [Rather] he might put his point by saying that it is a merely numerical identity” (italics mine).

⁸⁵⁶ ἡ δὲ τοῦ αἰσθητοῦ ἐνέργεια καὶ τῆς αἰσθήσεως ἡ αὐτὴ μὲν ἐστὶ καὶ μία, τὸ δ’ εἶναι οὐ τὸ αὐτὸ αὐταῖς. Shields translation, modified. Again, see *Physics* 3.3 where he first crafts this doctrine: “these things are one (ἐν), but their account (λόγος) is not one (μέντοι)” (202a20). ταῦτα γὰρ ἐν μὲν ἐστίν, ὁ μέντοι λόγος οὐχ εἷς.

to take Aristotle to be saying, “these things comprise one and the same numerically identical entity, but they differ in their what-it-is-to-be.” This is clearly not contradictory as Rosen suggests, so long as one takes what-it-is-to-be in the sense of εἶδος and especially λόγος, “account” or perhaps “whatness”—which is precisely how I suggest we understand it.⁸⁵⁷ Interestingly, this was precisely how many of the ancient commentators understood it as well. Hence, in Themistius, Philoponus, and Simplicius all, they took Aristotle’s “one and the same but distinct in being” SDD and phrased it in terms of being “one in their underlying subject but distinct in their account” (Themistius, *in Phys.* 77.30)⁸⁵⁸, “one as to the underlying subject, two in the definition” (Philoponus, *in Phys.* 381.24),⁸⁵⁹ or “one in underlying subject, even if different in account” (Simplicius, *in Phys.* 446.30-31).⁸⁶⁰ “Underling subject, of course, translates ὑποκείμενον, a term that, unlike these commentators, Aristotle never used in the context of the SDD. Their point, though, is the same as his, just with added clarity: there is one “underlying subject,” “substrate,” “substratum,” or “thing”—however we translate the word into English—but it admits of different accounts or definitions. We can sum this up by saying that while the εἶναι of “sameness” in SDD is numerical identity, the εἶναι of “difference” is in account, for “‘being’ (τὸ ὄν) is said in many ways and is not used in only one” (*Meta.* K.3 1060b32-33).⁸⁶¹ With this in mind, let us formally define the SDD as follows:

SDD df: (1a) if a singular entity is said to differ from itself or (1b) if two entities are said to be the same, (2) then singularity or sameness in each case is to be understood in terms

⁸⁵⁷ Cf. “difference in definition” in Hussey, *Aristotle’s Physics*, 66.

⁸⁵⁸ ὅτι μία μὲν τῷ ὑποκειμένῳ, τῷ λόγῳ δε διαφέρουσαι. Todd translation, modified.

⁸⁵⁹ μίαν τῷ ὑποκειμένῳ, οὐ τῷ ὀρισμῷ. Edwards, translation, modified.

⁸⁶⁰ ἐν οὖν κατὰ τὸ ὑποκείμενον, εἰ καὶ τῷ λόγῳ διάφορα. Urmson translation, modified.

⁸⁶¹ τὸ δ’ ὄν πολλαχῶς καὶ οὐ καθ’ ἓνα λέγεται τρόπον. Reeve translation, modified. For an account very similar to our own, see Pavel Gregoric, *Aristotle on the Common Sense* (New York: Oxford University Press, 2007), 137–38, 143, 148–53, 156, 159–61, esp. 152 & 178.s

of numerical identity, (3) while difference in each case is to be understood in terms of account.

6.2.3.2.2 Is ‘One and The Same, but Distinct in Being’ *Meaningful*?

We have dodged imputing to Aristotle a contradiction, but is the SDD meaningless, as Rosen also suggests, a rather Scotistic distinction without a difference?⁸⁶² More precisely, how can a distinction cashed out in terms of numerical identity versus account be of assistance to Aristotle, especially in this context? Medieval Aristotelianism is again helpful here. In his commentary on the *Physics*, Aquinas cites just these passages we have been examining from 3.3 and makes the following distinctions: what is the *same* is “one according to reality” (*unus secundum rem*, §317), whereas what *differs* is “different according to conception” (*differunt secundum rationem*, §309). For whatever is one in this way “is not one and the same in conception, but one in reality” (*non sit unus et idem secundum rationem, sed unus secundum rem*, §317).⁸⁶³ What Aquinas is here referring to, and, more importantly, what he thinks Aristotle is invoking, is what later came to be known as the *real distinction* and the *distinction of reason*.⁸⁶⁴ But what is it exactly that these distinctions refer to, and how can they help make the SDD meaningful?

⁸⁶² On Scotistic distinctions as distinctions without a difference, see Thomas Hobbes, *Behemoth: Or, the Long Parliament*, ed. Ferdinand Tönnies (London: Simpkin, Marshall, and Co., 1889), 40–41, Dialogue I: “The first Rector of the University of Paris (as I have read somewhere) was Peter Lombard who first brought in them the learning called School-divinity; and was seconded by *John Scot of Duns*, who lived in, or near the same time; whom any ingenious reader, not knowing it was the design, would judge to have been two of the most egregious blockheads in the world so obscure and senseless are their writings. And from these the schoolmen that succeeded, learnt the trick of imposing what they list upon their readers, and *declining the force of true reason by verbal forks*; I mean, *distinctions that signify nothing*, but serve only to astonish the multitude of ignorant men” (italics mine).

⁸⁶³ Blackwell, Spath, and Thirlkel translation, modified. For full textual citations see: Aquinas, *Expositio libri Physicorum*, 3.4.307 & 3.5.317; cf. 318 & 321.

⁸⁶⁴ For a general overview of the real distinction vs the distinction of reason (and the formal distinction) in Scholastic discussions, as well as citations to contemporary literature on the topic, see Feser, *Scholastic Metaphysics*, 72–77.

Let us begin with an example, a mirrored wall. The mirror can be removed from the wall, and if so done, both the wall and mirror continue to exist independently. Of course, they are no longer related as they once were, but they clearly remain what they were prior to the separation: a wall and a mirror. What medieval Aristotelians like Aquinas preferred to say is that there is a *real distinction* between the mirror and the wall, for they retain their concrete reality in separation from one another. Now, take the wall's paint and remove that from the wall. The scraped paint will come off in the form of strips and chips, and the wall will look naked, *but* both the paint and the wall continue to exist independently in separation from one another. And both remain what they were before the separation, too: dried paint and a textured wall, albeit a naked one. Here too, there is a *real distinction* between the paint and the wall, for they retain their concrete reality apart from one another.

Next, take the wall's sheetrock and remove that. This seems more problematic. If all that is left is an arrangement of two-by-fours and nails, is *that* still a wall? Or, leave the sheetrock and remove the wood and nails—is *that* still a wall? It seems not in either case, for the wood and nails alone would just be the frame of a wall, whereas the sheetrock alone, even arranged in a wall-like way, would just be a flimsy wall-like arrangement of sheetrock without itself being a wall. Remove any one of the wall's component parts, and the wall goes with it. Interesting, there is a sense in which *the parts* too are destroyed, for while there may be in some location a stack of sheetrock which *once* composed the wall, there is not a pile of actual wall-parts on the floor but *potential* wall parts. *Qua* sheetrock it remains, but *qua part*, it too went with the wall. Parts and wholes, at least in this instance, require one another in order to be what they actually are. Hence, there is *no real distinction* between the wall and any of its component parts *qua* parts, whether

nails and wood, or sheetrock. Rather, there is one concrete entity that ontologically depends upon its parts and cannot remain in existence as a concrete reality without such mereological integrity.

Notice, though, that at no time did the *account* or *form* of a wall become that of sheetrock, nor of sheetrock a wall. Rather, *the-what-it-is-to-be* a wall remained a wall, and *the-what-it-is-to-be* sheetrock remained sheetrock—even as in concrete reality, the wall necessitated their actual inseparability or unity. We might say, thus, that though sheetrock and wall are *inseparable in reality* from one another so long as they are related as part to whole, they were always *conceptually separable* as the account of a wall never became that of sheetrock rock, nor of sheetrock a wall. Part and whole, thus, are inseparable in one sense but quite separable in another. Or, with Aristotle, that they are numerically one and the same *in being*, but many in *account* or *what-it-is-to-be*. This is precisely what Aquinas is referring to when he says that things like, e.g., walls are “one according to reality,” but “different according to conception.”

While we now have some indication of what this real/conceptual distinction refers to, but can we be even more precise? The late medieval Aristotelian Francisco Suárez is exceedingly helpful in this regard. In Disputatio 7 of his *Disputationes Metaphysicae* (DM) from 1597, he defines the real distinction (*distinctionem realem*) as “a distinction between thing and thing,” saying that “it consists in the fact that one thing is not another, and vice versa.”⁸⁶⁵ This distinction is between two or more concrete individuals (DM 7.1.17 & 22), which, of course, are separable from one another—“for in the separated state they are distinguished as complete

⁸⁶⁵ DM 7.1.1. All English citations from Suárez are those of Cyril Vollert in: Francisco Suárez, *The Various Kinds of Distinctions: Disputationes Metaphysicae, Disputatio VII, De Variis Distinctionum Generibus*, trans. Cyril Vollert, SJ. (Milwaukee, WI: Marquette University Press, 1947). All Latin citations are from the still standard nineteenth-century critical text: Francisco Suárez, *Opera Omnia*, ed. C. Berton, vol. XXV (Paris: Ludovicus Vivès, 1861), 250–74.

beings” (DM 7.1.22).⁸⁶⁶ *Separability*, thus, is a key criterion of things that admit of a real distinction—just as we saw in the case above concerning the mirror, the paint, and the wall.

What, however, of the *distinction of reason*?

The distinction of reason (*distinctio rationis*)—at least the one that Suárez thinks has some foundation in reality—he calls “a distinction of reasoned reason” (*distinctio rationis ratiocinatae*).⁸⁶⁷ “This type of mental distinction,” he says, “can be understood as pre-existing in reality, prior to the discriminating operation of the mind” such that it “requires the intellect only to recognize it, but not to constitute it” (DM 7.1.4). What is the basis for this sort of distinction? Suárez continues (DM 7.1.5):

It arises from inadequate concepts (*conceptus inadaequatos*) of the one and the same thing. Although the same object is apprehended in each concept, the whole reality contained in the object is not adequately represented, nor its entire essence (*quidditas*) and objective notion exhausted, by either of them. This occurs frequently when [1] we conceive an object in terms of its bearing on different things, or [2] when we represent it in the way we conceive these different things. Hence such a distinction invariably has a foundation in fact, even though formally it will be said to spring from inadequate concepts (*conceptus inadaequatos*) of the same thing.⁸⁶⁸

We now have an account of such a distinction of reasoned reason and of its two causes: first, it arises from the inadequate conception of “one and the same thing”—that is, *one* of the

⁸⁶⁶ I am simplifying for the sake of brevity as Suárez distinguishes between a positive real distinction and two types of negative real distinction (DM 7.1.2), although both are beside the point for our present purposes.

⁸⁶⁷ The other which lacks a basis in reality is the so-called “distinction of reasoning reason” (*distinctio rationis ratiocinantis*), which is nothing more than a sort of “mental repetition” (DM 7.1.5).

⁸⁶⁸ At vero posterior distinctio rationis fit per conceptus inadaequatos eiusdem rei; nam, licet per utrumque eadem res concipiatur, per neutrum tamen exacte concipitur totum id quod est in re, neque exhauritur tota quidditas et ratio obiectiva eius, quod saepe fit concipiendo rem illam per habitudinem ad res diversas vel ad modum earum, et ideo talis distinctio semper habet fundamentum in re, formaliter autem dicetur fieri per conceptus inadaequatos eiusdem rei.

individuals designated by a real distinction. Second, these inadequate concepts which misrepresent the concrete individual arise when we either [1] conceive of the singular concrete individual with respect to how it ‘bears’ on some one thing—as opposed to the many things it could and does bear on; and [2] when we represent the concrete individual in terms of one of the items on which it ‘bears.’ For [1], Suárez seems to have in mind the notion of us thinking of, say, a dog sitting—such that we fixate just on the fact that it is *sitting*. The dog is, presumably, also breathing, digesting, growing, etc., but we consider it *only* as sitting. The error resides in the fact that “the whole reality contained in the object is not adequately represented,” but that does not make the designation of “Cici sitting” any less *true*. It is just *incomplete*. For [2], on the other hand, Suárez seems to be thinking of us going on to classify the dog as sitting and, perhaps, group it with other dogs sitting—or other animals sitting—as *a set* or *a class*. Here, we are just thinking of *sitting*, and grouping all the sitting things together, however disparate otherwise, and thus *representing* Cici sitting as though *that* is the important matter, to the detriment of all the rest. The problem with both [1] and [2] is in taking a whole and identifying it *just* in terms of some categorical aspect of the thing (i.e., in terms of one of the nine accidents of quantity, quality, relative, place, time, agency, patiency, position, or having), and thus to the neglect of that whole. But is this really all a matter of “inadequate concepts,” arising from the fact that we do not continually think of a dog like Cici in a wholistic manner rather than in a certain respect? Not at all, says Suárez (*DM* 7.1.6):

The mind does not err in thus distinguishing, because it does not assert that things conceived in this manner are distinct in fact [i.e., admit of a real distinction], but simply and without composition—that is, without affirmation or denial—conceives them as

distinct through precise abstraction (*abstractionem praecisivam*) whereby it effects, as it were, this type of distinction.⁸⁶⁹

‘Precise abstraction’ is a proper operation of mind, says Suárez, and we do not error when we perform it, although error certainly can—and often does—come in, particularly when we forget or fail to notice the real unity of wholes. Walls are not *just* composed of sheetrock but of boards and nails as well, even as through precise abstraction, they can be distinguished from one another. Likewise, Cici does not *just* sit, and if I have to be reminded that her panting and her sitting are different by a distinction of reasoned reason rather than by a real distinction, then the error is my own. With these distinctions in hand, let us redefine SDD accordingly:

SDD df: (1a) if a singular entity is said to differ from itself or (1b) if two entities are said to be the same, (2) then singularity or sameness in each case is to be understood as the absence of any real distinction, (3) while difference in each case is to be understood as presence of a distinction of reason resultant from (4) the conception of the whole reality in terms of some one categorical aspect of the thing identified by precise abstraction.

This is Suárez and Aquinas’ view of the matter with regard to SDD. And by dint of its explanatory power and coherence, as we will see momentarily, it is difficult to deny that it is Aristotle’s as well. It is also meaningful, dodging Rosen’s second charge. Now let us see how it is applied.

6.2.3.2.3 The ἀπορία of *Physics* 3.3 and SDD Solution

In *Physics* 3.3, Aristotle is attempting to resolve a puzzle (ἀπορούμενον, 202a13) which results from the confluence of at least four blunt theses posited in the preceding two chapters of

⁸⁶⁹ Nec tamen mens fallitur sic distinguendo, quia non affirmat in re esse distincta quae sic concipit, sed simpliciter et absque compositione seu affirmatione aut negatione ea concipit ut distincta per abstractionem praecisivam, per quam quasi efficit huiusmodi distinctionem.

the *Physics* concerning change. These theses are, specifically: that while [A] change necessarily takes place in the context of agents and patients (3.2 202a3-12), [B] not everything that causes change (i.e., every agent) can itself change (3.1 201a25-27). As such, [C] the process change and product change^o of agent and patient consists in a *single* actuality (3.1 201b5-15), despite the fact that [D] the enabling conditions for change are the *two* respective potentialities in the agent and patient to change (3.1 201a19-25, 3.2 202a7-9). While [A], [B], and [D] might seem somewhat plain to us given Aristotle's metaphysics, [C] will undoubtedly strike us as odd. Surely agent and patient *each* have an actuality consonant with their active and passive roles, such as the hot water's dissolving and the sugar's being dissolved. To see why Aristotle would posit such a thesis, let us parse the problem as he presents it in *Physics* 3.3. Not only will it allow him to sharpen each thesis, but from there, we will be in a position to move on *De Anima* 3.2, which it built both on this ἀπορία and its single actuality solution which has at its heart the SDD.

Aristotle sets out the puzzle up as follows:⁸⁷⁰ (1) in every causal happening there must be some actuality (ἐνέργεια) of the agent and some actuality (ἐνέργεια) of the patient owing to their respective potentialities (δυνάμεις), (2) both of which are properly classified as changes^k (κινήσεις, 202a22-25) or in each case an actuality (ἐνέργεια, 202a33).⁸⁷¹ Now, (3) if these

⁸⁷⁰ I here follow Reeve's numbering system for the argument's premises.

⁸⁷¹ Aristotle uses three terms here, κινήσις, ἐνέργεια, and ἐντελέχεια. And all appear to be used unchangeably. As Hussey (*Aristotle's Physics*, 66), argues: "agent's operation [ἐνέργεια] = agent's actuality [ἐντελέχεια] = change- (T[ransitive]) [κινήσις]; and patient's operation [ἐνέργεια] = patient's actuality [ἐντελέχεια] = change- (I[ntransitive]) [κινήσις]. Nothing here turns on the conceptual difference between actuality (*entelecheia*) and operation (*energeia*)." How is this supposed to work given that κινήσις is supposed to refer to a process and ἐνέργεια/ἐντελέχεια is an end-state? First, on ἐντελέχεια and ἐνέργεια, Aristotle seems to have coined both words—ἐνέργεια for "inward activity" and ἐντελέχεια from the phrase τὸ ἐντελές ἔχων, "having an end within" (see Blair, "The Meaning of 'Energeia' and 'Entelecheia' in Aristotle," 101, 104, 110; cf. W. D. Ross, *Aristotle's Metaphysics*, vol. 2 (Oxford, UK: Clarendon Press, 1924), 246). Second, he seems to have used them synonymously. So, Ross: "for the most part Aristotle uses the words as exact synonyms" (ibid., 245). Notice though that Ross hedges with "for the most part" here. He does so because he takes there to be a difference between the adverbial and nominal uses of ἐντελέχεια such that only the adverbial usage is synonymous with ἐνέργεια and refers to "actuality", while the nominal refers to "actualization" (Ross, *Aristotle's Physics. A Revised Text, with Introduction and Commentary*, 537). On this view specifically, the adverbial usage of ἐντελέχεια or of ἐνέργεια generally would refer to "the state

changes/actualities⁸⁷² are “distinct” (ἕτεροι, 202a25), then we are faced with the following disjunction: either (3a) both are “in” (ἐν) the patient or (3b) one is in the patient while the other is in the agent (202a25-26). If (3b) obtains, then in causing change, every agent will itself change (202a28-29). This, of course, would disallow the very *possibility* of unchanged changers, so Aristotle cannot take this option as it would violate thesis [B]. Given the disjunction thus, he must take the other option, (3a). But, if (3a) obtains then both changes/actualities—from the conjunction of (1) and (2)—viz., agency and patiency, will be “in” (ἐν) the patient (202a31-32). This would mean that, e.g., teaching (agency) and learning (patiency), which are two, would *both*

of actuality” while the idiosyncratic nominal usage would refer to “the *process* of actualization” (Wisnovsky, *Avicenna’s Metaphysics in Context*, 21–22). But I think Ross is flatly wrong to make such a distinction, agreeing with Hussey on the issue of the idiosyncratic nominal usage that “such a sense of *entelecheia* is, however, unparalleled in Aristotle” (Hussey, *Aristotle’s Physics*, 60). Rather, my own view is precisely that of George Blair who after an exhaustive analysis of every instance in the *Corpus*, argues: “ἐντελέχεια and ἐνέργεια must mean exactly the same thing; and so Aristotle coined two words and then defined them in such a way as to show that he should have coined only one. Nor do the words have different applications; as was pointed out earlier, every single instance of ἐντελέχεια has a use of ἐνέργεια that exactly parallels it” (Blair, “The Meaning of ‘Energeia’ and ‘Entelecheia’ in Aristotle,” 110). Third, if ἐντελέχεια and ἐνέργεια are exact synonymous and always refer to some state of actuality, then how does this coincide with his use of κινήσις? I think Aristotle is being both enthymematic and vague here. He is being enthymematic because he is using ἐνέργεια almost exclusively in the argument of *Phys.* 3.3 (ἐντελέχεια occurs only three times in the chapter and only at the very beginning or very end: 202a14, 16, and 202b25-26), but doing so without any qualifier, specifically ἀτελής or τέλεια. Process change is, of course, ἀτελής ἐνέργεια (“incomplete actuality”), which is what he was attempting to define throughout *Phys.* 3.1-2. Product change^o, on the other hand, is τέλεια ἐνέργεια (“complete actuality”), which was *not* the specific focus of these chapters (see 3.1 201b10-13 where he makes this clear). Hence, ἀτελής ἐνέργεια, ἀτελής ἐντελέχεια, and κινήσις are interchangeable in the appropriate sense, while τέλεια ἐνέργεια, τέλεια ἐντελέχεια, and κινήσις^o are themselves as well. Aristotle is aware of this, of course, and thus is undoubtedly being enthymematic here for brevity. Even so, on my view Aristotle is not being *just* enthymematic, but purposely vague as well. Why think this? Because the SDD solution he presents in *Phys.* 3.3 *cannot* just apply to process change but must apply as well to product change^o. Otherwise, his view is incoherent, for the process (incomplete actuality) will result in the product (complete actuality) upon its termination and thus are identical actualities at different stages of development. Hence, whatever he says about one will apply to the other—which is by my lights the very reason Aristotle is so purposely vague here. See, for instance, *Phys.* 3.2 201b5: “It is clear, then that change (κινεῖσθαι) is this, and that it exists when the actuality (ἐντελέχεια) itself does, and neither earlier or later.” How could this be given the definition of κινήσις unless they were not identical “entities” considered at different points? The only counterpoint to this seems to be in instances of things like perception where the actuality (i.e., product change^o) exists only so long as the change (i.e., process change) is happening (*Meta.* Θ.6 1048b18-35; *DA* 3.7 431a4-8). As we shall see when we discuss it later, however, this is actually a cheat of sorts because what we have in such instances is a *lack* of any process and instead just a strange sort of product change^o that requires the temporal presence but actualized action and passion of agent and patient for its existence. Such are ‘process’ changes only by technicality, for they are in actuality *products*.

⁸⁷² While I take “κινήσεις” at 202a25 to mean changes in *both* senses for Aristotle, for clarity I am here in this section using “changes” to refer to *process* changes or incomplete actualities and “actualities” to refer to *product* changes^o of complete actualities.

be “in” (ἐν) the patient (202a32-33). This would seem to, in turn, entail both (3a-i) that the actuality of x is not “in” x , and (3a-ii) that all patients will be simultaneously changed by two changes (202a33-35). While he takes (3a-i) as “not absurd” (οὐτε ἄτοπον 202b5), he takes (3a-ii) as both “absurd” (ἄτοπον, 202a34) and “impossible” (ἀδύνατον, 202a36). Nevertheless, given the conjunction of (1) and (2) with option (3), even with its various sub-options, seems foreclosed, and so the changes/actualities cannot be distinct. The only other option is to postulate (4), that “the actuality (ἐνέργεια) of each will be one (μία)” (202a36).⁸⁷³ The problem, of course, is that this *too* would seem to be “unreasonable” (ἄλογον, 202b1). The problem with rejecting (3a-ii) and embracing both (3a-i) and (4) is not just that (4a) two things “distinct in form” (ἐτέρων τῶ εἶδει, 202b1) will have “one and the same actuality” (τὴν αὐτὴν καὶ μίαν εἶναι ἐνέργειαν, 202b1-2), but also that (4b) if teaching and learning are the same, then to teach and to learn are the same, and thus, absurdly, if that is the case then if one is teaching then “necessarily” (ἀνάγκη, 202b4-5) one is also learning (202b2-5). This is the ἀπορία, which we can succinctly set out as follows:⁸⁷⁴

- (1) Both agent and patient have an actuality;
- (2) Both actualities are changes;
- (3) The changes cannot be different:
 - (a) they cannot be both in the patient.
 - (i) for then the actuality of an agent would not be in the agent
 - (ii) and patients would change via two simultaneous changes;
 - (b) they cannot be one in the agent, one in the patient;

⁸⁷³ ἀλλὰ μία ἔσται ἡ ἐνέργεια.

⁸⁷⁴ See Hussey, *Aristotle's Physics*, 67, who I have to in the main followed while adding sub-premises and replacing Hussey's word “operation” with “actuality” for ἐνέργεια, which is what Hussey too takes ἐνέργεια to mean (ibid., 60, 61, & 66).

(4) The changes cannot be the same.

(a) for then two different forms would have one actuality;

(b) and action and passion would be identical.

Such is the ἀπορία as Aristotle presents it, although it would seem that there is a missing premise between (2) and (3) which gives more weight to the problem and which we can call (3P):

(3P) Both changes must either be different or the same.

Now the question for us is to which of the premises is Aristotle committed for his solution? As we have said from the start, this ἀπορία is resultant from the conjunction of a sharpened [A], [B], [C], and [D]. So, it would stand to reason, whatever premises [A]-[D] commit Aristotle to, those premises which he must use for his solution—which is precisely what we find.

Aristotle is clearly committed to (1) and (2) as these two premises of the puzzle are in step with theses [A] and [D] from above. Premises (1) and (2) do not just repeat [A] and [D], however, but actually sharpen them—or at least sharpens [D]. Let us call this new thesis [D*], placing it alongside [A] and the newly added bit in italics:

[A] change necessarily takes place in the context of agents and patients;

[D*] the enabling conditions for change are the two respective potentialities in the agent and patient to change, *both of which have an actuality which is a change.*

As we noted above, the odd thesis was [C], viz., that the process change and product change^o of agent and patient consists in a single actuality. This clearly rejects (3) and (4), namely by claiming that the changes *are different* per (3) but *are also the same* per (4). For we are talking about the changes of *distinct* entities, agent and patient, as well as a *single* resultant actuality. What we find, however, is that while rejecting (3) and (4) in the main (or embracing positive versions thereof), he does not thereby reject all the sub-premises. Let us be precise here. Of (3)

he rejects sub-premise (a), that both changes cannot be in the patient; and (i), the absurdity of the actuality of an agent not being in an agent. This gives us [C*] with the addition italics:

[C*] the process change and product change^o of agent and patient consist in a single actuality *in the patient*.

And notice that both [C] and [C*] cause him to reject (4) as well—the changes are the same because there is only a *single actuality*. As for (4a), he does not think a single actuality of two forms is absurd, and of (4b), briefly, he does not think identity of action and passion is what is actually entailed—although we will discuss this objection in more depth below.

Returning to (3), he has embraced positive versions of (a) and (i), but he rejects (ii), that patients change via two simultaneous changes because there is no way to individuate them (see *Phys.* 5.4 227b20-228a6 on the individuation of changes); and because he embraces (a), he rejects (b), that one change is in the agent and the other in the patient. Why, however, accept (a) and reject (b)? It is undoubtedly because of the pressure of thesis [B], viz., that not everything that causes change (i.e., every agent) can itself change. If he accepts (b), then for *every* causal interaction between agent and patient and resultant change, the agent too *must* change. This, of course, would forbid [B], which he cannot do, and thus is the grounding for his acceptance of (a) and rejection of (b). With this in mind, we can sharpen [B] into [B*], the additions again in italics:

[B*] Not everything that causes change (i.e., every agent) can itself change *so that no agent changes merely in the course of causing change, but the change is solely in the patient*.

Now we can see even more clearly why it is that theses [A]-[D] give rise to the ἀπορία: if [A] change necessarily takes place in the context of agents and patients, and if [B*] not everything

that causes change (i.e., every agent) can itself change, so that no agent changes merely in the course of causing change but the change is solely in the patient. And if therefore [C*] the process change and product change^o of agent and patient consists in a single actuality in the patient even though [D*] the enabling conditions for change are the two respective potentialities in the agent and patient to change, both of which have an actuality which is a change. Then we have a serious problem on our hands. For now, we are committed to stating an obvious falsehood:

[F] When in causal interaction the dual potentialities of agent and patient are actualized, the actuality of the agent and the actuality of the patient are both the one and the same and in the patient, even though they are at the same time different as the actuality of agent and patient respectively.

Let us state this more succinctly:

[F1] Causal interaction of agent and patient results in a single change which is simultaneously the same and different.

If we combine [F1] with (3P), the problem is glaring:

(3P) Both changes must *either* be different or the same.

It would appear that we have a contradiction on our hands. What is Aristotle to do? *This* is precisely where the SDD comes in, for what this doctrine allows is for Aristotle to claim [F1] and yet *avoid* a contradiction. While an ἀπορία is certainly present here, a contradiction occurs only if “sameness” and “difference” are intended in the *same sense* or *same respect*.⁸⁷⁵

Aristotle’s move is to state that they are not. Above, we defined SDD as follows:

⁸⁷⁵ See Aristotle’s statement of his famous principle of non-contradiction (PNC) in *Meta.* Γ: “the same attribute cannot at the same time belong and not belong to the same subject in the same respect” (Γ.3 1005b19-20). The four conditions are (1) same attribute, (2) same time, (3) same subject, and (4) same respect. We can call these (1) the predicate identity condition, (2) the temporal condition, (3) the object identity condition, and (4) the same aspect condition (i.e., aspect being part and/or degree or extent. See *Soph. El.* 5 166b37-67a36 for a lengthy description of

SDD df: (1a) if a singular entity is said to differ from itself or (1b) if two entities are said to be the same, (2) then singularity or sameness in each case is to be understood as the absence of any real distinction, (3) while difference in each case is to be understood as presence of a distinction of reason resultant from (4) the conception of the whole reality in terms of some one categorical aspect of the thing identified by precise abstraction.

Applying SDD to [F1], we get [F2]:

[F2] Causal interaction of agent and patient results in a single change which is simultaneously the same via the absence of a real distinction and different via the presence of a distinction of reason resultant from the conception of the whole in terms of some one categorical aspect.

The problem with (3P) in the ἀπορία—and therefore (3) and (4) as well—is that it did not specify the *sense* of “same” or “different.” SDD does, and thus resolves the apparent contradiction. Here is the ἀπορία again, this time modified with both SDD and Aristotle’s commitments from above:

- (1) Both agent and patient have an actuality;
- (2) Both actualities are changes;
- (3) The changes are different *via a distinction of reason*:
 - (a) all the actuality is in the patient.
 - (i) Thus the actuality of an agent is not in the agent;
 - (ii) and patients does not change via two simultaneous changes;
 - (b) no change can be split between agent and patient, for some agents cannot change.

the ‘same respect’ condition cashed out in just these terms). In this case (1), (2), and (3) are present, but not (4), so no contradiction occurs.

(4) The changes are the same, *lacking any real distinction*;

(a) two different forms can have one actuality;

(b) but action and passion are not therefore identical *in account*.

While his solution is mostly now clear, we still need to examine (4) and its sub-premises (a) and (b) in more detail, for not only is this where the real-life consequences of this single actuality solution become apparent, but it also, therefore, has a direct bearing on the metabolic status of perception.

Per (4), when an agent acts on a patient, there is only one numerically identical actuality or change resultant in the patient. That is, all the actuality resultant from any causal interaction resides only in the patient, lacking any real distinction between its aspects. This singular change or actuality—whether at the stage of process change and product change⁸⁷⁶—is an *inseparable whole* or, as Aquinas puts it, “one according to reality” (*unus secundum rem*).⁸⁷⁶ One problem with this, however, is what Aristotle presents as (4a) in the ἀπορία, viz., “it is unreasonable (ἄλογον) for two things that are distinct (ἐτέρων) in form (εἶδει) to have one and the same actuality (ἐνέργειαν)” (*Phys.* 3.3 202a36-b2).⁸⁷⁷ Take his example of teaching and learning.⁸⁷⁸ If teaching is the actuality of the agent while learning is the actuality of the patient, then there is no real distinction between learning and teaching in actuality. There is one process change (teaching-learning) and thus one product change⁸⁷⁹ (taught-learned). One immediate problem with this is that it seems *prima facie* false. While perhaps not possible to learn some things without also being taught, surely one can teach most anything without the occurrence of any actual

⁸⁷⁶ Aquinas, *Expositio libri Physicorum*, 3.5.317.

⁸⁷⁷ Reeve, modified. ἀλλ’ ἄλογον δύο ἐτέρων τῷ εἶδει τὴν αὐτὴν καὶ μίαν εἶναι ἐνέργειαν.

⁸⁷⁸ Though not genuine examples as instances of cognitive “change” from the knowledge model which are invalidated for this use later in *Phys.* 7.3 247b1ff and in *DA* 2.5 417a31-b16, are nevertheless somewhat helpfully used here. Given that both *Phys.* 7 and *DA* were written after *Phys.* 3 (see chapter 1 ad loc.), this is not cause for concern. Nevertheless, a better and truer example shall be presented shortly in perception.

learning. Perhaps the teacher did not communicate the subject matter well, or perhaps the students were not appropriately receptive for whatever reason, but nary a teacher has left a class with the thought that despite their best efforts that day, no student seemed to have learned a thing. I think this sort of criticism misses the mark, however. Teaching and learning here are supposed to *coordinate operations* such that one designates the active role and one the passive role of the very same phenomenon.⁸⁷⁹ This can be seen more clearly if we examine the terms in reverse. If one attends to learning, it is difficult to conceive of it in like manner to how we have just described some teaching days. Surely a student could *not* say that they learned on a particular day on which they failed to grasp any of the taught content. Rather, the term itself requires not just the attempt but a *successful* attempt. That is, implied by the term is not just an action but a *success condition*. And if the operations are coordinate as Aristotle clearly intends them to be, then so must teaching—something many of the ancient commentators recognized. So, as Philoponus argues, “it is granted that if the teacher speaks in the presence of the learner but does not work upon the learner, he is not said to be teaching” (*in Phys.* 381.15-16).⁸⁸⁰ And Simplicius: “whoever speaks of teaching speaks of nothing other than what comes about through the activities of teaching *and* learning, in which case it is impossible for the one to be and come about without the other” (*in Phys.* 446.28-30).⁸⁸¹ The claim being made, thus, is not about failed

⁸⁷⁹ “Action” (ποιεῖν) and “passion” (πάσχειν) are, says Aristotle in *GC* 1.6 322b11-12, “reciprocal” (ὑπ’ ἀλλήλων). See too *GC* 1.6 322b14-15, 20-21, 1.7 323b7, 324a2-3, & 7-8. While Aristotle nowhere says that action and passion are relatives, they are similar to relatives in just this way. See, e.g., *Cat.* 7 7b12-14: “When correlatives are given thus it is clear that all relatives (πρός τι) will be spoken of in relation to correlatives (ἀντιστρέφοντα) that reciprocate (πρός).” οὕτω δὲ ἀποδομένων φανερόν ὅτι πάντα τὰ πρὸς τι πρὸς ἀντιστρέφοντα ῥηθήσεται. Forster translation.

⁸⁸⁰ ὥς εἰ γε καὶ παρόντος τοῦ μαθητοῦ εἶπη μὲν ὁ διδάσκαλος μὴ δράση δε εἰς τὸν μαθητὴν οὐ λέγεται διδάξαι. The full comment reads: “It is granted that if the teacher speaks in the presence of the learner but does not work upon the learner, he is not said to be teaching; teaching, therefore, is not simply the application of the theorems, but the persuasion which the words of the teacher bring about in the learner, which same thing in another relation is called learning whenever we start from the learner and progress to the teacher” (Philoponus *in Phys.* 381.15-20).

⁸⁸¹ ὁ γὰρ διδάξιν εἰπὼν οὐκ ἄλλο τι λέγει ἢ το ἐκ τοῦ διδάσκειν καὶ μανθάνειν γινόμενον, ὧν ἀδύνατον θάτερον χωρὶς θατέρου εἶναι τε καὶ γίνεσθαι, καὶ τὴν μάθησιν δε λέγων τὸ αὐτὸ πάλιν λέγει. *Italics mine.* Cf. too Themistius 78.12.13: “Teaching is nothing other than what comes about from teaching and learning, and likewise too with

attempts at either teaching or learning, but their successful operations which *qua* successful are “impossible” to separate. If this is correct and Aristotle is assuming a success condition for both terms, then necessarily when someone teaches, someone also learns, and if someone learns, it is because someone teaches, for they are inseparable. But they are also coordinate in a more fine-grained way: to the *degree* that the teacher successfully teaches the learner successfully learns; and to the degree that the learner successfully learns, the teacher successfully teaches. The operations, thus, are not just coordinate as active to passive but in a biconditional fashion as well with respect to the degree of their relative successfulness. As such, it is not just subpar teaching that limits learning, but subpar learning also limits teaching. Hence, if a maximally effective teacher teaches to a maximally receptive student, the learning will be maximal as well. If, on the other hand, that maximally effective teacher teaches to a minimally receptive student, it is not just the learning that is minimal, but the teaching as well. The result of this is a sort of relativity of effectiveness such that a maximally effective teacher in a classroom of twenty students with equal numbers of maximally and minimally receptive students, if the same lesson is learned at a level ten by the first group and a level one by the second group, then teaching will likewise be at a level ten with respect to the first group and a level one with respect to the second. There is an objective reality—a real form or theorem—that is being given (action) by the teacher in all cases, but because it is inseparable from the reception (passion) by the student, the combination of the two in the change or actuality are negatively ‘keyed’ one to another such that one necessarily diminishes with the other. Assuming this fine-grained success condition for both active and passive operations works to resolve this *prima facie* difficulty in most if not all cases, as the

learning.” και διδάσκει ο διδάσκων και δ μανθάνει και μανθάνων και η δίδαξις ουκ άλλο τί έστιν ή το εκ του διδάσκειν και μανθάνειν γινόμενον.

ancient commentators saw, and there seems no reason to deny this insight to Aristotle.⁸⁸² We too, will assume this fine-grained success condition going forward.

One of the real-life consequences of the single actuality solution Aristotle is proffering is that necessarily coordinate active and passive operations consist in a single actuality (in the patient) which lacks any real distinction between the components contributed by the agent and patient respectively. Hence, if teaching is the actuality of the agent while learning is the actuality of the patient of a coordinate activity, then there is no real distinction between learning and teaching in actuality. However we may talk about it, in reality, there is one whole thing developing from incomplete actuality (process change) to complete actuality (product change⁸⁸³)—one being or entity which ontologically depends upon its parts and cannot exist without its mereological integrity.⁸⁸³ The active and passive actualities are not two but *one whole thing* without separable parts, a single ὑποκείμενον as the ancient commentator’s referred to it.⁸⁸⁴ It is in light of this necessary connection (or impossible separation) between, e.g., successful teaching and learning that problems (4a) and (b) can rear their heads.

The initial and less serious problem is contained in sub-premise (4a), viz., that if Aristotle’s single actuality solution holds then two different forms (εἶδη) would have to have the same actuality (ἐνέργεια)—which is precisely the view he holds. Put differently, the problem is

⁸⁸² While nowhere as explicit on this score as Philoponus or Simplicius, Aristotle seems to have no less in mind at 202b6-8: “for teaching is the actuality of the one who can teach, but occurring in something, and not cut adrift, but of *this* occurring in *that*” (Reeve, modified; italics original). ἔστι γὰρ ἡ διδάξις ἐνέργεια τοῦ διδασκαλικοῦ, ἐν τινι μέντοι, καὶ οὐκ ἀποτετμημένη, ἀλλὰ τοῦδε ἐν τῷδε.

⁸⁸³ Remember, in the philosophical lexicon of *Metaphysics* Δ, Aristotle notes in chpt. 7 that “being” (τὸ ὄν) refers not just substances (1017a13-16), but to the things which are signified in instances of predication such as qualities, quantities, relatives, and tokens of other accidental categories (1017a23-28), as well as truths or affirmations generally (1017a31-35). “Being” is said in many ways (*Apr.* 1.36 48b2-4, 1.37 49a6-10, *Meta.* K.3 1060b32, *EN* 1.6 1096a23-29, etc.).

⁸⁸⁴ Alexander, in *Phys. Frag.*, qtd. in Simplicius, in *Phys.* 449.4-8, Themistius, in *Phys.* 77.30, Philoponus, in *Phys.* 381.24, and Simplicius, in *Phys.* 446.30-31. The connection between being numerically one and thus a ὑποκείμενον, yet distinct in form or account, was made by Aristotle at *Phys.* 1.7 190a14-17. The ancient commentators take this insight and apply it far more broadly than Aristotle explicitly does, though there is no reason to think he would balk at this broader usage.

that while the form or account of teaching is one thing, the form or account of learning altogether another, so would it not be “unreasonable” (ἄλογον, 202b1) to think that of necessity they can only be joined in a single actuality, inseparable and lacking in any real distinction?⁸⁸⁵ Not at all, says Aristotle a few lines later at 202b5-10:

It is not absurd for the actuality (ἐνέργειαν) of one thing to be in (ἐν) another thing, since teaching is the actuality (ἐνέργεια) of the one who can teach, but occurring in (ἐν) something, and not cut off (οὐκ ἀποτετμημένη), but of *this* (τοῦδε) occurring in *that* (ἐν τῷδε); neither is there anything to prevent two things from being (εἶναι) one (μίαν) and the same (τὴν αὐτὴν) [actuality]—not as the same in being (μὴ τῷ εἶναι τὸ αὐτό), but in the way that what potentially is (δυνάμει ὄν) is related to what actually is (ἐνεργοῦν).⁸⁸⁶

Let us start with the end of this rebuttal. Commentators past and present have, rightly in my view, interpreted δυνάμει ὄν (“potentially is”) to refer to an entity at one time in potentiality with respect to a certain disposition and ἐνεργοῦν [ὄν] (“actually is”) to refer to that same entity at another time in actuality with respect to that same disposition.⁸⁸⁷ So, Smith might be at time t_1 a potential teacher but at t_2 an actual teacher—yet Smith is “one and the same” individual, numerically identical at both t_1 and t_2 . Hence, while Smith lacks any real distinction from t_1 - t_2 , Smith is certainly capable of various distinctions of reason over that same interval, namely

⁸⁸⁵ “Form” (εἶδος) and “account” (λόγος) and being used interchangeably in this context, as the synonymous uses of the terms at 202b9 and b12 make clear. The same holds in other places in the *Corpus* as well, e.g. *DA* 1.1 403b1-2: “Of these [two descriptions], one describes the matter and the other the form or account” τούτων δὲ ὁ μὲν τὴν ὕλην ἀποδίδωσιν, ὁ δὲ τὸ εἶδος καὶ τὸν λόγον. On the equation of λόγος/εἶδος, see Hicks, *Aristotle De Anima*, 417: “The terms λόγος and εἶδος are *equivalent*, but the former gives prominence to the notion or character, that which the definition seeks to express in words” (italics, mine).

⁸⁸⁶ ἢ οὐτε τὸ τὴν ἄλλου ἐνέργειαν ἐν ἐτέρῳ εἶναι ἄτοπον (ἔστι γὰρ ἡ διδάξις ἐνέργεια τοῦ διδασκαλικοῦ, ἐν τινι μέντοι, καὶ οὐκ ἀποτετμημένη, ἀλλὰ τοῦδε ἐν τῷδε), οὐτε μίαν δυοῖν κωλύει οὐθὲν τὴν αὐτὴν εἶναι (μὴ ὡς τῷ εἶναι τὸ αὐτό, ἀλλ’ ὡς ὑπάρχει τὸ δυνάμει ὄν πρὸς τὸ ἐνεργοῦν). Reeve translation, modified.

⁸⁸⁷ See esp. Philoponus, in *Phys.* 381.27-382.5, Simplicius, in *Phys.* 447.2-7, Hussey, *Aristotle’s Physics*, 72, and Coope, “Aristotle’s Account of Agency in Physics III.3,” 211. Cf. Themistius, in *Phys.* 78.9-17 and Aquinas, *Expositio libri Physicorum*, 3.5.317.

transitioning from being a potential teacher to becoming an actual teacher. The accounts or forms here vary—or as Aristotle has it here, Smith is “not as the same in εἶναι,” which I suggested above we consolidate with λόγος, εἶδος and τὸ τί ἦν εἶναι and read as “whatness”—but not the entity. Rather, there is one entity that is variously describable: Smith. This is because, as Simplicius puts it, “what causes the change and what it is in are not separated in it, but *they constitute change both together* (ἀμφω συμπλήροῖ την κίνησιν)” (*in Phys.* 449.1-3).⁸⁸⁸ This is why Aristotle says in the immediately preceding line that nothing is “to prevent two things from being one and the same”—*even if* they differ in form or account. For just as Smith lacks any real distinction as a potential teacher and an actual teacher but ‘constitutes one both together,’ each designation nevertheless indicates a distinction of reason given that what it is to be *able* to teach differs from what it is to *actually* teach.⁸⁸⁹ Simplicius is helpful here (*in Phys.* 44.30-33):

For, if the change is one, it is not necessary that at once the constituents (υπάρχοντα)⁸⁹⁰ of the change—teaching and learning or agency and affection—should be the same in the strict sense, because the relations (προς) of the agent to the result and the result to the agent are different in account (λόγῳ).⁸⁹¹

Moreover, Smith is capable of these states not just in sequential fashion but even at the same time. Imagine that Smith is a physics teacher giving a lesson on inertia at time t_3 . Smith can teach physics at the time, but not *all* of physics. For to teach inertia is not to teach, e.g., the second law

⁸⁸⁸ ουδέ μεμέρισται ἐπ' αὐτῆς τὸ ὑπὸ τοῦδε καὶ τὸ ἐν τῷδε ἀλλ' ἀμφω συμπλήροῖ την κίνησιν.

⁸⁸⁹ Cf. Philoponus, *in Phys.* 382.3-4: “For I define him in one way as a potential teacher of grammar and in another as an actual one.” ἄλλως γὰρ ὀρίζομαι αὐτὸν δυνάμει ὄντα γραμματικόν, καὶ ἄλλως ἐνεργείᾳ.

⁸⁹⁰ See the LSJ entry for ὑπάρχειν at III.3: “in the Logic of Arist. ὑπάρχειν denotes *the subsistence* of qualities *in a subject*, Metaph.1025a14” (italics original). Meta. Δ.30 1025a14-15: “Something is said to be an accident when it belongs (ὑπάρχει) to something and can be truly said of it, but neither of necessity nor for the most part” (Reeve translation. Modified). Συμβεβηκὸς λέγεται ὃ ὑπάρχει μὲν τινὶ καὶ ἀληθὲς εἰπεῖν, οὐ μὲντοι οὔτ' ἐξ ἀνάγκης οὔτε <ὥς> ἐπὶ τὸ πολὺ. See too, *Phys.* 3.3 202b15, 21, both of which we reference below.

⁸⁹¹ οὐ γὰρ εἰ ἡ κίνησις μία, ἥδη καὶ τὰ υπάρχοντα τὴν κινήσει τὴν διδάξαν καὶ τὴν μάθησιν ἤτοι τὴν ποίησιν καὶ τὴν πάθησιν ἀνάγκη τὰ αὐτὰ εἶναι κυρίως, διότι ἑτέρα τῷ λόγῳ ἐστὶν ἢ τε ἀπὸ τοῦ ποιούντος πρὸς τὸ γινόμενον σχέσης καὶ ἡ ἀπὸ τοῦ γινομένου πρὸς τὸ ποιοῦν.

of thermodynamics. Hence, at t_3 , Smith is *both* a potential teacher of physics *and* an actual teacher of physics—even as Smith is a singular entity.⁸⁹² This does not entail that there are two Smiths, for Smith admits of no real distinction.⁸⁹³ Rather, the one person Smith is just describable in two ways or according to two different “forms” (εἶδη) as the original complaint has it, because he is in a way *constituted by* (at least) two forms. On Aristotle’s single actuality solution coupled with the SDD, the error lies not in the failure to distinguish between two aspects of Smith or between the active operation of teaching and the passive operation of learning, for these are genuinely distinct. Rather, the error lies in mistaking a distinction of reason for a real distinction, and in taking the descriptions to be, as Suárez pointed out to us, *complete*.⁸⁹⁴ Teaching is *not* a complete description of the actuality; it is a mere aspect or constituent. Likewise for its counterpart, learning. Neither teaching nor learning are conceptually one, but they are parts of one whole.⁸⁹⁵ Again, the mistake lies in thinking that what can be isolated conceptually is isolable in reality too, or that a single part (i.e., acting or being acted upon) is of itself a whole.

Take the example of Smith again. Smith has a variety of categorical aspects, such as being an animal, being a human, living in a certain place, living at a certain time, having a certain height, having a certain weight, etc. Of course, Smith is describable in two ways or according to two “forms,” for Smith a whole with many constituent parts, not a simple. Hence, one can describe Smith in terms of *any* single one of these things: “The 5’ 9” person,” “That

⁸⁹² On a more fine-grained analysis, Smith is simultaneously actually a *part* teacher of physics and potentially a *part* teacher of physics, but with respect to *different* parts. So there is no contradiction. Nevertheless, *qua* actual gives rise to one definition and *qua* potential another, both are true of Smith, and yet there is only one Smith.

⁸⁹³ Cf. Hussey, *Aristotle’s Physics*, 72: “The unmusical Socrates is potentially musical, the musical Socrates is ‘operating’ in respect of musicality. ‘They’ are one and the same man: yet different, incompatible things are true of the ‘two Socrateses’. Accordingly, for Aristotle ‘they’ are not one in definition.”

⁸⁹⁴ *DM* 7.1.5: “It arises from inadequate concepts of the one and the same thing.”

⁸⁹⁵ Which is precisely why contra Rosen there is no contradiction, and why the SDD does not violate Leibniz’s Law of the Indiscernibility of Identicals contra Hussey, *Aristotle’s Physics*, 69–71.

animal there,” or “The human who lives at the end of Pine Avenue.” These accounts or descriptions are all distinct, *but what they refer to is not*. And again, this can only be so because none of these accounts are *exhaustive*. For an exhaustive account would include them *all*. Rather, per SDD, there is a singular entity that is variously describable, even at the same time. And so it is in all instances of change, whether it be teaching and learning, coloring and being colored, or heating and being heated. There is one actuality which is in the patient, but that actuality is not just that of the patient but the agent too. For their ‘actualities’ consist in a single whole which cannot be, as Aristotle puts it at the beginning lines of this rebuttal, ἀποτετμημένη (202b8) from one another—separated or “cut off.” The actuality is a mereological whole constituted by inseparable parts, a single ὑποκείμενον. Take the presence of yellow in some natural subject. According to Aristotle, a mereological analysis will yield three things. Yellow (form), yellowing (giving), and what we might call ‘yelloweding’ (receiving). Yellow cannot exist in any natural subject without being given *or* received, so inseparable ‘parts’ of the form yellow, when taken as a whole, are yellowing and yelloweding. If the former is “*of this in that*” (τοῦδε ἐν τῷδε, 202b8, b21), then the latter must be “*of that by this*” (τοῦδε ὑπὸ τοῦδε, 202b22). Yellow-as-a-whole necessarily has both of these features as inseparable parts. For, generically, the action *of* the agent cannot be separated from the form (or forming)—for that is precisely what the action is, the giving of form. And the form only occurs *in* the patient. So, the action of the agent cannot be separated (or “cut off”) from the passion in the patient.⁸⁹⁶ Moreover, the passion of the patient

⁸⁹⁶ Cf. Themistius, *in Phys.* 78.4-9: “When the teacher is changed relative to (πρὸς) the learner his teaching does not come about in the learner by being completely cut off (ανεέργητον) so that the teacher undergoes no actuality and only the learner is actual but the actuality of the learner comes about when the teacher is present (παρόντος) and actual (ενεργούντος) so that the teacher is actual and produces precisely the effect that the learner undergoes” (Todd translation, modified). του γάρ διδάσκοντος κινουμένου πρὸς τον μαθάνοντα οὐκ ἀποτεμνομένη ἡ διδασκαλία του διδάσκοντος γίνεται ἐν τῷ μαθάνοντι, ὥστε τον μὲν ανεέργητον εἶναι, τον μαθάνοντα δὲ ενεργεῖν μόνον, ἀλλὰ του διδάσκοντος παρόντος καὶ ενεργούντος τοσούτον ενεργεῖν καὶ ποιεῖν τοῦτο ὁ πάσχει καὶ μαθάνων, οὕτως ἡ του μαθάνοντος ἐνέργεια γίνεται.

cannot be separated from the *form* (or forming), for that is precisely what the passion is, the receiving of the form. And given that a form cannot be had that is not given or received—nor, obviously, can ‘givings’ or ‘receivings’ be had apart from a form—this entails that no form can be a simple, but is of necessity a mereological whole constituted by the inseparable ‘parts’ of action and passion.⁸⁹⁷ Whatever the form transmitted, it never comes alone but is always, as a matter of fact, “*of this [the agent] occurring in that [the patient]*” (202b8). And as such, it can be variously described. For “it is the act of the agent insofar as it is ‘from it’ and of the patient insofar as it is ‘in it,’” says Aquinas phrases, but all this entails (per SDD) is that it “is not one and the same in conception, but one in reality.”⁸⁹⁸

We should point out, however, that the existence of this whole *qua* whole is temporally indexed. As we have seen repeatedly in the previous chapters, process change is defined by Aristotle as the actuality of that which potentially is, *qua* potentially is. As such, process change is incomplete or still potential with respect to the acquisition of actuality aimed at. Product change^o, on the other hand, is just the complete actuality resultant from the fulfillment of a previously unfulfilled potentiality. Process changes, as such, are partial actualities with some residual potentiality which is moment by moment being exhausted. While product changes^o, as such, are complete actualities without any residual potentiality which can be exhausted. If Aristotle’s claim that the actuality of the agent and patient in, e.g., yellow-as-a-whole is of necessity a mereological whole constituted by the inseparable ‘parts’ of action, passion, and form, then this must be seen as applying solely to processes changes but not product changes^o.

⁸⁹⁷ Remember, action (τὸ ποιεῖν) and passion (τὸ πάσχειν) are *sui generis* ontological categories for Aristotle, not mere relations or species of relative (see *Cat.* 4 1b25-2a4 and 9 11b1-8). Perhaps this does not make them ‘parts’, but they are certainly true of and contribute to the being of what has them (*Cat.* 4 2a4-10 and 5 4b8-10).

⁸⁹⁸ Aquinas, *Expositio libri Physicorum*, 3.5.317: agentis quidem secundum quod est ab eo, patientis autem secundum quod est in ipso. And: non sit unus et idem secundum rationem, sed unus secundum rem.

Why? Because once a product change^o has come to be, both action and passion have ceased to be.⁸⁹⁹ If a house is undergoing a process change in being painted yellow, then the action of yellowing and the passion of ‘yelloweding’ certainly exist during the entire extent of the process of exhausting the potentiality of the house to be yellow and the brush to make yellow. Once the potentiality has been exhausted, however, then we have a house now actually yellow, but we do not have a brush yellowing or a house ‘yelloweding’. The action and passion ceased to be just when the potentialities they were exhausting were, in fact, exhausted. Otherwise, what activities would they still perform *post-completion*? For a house cannot become any more yellow than yellow, nor can a brush yellow beyond yellow. As such, complete actuality of what *was* potential entails the *absence* of both action and passion. In contrast, incomplete actuality of what *is still* potential entails the *presence* of both action and passion. This does not make [C*] from above, the process change and product change^o of agent and patient consist in a single actuality in the patient, any less true. Process or product, there is still one change and actuality of agent and patient in the patient. Rather, what this means for us is that while Aristotle’s claim of “the necessity a mereological whole constituted by the inseparable ‘parts’ of action and passion” is true of all process changes, it only *was* true of all product changes^o.⁹⁰⁰ That is, it does not so much affect the single actuality solution as it does alter the applicability of the SDD. For in the typical case, once a product change^o has come to be, it indicates the absence of both action and passion—and thus, the absence of the changer or cause as well—such that the SDD no longer

⁸⁹⁹ See e.g., GC 1.7 324b15-17: “For when the agent is [present] the patient becomes something, but when states (ἔξεων) are present (παρουσῶν) the patient no longer becomes but already is (ἔστιν ἤδη)” (Forster translation, modified). καὶ γὰρ τοῦ μὲν ποιούντος ὅταν ὑπάρχῃ, γίνεται τι τὸ πάσχον, τῶν δ’ ἔξεων παρουσῶν οὐκέτι γίνεται, ἀλλ’ ἔστιν ἤδη.

⁹⁰⁰ Even though it only *was* true of complete actualities or product changes^o, it will *always* be true that it was true. As such, action and passion are constitutive *facts* about any item which has come to be, even if they are not at that time present as real parts. I will always be that person who was sired by Larry and birthed by Suzette, even if I am not now being sired or birthed.

applies. This point will become important for us in our analysis below of *De Anima* 3.2. But more on this anon.

So much for problem (4a), but what of (b)? Perhaps this solution works with respect to explaining how it is that one thing can be variously describable, but would this not entail an even greater problem, namely that affecting is the same thing as being-affected? If this is entailed, then, e.g., heating is the same thing as being heated and teaching the same thing as learning, the result being that ever thing that heats is heated, everyone who teaches also learns, or generally that “everyone who acts upon is acted upon” (202b5).⁹⁰¹ If this both follows and is absurd, then Aristotle’s solution must be faulty. But Aristotle will not allow that this absurdity follows from his single actuality solution: it is “not necessary for the one who is teaching to be learning, even if affecting and being-affected are the same (τὸ αὐτό ἐστίν)” (202b10-11).⁹⁰² But why is that exactly? Aristotle seems to think that the problem does not ensue so long as affecting and being-affected are not taken as *exact synonyms* like “clothing and garment” (λῶπιον καὶ ἱμάτιον, 202b13)⁹⁰³ but are instead taken as complementary aspects or descriptions of one and the same thing. For instance, take the current 42 miles separating the city centers of Thebes and Athens and imagine a single road running between the two with various mountains, lodgings, and other landmarks along the way. While it is true that there is just one road, it is also true that it is capable of at least two descriptions, viz., as the road from Athens to Thebes *and* the road from Thebes to Athens (202b13-14). These accounts cannot be not numerically identical as despite being of one and the *same* 42-mile stretch of road with identical mountains, lodgings, and landmarks, they have a) *different* starting points and ending points, b) those mountains, lodgings,

⁹⁰¹ τὸν ποιοῦντα πάσχειν. Hussey translation.

⁹⁰² οὐτ’ ἀνάγκη τὸν διδάσκοντα μανθάνειν, οὐδ’ εἰ τὸ ποιεῖν καὶ πάσχειν τὸ αὐτό ἐστίν. Reeve translation, modified.

⁹⁰³ See e.g., Hippocrates G. Apostle, ed., *Aristotle’s Physics: Translated with Commentaries and Glossary* (Grinnell, IA: The Peripatetic Press, 1980), 225 n. 16.

and landmarks will be at *different* points of the journey (mile 12 rather than miles 30) which are c) on *different* sides of the road, and finally, d) as Thebes is about 500 feet higher in elevation than Athens, the road from Thebes to Athens will be downhill while the road from Athens to Thebes uphill (cf. 202a19-20). Nevertheless, per SDD, there are *not really* two roads (absence of a real distinction), just a single road with different descriptions (presence of a distinction of reason) (202b13-14). In a similar manner, one can *conceive* of either the actuality of teaching or of learning, and one is acting and the other being acted upon—but there are not *really* two actualities, just one with different descriptions. For, as Themistius puts it, “teaching is the giving of knowledge, learning is the taking of knowledge... so teaching and learning are not the same, even if both apply to the same object of study” (*in Phys.* 78.15-18).⁹⁰⁴ Nevertheless, “it is what these constitute (υπάρχει) that are the same, namely the change (ή κίνησης) and actuality (ή ενέργεια), which is one with respect to their underlying subject (υποκειμενον), different with respect to their definitions (διάφορος)” (*in Phys.* 78.30-79.1).⁹⁰⁵

To see how two genuinely different descriptions ensure that acting is not affecting and vice versa, let us return to our example above concerning yellow. There we stated that yellow cannot exist in any natural subject without being given or received, so that inseparable ‘parts’ of the form yellow, when taken as a whole, are yellowing and ‘yelloweding.’ Yellow-as-a-whole has both, necessarily. This does not make yellowing ‘yelloweding’ or ‘yelloweding’ yellowing, nor does it require because of their inseparability that what yellows is yellowed or what is yellowed also yellows. For what yellows *gives* to another, while what is yellowed *receives* from another, so what yellows is not also yellowed because neither the giving nor receiving of the

⁹⁰⁴ αλλά δίδαξις μεν επιστήμης δόσις, μάθησις δε επιστήμης λήψις... ουκ ἔστιν οὖν το διδάσκειν το μανθάνειν ταυτόν, ει και περί ταυτο θεώρημα άμφω.

⁹⁰⁵ αλλ ούτε η δίδαξις τη μαθήσει ταυτόν ούτε η ποίησις τη παθήσει, αλλά εκείνα οis ταύτα υπάρχει, ή κίνησης και ή ενέργεια, ήτις κατά μεν το υποκειμενον μία κατά δε τους λόγους διάφορος. Todd translation, modified.

form occurs *in it* but *in another*. Likewise, what is yellowed is not also yellowing because both the giving and receiving occur *in it* and *not in another*. The form is *of* and not *in* the agent, but it is *in* and not *of* the patient. Hence, because of these genuinely different descriptions, what the agent and patient do respectively cannot be swapped without consequence because of this *of/in* asymmetry. For of nothing that is acting as an agent can the form be *in*, and of nothing acting as a patient can the form be merely *of*. And these are realities about yellow-as-a-whole based in facts about its province and location in certain cases, not mere verbal stipulations. So, to confuse one with another is to confuse agency and patiency. As such, the objection fails. Neither is acting the same thing as being-affected, nor is it necessary that when one acts, one is also affected—despite the fact that the change and actuality are one and the same.

But how can this be? If there is just one thing and it is truly described as acting and affecting, then whatever has it acts and affects, *both*. But this is false. While the actuality in question is indeed a singular entity, one needs to recognize that discrete descriptions are only possible because neither description—aspect, form, account, etc.—is *exhaustive*. They are, as we have stated above, constituent parts of the whole, not wholes themselves. There is no road to Thebes from Athens that is not *also* a road to Athens from Thebes, and what has teaching and learning, has them *both*. But that does not entail that the descriptions are exact synonyms unless one assumes either that (a) all parts of the whole are homogeneous or (b) that both refer to the whole and therefore mean the same thing. But we have no reason to think either (a) or (b). As Aristotle puts the point, “for it is not the case that all the same attributes belong to (ὑπάρχει) things that are the same in any way whatsoever, but only to those whose being is the same (εἶναι τὸ αὐτό)” (202b14-16).⁹⁰⁶ There is a difference between *belonging to* (i.e., being *constituents of*)

⁹⁰⁶ οὐ γὰρ ταῦτά πάντα ὑπάρχει τοῖς ὁπωσοῦν τοῖς αὐτοῖς, ἀλλὰ μόνον οἷς τὸ εἶναι τὸ αὐτό.

the same thing and *being* the same thing (i.e., having the exact same definition, ‘whatness,’ form, or account). Tires and bumpers both *belong* to the same thing (cars), but they are not the same *in account*. And the same applies to all the various sorts of acting and being acted upon (202b19-21):

But speaking generally (ὅλως), neither teaching and learning nor affecting and being-affected are in the strict sense the same (τὸ αὐτὸ κυρίως), though what they belong to (ὕπάρχει) is the same: the change (ἡ κίνησις).⁹⁰⁷

Only if one assumes that teaching is the same in account or refers to the same part of the actuality as learning is one saddled with this problem. Aristotle does neither with the help of the SDD, so this objection too fails *generally*.

The single actuality solution has now been developed in full. And not only have we elucidated the doctrine, but we have defended it against Rosen’s two charges as well. We are now in a position to turn to the *De Anima* 3.2 passage and verify whether or not it applies to perception, for it is a doctrine which Aristotle applies to *all* genuine instances of change (*Phys.* 3.3 202b23-29). For if this *Physics* 3.3 account is indeed directly applied to perception in *De Anima* 3.2 as I claim, then we would have a straightforward identification of perception by Aristotle as a genuine instance of change—which would amount to a rejection of the knowledge model in favor of the QG virtue model. Moreover, the details of the account may just tell us *why* Aristotle makes the judgment he does. With this in mind, let us examine *De Anima* 3.2 425b26-426a19 to see if we can detect the metabolic status of perception in the manner suggested. This will allow us to bring a close to the second inquiry and begin our third and final.

6.2.3.2.3.1 Excurses: To What Do *Physics* 3.3 and SDD Solution Apply?

⁹⁰⁷ ὅλως δ’ εἰπεῖν οὐδ’ ἡ δίδασξις τῇ μαθήσει οὐδ’ ἡ ποίησις τῇ παθήσει τὸ αὐτὸ κυρίως, ἀλλ’ ὃ ὑπάρχει ταῦτα, ἡ κίνησις.

Before moving on to our passage, let us make a quick note. *De Anima* bk. 2 is largely concerned with perception, as we have seen. From 2.5-2.12, we find eight consecutive chapters devoted to systematic treatment of the topic. But bk. 3 focuses quite heavily on perception too, at least in the first two chapters⁹⁰⁸—although with the systematic treatment completed in bk. 3, what we find is a smattering of special topics.⁹⁰⁹ Despite the lack of any singular focus, a key feature of both chapters is on the so-called “common sense” (αἴσθησιν κοινήν, 3.2 425a26). “Common sense” does not mean for Aristotle what we mean by the term but refers to a “common perceptual *faculty*.”⁹¹⁰ In order to avoid this confusion, I will resort to calling it by its classical Latin title “*sensus communis*” as have other contemporary writers.⁹¹¹ What exactly is the *sensus communis*, and what does it do? Ross provides a helpful summary:

The functions in which the perceptive faculty operates in this unspecialized way are the following: (1) the perception of the ‘common sensibles’; (2) the perception of the ‘incidental sensibles’; (3) the perception that we are perceiving; (4) discrimination

⁹⁰⁸ To be fair, *DA* 3.3 is also devoted to perception in part, although it also introduces the sub-faculty of imagination (φαντασία) and the faculty of intellect alongside perception in an effort to distinguish between the three. This is why a number of prominent Medieval commentators stretched bk. 2 to 3.3 (i.e., bk. 2 also had chpts. 13, 14, and 15), only beginning bk. 3 at 3.4. See, e.g., the comments in Richard C. Taylor, *Averroes: Long Commentary on the De Anima of Aristotle* (New Haven, CT: Yale University Press, 2011), l–li. Cf. the comments by Kahn, “Sensation and Consciousness in Aristotle’s Psychology,” 50: “The traditional division between Books II and III which intervenes at this point has often been regarded as arbitrary, since it severs two further chapters on sensation from the preceding discussion, and groups them instead in Book III with the other faculties, including the intellect.... Most editors remark that *DA* III.1-2 (or even 1-3) might more properly have been included in Book II.”

⁹⁰⁹ See e.g., Charles H. Kahn, “Sensation and Consciousness in Aristotle’s Psychology,” *Archiv Für Geschichte Der Philosophie* 48, no. 1–3 (1966): 50: “Chapters 5-12 of Book II form a unified, largely self-contained exposition focused on the account of the special senses, whereas chapters 1-2 of Book III are of a much looser literary texture, dealing with a variety of miscellaneous questions, some of which are too complex for a full treatment in the *De Anima*,”

⁹¹⁰ See the arguments and conclusion on this front by Gregoric, *Aristotle on the Common Sense*, 28–39, esp. 38–39.

⁹¹¹ On this confusion of Aristotle’s meaning of the term and our own and of the narrower meaning of the Latin, see Gregoric, vii. For an instance of the classical usage See e.g., Aquinas, *Sentencia libri De anima*, II.2.13.390-391. For the contemporary usage of the Latin phrase see e.g., Beare, *Greek Theories of Elementary Cognition*, 250ff; Kahn, “Sensation and Consciousness in Aristotle’s Psychology” passim; and Giuseppe Feola, “The Unity of Sense-Power in the *De Anima* and *Parva Naturalia*,” in *The Parva Naturalia in Greek, Arabic and Latin Aristotelianism*, ed. Börje Bydén and Filip Radovic, *Studies in the History of Philosophy of Mind* 17 (Cham, Switzerland: Springer, 2018), 51–63, passim.

between objects of different senses. (5) Finally, Aristotle argues that the inactivity of all the senses which is found in sleep cannot be a mere coincidence but must be due to the inactivity of the central perceptive faculty on which they are differentiations.⁹¹²

While clearly present in *De Anima*, the doctrine of the *sensus communis* is worked out in far more detail in the *Parva Naturalia*.⁹¹³ Nevertheless, we find Aristotle arguing for all but the final one of these functions in *De Anima* 3.1-2: (1) and (2) at 3.1 425a14-b4, (3) at 3.2 425b12-25, and (4) at 3.2 426b12–427a16. The reason that this matters for us here is that the *sensus communis* is the ultimate patient in perception, for it is as he says elsewhere “*the perceptive part of the soul*” (τῷ αἰσθητικῷ μορίῳ τῆς ψυχῆς, *Phys.* 7.3 248a8).⁹¹⁴ How so? The *sensus communis* is what we might call a “synthetic faculty” in that it receives, sorts, and combines the data of the five perceptual faculties into a unified whole.⁹¹⁵ As Aristotle concludes at *De Sensu* 7 449a8-9 in the context of a discussion on discrimination during simultaneous perception, the unifying or synthesizing it performs is only possible because there is some *one* thing that ultimately receives *all* of diverse perceptibles: “necessarily (ἀνάγκη) then there is one (ἓν) [part] of the soul (τῆς ψυχῆς) with which it perceives (αἰσθάνεται) *everything* (ἅπαντα).”⁹¹⁶ As we argue from *De Anima* 2.12 in the Appendix, this is the part that Aristotle takes to be the “principle (ἀρχὴν) for

⁹¹² W. D. Ross, *Aristotle: Parva Naturalia. A Revised Text with Introduction and Commentary* (New York: Oxford University Press, 1955), 35.

⁹¹³ See Kahn, “Sensation and Consciousness in Aristotle’s Psychology,” 50–69 for a compelling argument that Aristotle fills out and completes what was nascent in *DA*. For a similar sort of argument about the contemporaneity of the *Parva Naturalia* and *De Anima*, see Myles Burnyeat, “Aristotelian Revisions: The Case of *de Sensu*,” *Apeiron* 37, no. 2 (2004): 177–80.

⁹¹⁴ See the same phrase in *GA* 2.3 736a30-31: ὁ μόριον τῆς ψυχῆς τὸ αἰσθητικόν. For the shorthand version of the phrase elsewhere, which does not specify that the part is ‘of the soul’, see *Phys.* 7.2 244b10 (αἰσθητικὰ τῶν μερῶν) and 7.3 247a67 (αἰσθητικοῦ μέρους). For parts of the soul generally in *DA*, which include both the nutritive and perceptual parts, see 2.2 413b7-8 (μόριον τῆς ψυχῆς) and 413b14 (μόριον ψυχῆς).

⁹¹⁵ The phrase comes from Beare, *Greek Theories of Elementary Cognition*, 210; cf. 202 & 250–51.

⁹¹⁶ ἀνάγκη ἄρα ἓν τι εἶναι τῆς ψυχῆς ὃ ἅπαντα αἰσθάνεται. Hett translation, modified. “Part” (μέρος) is inferred here from the previous line, *De Sensu* 7 449a7, where he states: “for the perceptual faculty is one *part*” (Hett translation, modified). ἓν γάρ τι τὸ αἰσθητικόν ἐστὶ μέρος. Cf. *De Somno* 2 455a20: “For there is one perceptual faculty, and one paramount sense organ” (Hett translation, modified). ἐστὶ μὲν γὰρ μία αἴσθησις, καὶ τὸ κύριον αἰσθητήριον ἓν.

receiving (δέχεσθαι) the forms (εἶδη) of perceptibles (αἰσθητῶν)” (424b1-2)⁹¹⁷—for nothing that lacks this part can partake in perception.⁹¹⁸ Hence, despite an animal’s possession of the various other perceptual *faculties* (e.g., sight, hearing, etc.), these are aspects or parts of a singular, synthesizing *faculty* which is the ultimate recipient of the forms it receives, viz., the *sensus communis* (κοινῆς αἰσθήσεως)—or as Aristotle calls it here, “the primary sense” (τῆς πρώτης τοῦτο, 3.2 425b17).⁹¹⁹ And just as with the “other” perceptual facilities, it too has a physical correlate or organ: the heart (καρδία),⁹²⁰ the “common sense-organ” or *common sensorium* (κοινὸν αἰσθητήριον, *De Juventute* 3 469a11).⁹²¹ The benefit of this doctrine for our analysis in this section is that we need to assess the metabolic status of change with regard to a *single* perceptual faculty—“the perceptual faculty” (τῆς αἰσθήσεως, 425b26)—not five, for there is *just one patient*, regardless of the perceptual mode by which it receives its form. This will be assumed in our analysis of 425b26-426a26 without further comment.

6.2.3.2.4 *De Anima* 3.2 in the Context of *Physics* 3.3 and SDD Solution

⁹¹⁷ ἀρχὴν οἷαν τὰ εἶδη δέχεσθαι τῶν αἰσθητῶν. Aristotle defines a principle as “the primary thing from which something either exists or comes into being or becomes known” (*Meta.* Δ.1 1013a17-19). πασῶν μὲν οὖν κοινὸν τῶν ἀρχῶν τὸ πρῶτον εἶναι ὅθεν ἢ ἔστιν ἢ γίγνεται ἢ γινώσκεται.

⁹¹⁸ See e.g., *De Juventute* 1 467b18-27: “But as for what we call animals (ζῷα) and living (ζῆν), in anything to which both terms are applicable, there must be one identical part (ἐν μόνιον) in virtue of which (καθ’ ὃ) the creature lives and in virtue of which (καθ’ ὃ) we call it an animal. For the animal, in so far as it is such, cannot fail to live, but it need not be an animal because it lives; for plants (φυτὰ) live, but have no perception (αἴσθησιν), and it is by perception (αἰσθάνεσθαι) that we distinguish the animal from that which is not animal. Numerically (ἀριθμῶ), then, this part (τοῦτο τὸ μόνιον) must be one and the same (ἐν εἶναι καὶ τὸ αὐτὸ), but in being (εἶναι) more than one (πλείω) and differentiated (ἕτερα)” (Hett translation, modified). ὅσα δὲ ζῷα λέγεται καὶ ζῆν, ἐν μὲν τοῖς ἀμφοτέρων τούτων τετυχηκόσι (λέγω δ’ ἀμφοτέρων τοῦ τε ζῶον εἶναι καὶ τοῦ ζῆν) ἀνάγκη ταυτὸν εἶναι καὶ ἐν μόνιον καθ’ ὃ τε ζῆ καὶ καθ’ ὃ προσαγορεύομεν αὐτὸ ζῶον· τὸ μὲν γὰρ ζῶον ἢ ζῶον ἀδύνατον μὴ ζῆν· ἢ δὲ ζῆ, ταύτη ζῶον ὑπάρχειν οὐκ ἀναγκαῖον· τὰ γὰρ φυτὰ ζῆ μὲν, οὐκ ἔχει δ’ αἴσθησιν, τῷ δ’ αἰσθάνεσθαι τὸ ζῶον πρὸς τὸ μὴ ζῶον διορίζομεν. ἀριθμῶ μὲν οὖν ἀναγκαῖον ἐν εἶναι καὶ τὸ αὐτὸ τοῦτο τὸ μόνιον, τῷ δ’ εἶναι πλείω καὶ ἕτερα.

⁹¹⁹ As most translators recognize, the pronoun τοῦτο in line 17 refers back to αἴσθησις in line 16. See, e.g., Reeve, Shields, and Apostle *ad loc.* Cf. e.g., *De Memoria* 1 450a10-12 for “the primary perceptual faculty” (πρώτῳ αἰσθητικῷ); see too 450a13-14, 451a17.

⁹²⁰ *De Somno* 2 455b34-456a6, *De Juventute* 3 469a4-8, 10-19; 4 469b3-6; cf. *De Sensu* 438b30-439a4. See supposition appears in *DA* too, both in 2.12 424a24-25 and 3.2 426b15-16, the very chapters under consideration.

⁹²¹ Beare, *Greek Theories of Elementary Cognition*, 122, 200. Cf. Kahn, “Sensation and Consciousness in Aristotle’s Psychology,” 59. Cf. *De Somno* 3 458a28 where he refers to the heart as “the primary sense organ” (τὸ πρῶτον αἰσθητήριον).

Let us turn now to our passage, 425b26-426a26, which is largely self-contained in a chapter of ἀπορίαι.⁹²² Can we detect the presence of the *Physics* 3.3 single actuality solution as we have claimed? As we shall see, the answer is clearly in the affirmative. The passage is somewhat lengthy, so for ease of analysis, we will divide it into three parts: Part 1, 425b26-426a8; Part 2, 426a8-19; and Part 3, 426a20-26. Now for Part 1:

The actuality (ἐνέργεια) of the perceptible (αἰσθητοῦ) and of the perceptual faculty (τῆς αἰσθήσεως) are one and the same (ἢ αὐτὴ μὲν ἐστὶ καὶ μία), but there being is different (τὸ δ' εἶναι οὐ τὸ αὐτὸ αὐταῖς). I mean, for example, actual (ἐνέργειαν) sound (ψόφος) and actual (ἐνέργειαν) hearing (ἀκοή). For it is possible for someone who has hearing (ἀκοήν) not to be hearing (μὴ ἀκούειν); and what has sound (ψόφον) is not always sounding (οὐκ ἀεὶ ψοφεῖ). But whenever what is potentially hearing (δυνάμενον ἀκούειν) is in actuality (ἐνεργῇ) hearing and whatever is potentially sounding (δυνάμενον ψοφεῖν) is sounding (ψοφῇ), then actual hearing (ἐνέργειαν ἀκοή) and actual sounding (ἐνέργειαν ψόφος) come to be simultaneously (ἅμα γίνεται). One could say of these that one is hearing (ἄκουσιν) and the other sounding (ψόφησιν). If, then, the change (κίνησις)—both acting (ποίησις) and being acted upon (πάθος)—is in (ἐν) the-thing-being-acted-upon (τῷ πρῶτῳ κινουμένῳ),⁹²³ it is necessary that both the sound (ψόφον) and the actual (ἐνέργειαν) hearing (ἀκοήν) be in (ἐν) something potential (δύναμιν). For the actuality (ἐνέργεια) of what produces (ποιητικοῦ) and causes-change (κινητικοῦ) comes about (ἐγγίνεται) in (ἐν)

⁹²² The various ἀπορίαι of the chapter can be divided into four sections: (1) 425b12-25 addresses a puzzle about second-order perception which it attributes to the *sensus communis*; (2) 425b26-426a26 analyzes the relationship between perceptibles and active perception; (3) 426a27-b7 applies the analysis from the previous puzzle to a new problem; and (4) 426b8-a16 closes out the chapter with further puzzles regarding the *sensus communis*. While undoubtedly connected, the ἀπορίαι are self-contained (see Polansky, *Aristotle's De Anima*, 380–81 and Shields, *Aristotle: De Anima*, 263–65), and so we can safely examine section (2) in isolation without involving the others or denuding it of context.

⁹²³ Following Ross' OCT text and Shields, *Aristotle: De Anima*, 76 n. 37, over τῷ κινουμένῳ from Ross, *Aristotle: De Anima. Edited, with Introduction and Commentary*, *ad loc.* See too Reeve and Apostle, *ad loc.*

the-thing-which-is-affected (τῷ πάσχοντι)—for which reason it is not necessary that what-initiates-change (τὸ κινουὺν) be changing (κινεῖσθαι). Hence, the actuality (ἐνέργεια) of what-is-capable-of-making-a-sound (τοῦ ψοφητικοῦ) is sound (ψόφος) or sounding (ψόφησις), and [the actuality] of what-is-capable-of-hearing (τοῦ ἀκουστικοῦ) is hearing (ἀκοή) or listening (ἄκουσις). For hearing (ἀκοή) is twofold; and sound (ψόφος) is twofold.⁹²⁴

The initial thing one notices here, given the context of our discussion, is the presence of the SDD in the beginning two lines (425b26-27) and then again later on (426a15-17). Now, the SDD is used in a variety of contexts besides in his *Physics* 3.3 solution, so by itself it does not make the case.⁹²⁵ Nevertheless, the item in question to which the SDD is applied *does* align it with *Physics* 3.3, viz., *the actuality* (ἐνέργεια, 425b26; cf. 426a16), also called *the change* (κίνησις, 426a2). As we have already determined in our first inquiry above, it is the perceptible that plays the role of agent and the percipient that of patient in perception. Hence, to use the SDD in an active agency/patiency context like this *and then* to claim that the result is a single actuality (ἐνέργεια) or change (κίνησις) which is variously describable (425b27, 426a2, 426a16-17), makes it impossible to decouple from *Physics* 3.3. For not only is this *precisely* what we would expect if the doctrine were being applied, but without the guidance from *Physics* 3.3. the passage would

⁹²⁴ ἡ δὲ τοῦ αἰσθητοῦ ἐνέργεια καὶ τῆς αἰσθήσεως ἡ αὐτὴ μὲν ἐστὶ καὶ μία, τὸ δ' εἶναι οὐ τὸ αὐτὸ αὐταῖς· λέγω δ' οἷον ὁ ψόφος ὁ κατ' ἐνέργειαν καὶ ἡ ἀκοή ἡ κατ' ἐνέργειαν· ἐστὶ γὰρ ἀκοὴν ἔχοντα μὴ ἀκούειν, καὶ τὸ ἔχον ψόφον οὐκ αἰεὶ ψοφεῖ, ὅταν δ' ἐνεργῇ τὸ δυνάμενον ἀκούειν καὶ ψοφῇ τὸ δυνάμενον ψοφεῖν, τότε ἡ κατ' ἐνέργειαν ἀκοή ἅμα γίνεται καὶ ὁ κατ' ἐνέργειαν ψόφος, ὃν εἴπειεν ἄν τις τὸ μὲν εἶναι ἀκουσιν τὸ δὲ ψόφησιν. εἰ δὲ ἐστὶν ἡ κίνησις (καὶ ἡ ποίησις καὶ τὸ πάθος) ἐν τῷ ποιουμένῳ, ἀνάγκη καὶ τὸν ψόφον καὶ τὴν ἀκοὴν τὴν κατ' ἐνέργειαν ἐν τῷ κατὰ δυνάμιν εἶναι· ἡ γὰρ τοῦ ποιητικοῦ καὶ κινητικοῦ ἐνέργεια ἐν τῷ πάσχοντι ἐγγίνεται· διὸ οὐκ ἀνάγκη τὸ κινουὺν κινεῖσθαι. ἡ μὲν οὖν τοῦ ψοφητικοῦ ἐνέργεια ἐστὶ ψόφος ἢ ψόφησις, ἡ δὲ τοῦ ἀκουστικοῦ ἀκοή ἢ ἄκουσις· διττὸν γὰρ ἡ ἀκοή, καὶ διττὸν ὁ ψόφος. Shields translation, modified.

⁹²⁵ For three uses of the SDD besides that for which he uses it in *Phys.* 3.3, compare *Phys.* 1.7 190a15-16, *DA.* 2.12 424a25, and *De Juventute* 1 467b25-27. The first concerns material unity despite divergent sequential properties, the second for functional unity despite parts of differing material statuses, and the third for faculty unity despite parts differing in functional operation.

be indecipherable—for how *else* could one read this passage? It appears then that we have an extremely strong case for reading *De Anima* 3.2 along the lines suggested by the single actuality solution presented in *Physics* 3.3. But this still needs confirmation. For this we must needs turn to the logic of the passage in order to see if the single actuality solution and the SDD applies in the case of perception. If we can make sense of the passage in this way when it comes to the details, then in the absence of competing interpretations, we must consider our thesis confirmed. We turn now to just those details.

Let us focus first on the coordinate operations at play here, sounding and hearing. There are two entities, agent and patient, which are capable of being both potentially *x* and actually *x* (425b30-426a1, cf. 426a24)⁹²⁶ with respect to their action or passion.⁹²⁷ For clarity, it will be helpful to align this passage with our previous example concerning yellow. Prior to painting, the brush is potentially yellowing, and the house potentially ‘yelloweding.’ Once painting is commenced, however, the brush is actually yellowing and the house actually ‘yelloweding.’ Yellowing and ‘yelloweding’ are the coordinate action/passion operations at play here, and they are grounded in the temporally prior agent (brush) and patient (house). Likewise in the case of auditory perception. It is possible, Aristotle says, for someone who *can* hear *not* to hear (425b28-29); that is, it is possible for *a percipient* to be *both* potentially hearing and actually hearing with respect to some perceptible. And it is possible for something that *can* sound *not* to sound (425b29); that is, it is possible for *a perceptible* to be *both* potentially sounding and actually sounding with respect to some perceiver. So here, hearing and sounding are the coordinate

⁹²⁶ τὸ δυνάμενον ἀκούειν and τὸ δυνάμενον ψοφεῖν (425b30) both *become* ἐνέργειαν ἀκοῇ and ἐνέργειαν ψόφος (425b31-426a1) respectively. See too later on: the perceptible (αἰσθητοῦ)—not just the perceptual faculty (αἰσθήσεως)—can be considered either κατὰ δύναμιν or κατ’ ἐνέργειαν (426a24), because it can become *either*.

⁹²⁷ ἡ ποίησις and τὸ πάθος (425b30); τῷ ποιούμενῳ (426a2-3), τοῦ ποιητικοῦ (426a4), τῷ πάσχοντι (426a5); cf. ἡ ποίησις and ἡ πάθησις (426a9-10), and τῷ πάσχοντι and τῷ ποιῶντι (426a10).

action/passion operations at play, and they too are grounded in the temporally prior agent (perceptible) and patient (percipient). The first thing to note thus, is that action and passion are both actualities of what has them, namely the temporally prior agent and patient. Much more needs to be said about the nature of the agent in its potential state, but we leave this point for the next couple of sections of this chapter.

We have just noted that action and passion are both actualities of the respective agent and patient, which preexist them. We should now like to note what else Aristotle says, *viz.*, that when agent and patient are actualized in this manner, that *qua* coordinate operations, action and passion “come to be simultaneously” (ἅμα γίνεται, 425b31).⁹²⁸ That is, if one is, then so is the other also, for they are coordinate.⁹²⁹ This then generates two claims, one mundane and the other quite interesting. The mundane claim is that if there is a passion then, necessarily, there is an action. Hence, if there is a passion ‘yellowedging,’ there must also be an action of yellowing, and if there is a passion of hearing, there must also be an action of sounding. The interesting claim, on the other hand, is that if there is an action, then, necessarily, there is a passion. Hence, if there is an action of yellowing, there must also be a passion of ‘yellowedging’, and if there is an action of sounding, there must also be a passion of hearing. The first claim will strike us as rather obvious, but why is Aristotle inclined to make the second? The only reason one can give for this that is not question begging is that Aristotle assumes a *success condition* such that an agent’s action is only *properly* an action if it is successful at inducing a passion in a patient. This, of course, takes us right back to *Physics* 3.3, as this was precisely the claim Aristotle made there

⁹²⁸ Later on he says they even “perish or are preserved simultaneously” (ἅμα φθείρεσθαι καὶ σώζεσθαι, 426a17).

⁹²⁹ According to Aristotle at *GC* 1.6 322b11-12, action (ποιεῖν) and passion (πάσχειν) are “reciprocal” (ὑπ’ ἀλλήλων). See too *GC* 1.6 322b14-15, 20-21, 1.7 323b7, 324a2-3, & 7-8.

with regard to teaching and learning.⁹³⁰ There we said that while it might *seem* like one can teach but no one learn, it is obvious that one cannot learn if not taught. The first of these is false, however, because a success condition is implied by *both* terms which necessitates that they be coordinate. And these are, moreover, *qua* successful, biconditionally connected such that one learns iff one teaches, and one teaches iff one learns—the former being the mundane claim, the latter the more interesting one. The claim Aristotle is making here in saying that action and passion “come to be simultaneously” (ἅμα γίνεται, 425b31), of course, is that this applies just as much to teaching/learning and yellowing/’yelloweding’ as it does to the operations of sounding (ψοφεῖ) and hearing (ἀκούειν, 425b29), viz., that if hearing refers to *successful* hearing, then sounding must refer to *successful* sounding. And this entails for auditory perception both the mundane claim that something hears iff something sounds, *as well as* the more interesting claim that something sounds iff something hears.⁹³¹ Hence, the second thing to note is that actualities of action and passion of the temporally prior agent and patient are necessarily simultaneous.

So far, we have the simultaneity of the actualities of action and passion of the temporally prior agent and patient, but simultaneity, of course, does not entail identity. Otherwise, e.g., clouds and shade would be identical. Hence, we have not arrived at the *Physics* 3.3 SDD single actuality solution just yet. Aristotle must take us another step in order to arrive at identity, which is precisely what he does at the end of this passage at 426a2-6. There he not only notes that the coming to be of the simultaneous actualities of agent and patient *constitute* a change (κίνησις,

⁹³⁰ We are not the only ones reminded. See the same *Phys.* 3.3 reference to teaching and learning in Philoponus, in *DA* 469.30-470.3. Cf. Themistius, in *DA* 84.4-5. See too Simplicius, in *DA* 192.25-27.

⁹³¹ Cf. Simplicius, in *DA* 191.12-15: “For the perceptible in actuality falls together in every way with the perception in actuality, since they are spoken of correlatively (ἄλληλα), just as what is double in actuality is spoken of in respect to what is half in actuality, and so in a word this applies to all relative things” (Blumenthal translation, modified). συντρέχει γάρ πάντως το κατ ἐνέργειαν αισθητόν τη κατ ἐνέργειαν αισθήσει, ἐπειδὴ και προς ἄλληλα λέγεται, ως και το ενεργεία διπλάσιον τῷ ενεργεία ημίσει και απλῶς εἰπεῖν πάντα τα πρὸς τι.

426a2),⁹³² but that this change is “*in* the-thing-being-acted-upon” (ἐν τῷ ποιουμένῳ, 426a2-3), the patient. Hence, in the case of auditory perception, he says, “it is necessary that both the sound (ψόφον) and the actual (ἐνέργειαν) hearing (ἀκοήν) be *in* (ἐν) something potential (δύναμιν)” (426a3-4).⁹³³ For generally speaking, as he goes on to explain, “the actuality (ἐνέργεια) of what produces (ποιητικοῦ) and causes-change (κινητικοῦ) comes about (ἐγγίνεται) *in* (ἐν) the-thing-which-is-affected (τῷ πάσχοντι)” (426a4-5).⁹³⁴ And why must the actuality of the agent come about *in* the patient rather than the agent? He explains: “for it is not necessary (οὐκ ἀνάγκη) that what-initiates-change (τὸ κινουόν) be changing (κινεῖσθαι)” (426a5-6).⁹³⁵ So, the third thing to note is the location of the simultaneous actualities which constitute the change: they are “*in*” the patient. But why should this matter for us here?

That the change is *in* the patient, of course, is a core component of Aristotle’s SDD single actuality solution of *Physics* 3.3. As he said there concerning the simultaneous action of teaching and passion of learning, “neither teaching nor learning are in the strict sense the same, but what they belong to is the same: the change (κίνησις). For being [the actuality] of this (τὸ τοῦδε) occurring *in* that (ἐν τῷδε) and being the actuality (ἐνέργειαν) of that (τὸ τοῦδε) by this (ὑπὸ τοῦδε) are distinct in account” (202b19-22).⁹³⁶ Moreover, the reason that *both* the actuality of the patient *and* the agent must be *in* the patient is the same as he gave there: if it were *necessary* that what causes change must also undergo change, then there *could* be no unchanged changer (*Phys.*

⁹³² Parenthetically he remarks at 426a2 that κίνησις consists in “both acting and being acted upon” (καὶ ἡ ποίησις καὶ τὸ πάθος), i.e., in both action and passion. Of course it does. In his final and most comprehensive definition of change *in Phys. 3.3 Physics* 3.3 202b26-27: “more intelligibly (ἔτι δὲ γνωριμώτερον), it [change] is [the actuality of] the potential agent and the [potential] patient, *qua* potentially” (Coope translation, modified). ἔτι δὲ γνωριμώτερον, ἡ τοῦ δυνάμει ποιητικοῦ καὶ παθητικοῦ, ἢ τοιοῦτον. “Actuality” (ἐντελέχεια), is supplied from the previous line and is clearly in reference here.

⁹³³ ἀνάγκη καὶ τὸν ψόφον καὶ τὴν ἀκοήν [noun] τὴν κατ’ ἐνέργειαν ἐν τῷ κατὰ δύναμιν εἶναι.

⁹³⁴ ἡ γὰρ τοῦ ποιητικοῦ καὶ κινητικοῦ ἐνέργεια ἐν τῷ πάσχοντι ἐγγίνεται.

⁹³⁵ διὸ οὐκ ἀνάγκη τὸ κινουόν κινεῖσθαι.

⁹³⁶ οὐδ’ ἡ δίδαξις τῇ μαθήσει οὐδ’ ἡ ποίησις τῇ παθήσει τὸ αὐτὸ κυρίως, ἀλλ’ ὃ ὑπάρχει ταῦτα, ἡ κίνησις· τὸ γὰρ τοῦδε ἐν τῷδε καὶ τὸ τοῦδε ὑπὸ τοῦδε ἐνέργειαν εἶναι ἕτερον τῷ λόγῳ.

3.3 202a28-31; cf. 3.1 201a25-27). But this, of course, forces right back into the puzzle of *Physics* 3.3: if there is both an actuality of the agent (action) and an actuality of the patient (passion), but neither can be present in the agent, then they *both* must be present *in the patient* (202a32-33). This would entail either that all patients are “changed by two changes simultaneously” (δύο κινήσεις ἅμα κινεῖσθαι, 202a34-35), which he says is impossible (ἀδύνατον, 202a36) as there would be no way to individuate them (*Phys.* 5.4 227b20-228a6); or that there is a single actuality of agent and patient *in the patient*, which is precisely the option that Aristotle takes (202a36).⁹³⁷ And this dilemma is what gives rise to the SDD portion of the single actuality solution regarding the dual actualities of action and passion: “for these things are one, but their account is not one” (202a20).⁹³⁸ Hence, to grant that there are two actualities of agent and patient, to grant that these are simultaneous, and then to grant that they are *both* “in” the patient, is precisely what causes him to posit the SDD single actuality solution—which is just what we find him doing here in *De Anima* 3.2 in the very first lines of our passage at 425b26-27: “the actuality (ἐνέργεια) of the perceptible (αἰσθητοῦ) and of the perceptual faculty (τῆς αἰσθήσεως) are one and the same (ἡ αὐτὴ μὲν ἐστὶ καὶ μία), but there being is different (τὸ δ’ εἶναι οὐ τὸ αὐτὸ αὐταῖς).”⁹³⁹ As we said from the outset, this is not only *precisely* what we would expect if the solution were being applied in *De Anima* 3.2, but without the guidance from *Physics* 3.3, the passage would be indecipherable. Which I think we can now clearly see. For how else could one understand the claims Aristotle makes here (i.e., two actualities of agent and

⁹³⁷ “So there will be one actuality” (Apostle translation). ἀλλὰ μία ἔσται ἡ ἐνέργεια (202b36).

⁹³⁸ ταῦτα γὰρ ἓν μὲν ἐστὶν, ὁ μὲντοι λόγος οὐχ εἷς. Cf. 202b8-9: “Neither is there anything to prevent the actuality of two things from being one and the same.” οὔτε μίαν δυοῖν κωλύει οὐθὲν τὴν αὐτὴν εἶναι.

⁹³⁹ ἡ δὲ τοῦ αἰσθητοῦ ἐνέργεια καὶ τῆς αἰσθήσεως ἡ αὐτὴ μὲν ἐστὶ καὶ μία, τὸ δ’ εἶναι οὐ τὸ αὐτὸ αὐταῖς.

patient, simultaneous, both are “in” the patient, and together they are one and the same) if not in light of the SDD single actuality solution?⁹⁴⁰

We now have our confirmation that *De Anima* 3.2 does indeed apply the *Physics* 3.3 SDD single actuality solution to perception, although see Appendix 2 for a presentation of the *Physics* 3.3 solution along with the appropriate quotations from the entirety of the relevant portion of *De Anima* 3.2 for further evidence of this. Moreover, given that Aristotle takes this account to apply to *all* genuine instances of change (*Phys.* 3.3 202b23-29), this gives us a straightforward identification of perception by Aristotle *as* a genuine instance of change, and thus would seem to weigh heavily in favor of the QG virtue model. Nevertheless, if we are correct in thinking that Aristotle is indeed invoking the *Physics* 3.3 SDD single actuality solution here in *De Anima* 3.2, then we are beset by another problem at this point, this one regarding the status of perceptibles in a pre-perceived state of potentiality. For if *both* hearing and sounding lack any real distinction but are only distinct in account and separable by Suárez’s “precisive abstraction” (*abstractionem praecisivam*, *DM* 7.1.6), then it would seem that *sans* hearing, there is no *sound*. That is, sound itself only comes to be *with* hearing as sound and hearing lack any real distinction, hence without perceivers there are no perceptibles either. As such, on this view, Aristotle is an antirealist concerning unperceived perceptibles. If this is correct, then it would seem that Aristotle *cannot* think that perception is a genuine instance of change as on the QG virtue model, but embraces the knowledge model after all—for the change⁹⁴⁰ in question which is perception is not a genuine metabolic change, but a pseudo-change akin to that of knowledge

⁹⁴⁰ Note too how this tracks with the four theses that generated the *Phys.* 3.3 puzzle in the first place: [A] change necessarily takes place in the context of agents and patients; [B*] not everything that causes change (i.e., every agent) can itself change, so that no agent changes merely in the course of causing change but the change is solely in the patient; [C*] the process change and product change⁹⁴⁰ of agent and patient consist in a single actuality in the patient; and [D*] the enabling conditions for change are the two respective potentialities in the agent and patient to change, both of which have an actuality which is a change.

coming to be. While I think this view is demonstrably false, both its prevalence in the literature and the stakes involved bid us to confront the viability of this interpretation before moving on. The benefit of this analysis is not only that it allows us to debunk a rather stubborn alternative interpretation, but it also grants us further insight into *why* Aristotle thinks perception possesses the metabolic status he thinks it does. With this in mind, we now turn to address the issue of Aristotle’s supposed perceptual antirealism.

6.2.3.2.4.1 Problem 1: Is Aristotle an Antirealist Concerning Unperceived Perceptibles?

Some commentators have read *De Anima* 3.2, and especially the Part 1 which we examined above, only to conclude that “what has sound is not always sounding” (τὸ ἔχον ψόφον οὐκ ἀεὶ ψοφεῖ, 425b29), i.e., the “sounder,” must refer to what *can* make a sound but does not (e.g., a bell), not to some unheard—and therefore *unsounding*—sound. On this view, when Aristotle speaks of actual hearing (ἐνέργειαν ἀκοῇ, 425b31) and actual sounding (ἐνέργειαν ψόφος, 425b30-31) and being “one and the same” (ἡ αὐτὴ μὲν ἐστὶ καὶ μία, 425b26-27) and “coming about simultaneously” (ἅμα γίνεται, 425b31) *qua* the SDD single actuality solution, he must mean that *prior* to being heard there can be no sound whatsoever. On this view, perceptibles are merely potential prior to perception and only become actual when perceived.⁹⁴¹ I think it is clear, however, that this is not Aristotle’s point. First, even if this reading might sound plausible with respect to auditory qualities, it would wreak havoc on the status of perceptibles of the other sensory modes in that, e.g., cotton would not be actually soft until felt, nor a car actually red until seen. If this were Aristotle’s view, then how would the like-like theory work if such were the case given that something unlike is affected but once affected becomes *like* it (*DA*

⁹⁴¹ For two proponents of this reading, see Irwin, *Aristotle’s First Principles*, 313–14 and Stephen Everson, *Aristotle on Perception* (New York: Clarendon Press, 1999), 114–25. For those who, surprisingly, avoid this issue entirely, see Aquinas, *Sentencia libri De anima*, II.26.589-596; Hicks, *Aristotle De Anima*, 438; and Ross, *Aristotle: De Anima. Edited, with Introduction and Commentary*, 272–73.

2.5 417a20, 218a5-6)? If *both* are only *potentially* *x* prior to perception, then how are percipient and perceptible both initially *unlike*? Not only is this clearly at odds with what Aristotle explicitly says elsewhere in *De Anima* (e.g., “the percipient is in potentiality such as the perceptible *already* (ἤδη) is in actuality” 2.5 418a3-4⁹⁴²), it is also contrary to his final comments concerning the error of the ancient physicists at the end of our section as we shall see (426b20-26).

Second, Aristotle explicitly disavows this very thing in *Categories* 7. While it is true that perception and perceptible are Df1 soft relatives which necessarily “reciprocate” (ἀντιστρέφοντα, 6b28) such that “perception is perception *of* the perceptible, and the perceptible perceptible *by* perception” (7b35-36),⁹⁴³ they are not *merely* relatives but qualities too as we saw in our previous chapter. As such, their status as relatives does *not* entail that they are “simultaneous in nature” (ἅμα τῇ φύσει) as are most relatives (7b15), such as, e.g., slave and master (7b17-18).⁹⁴⁴ For in some cases, this is just not so (7b22-23). One such instance, as Aristotle points out, is that of perception and the perceptible, for in this case “the perceptible exists (αἰσθητὸν ἔστι) even *before* (πρὸ) perception exists (αἴσθησιν εἶναι)” (8a8-9).⁹⁴⁵ As a result, even if perception is “destroyed” (συναναιρεῖ) if perceptible is destroyed, the converse does not follow—for the destruction of perception does not carry the perceptible to destruction

⁹⁴² τὸ δ’ αἰσθητικὸν δυνάμει ἐστὶν οἷον τὸ αἰσθητὸν ἤδη ἐντελεχείᾳ. Cf. *DA* 2.6 418a31, 2.7 419a8, 19, 2.9 421a26, 2.10 422a10, 16, b15, 2.11 423b27, 2.12 424a22, & 3.2 425b22. See too the comments on these and like passages by Irwin, *Aristotle’s First Principles*, 312: “Aristotle assumes that colours, sounds, etc. of external bodies exist in the bodies *before* they are perceived” (italics mine).

⁹⁴³ καὶ ἡ αἴσθησις αἰσθητοῦ αἴσθησις καὶ τὸ αἰσθητὸν αἰσθήσει αἰσθητόν.

⁹⁴⁴ The criterion Aristotle gives for simultaneity is that of existential separability: if *x* is reciprocally simultaneous with *y*, then necessarily if *x* exists then so does *y* and vice versa. If, however, one can exist separated from (i.e., independently of) the other, then *x* and *y* are not reciprocally simultaneous. See *Cat.* 7 7b19, 27-29, 36-38, 8a2-4.

⁹⁴⁵ τὸ δέ γε αἰσθητὸν ἔστι καὶ πρὸ τοῦ αἴσθησιν εἶναι. Cf. 7b36, 8a11-12.

(8a3-4).⁹⁴⁶ And just what are these pre-existing perceptibles? Exactly what we would expect:

“hot, sweet, bitter, and all the other perceptibles” (8b5-6).⁹⁴⁷

Some commentators have appealed to *Metaphysics* Γ.5 1010b30-1011a2 to counter this passage from *Categories* 7 with the claim that the *Metaphysics* passage is much more “sophisticated.”⁹⁴⁸ Contextually, Aristotle is discussing Protagoras’ “man is the measure” doctrine in relation to the denial of the principle of noncontradiction (1009a6-9), the most plausible version of which concerns the relativity of perception (αἴσθησις)—which is necessarily accurate or true (1009b12-15)—because the perceptibles (αἰσθητὰ) which they are of are in constant flux in and out of being (1009a21-1010a1). Aristotle has serious problems with this view, one of which is that it would seem to entail that neither perceptions nor perceptibles can exist independently of one another but come into being simultaneously (1009b31-33, 1010b30-31).⁹⁴⁹ Aristotle thinks this is problematic “for perception (αἴσθησις) is certainly not [perception] of itself, but there is also some other thing beyond (ἕτερον παρὰ) the perception (αἴσθησιν), which is necessarily prior (πρότερον) to the perception (αἰσθήσεως)” (1010b35-37).⁹⁵⁰ What is this “some other thing” which is “prior” to perception? In the line immediately prior he calls it “the underlying subjects (τὰ ὑποκείμενα) that produce perception (ποιεῖ τὴν αἴσθησιν)” (1010b33-34).⁹⁵¹ What is ὑποκείμενον or “underlying subject”? If it is what actually produces or causes perception, then one would think it would be a perceptible (αἰσθητός) per *De Anima* 2.6, 2.12, and *Categories* 7 as we saw earlier in this chapter. But, says Aristotle,—and this is the key

⁹⁴⁶ “Consequently the perceptible carries perception to destruction. But perception does not carry the perceptible” (Ackrill translation, modified). ὥστε συναναιρεῖ τὸ αἰσθητὸν τὴν αἴσθησιν. ἡ δὲ γε αἴσθησις τὸ αἰσθητὸν οὐ.

⁹⁴⁷ θερμόν, γλυκύ, πικρόν, καὶ τὰ ἄλλα πάντα ὅσα ἐστὶν αἰσθητά.

⁹⁴⁸ Everson, *Aristotle on Perception*, 122.

⁹⁴⁹ For the same reading, see Alexander, *In meta.* 315.27-35; and Syrianus, *In meta.* 77.10-13.

⁹⁵⁰ οὐ γὰρ διὴ ἣ γ’ αἴσθησις αὐτὴ ἐαυτῆς ἐστίν, ἀλλ’ ἐστι τι καὶ ἕτερον παρὰ τὴν αἴσθησιν, ὃ ἀνάγκη πρότερον εἶναι τῆς αἰσθήσεως.

⁹⁵¹ τὸ δὲ τὰ ὑποκείμενα μὴ εἶναι, ἃ ποιεῖ τὴν αἴσθησιν.

line—the Protagorean stipulation that prior to perception “that neither perceptibles (αἰσθητὰ) nor perceptual affections (αἰσθήματα) would exist *is presumably true*—since this is a way of the perceiver’s (αἰσθανομένου) being-affected (πάθος)” (1010b31-33).⁹⁵² That is, so long as there is “some other thing,” even a body bereft of perceptibles, *that* can function as a sufficient ὑποκείμενον for perception to occur. At least, this is how it is in the critical editions of the Greek text of *Metaphysics* by W. D. Ross (1924) and Werner Jaeger (1957).⁹⁵³ Both have (1) μήτε τὰ αἰσθητὰ εἶναι μήτε τὰ αἰσθήματα (“neither perceptibles nor perceptible affections exist”), but our textual evidence is mixed as we also find (2) μήτε τὰ αἰσθητὰ εἶναι (“perceptibles do not exist”) and even (3) μήτε τὰ αἰσθήματα εἶναι (“perceptible affections do not exist”). Which of these three is the correct reading?

We are currently in possession of 53 (partial or complete) Greek texts of the *Metaphysics*, which hail from two very old text families, the α-text and the β-text, respectively.⁹⁵⁴ Our best evidence suggests that both of these text families date from at least AD 400 and perhaps as early as AD 250.⁹⁵⁵ The Neoplatonic Aristotelian commentator Asclepius, for instance, makes heavy use of the α-text already in the sixth century.⁹⁵⁶ In terms of the transmission of the α-text and the β-text themselves, our knowledge of them stems from two exemplars transliterated during the late ninth century Macedonian Renaissance in Byzantium.⁹⁵⁷ For the most part, however, our earliest copies of these two exemplars date from a bit later. For the α-text, we have Vindobonesis

⁹⁵² τὸ μὲν οὖν μήτε τὰ αἰσθητὰ εἶναι μήτε τὰ αἰσθήματα ἴσως ἀληθές.

⁹⁵³ Ross, *Aristotle's Metaphysics*, 1924, 1:71. Jaeger, *Aristotelis Metaphysica*, 80.

⁹⁵⁴ Oliver Primavesi, “Introduction: The Transmission of the Text and the Riddle of the Two Versions,” in *Aristotle's Metaphysics Alpha: Symposium Aristotelicum*, ed. Carlos Steel, Illustrated edition (Oxford: Oxford University Press, 2012), 389–92.

⁹⁵⁵ Mirjam E. Kotwick, *Alexander of Aphrodisias and the Text of Aristotle's Metaphysics* (Berkeley, CA: California Classical Studies, 2016), 279–82. Cf. Primavesi, “Introduction: The Transmission of the Text and the Riddle of the Two Versions,” 457.

⁹⁵⁶ Primavesi, “Introduction: The Transmission of the Text and the Riddle of the Two Versions,” 408, 458.

⁹⁵⁷ Kotwick, *Alexander of Aphrodisias and the Text of Aristotle's Metaphysics*, 3–4.

phil. gr. 100 (ninth century) and Parisinus gr. 1853 (tenth century).⁹⁵⁸ The α -text was also the basis for the four later medieval Latin translations of the *Metaphysics*, only two of which have bk. Γ : *Translatio Anonyma* (early twelfth century) and *Recensio et Translatio Guillelmi* (late twelfth century).⁹⁵⁹ For the β -text, on the other hand, our oldest copy is Laurentianus plut. 87,12 (twelfth century),⁹⁶⁰ although fragments from the β -text exist of bks. I and K in the early Fragmentum Parisinum (ninth-tenth century).⁹⁶¹ Interestingly, both text families were unknown to Alexander of Aphrodisias when he penned his *Metaphysics* commentary in AD 200. It is posited instead that he used instead a no longer extant “common text” which would predate both the α -text and the β -text and from which both are derived.⁹⁶² A very plausible current theory is that an ancestor of this “common text” exists in Arabic as preserved in Averroes *Long Commentary on the Metaphysics*, the *Tafsīr Mā ba ‘d al-ṭabī‘a*⁹⁶³—his only long commentary preserved in its entirety in Arabic.⁹⁶⁴ The translation Averroes commented on and preserved for bk. Γ of the *Metaphysics* is from the *early* ninth century and was completed by Uṣṭāt (or

⁹⁵⁸ Primavesi, “Introduction: The Transmission of the Text and the Riddle of the Two Versions,” 390.

⁹⁵⁹ Primavesi, 403–5.

⁹⁶⁰ Primavesi, 389.

⁹⁶¹ Primavesi, 391–93.

⁹⁶² Primavesi, 406–8, 457–58. Cf. Kotwick, *Alexander of Aphrodisias and the Text of Aristotle’s Metaphysics*, 60–61. For a proposed *stemma codicum* (i.e., manuscript “family tree”) see Kotwick, 282.

⁹⁶³ See the March 2018 announcement by Ludwig-Maximilians-University Munich of a new eleven-year funded project by the Center for Advanced Studies for a new critical Greek text of the *Metaphysics* edited by Oliver Primavesi and Marwan Rashed for just this reason: past critical Greek texts by Ross and Jaeger neglected this independent Arabic tradition which is represented in Averroes. As the announcement goes on to state: “The Averroes commentary dates from the 12th century, but the archetype used there is older than the two Hyparchetypes α and β . Averroes could therefore be closer to the original wording of metaphysics than the texts of the Byzantine tradition on which today’s editions of *Metaphysics* are based” (Der Averroës-Kommentar stammt zwar aus dem 12. Jahrhundert, doch ist der dort verwendete Archetyp älter als die beiden Hyp-Archetypen α und β . Averroës könnte mithin näher am ursprünglichen Wortlaut der *Metaphysik* sein als die Texte der byzantinischen Tradition, auf denen die heutigen *Metaphysik*-Ausgaben fußen.”). “„Eine völlig neue Sicht“,” accessed January 6, 2019, <https://www.lmu.de/de/newsroom/news-und-events/news/eine-voellig-neue-sicht.html>. Cf. Primavesi, “Introduction: The Transmission of the Text and the Riddle of the Two Versions,” 399–403; Kotwick, *Alexander of Aphrodisias and the Text of Aristotle’s Metaphysics*, 31–32.

⁹⁶⁴ Glasner, *Averroes’ Physics*, 12.

Eustathius) as commissioned by the early Islamic philosopher al-Kindi.⁹⁶⁵ Evidence for this ancestry with Alexander’s “common text” is that Uṣṭāt’s text consistently gives readings that differ from *both* the α -text and the β -text,⁹⁶⁶ which seem to be indicative of its independence.⁹⁶⁷ With this textual history in mind, what do we find with respect to our three readings (1), (2), and (3)?

The α -text, largely followed by Ross and Jaeger, presents reading (1) (“neither perceptibles/ $\alpha\iota\sigma\theta\eta\tau\alpha$ nor perceptible affections/ $\alpha\iota\sigma\theta\acute{\eta}\mu\alpha\tau\alpha$ exist”) as we have seen. This reading is present in both of our oldest Greek copies of this text family.⁹⁶⁸ It is also present in both extant twelfth-century Latin translations of bk. Γ .⁹⁶⁹ Reading (2) (“perceptibles/ $\alpha\iota\sigma\theta\eta\tau\alpha$ do not exist”), on the other hand, is present in our oldest copy of the bk. Γ from the β -text.⁹⁷⁰ As for reading (3) (“perceptible affections/ $\alpha\iota\sigma\theta\acute{\eta}\mu\alpha\tau\alpha$ do not exist”), we do not find this in any of our 53 Greek manuscripts from either text family, but we do find it in a paraphrase of the passage from Alexander.⁹⁷¹ As a result of Alexander’s paraphrase and because of his affinity for the β -text, this

⁹⁶⁵ Amos Bertolacci, “On the Arabic Translations of Aristotle’s *Metaphysics*,” *Arabic Sciences and Philosophy* 15 (2005): 244, 251. Cf. Richard Walzer, “On the Arabic Versions of Books A, α , and λ of Aristotle’s *Metaphysics*,” *Harvard Studies in Classical Philology* 63 (1958): 221; Cristina D’Ancona, “Review: Avicenna and the *Metaphysics*: Reflections about a New Approach,” *International Journal of the Classical Tradition* 15, no. 3 (2008): 459; and Primavesi, “Introduction: The Transmission of the Text and the Riddle of the Two Versions,” 399–403.

⁹⁶⁶ See the conclusion which states just this in the study by Walzer, “On the Arabic Versions of Books A, α , and λ of Aristotle’s *Metaphysics*,” 229.

⁹⁶⁷ See e.g., Walzer, “On the Arabic Versions of Books A, α , and λ of Aristotle’s *Metaphysics*,” 222: “The value of the Arabic translations is obvious in cases where readings of *II* (i.e., the β -text) and *A^b* (i.e., α -text) are not guaranteed as old variants by Alexander or some similar witness; whenever they appear in the Arabic as well we can assume that they are older than *A^b* and also than *II*.”

⁹⁶⁸ Vindobonesis phil. gr. 100 (ninth century) and Parisinus gr. 1853 (tenth century). See the critical apparatus in both Ross, *Aristotle’s Metaphysics*, 1924, 1:71 and Jaeger, *Aristotelis Metaphysica*, 80.

⁹⁶⁹ *Translatio Anonyma* liber 4, cap. 5, pag. 78, linea 15 (“Nam sensibilia non esse ut sensibilia forsan verum est (sentientis enim passio hoc), subiecta vero non esse, que sensum faciunt et sine sensu, impossibile”) and *Recensio et Translatio Guillelmi* liber 4, cap. 5, pag. 86, linea 533 (“Neque quidem igitur sensibilia esse neque sensationes forsan uerum; sentientis enim passio hoc est”). Both texts are available digitally via the Aristoteles Latinus Database.

⁹⁷⁰ Laurentianus plut. 87,12 (twelfth century).

⁹⁷¹ Alexander, *In meta.* 315.35. Here is the passage in context, from 315.34 to 316.2: “Having said that this follows for them, he [Aristotle] next adds that while it is true that the affections ($\acute{\alpha}\theta\eta$) of perception ($\alpha\iota\sigma\theta\acute{\eta}\sigma\epsilon\omega\nu$), that is, perceptual affections ($\alpha\iota\sigma\theta\acute{\eta}\mu\alpha\tau\alpha$) or ($\kappa\alpha\iota$) the activities ($\epsilon\nu\epsilon\rho\gamma\epsilon\acute{\iota}\alpha\varsigma$) of [perception] them, will not exist if

reading was adopted in the critical edition of the Greek text of *Metaphysics* by Wilhelm von Christ (1895), who thought a copyist of the β -text swapped out αἰσθητὰ for Alexander's αἰσθήματα.⁹⁷²

Which of these three readings should we prefer? I think it is certain that we should *not* prefer the reading adopted by Ross and Jaeger from the Byzantine era α -text. While this longer reading is present in both of our oldest α -text Greek copies and even in the later Latin translations which stem from this textual tradition,⁹⁷³ it is not present in our earliest witness to the α -text in Asclepius.⁹⁷⁴ In fact, “perceptual affections” (αἰσθήματα) occurs nowhere in the entire comment section, much less near the almost verbatim quote of the passage—and this is despite the fact that Asclepius closely follows the α -text in most places.⁹⁷⁵ Surely this is indicative of the fact that the earliest version of the α -text actually *agreed* with the β -text at this point, especially since the α -text is famous for its explanatory “supplements” to Aristotle’s text.⁹⁷⁶ It seems highly unlikely therefore that the current α -text reading is original, and this is especially so since it is lacking the Averroes text as well.⁹⁷⁷ If we add to this the text-critical

[perception is] negated, it is not true that the underlying subjects (ὕποκείμενα), with which the activities (ἐνέργειαι) of perception (αἰσθήσεων) are concerned, will not exist” (Dooley & Madigan translation, modified). εἰπὼν δὲ τοῦτο ἐπεσθαι αὐτούς, ἐξῆς προστίθησιν ὅτι τὰ μὲν πάθη τῶν αἰσθήσεων, τούτέστι τὰ αἰσθήματα καὶ τὰς ἐνεργείας αὐτῶν μὴ ἔσεσθαι ἀναιρεθεισῶν, ἀληθές το δὲ μὴ τὰ ὑποκείμενα, περὶ αἰ τῶν αἰσθήσεων ἐνέργειαι, οὐκέτι ἀληθές.

⁹⁷² Wilhelm von Christ, *Aristotelis Metaphysica* (Leipzig, DE: in aedibus B.G. Teubneri, 1895), 82–83. See the critical apparatus for von Christ’s justification for this reading.

⁹⁷³ Primavesi, “Introduction: The Transmission of the Text and the Riddle of the Two Versions,” 403–5.

⁹⁷⁴ Asclepius, *In meta.* 283.25–28. Ross notes this too in his critical apparatus, although it clearly did not sway his judgement of the matter. See Ross, *Aristotle’s Metaphysics*, 1924, 1:71.

⁹⁷⁵ Primavesi, “Introduction: The Transmission of the Text and the Riddle of the Two Versions,” 408.

⁹⁷⁶ See Primavesi, 439–56 for discussion of this point and numerous examples. It is also interesting to note that the β -text is thought to modify the “common text” used by Alexander with Alexander’s own wording—yet this does *not* occur here despite his use of αἰσθήματα in his paraphrase of the passage. For more on these β -text “corrections”, see Primavesi, 424–39.

⁹⁷⁷ Averroes, *Tafsīr Mā ba’d al-ṭabī‘a*, Liber 3, Textus 25. For references to the *Tafsīr*, I have consulted the recent French translation from the original Arabic: Karim Kaddour, trans., *Traduction Commentée Du Grand Commentaire d’Averroès Aux Livres Petit Alpha, Grand Alpha, Gamma et Epsilon de La Métaphysique d’Aristote* (Paris: Université Panthéon- Sorbonne - Paris I, 2018), 253: “il est vrai aussi que les choses sensibles n’existeront pas, car elles sont les affections du sujet sentant.” See too the early thirteenth century Latin translation of Averroes’ Long Commentary on the *Metaphysics* by Michael Scot, *Translatio Scoti* liber 4, cap. 5, pag. 93, linea 22–24: “Est verum,

principle of *lectio brevior lectio potior* (“the shorter reading is the more probable reading”),⁹⁷⁸

this only increases the probability of either reading (2) or (3). In addition, we should note that the argument against Protagoras does not work on the α -text reading (1). As Christopher Kirwan points out, the argument on this α -text reading does not work. Kirwan presents the argument from reading (1) as follows.⁹⁷⁹

1. Some things are prior to perception or there could be no perception.
2. Perceptibles are not prior to perception but simultaneous with it.
3. Therefore, some things must exist which are prior to perceptibles.

The problem with this argument, Kirwan notes, is that “it makes Aristotle’s conclusion worthless against the argument from contrary appearances, which claims to apply to everything perceptible.”⁹⁸⁰ On the other hand, if we reject this reading in favor of (3)—or even (2) as on the reading I present below—the argument *does* work:

1. Some things are prior to perception or there could be no perception.
2. Perceptible affections are not prior to perception but simultaneous with it.
3. Therefore, some things must exist which are prior to perceptible affections, viz.
perceptibles.

Protagoras is wrong because even if perceptible affections are simultaneous with perception, it does not follow that those things which the perceptible affections are *from* and *of* (i.e.,

quem admodu non erunt sensibilia etiam. Sunt passio sentientis.” In Marco Antonio Zimara, ed., *Aristotelis Opera Cum Averrois Commentariis*, vol. VIII (Venice: Apud Junctas, 1562). Given that only one Arabic manuscript now exists, the *Translatio Scoti* may better preserve Averroes original text. See Primavesi, “Introduction: The Transmission of the Text and the Riddle of the Two Versions,” 401–2. Cf. Kotwick, *Alexander of Aphrodisias and the Text of Aristotle’s Metaphysics*, 30.

⁹⁷⁸ For a list and description of twelve such rules including those cited here, see: Kurt Aland and Barbara Aland, *The Text of the New Testament: An Introduction to the Critical Editions and to the Theory and Practice of Modern Textual Criticism*, trans. Erroll F. Rhodes (Grand Rapids, MI: Wm. B. Eerdmans Publishing, 1995), 280–81.

⁹⁷⁹ Christopher Kirwan, *Aristotle’s Metaphysics: Books Γ , Δ , and E* , second (London: Oxford University Press, 1993), 112. I have slightly modified Kirwan’s phrasing of the premises to match Aristotle’s language.

⁹⁸⁰ Kirwan, 112.

perceptibles) are not prior and therefore independent of perception.⁹⁸¹ Not only does this render the passage far more intelligible,⁹⁸² it also matches the anti-Protagorean argument at *Metaphysics* K.6 1063a35-b7,⁹⁸³ which also happens to be the *only* other place where the term αἰσθήματα is used in the *Metaphysics*.

Given the improbability of (1), which of the remaining readings should we opt for? There are three overriding reasons to opt for the β-texts' (2) over von Christ's (3), which I think are cumulatively persuasive. First, another applicable principle of textual criticism (in addition to *lectio brevior*) is *lectio difficilior lectio potior* ("the more difficult reading is the more probable reading").⁹⁸⁴ Reading (2) is certainly more difficult than reading (3). Why? Because Aristotle is *either* saying something about αἰσθητὰ which he says nowhere else, *or* he is using the term in a nonstandard way. Apart from this passage, the *only* other place where commentators who take the anti-realist view find this line of thought in Aristotle is in the very passage we have been

⁹⁸¹ See just this version of the argument in Alexander, *In meta.* 315.35-316.29 and Syrianus, *In meta.* 77.10-15.

⁹⁸² Contra Ross, *Aristotle's Metaphysics*, 1924, 1:278. "A reference to αἰσθήματα would be rather pointless; the interesting thing is the statement that if the senses disappeared the sensible qualities would disappear. This is accordance with Aristotle's usual doctrine: ἡ δὲ τοῦ αἰσθητοῦ ἐνέργεια καὶ τῆς αἰσθήσεως ἡ αὐτὴ μὲν ἐστὶ καὶ μία, τὸ δ' εἶναι οὐ τὸ αὐτὸ αὐταῖς ["the actuality of the perceptible and of what can perceive are one and the same, but their being is different"], *DA* [3.2] 425b25. Apart from the αἰσθητικόν, the αἰσθητόν has merely potential existence. Cf. the whole passage 425b25-426b8."

⁹⁸³ The passage in full, *Meta.* K.6 1063a35-b7: "Further, if we are always altering and never remain the same, is it any wonder that to us, as to the sick, things never appear the same? For to them, too, because their state is not in the same condition as when they were healthy, perceptible things do not appear the same. And yet this certainly does *not* (μὲν) make the perceptibles (αἰσθητά) themselves share in any change, though they do produce different perceptual affections (αἰσθήματα) in the sick and not the same ones. For it to be the same way, then, with us too, if the aforementioned change occurs, is equally necessary. But if we do not change but continue as we were, there will be something that remains the same" (Reeve translation, modified). ἔτι δ' εἰ μὲν ἀλλοιούμεθα ἀεὶ καὶ μηδέποτε διαμένομεν οἱ αὐτοί, τί καὶ θαυμαστὸν εἰ μηδέποθ' ἡμῖν ταῦτα φαίνεται καθάπερ τοῖς κάμνουσιν (καὶ γὰρ τούτοις διὰ τὸ μὴ ὁμοίως διακεῖσθαι τὴν ἕξιν καὶ ὅθ' ὑγίαινον, οὐχ ὅμοια φαίνεται τὰ κατὰ τὰς αἰσθήσεις, αὐτὰ μὲν οὐδεμιάς διὰ γε τοῦτο μεταβολῆς κοινωνοῦντα τὰ αἰσθητά, αἰσθήματα δ' ἕτερα ποιοῦντα τοῖς κάμνουσι καὶ μὴ τὰ αὐτά· τὸν αὐτὸν δὲ τρόπον ἔχειν καὶ τῆς εἰρημένης μεταβολῆς γιγνομένης ἴσως ἀναγκαῖον ἐστίν); εἰ δὲ μὴ μεταβάλλομεν ἀλλ' οἱ αὐτοὶ διατελοῦμεν ὄντες, εἴη ἂν τι μένον.

⁹⁸⁴ Aland and Aland, *The Text of the New Testament*, 281.

examining, *De Anima* 3.2.⁹⁸⁵ If he used the term αἰσθήματα, on the other hand, there would be no challenge to his realism—for αἰσθήματα are just perceptual affections in the body which co-occur with perception and give rise to images in the imagination and are the fodder for dreams and such.⁹⁸⁶ To say that there would be no αἰσθήματα without perception is undoubtedly true, but is in no way antirealist.⁹⁸⁷ To say, on the other hand, that there is no αἰσθητὰ is unique in the *Corpus*. Hence, *lectio difficilior* weighs in favor of (2) over (3), which should be taken in addition to the already established fact that there is very ancient evidence for this reading too in Asclepius and Averroes.

What, however, of the even more ancient evidence from Alexander? This leads to my second point. Against von Christ, both Ross and Jaeger point out that Alexander uses αἰσθητὰ in a later passage than quoted by von Christ alongside αἰσθήματα, which to them indicates the α-text reading in Alexander.⁹⁸⁸ But I think this is incorrect. What I propose instead is that Alexander uses αἰσθήματα as a gloss concerning the meaning of Aristotle's in his first paraphrase, only later specifying that αἰσθήματα is the meaning of Aristotle's term αἰσθητὰ as used here. That is, Alexander recognizes this is a nonstandard use of the term and so “translates”

⁹⁸⁵ See e.g., Ross, *Aristotle's Metaphysics*, 1924, 1:278; Irwin, *Aristotle's First Principles*, 313–14, 591–92; and Everson, *Aristotle on Perception*, 123. Cf. additional proponents of this view in Sarah Broadie, “Aristotle's Perceptual Realism,” *Southern Journal of Philosophy* 31, no. S1 (1993): 154.

⁹⁸⁶ As Aristotle puts it at *De Insomniis* 3 461b28–29, αἰσθήματα are “the motions in the sense-organs” (τῶν κινήσεων τῶν ἐν τοῖς αἰσθητηρίοις; cf. 462a12: κινήσεις οὐσας ἐν τοῖς αἰσθητηρίοις). Cf. the excellent overview of Aristotle's notion of αἰσθήματα in Richard Sorabji, *Aristotle on Memory* (Providence, RI: Brown University Press, 1972), 82. See too Robert Roreitner, “Blood, Pneuma, or Something More Solid? Aristotle on the Material Structure of Perceptual Apparatus,” in *Heat, Pneuma, and Soul in Ancient Philosophy and Science*, ed. Hynek Bartoš and Colin Guthrie King (New York: Cambridge University Press, 2020), 291; and Beare, *Greek Theories of Elementary Cognition*, 287–93.

⁹⁸⁷ As proves to the point, see the rather wrongheaded comments of Ross, *Aristotle's Metaphysics*, 1924, 1:278. “A reference to αἰσθήματα would be rather pointless; the interesting thing is the statement that if the senses disappeared the sensible qualities would disappear.”

⁹⁸⁸ Ross and Jaeger point to 316.19–20 as evidence for the α-text reading.

it for his readers in his paraphrase.⁹⁸⁹ This is further substantiated when one looks at the later passage and can see that Alexander is specifying that he is using *in the sense of* αἰσθήματα, which is the passage that both Ross and Jaeger point to, although any detailed reading of it would show that Aristotle is using the term in the sense of αἰσθήματα.⁹⁹⁰

But how can one be so sure that the β-text reading possessed by Asclepius and Averroes is also that possessed by Alexander but “translated” in his paraphrase? This is where the third and final piece of evidence comes in. In all the versions of this passage that we are in possession of—from Alexander,⁹⁹¹ Asclepius,⁹⁹² and Averroes⁹⁹³ to the α-text⁹⁹⁴ and β-text⁹⁹⁵ from

⁹⁸⁹ For the only similar usage of αἰσθητά, see *De Insomniis* 2 460b2-3: “Even when the perceptible (αἰσθητοῦ) has departed the perceptible affection-perceptible (αἰσθήματα αἰσθητά) persists.” ὅτι καὶ ἀπελθόντος τοῦ θύραθεν αἰσθητοῦ ἐμμένει τὰ αἰσθήματα αἰσθητά ὄντα.

⁹⁹⁰ In terms of my contention that both Ross and Jaeger misread the passage (especially lines 19-20), I think this is rather clear on any close reading, for Alexander is referencing Protagoras’ view and how Aristotle argues against it, *not* Aristotle’s own view as is show in the final two lines (21-22) where he calls the underlying subjects (υποκείμενα) *perceptible*. Here is the passage in full, *In meta.* 316.11-22, with parenthetical clarifications, and lines numbers marked approximately in English, exactly in Greek: (11) “What he [Aristotle] (12) says could also be said in reply to the view of Protagoras, who, (13) thinking that only perceptibles (αἰσθητά) exist [*when perceived*; see 315.30b-33a], (14) said that perceptibles (αἰσθητά) were produced in some sort of relation (προς) of perception (αἰσθήσεως) to external (εκτός) things [and simultaneous with them]; this is why he [Protagoras] said that a thing is for each person such as it appears to him. (15) If, then, perceptibles (αἰσθητά) are of the same nature (της αὐτῆς φύσεως ἐστὶ) [as perceptions], i.e. (καὶ) (16) if it is the same thing for them to be (τό τε εἶναι) and to be perceived (το αἰσθητοῦς εἶναι) *if* [as Protagoras says; see 315.30b-33a], that is, their existence consists in their being (17) apprehended (αντιλήψει) by perception (αἰσθήσεως), *then* [on this line of reasoning] it is clear that *if* there is no perception (αἴσθησις), none of the perceptibles (αἰσθητῶν) will exist either [per Protagoras’ view in 315.30b-33a].” (18) *But* there will be no perception (αἴσθησις) if there are no animals (ζώων), for perception (αἴσθησις) resides in them [i.e., perceptions are not “free-floating” but must be *had* by things, per *Meta.* Γ.5 1010b30]. (19) He [Aristotle] has shown, then, that this [theory] is not true. For, while there will be no activity (ἐνέργεια) (20) according to perception (αἴσθησιν) if there is no perception (αἰσθήσεως), nor will there be anything actually perceptible (ἐνέργειας τι αἰσθητόν) (i.e., actually perceived in the 316.10-11 *sense*), (21) it does not follow from this that the perceptible (αἰσθητά) underlying subjects (υποκείμενα) which come to be perceived (αἰσθήσει), (22) and which produce (ποιεῖ) perception (αἴσθησιν), will be negated” (Dooley & Madigan translation, modified). (11) καὶ εἴη ἀν (12) το λεγόμενον πρὸς τὴν Πρωταγόρου δόξαν εἰρημένον, δς μόνα γινόμενος (13) εἶναι τὰ αἰσθητά, ἔλεγεν ἐν σχέσει τῆς αἰσθήσεως ποῖα πρὸς τὰ ἐκτός (14) ἀπο|γεννάσθαι τὰ αἰσθητά; διό καὶ ὅποιον ἐκάστω φαίνεται, τοιοῦτον καὶ (15) εἶναι ἐκείνῳ ἔλεγεν. εἰ δὴ τὰ αἰσθητά τῆς αὐτῆς φύσεως ἐστὶ καὶ ταυτον (16) αὐτοῖς τό τε εἶναι καὶ το αἰσθητοῦς εἶναι, εἰ γε ἐν τῇ τῆς αἰσθήσεως (17) ἀντιλήψει το εἶναι αὐτοῦς, δῆλον ὡς ἂν μὴ αἴσθησις ἢ, οὐδε τῶν αἰσθητῶν (18) τι ἐστὶ. οὐκ ἐστὶ δὲ αἴσθησις μὴ ὄντων ζώων; ἢ γὰρ αἴσθησις (19) ἐν τούτοις. ὅτι οὐ μὴ ἀληθές τούτο ἐδείξεν. ἢ μὲν γὰρ ἐνέργεια ἢ (20) κατὰ τὴν αἴσθησιν οὐκ ἐστὶ μὴ οὐσης αἰσθήσεως, οὐδε κατ ἐνέργειας (21) τι αἰσθητόν; οὐ μὲν δὴ τούτο καὶ τὰ ὑποκείμενα καὶ τὴν αἰσθήσει αἰσθητά (22) γινόμενα ἀναιρεθῆσεται α τὴν αἴσθησιν ποιεῖ.

⁹⁹¹ Alexander, *In meta.* 315.35-36.

⁹⁹² Asclepius, *In meta.* 283.28.

⁹⁹³ Averroes, *Tafsīr Mā ba ‘d al-ṭabī‘a*, Liber 3, Textus 25.

Byzantium and the twelfth-century Latin translations,⁹⁹⁶ all have the parenthetical phrase “for they are affections of the perceiver” (τοῦ γὰρ αἰσθανομένου πάθος τοῦτό ἐστι, 1010b33). This, of course, is precisely what αἰσθήματα are⁹⁹⁷—but that begs the question. If the reading (3) is correct, then *why* does Aristotle define the term in this passage? Granted, the term is rare,⁹⁹⁸ but in no other place does Aristotle parenthetically define it, partly because the term is etymologically clear to any ancient reader: it is what passively happens due to perception.⁹⁹⁹ The *only* plausible reason that Aristotle would give this parenthetical definition is because he is using αἰσθητὰ in a nonstandard way¹⁰⁰⁰ and is seeking to keep his point clear.¹⁰⁰¹ And this scenario is even more plausible if one recognizes that αἰσθήματα is rarely used in the *Corpus* and posits that this passage was written prior to that widespread usage by Aristotle.¹⁰⁰² If that is correct, then there was no other widely available term for Aristotle to use here but αἰσθητὰ. But if he did so use it in this nonstandard way—and this is key—*he had to define it*. For it is exceedingly

⁹⁹⁴ Ross, *Aristotle's Metaphysics*, 1924, 1:71 and Jaeger, *Aristotelis Metaphysica*, 80.

⁹⁹⁵ Christ, *Aristotelis Metaphysica*, 83.

⁹⁹⁶ *Translatio Anonyma* liber 4, cap. 5, pag. 78, linea 15 (“sentientis enim passio hoc”) and *Recensio et Translatio Guillelmi* liber 4, cap. 5, pag. 86, linea 533 (“sentientis enim passio hoc est”); *Translatio Scoti* liber 4, cap. 5, pag. 93, linea 23-24: (“sunt passio sentientis”).

⁹⁹⁷ *De Insomniis* 3 461b28-29: αἰσθήματα are “the motions in the sense-organs” (τῶν κινήσεων τῶν ἐν τοῖς αἰσθητηρίοις).

⁹⁹⁸ A search in the *Thesaurus Linguae Graecae* for αἰσθήμα reveals a single use of the term in the Athenian tragedian Euripides (480-406 BC) prior to its use in Aristotle. As for its use in Aristotle, it occurs only thirteen times in the entire *Corpus*: 99b37, 431a15, 432a9, 450a31-32, 456a26, 460b2-3, 29, 461a19, 26, b22, 462a30, 1010b32, and 1063b4.

⁹⁹⁹ The Greek suffix -μα indicates the result of an action, which when combined with αἰσθησις gives us αἰσθήμα—the *result* of perception. That this is an effect or result of perception in the percipient by the addition of -μα would be as clear to any Greek reader as the adding of the suffix -ing or -ed to an English stem to indicate present or past action would be to us.

¹⁰⁰⁰ Again, for the only similar usage of αἰσθητὰ see *De Insomniis* 2 460b2-3: “Even when the perceptible (αἰσθητοῦ) has departed the perceptible affection-perceptible (αἰσθήματα αἰσθητὰ) persists.” ὅτι καὶ ἀπελθόντος τοῦ θύραθεν αἰσθητοῦ ἐμμένει τὰ αἰσθήματα αἰσθητὰ ὄντα.

¹⁰⁰¹ See Averroes, *Tafsīr*, Liber 3, Commentum 25.O: “Quand il a dit: «Et d’une certaine manière, il est vrai aussi que les choses sensibles n’existeront pas, car elles sont les affections du sentant». Il veut dire: cette consécution est vraie d’un autre point de vue, je veux dire, si nous supposons que les sensibles sont des relatifs, car le sensible doit être le sens et le sens est une affection dans le sentant, c’est à dire un accident, de sorte que le sensible ne devrait pas exister si celui qui sent n’existe pas, puisque l’accident ne peut exister sans son substrat” (Kaddour translation). See too Aquinas for the same point, *Sententia libri Metaphysicae*, 4.14.706.

¹⁰⁰² Of the thirteen occurrences of αἰσθήμα in the *Corpus*, only *three* of which are outside *De Anima* and the *Parva Naturalia* (which are both late works): *APo* 2.19 99b37, *Meta.* Γ.6 1010b32, and *K.6* 1063b4.

difficult to see why the authentic parenthetical definition would be present if the term being defined is the rather clear αἰσθήματα. If this analysis is correct, then neither reading (1) nor (3) are plausible at this point either, given that *both* posit αἰσθήματα as the term to be defined.

With these arguments in mind, it is highly plausible that the original reading of the passage is what we find in reading (2), viz., “that perceptibles (αἰσθητὰ) would not exist is presumably true—for they are affections (πάθος) of the perceiver” (1010b31-33).¹⁰⁰³ Not only does this account for all of our textual evidence, but it renders the passage no longer the single outlier on the issue of the reality of perceptibles prior to perception.

6.2.3.2.4.2 Problem 2: How Are Potential Perceptibles Compatible with Realism?

Having established that perceptibles exist prior to perception and that the evidence that Aristotle is an antirealist is thin in the extreme, we are still, nonetheless, beset with a rather perplexing interpretive problem. Returning to our passage in *De Anima* 3.2, what are we to make of Aristotle’s statement that it is *only when* perception is occurring that we have *actual sound* (ἐνέργειαν ψόφος, 425b30-31)? For if sound itself only comes about when auditory perception comes about, i.e., actual hearing (ἐνέργειαν ἀκοή, 425b31), given that *both* sounding and hearing come to be as one “in” the patient (425b26-28), then there can be no sounding prior to perception, and hence, one would think, no sound. As a result, it would seem we have two options: either (a) prior to perception there is no actual sound *qua* perceptible as on the antirealist interpretation we just debunked; or (b), strange as it might seem, prior to perception what sounds (e.g., a bell) is only *potentially* sounding if no one is around to hear it, but it nevertheless characterized by a perceptible which we rightfully call *sound*.¹⁰⁰⁴ But what would this latter option even amount to exactly? If the auditory perceptible is *already* actual prior to perception,

¹⁰⁰³ τὸ μὲν οὖν μήτε τὰ αἰσθητὰ ἴσως ἀληθές (τοῦ γὰρ αἰσθανομένου πάθος τοῦτό ἐστι).

¹⁰⁰⁴ For both of these interpretations of this passage, see Broadie, “Aristotle’s Perceptual Realism,” 155–56.

how could it become even *more* actual during perception? That is, how can sound be any more actual than it already is just in virtue of *sounding*? For not only is the auditory perceptible (e.g., a bark) already actual if had by its object (e.g., a dog), but one would also think that if there is sound then there must be a sounding as well, which on option (b) Aristotle will not allow. But all of this confusion is due to a simple mistake. Even if sounding must be simultaneous with—because it is one and the same as (425b26-28)—hearing (425b30-426a1), it is by no means necessary that sounding must be simultaneous with *sound*. For sounding, like hearing, indicates *successful* action (or successful passion in the case of hearing), but *sound* need not indicate successful *action*, nor can it. For sound is not an action at all, but a perceptible which is at least in principle separable from what it does. We see this too with respect to the other modes of perception in Part 2 of this passage at 426a8-19:

The same account also applies to the other perceptual faculties (αἰσθήσεων) and perceptibles (αἰσθητῶν). For just as both acting (ποιήσις) and being-affected (πάθησις) are in (ἐν) what is affected (πάσχοντι), but not in (οὐκ ἐν) what is acting (ποιοῦντι), so also is the actuality (ἐνέργεια) of the perceptible (αἰσθητοῦ) and of (καὶ ἡ) the percipient (αἰσθητικοῦ) is in (ἐν) the percipient (αἰσθητικῷ). But while in some cases each has a name (ὀνόμασται), e.g. sounding (ψόφῃσις) and hearing (ἄκουσις), in others one or the other is without a name (ἄνώνυμον). For the actuality (ἐνέργεια) of sight (ὄψεως) is called seeing (ὄρασις), while [the actuality] of color (χρώματος) has no name (ἄνώνυμον), and tasting (γεῦσις) [is the actuality] of what is able to taste (γευστικοῦ), while [the actuality] of flavor (χυμοῦ) has no name (ἄνώνυμος). And since there is one (μία) actuality (ἐνέργεια) of the perceptible (αἰσθητοῦ) and the percipient (αἰσθητικοῦ), though their being is different (τὸ δ' εἶναι ἕτερον), it is necessary (ἀνάγκη) that what is

spoken of in this way as hearing (ἀκοήν) and sounding (ψόφον) perish (φθείρεσθαι) or preserve (σώζεσθαι) simultaneously (ἅμα), and so also for flavor (χυμὸν) and tasting (γεῦσιν), and similarly (ὁμοίως) for the other cases. But this is not necessary (οὐκ ἀνάγκη) for those things spoken of as potential (δύναμιν).¹⁰⁰⁵

This is all very familiar: the actuality of the perceptible and of the percipient are wholly in the percipient in instances of second actuality perception (426a9-11); these ‘actualities’ of perceptible and percipient in the percipient are really just one actuality, even as they are different in account (426a15-17); and ‘they’ are “preserved” (σώζεσθαι) and even perish simultaneously (426a17).¹⁰⁰⁶ Nevertheless, it is not *the perceptible* (e.g., sound, flavor, etc.) in any case that is “without a name” (ἄνώνυμον, 426a13), nor the perceptual mode (e.g., hearing, tasting, etc.), but what the perceptible itself *does*. For seeing and tasting are like hearing in that they refer to successful action (or successful passion, to be precise), though they are unlike it just by virtue of the linguistic fact that the simultaneous and coordinate (successful) action of the perceptible (e.g., color or flavor) lacks any name such as “sounding.”¹⁰⁰⁷ We should note, as does Aristotle (426a17-18), that this is the purpose behind his initial example of the sounding and hearing of

¹⁰⁰⁵ ὁ δ’ αὐτὸς λόγος καὶ ἐπὶ τῶν ἄλλων αἰσθήσεων καὶ αἰσθητῶν. ὥσπερ γὰρ καὶ ἡ ποίησις καὶ ἡ πάθησις ἐν τῷ πάσχοντι ἀλλ’ οὐκ ἐν τῷ ποιῶντι, οὕτω καὶ ἡ τοῦ αἰσθητοῦ ἐνέργεια καὶ ἡ τοῦ αἰσθητικοῦ ἐν τῷ αἰσθητικῷ. ἀλλ’ ἐπ’ ἐνίων μὲν ὠνόμασται, οἷον ἡ ψόφησις καὶ ἡ ἄκουσις, ἐπ’ ἐνίων δ’ ἀνώνυμον θάτερον· ὄρασις γὰρ λέγεται ἡ τῆς ὄψεως ἐνέργεια, ἡ δὲ τοῦ χρώματος ἀνώνυμος, καὶ γεῦσις ἡ τοῦ γευστικοῦ, ἡ δὲ τοῦ χυμοῦ ἀνώνυμος. ἐπεὶ δὲ μία μὲν ἐστὶν ἐνέργεια ἡ τοῦ αἰσθητοῦ καὶ τοῦ αἰσθητικοῦ, τὸ δ’ εἶναι ἕτερον, ἀνάγκη ἅμα φθείρεσθαι καὶ σώζεσθαι τὴν οὕτω λεγομένην ἀκοήν καὶ ψόφον, καὶ χυμὸν δὲ καὶ γεῦσιν, καὶ τὰ ἄλλα ὁμοίως· τὰ δὲ κατὰ δύναμιν λεγόμενα οὐκ ἀνάγκη.

¹⁰⁰⁶ The term for “preserved” here, σώζεσθαι, occurs also in *DA* 2.5 417b3 as σωτηρία, “preservation”, referring there as here to the switch from first to second actuality. This appears to be another way of referring to the category of “generation of a sort” (γένεσις τις) from *Phys.* 5.1 225a12-17. There too in *DA* 2.5 it is paired with φθορά—specifically φθορά τις—referring in that case to the “destruction” of first actuality when second actuality comes to be, whereas φθείρεσθαι here (426a17) would seem to refer to the “destruction” of second actuality perception when it reverts back to its first actuality state with the removal of the perceptible. These passages are undoubtedly linked.

¹⁰⁰⁷ “Sounding” refers to what sound does, but coloring, flavoring, scenting, and all the rest refer to something entirely different, viz., the *making* of things to possess such qualities in the first place. Hence, in English coloring refers not, as does sounding, to what color *does*, but to how a thing *acquires* its color. The same point, apparently, applies in Greek.

sound, not something unique about the perceptual mode of hearing. It just happens to be the most perspicuous example linguistically but is otherwise not unique. As such, the point still stands that in all such cases, the perceptible itself need not indicate successful *action*, nor can it. Thus given, how can we untangle all this and make sense of Aristotle’s claim here on the realist reading?

The first thing we must note—joining Aristotle in using the most perspicuous example—is that e.g., sounding and hearing refer to action and passion respectively, which are categories in their own right (τὸ ποιεῖν καὶ πάσχειν, *Cat.* 9 11a1).¹⁰⁰⁸ But, e.g., sound, as we have just stated, is a perceptible, and perceptible are *qualities*. Hence, we have already just from a close reading of the *Categories* a distinction between perceptibles *qua* qualities and perceptibles *qua* actors. Moreover, this distinction occurs not just in the *Categories*, but early in our passage as well at 425b28-29: “for it is possible for someone who has hearing (ἀκοὴν) not to be hearing (ἀκούειν); and what has sound (ψόφον) is not always making a sound (ψοφεῖ).”¹⁰⁰⁹ Notice that “someone who has hearing” (i.e., “a hearer”) is a noun while “hearing” is a verb; and the same is the case with “what has sound” (i.e., “sounder”) and “making a sound” (i.e., “sounding”).¹⁰¹⁰ We have every indication here that Aristotle is making a distinction between a thing (i.e., *sound*) and agent action (i.e., *sounding*)—the latter of which does not come into being until the former is *heard*

¹⁰⁰⁸ The entire chapter is just eight Bekker lines in length (11a1-8) and besides giving us four examples (the active heating and cooling, and the passive being heated and being cooled/being pained and being pleased, 11a2-4), the only details we are given is that both action and passion admit of contrariety (ἐναντίον, 11a3; i.e., heating and cooling vs being heated and being cooled) and both admit of more or less (μᾶλλον καὶ ὀλίγον, 11a2, 5-6; i.e., they are degreed).

¹⁰⁰⁹ ἔστι γὰρ ἀκοὴν ἔχοντα μὴ ἀκούειν, καὶ τὸ ἔχον ψόφον οὐκ ἀεὶ ψοφεῖ.

¹⁰¹⁰ The word ψόφος (“sound”) is used fourteen times in this section of chpt. 2 (425b27, 29, 30, 31-2, 426a1, 3, 6, 7, 8, 12, & 18), sometimes as a noun (425b27, 31-2, 426a3, 7, 8), sometimes as a verb (425b29, 30), and sometimes as a verbal adjective (425b29, 30, 426a1, 6, 7, 12, & 18). Aristotle shows a preference in this context to refer to the action by means of the verb ψοφεῖν (“sounding”, 425b30), but also makes heavy use of verbal adjectives like ψόφησις (“making a sound”, 426a7) to refer to the same thing. The noun he reserves for either the heard or unheard noise *qua* noise. As Aristotle puts it at 426a6-7, “the actuality (ἐνέργειά) of what-is-capable-of-making-a-sound (τοῦ ψοφητικοῦ) is sound (ψόφος) or sounding (ψόφησις).” Notice, it is the ἐνέργειά of the agent (τοῦ ψοφητικοῦ) he is speaking of here, which can itself be sounding or unsounding. I say more about this passage below.

(patient passion).¹⁰¹¹ Hence, in his summary remarks, he notes that “the actuality (ἐνέργειά) of what-is-capable-of-making-a-sound is sound (ψόφος) or sounding (ψόφησις) and [the actuality] of what-is-capable-of-hearing is hearing (ἀκοή) or listening (ἄκουσις)” (426a6-7). Why the twofold reference of ψόφος/ψόφησις and ἀκοή/ἄκουσις? I think it is clear that it is on account of the deep analogy between the two. Take the passion of the percipient, the hearing. On the one hand, there is the *ability* to hear—the first actuality state of hearing (ἀκοή), and then there is the further perfection of that state in second actuality hearing (ἄκουσις). So, what we have is the distinction between what we might call a hearer with the unexercised potentiality to hear, and *hearing* which is the full actuality of that potentiality—i.e., the state and the actuality of that state. Of course, the state and what have the state (i.e., the percipient) both *preexist* the second actuality perfection of that state in the passion of hearing. For a percipient and its states are in actuality with respect to their *existence*, even if they are potentiality with respect to their *exercise*. Thus, says Aristotle, “hearing (ἀκοή) is twofold” (426a8). But if this is correct, then the same must be applied to the perceptible agent as well, for as he also says, “sound (ψόφος) is twofold” (426a8). Hence, whereas ψόφησις refers to what we have called *sounding*, ψόφος refers to plain *sound*.¹⁰¹² On this score, there is the actual sound itself—a real but unheard quality of something—and then the further perfection of sound in *sounding*. If the analogy holds with the hearer, then the first actuality of the perceptible is the state of being *sound unsounding*—or what

¹⁰¹¹ Cf. Sarah Broadie, “Aristotle’s Perceptual Realism,” *Southern Journal of Philosophy* 31, no. S1 (1993): 155: “I follow most scholars (Themistius, Philoponus, Simplicius, Trendelenburg, Rodier, Hicks, Ross, Kosman, Burnyeat) in taking ὁ κατ’ ἐνέργειαν ψόφος [425b27-28] to be the auditory appearance (or appearing) of sound to a hearer, rather than the actual sound itself which appears, but which also might not have been heard. Thus here the contrasting references to “potential sound” are to *actual sounds unheard*” (italics mine). Cf. Simplicius, in *DA* 191.30-31: “Saying ‘has sound’ he means what is already making a sound, like bronze being struck, but he ways it ‘makes a sound’ when it is in actuality as something being *heard*” (italics mine). Ἐχον ψόφον ἐπὶ τὸ ἤδη ηχοῦν, ὡς καὶ πληττόμενος χαλκός, ψοφεῖν δὲ λέγων, ὅταν ὡς ακουστός ενεργή.

¹⁰¹² See this same interpretation of ψόφος and ψόφησις in “sound (ψόφος) is twofold” (426a8) in Broadie, 155.

some commentators have termed “noise”¹⁰¹³—while the second actuality perfection of the state in its exercise is *sound sounding*. And if both the first actuality state of being a hearer and what can hear are *prior* to second actuality hearing, then the first actuality state of sound unsounding (i.e., “noise”) and what has it are *prior* to second actuality sound sounding.

Ronald Polansky has advanced just such an interpretation of this passage, linking it to the first actuality/second actuality distinctions made in *De Anima* 2.5.¹⁰¹⁴ Hence, “potentiality” in *De Anima* 3.2 with respect to a perceptible “really means developed potentiality or dispositional actuality” whereas “actuality” refers to its “operation.”¹⁰¹⁵ While this is a helpful distinction to introduce here, the problem with such an interpretation is that it would seem to put us right back into the antirealist position in that if the perceptibles, e.g., yellow or C minor were only “dispositionally” had by what has color and what has sound (a bird), then *if* that bird is not seen or heard *then* that bird has neither color nor sound.¹⁰¹⁶ One can see why Polansky might be inclined to say this, for if a perceptible is not actual then it must be potential, and if color or sound is potential, then there is only the *disposition* for both in what has them, not their actuality.¹⁰¹⁷ But if this is correct, then what is the difference between first potentiality and first actuality/second potentiality on Polansky’s view? For both would be the *disposition* of the, e.g., bird to be yellow and sing C minor without actually being characterized by either. Polansky has collapsed the distinction. For again, on this account, the bird is neither yellow nor singing in C

¹⁰¹³ Shields, *Aristotle: De Anima*, 269; Polansky, *Aristotle’s De Anima: A Critical Commentary*, 387.

¹⁰¹⁴ Polansky, *Aristotle’s De Anima: A Critical Commentary*, 386–91. Given the use of “preserved” (σώζεσθαι) and “perish: (φθίρεισθαι) in 426a17 and the rare double usage in *DA* 2.5 417b3 as well among other things, I do not find this implausible in the least.

¹⁰¹⁵ Polansky, 388.

¹⁰¹⁶ Polansky, 387–88, seems to be saying just this, *despite* attempting to defend what he calls a “realist view” of Aristotle’s theory (390).

¹⁰¹⁷ Polansky, 389 n. 10, notes: “Aristotle does not talk about whether there would be sensible objects according to potentiality if there were no sentient being at all to perceive them, since this would be potentiality without any possibility of actuality.” But this is *precisely* what Aristotle talks about in *Cat.* 7 7b36–8a12, esp. 8–12 as we saw above, a passage Polansky does not cite or seem to be aware of.

minor, but merely *can*. And if this is correct, then first actuality/second potentiality color and sound are utterly disconnected from second actuality color and sound in that what one sees and hears at time t_2 when perceiving is not what *actually* characterized the bird *prior* to perception at time t_1 . Worse still, if unperceived perceptibles are mere dispositions, then there is no difference between the color of a blue jay and of a canary. For both blue and yellow are merely potentially the birds' colors just as much as green, purple, or any other color given the lack of difference between first potentiality and first actuality/second potentiality on Polansky's view. And if this is correct, then what is to prevent one potentiality from becoming actual for perceiver₁ and another for perceiver₂ even at the same time? Polansky's view as is leads us right back into antirealism—for the perceptible object is *perceived* such as it is not *sans* perception.¹⁰¹⁸ Fortunately, Polansky's is not the only way, even as an aspect of his view is salvageable as we shall see momentarily.

By my lights, the best way to solve this problem is by recalling and applying what Aristotle said about perceptibles in the *Categories* 8. As we have seen, Aristotle posits four species of quality: (1) states/ conditions (ἔξεις/διαθέσεις), (2) natural capacity (δύναμις), (3) affective qualities (παθητικός ποιότης) or affections (πάθη), and (4) shape/figure (σχῆμα/μορφή). As noted previously, perceptibles (αἰσθητά) are identifiable with affective qualities. Not only do we see this identification made in the *Categories*,¹⁰¹⁹ but also very clearly in *Physics* 7.2.¹⁰²⁰ Aristotle tells us he calls perceptibles “qualities” (ποιότητες) because “things that possess them

¹⁰¹⁸ Despite passages like *DA* 2.5 5 418a3-4 “the percipient is in potentiality such as the perceptible *already* (ἤδη) is in actuality” τὸ δ' αἰσθητικὸν δυνάμει ἐστὶν οἷον τὸ αἰσθητὸν ἤδη ἐντελεχέα. Cf. *DA* 2.6 418a31, 2.7 419a8, 19, 2.9 421a26, 2.10 422a10, 16, b15, 2.11 423b27, 2.12 424a22, & 3.2 425b22.

¹⁰¹⁹ Cf. *Cat.* 7 8a5-6 (αἰσθητά) and 8 9a28-31 (παθητικός ποιότης καὶ πάθη), where the examples used are *identical*.

¹⁰²⁰ In *Physics* 7.2 Aristotle uses affections (πάθη, 244b6), affective qualities (παθητικός ποιότης, 244b5a, b6) and perceptibles (αἰσθητά, 244b5b, 245a3) interchangeably in the matter of just a few lines. As for why he takes them to be synonymous, he tells us in the *Categories* that affective qualities are so called because they affect *the senses* (*Cat.* 8 9b5-9)—hence, it stands to reason that they might also be called *perceptibles*.

are said to be qualified in virtue of them” (*Cat.* 9a31-33);¹⁰²¹ and that he calls them “affective” (παθητικός) “because each of the qualities mentioned is *productive of an affection* (πάθος) *of the senses* (τὰς αἰσθήσεις)” (*Cat.* 9b5-6).¹⁰²² As affective qualities and *only* affective qualities are capable of affecting the senses, Aristotle regularly calls them “perceptibles” (αἰσθητά) elsewhere, even in the *Categories* (cf. *Cat.* 7 8a5-6, 8 9a28-31). Perceptibles, thus, are of a dual nature, something Polansky seems to have missed. As such, they can be actual in more than one sense—either *qua* quality or *qua* affective.

Among ancient commentators, all offered realist interpretations with respect to *De Anima* 3.2, but only Simplicius spotted just this point.¹⁰²³ Hence, while Simplicius thinks “it is possible for there to be a sound and for it not to be heard” (*In DA* 191.27)¹⁰²⁴ such that sound can exist without sounding, he nevertheless thinks that the perceptible is only potential at that time despite being a genuine characteristic of what has it. For the actuality “of the perceptible does not happen *qua* color or *qua* sound, but when it is perceptible, so that it is in actuality *qua* actuality” (191.11-12).¹⁰²⁵ That is, sound *qua* perceptible is only actual when it is *affective* or *acting*—sounding and therefore being heard—even if it is a genuine characteristic of what has it *qua* quality. Hence, when Aristotle refers at 425b27-28 to “sound according to actuality” (ὁ ψόφος ὁ κατ’ ἐνέργειαν), Simplicius takes Aristotle not to be speaking of “sound without qualification, but of the whole thing as perceived sound” which “coincides with hearing in actuality” (*in DA*

¹⁰²¹ This is the so-called linguistic criterion of quality which we referenced in the previous chapter.

¹⁰²² Τῷ δὲ κατὰ τὰς αἰσθήσεις ἐκάστην τῶν εἰρημένων ποιοτήτων πάθος εἶναι ποιητικὴν.

¹⁰²³ Averroes spotted this too in his commentary on *DA* 3.2, referring to perceptibles at one point “insofar as they are agents”, (i.e., perceptibles *qua* agents), although the reference is somewhat oblique. See Averroes *Commentarium magnum In Aristotelis De anima libros* 2.139 in Taylor, *Averroes: Long Commentary on the De Anima of Aristotle*.

¹⁰²⁴ ἐπει ἐνδέχεται καὶ ψόφον εἶναι καὶ μὴ ἀκούεσθαι.

¹⁰²⁵ τοῦ δὲ αἰσθητοῦ οὐχ ὅταν χρῶμα ᾗ ὅταν ψόφος ᾗ, ἀλλ ὅταν αἰσθητόν, ἵνα ὡς αἰσθητόν ἐνεργείᾳ ᾗ. Blumenthal translation, modified.

191.25-26).¹⁰²⁶ But if this is correct, then “sound according to potentiality” would refer not to what lacks sound *en toto*, but what has sound but lacks successful *sounding*. That is, it refers to what is actual *qua* quality, but what is merely potential *qua* affective—or as Simplicius puts it, what is potential with respect to “the perceptible *qua* perceptible” (του αισθητού ἢ αισθητόν, 191.1-2).

While I think Simplicius’ analysis of the passage is correct, it still presents us with a lack of clarity given that he only wants to make reference to affective qualities or perceptibles as actual *when* they are perceptually affective. Not only do I think he would do well to incorporate into his solution the first and second actuality distinction suggested by Polansky, albeit in a different way, but I think a realist reading of the passage actually *requires* it in given the final lines of the section we are here examining which we referenced just above, *viz.*, at 426a6-8:

Hence, the actuality (ἐνέργειά) of what-is-capable-of-making-a-sound (τοῦ ψοφητικοῦ) is sound (ψόφος) or sounding (ψόφησις), and [the actuality] of what-is-capable-of-hearing (τοῦ ἀκουστικοῦ) is hearing (ἀκοή) or listening (ἄκουσις). For hearing (ἀκοή) is twofold; and sound (ψόφος) is twofold.¹⁰²⁷

We asked above about why Aristotle introduces a twofold reference of ψόφος/ψόφησις and ἀκοή/ἄκουσις, and our answer had to do with the deep analogy Aristotle sees between the two. But this led us to a puzzle in that if “hearing” (ἀκοή) refers one sense of actuality and “listening” (ἄκουσις) to still another, then “sound” (ψόφος) and “sounding” (ψόφησις) must both refer to distinct actualities of an auditory perceptible—despite the fact that they appear inseparable and the perceptible seems too simple to admit of multiple actualities. But we have now come to a

¹⁰²⁶ Ἐνεργούντα ψόφον ουχ ὡς ψόφον ἀπλῶς λέγων, ἀλλά το ὅλον τούτο ὡς αισθητόν ψόφον. οὗτος γὰρ εἰς ταυτὸν εἰσι τῇ κατ ἐνέργειαν ἀκοή. Blumenthal translation, modified.

¹⁰²⁷ ἢ μὲν οὖν τοῦ ψοφητικοῦ ἐνέργειά ἐστι ψόφος ἢ ψόφησις, ἢ δὲ τοῦ ἀκουστικοῦ ἀκοή ἢ ἄκουσις· διττὸν γὰρ ἢ ἀκοή, καὶ διττὸν ὁ ψόφος. Shields translation, modified.

point where we can see through these objections and even to a firmer and more precise parallel between the twofold references. For it is not just that “hearing” (ἀκοή) refers to a percipient having the first actuality state of being-able-to-hear without actually hearing while “listening” (ἄκουσις) refers to the second actuality state of being-able-to-hear *and* actually doing so, but that “sound” (ψόφος) too refers to a perceptible’s first actuality state of qualifying ‘what is said to be qualified in virtue of it’ (*Cat.* 9a31-33) without actually perceptually affecting any perceiver and “sounding” (ψόφησις) to the second actuality state of qualifying what has it *and* actually perceptually affecting a perceiver. For just as a percipient can be called an actual perceiver in two senses, so too can a perceptible be called an actual perceptible in two senses. In first actuality sense it is actual *qua* quality and thus *available* for perception, while in the second actuality sense it is actual *qua* quality *and qua* affective and thus actually perceived.

In confirmation of our view here, Aristotle references this dual-capacity for actuality again at the very end of our passage in Part 3 at 426a20-26. And as we shall see, sense cannot be made of his realism claims—just as here at 426a6-8—without recourse to his first actuality/second actuality distinction:

Still, the earlier natural philosophers (πρότερον φυσιολόγοι) did not speak well on this point, because they supposed that nothing is white (οὔτε λευκόν) or black (οὔτε μέλαν) without sight (ἄνευ ὄψεως), nor is there flavor (οὐδὲ χυμὸν) without tasting (ἄνευ γεύσεως). For though they were in one way right (ὀρθῶς), in another way they were not right (οὐκ ὀρθῶς), since [both] perception (αἰσθήσεως) and perceptibles (αἰσθητοῦ) are spoken of in two ways (διχῶς), in some cases as potential (κατὰ δύναμιν) and in others as actual (κατ’ ἐνέργειαν). What was said by them applies to this (τούτων), but does not

apply to the other (ἐτέρων). They, however, spoke without qualification (οὐχ ἀπλῶς) about matters which are spoken of only with qualification (ἀπλῶς).¹⁰²⁸

From Aristotle's vantage point, the earlier physicists were antirealists with respect to perception.¹⁰²⁹ On this view, perceptibles qualify no objects *sans* perception. They were correct in one way but incorrect in another, says Aristotle, for of perception and perceptibles both one speaks of them in terms of potentiality and actuality. Why does the potentiality/actuality distinction matter at this point? Aristotle specifies in lines 24-25: "what was said by them applies to this (τούτων), but does not apply to the other (ἐτέρων)."¹⁰³⁰ The τούτων/ἐτέρων terms undoubtedly refer back to κατὰ δύναμιν/κατ' ἐνέργειαν in line 24, "as potential" and "as actual" as is recognized in contemporary translations.¹⁰³¹ We can paraphrase this as "what was said by them applies to actual perception and actual perceptibles, but does not apply to potential perception and potential perceptibles."¹⁰³² Hence, the earlier physicists were correct, says Aristotle, with respect to actual perception and actual perceptibles, but were incorrect with respect to potential perception and potential perceptibles. It is typically thought that Aristotle has

¹⁰²⁸ ἀλλ' οἱ πρότερον φυσιολόγοι τοῦτο οὐ καλῶς ἔλεγον, οὐθὲν οἰόμενοι οὔτε λευκὸν οὔτε μέλαν εἶναι ἄνευ ὄψεως, οὐδὲ χυμὸν ἄνευ γεύσεως. τῇ μὲν γὰρ ἔλεγον ὀρθῶς, τῇ δ' οὐκ ὀρθῶς· διχῶς γὰρ λεγομένης τῆς αἰσθήσεως καὶ τοῦ αἰσθητοῦ, τῶν μὲν κατὰ δύναμιν τῶν δὲ κατ' ἐνέργειαν, ἐπὶ τούτων μὲν συμβαίνει τὸ λεχθέν, ἐπὶ δὲ τῶν ἐτέρων οὐ συμβαίνει. ἀλλ' ἐκεῖνοι ἀπλῶς ἔλεγον περὶ τῶν λεγομένων οὐχ ἀπλῶς.

¹⁰²⁹ Who are the πρότερον φυσιολόγοι in question? While Themistius mentions no name in his paraphrase (*in DA* 84.18-23), Philoponus takes Aristotle to be referring to Protagoras (*in DA* 475.23-27), while Simplicius thinks it is Democritus (*in DA* 193.27-30). Contemporary commentators have taken Aristotle to be referring, perhaps, to just Democritus (Ross, *Aristotle: De Anima. Edited with Introduction and Commentary*, 276), to just Protagoras (D. W. Hamlyn, *Aristotle's De Anima: Books II and III (with Certain Passages from Book I)* (Oxford, UK: Oxford University Press, 1968), 124), to both Protagoras and Democritus (Broadie, "Aristotle's Perceptual Realism," 155), to just Empedocles and Democritus (Polansky, *Aristotle's De Anima: A Critical Commentary*, 389), or even to Protagoras and Democritus both in addition to Empedocles and Anaxagoras (Hicks, *Aristotle De Anima*, 439-40; Shields, *Aristotle: De Anima*, 268). In my estimation, the latter of these is the most probable.

¹⁰³⁰ ἐπὶ τούτων μὲν συμβαίνει τὸ λεχθέν, ἐπὶ δὲ τῶν ἐτέρων οὐ συμβαίνει.

¹⁰³¹ See, e.g., Hamlyn, Apostle, Blumenthal, Shields, Reeve, etc. The reason, of course, is that not only does the passage fail to make sense if the referents of τούτων/ἐτέρων are not actuality-potentiality (i.e., if they were, say, perception and perceptibles from 426a23), but the τούτων, "this", is immediately after "actuality" in line 24 (κατ' ἐνέργειαν, ἐπὶ τούτων), which makes it difficult to argue that it refers to anything else from the preceding lines—and if this is so, then ἐτέρων *must* refer to the potentiality.

¹⁰³² Cf. the paraphrase of this same line in Hicks, *Aristotle De Anima*, 440.

something like this in mind: when the earlier physicists say that perceptibles qualify no objects *sans* perception, they are correct with respect to actual perceptibles and actual perception in that neither exists in its own right without the other (e.g., there is no yellow without a corresponding *seeing* of yellow); but they are wrong to think there are no potential perceptibles and potential perceptions *sans* actual perception (e.g., there is nothing that *can* appear yellow or *can* see yellow, absent actually doing so). The problem with this interpretation, however, is that it falls rather flat as an *alternative* to the view of the early physicists themselves—for surely they thought precisely what Aristotle says here: perceptibles qualify no objects *sans* perception, though they *can*. As various commentators have pointed out, this hardly distinguishes Aristotle’s view from the earlier antirealists.¹⁰³³

If we take Aristotle to be invoking the first actuality/second actuality distinction here, on the other hand, the problem dissipates. On this view, when Aristotle says in lines 24-25, according to our paraphrase, that “what was said by them applies to actual perception and actual perceptibles, but does not apply to potential perception and potential perceptibles,” he is invoking the same distinction as at 426a6-8 with the double twofold reference to ψόφος/ψόφησις and ἀκοή/ἄκουσις, *viz.*, first actuality/second potentiality and second actuality. For clarity, let us paraphrase the statement again: “What was said by them applies to actual perception and actual

¹⁰³³ See, e.g., Hamlyn, *Aristotle’s De Anima*, 125, Broadie, “Aristotle’s Perceptual Realism,” 155–56, and esp. Irwin, *Aristotle’s First Principles*, 313–14: “This reply [at 426a20-6], however, does not defend very much of the realist position. Aristotle’s opponents could fairly easily agree that there are external subjects causing our perceptions, but they need not concede that our perceptions reveal to us any truths about the nature of the external subjects. The fact that two objects are capable of appearing white to us, and hence of becoming white, does not show that the two subjects have some property in common, or that they appear to us as they really are. If only the potentiality is allowed to exist unperceived, it is not clear how Aristotle can distinguish sensory qualities such as colours from qualities such as painfulness; we know that objects causing us pain are capable of causing pain, and that they are therefore painful; but it does not follow that this causal tendency of theirs corresponds to any further common property, and that is why we do not think painfulness itself is a real quality of objects in the way we think colours are. If Aristotle’s claim about the real existence of potentially coloured objects amounts only to a weak claim about causal tendencies, it seems to raise grave doubts about how perception can yield any knowledge of external objects. His views would be both more consistent and more plausible if he had not added these aberrant remarks.”

perceptibles *qua* second actualities, but does not apply to potential perception and potential perceptibles *qua* second potentialities.” Now we have Aristotle saying the following: with respect to the earlier physicists, they are correct when they say there is no color or sound *sans* perception if they mean by this that absent, e.g., second actuality hearing (passion) there is no second actuality sounding (action); but they are incorrect to take this any further such that *sans* perception there is no second potentiality sound unsounding or “noise” (affective quality). For perceptibles certainly do *qualify* objects *sans* perception even if such qualities are not in such instances *affective*.¹⁰³⁴

Two passages in near proximity to 426a24-25 confirm just this reading. At 426a15-19, the final lines of Part 2 of this passage as examined above, Aristotle repeats the SDD single actuality solution for perception (“there is one actuality of the perceptible and what is capable of perceiving/percipient, though their being is different”, 426a15-17) and then comments that “it is necessary that what is spoken of in this way as hearing (ἀκοήν) and sounding (ψόφον) perish or be preserved at the same time (ἅμα), and so also for flavor and tasting, and similarly for the other cases. But this is not necessary for those things spoken of as potential (κατὰ δύναμιν).”¹⁰³⁵ We have already looked at perish/preserved and argued that they plainly refer to what “the perceptible and percipient” (τοῦ αἰσθητοῦ καὶ τοῦ αἰσθητικοῦ, 426a16) *do*—i.e., to their respective action and passion. But we did not note what Aristotle says in the final line of Part 2, *viz.*, that perish/preserved does *not* necessarily apply to “things spoken of as potential.” If we apply our interpretation, then Aristotle is saying that the second potentiality percipient (i.e., first

¹⁰³⁴ Broadie, “Aristotle’s Perceptual Realism,” 155–56, attempts this same interpretation we have just given, though she struggles to make it fit without invoking the second potentiality/second actuality distinction.

¹⁰³⁵ ἐπεὶ δὲ μία μὲν ἐστὶν ἐνέργεια ἢ τοῦ αἰσθητοῦ καὶ τοῦ αἰσθητικοῦ, τὸ δ’ εἶναι ἕτερον, ἀνάγκη ἅμα φθείρεσθαι καὶ σώζεσθαι τὴν οὕτω λεγομένην ἀκοήν καὶ ψόφον, καὶ χυμὸν δὴ καὶ γεῦσιν, καὶ τὰ ἄλλα ὁμοίως· τὰ δὲ κατὰ δύναμιν λεγόμενα οὐκ ἀνάγκη.

actuality) is independent of the second potentiality perceptible (i.e., first actuality) and vice versa. Either can exist without the other *qua* second potentiality. But *qua* *affective* as second actualities (i.e., action and passion), they are interdependent, standing and falling together. Now, one could say this too is absent the second potentiality/second actuality distinction, but this results in at least two problems. First, it causes the parallel of the perceptible with the percipient to be lost in that the perceptible becomes just a simple potentiality, while the percipient is a real thing that potentially perceives. Second, if Aristotle is not here invoking the second potentiality/second actuality distinction, then this line is not worth the ink it took to write it. If both are simple potentialities, then, of course, they are separable; and if the percipient is a second potentiality (first actuality) while the perceptible is just a simple potentiality, why say it even then as of course they are separable? The line only provides content if a dual second potentiality/second actuality distinction is being invoked as they are *qua* second potentiality separable but real while *qua* second actuality inseparable but real, which is indeed worth knowing.¹⁰³⁶ Finally, in the final line of Part 3 at 426a26 really seems to lay bare Aristotle's intention: "they, however, spoke without qualification (ἀπλῶς) about matters which are spoken of only with qualification (οὐχ ἀπλῶς)."¹⁰³⁷ If Aristotle is referring just to the neglect by the earlier physicists of simple potentiality/actuality, then this passage is difficult to make sense of. For even if they did not use the same terms, they undoubtedly made the distinction between what can be/is the case as it was only the monistic Eleatics that balked at such a notion (*Phys.* 1.3 186a4-187a11)—and he clearly distinguishes them from "the physicists" (οἱ φυσικοὶ, *Phys.* 1.4

¹⁰³⁶ Polansky (*Aristotle's De Anima: A Critical Commentary*, 388) too thinks that "potentiality" at 426a19 and again at a23-26 refers to *second* potentiality ("'Potentiality' in a19 really means developed potentiality or dispositional actuality...."), though he struggles with what this is supposed to mean given that he fails to adequately distinguish between first and second potentiality and so ends up, despite best intentions, still sounding like an antirealist. See especially Polansky, 390.

¹⁰³⁷ ἀλλ' ἐκεῖνοι ἀπλῶς ἔλεγον περὶ τῶν λεγομένων οὐχ ἀπλῶς.

187a12). Rather, Aristotle is using the same terms he used in *De Anima* 2.5 when he introduced the first/second potentiality/first/second actuality distinctions, “qualification” (ἀπλῶς). Hence, at 417a21-22, he introduces the distinctions with the following statement: “One must also draw a distinction concerning potentiality (δυνάμεως) and actuality (ἐντελεχείας). For we have just now been speaking of them without qualification (ἀπλῶς).”¹⁰³⁸ And with respect to percipients, he later says, “that what is spoken of as being in potentiality (δυνάμει) is not without qualification (οὐχ ἀπλοῦ)” (417b29-30),¹⁰³⁹ invoking there the same distinction.¹⁰⁴⁰ He is either harkening back to the same distinctions here in 426a26, given that the earlier physicists failed to recognize that the difference between sound and sounding, or we are again at a loss as to that which Aristotle is referring. Thus given, our view does not just seem well supported but even necessary for a nuanced realism that walks the *Aristotelian* tightrope between the naïve realism rejected by his predecessors and the antirealism they embraced in its stead.

With all this in hand, let us summarize the position by spelling out just how this nuanced realist solution is supposed to work for Aristotle. When an object becomes qualified by an affective quality or perceptible, it is not merely *potentially* red or green, sharp or flat, etc., *but actually so*. The blue jay *genuinely* has any quality it is said to have at a given time and in a real way, even if no perceiver has or ever does detect them. Hence, even in the dark blue jays are blue, and if a deaf blue jay is singing without any other perceivers around, it is at that time genuinely making sound. This is just what it means for a thing’s perceptibles to be in second potentiality/first actuality or actual *qua* quality but not *qua* affective. Once a percipient is in proximity, however, and is presently acted upon by a thing’s perceptibles, not only is the

¹⁰³⁸ διαιρετέον δὲ καὶ περὶ δυνάμεως καὶ ἐντελεχείας· νῦν γὰρ ἀπλῶς ἐλέγομεν περὶ αὐτῶν.

¹⁰³⁹ νῦν δὲ διωρίσθω τοσοῦτον, ὅτι οὐχ ἀπλοῦ ὄντος τοῦ δυνάμει λεγομένου.

¹⁰⁴⁰ Cf. 417b2 for its application to *πάσχειν* because of the first/second actuality distinction.

percipient moved from second potentiality/first actuality to second actuality, but so is the perceptible. For now, the blue jay is not just qualified by blue but is *appearing* blue to some perceiver.¹⁰⁴¹ That is, it is not just actual *qua* quality as when in first actuality, but *qua* quality and *qua* affective as in second actuality.¹⁰⁴² We can work this out as follows:

¹⁰⁴¹ For the “appearance” or “appearing” of a perceptible to a perceiver *as* the actuality “*par excellence*” or “at the highest metaphysical level” of that perceptible, see Broadie, “Aristotle’s Perceptual Realism,” 155. Cf. “sensorily appears” and “an animals being acted on perceivably by the sensible object appearing to it” in *ibid.*, 139, 144. While she fails to mention either first or second actuality in this context, it is clear that she should have.

¹⁰⁴² Logically it might seem that a perceptible could be actual in three distinct ways, *viz.*, *qua* quality, *qua* affective, and *qua* quality and *qua* affective. While this is a logical possibility, Aristotle would not see this a metaphysically possible given that *something* which preexists the affecting must do the acting, i.e., the quality per the five essential components of change from *Phys.* 5.1. As such, there can be no “appearances” without there first being qualities which means that while a perceptible can be actual *qua* quality without being actual *qua* affective, it cannot be actual *qua* affective without also being actual *qua* quality. Aristotle, hence, is a realist through-and-through, for on his position even the (metaphysical) possibility of phenomenalism (i.e., ‘free-floating appearances’) is banished. This is not to say there cannot be dreams, hallucinations, or even memories, but that on Aristotle’s view these are due to αἰσθήματα. See the fascinating comments on this by Beare, *Greek Theories of Elementary Cognition*, 291, one of the few experts last century on the *Parva Naturalia*: “The impressions of sense, the αἰσθήματα, do not disappear or perish with the instant of their first perception. They leave traces (μοναί) of themselves [APo 2.19 99b34-7, *De Memoria* 1 450a27 seqq., *De Anima* 1.4 408b15-18, *De Insomniis* 1 459b5 seqq., 460b2.], or persist, ‘within us.’ These traces are somehow stored up. This ‘storing up’ is effected by successive φαντασῖαι, i.e. ‘appearances’ or presentations through immediate sense; and when a store of αἰσθήματα has been formed, the ground is prepared for φαντασία (or τό φανταστικόν) in the further application of this term, i.e. as the faculty of reproducing images which were once before the mind, even when the objects which gave rise to them have disappeared from perception. Thus it will be observed that an αἰσθήμα and a φαντασμα are at bottom the same psychical phenomenon, which if regarded as grounded on the αἰσθήσις is an αἰσθήμα, but as a mere presentation or re-presentation to the ‘mind’s eye’ is a φαντασμα. Accordingly Aristotle defines the faculty of imagination as one and the same *per se* with that of central sense [i.e., *sensus communis*], but differing from the latter in its relationships or conception [*De Insomniis* 1 459a15-17 ἔστι μὲν τὸ αὐτὸ τῷ αἰσθητικῷ τὸ φανταστικόν, τὸ δ’ εἶναι φανταστικῶ καὶ αἰσθητικῶ ἕτερον. (“and the imaginative is the same as the perceptual faculty, although the imaginative and perceptual are different in being” (Hett translation, modified)]. The φαντασματα, like the αἰσθήματα, are individual and concrete in their nature: they have not the universality of concepts. Until thinking takes them over they are not connected in propositions. Intrinsically the faculty of perception (τὸ αἰσθητικόν) is one with that of imagination (τὸ φανταστικόν), though they are conceived in different ways, and are differently related [*De Insomniis* 1 459a15-17].”

**Perceptible αἰσθητός/
Affective Quality παθητικός ποιότης**

Capacity δύναμις	Dispositional State ἐξίς	Actuality ἐντελέχεια/ἐνέργεια
(1) First Potentiality	→ (2) First Actuality Second Potentiality	→ (3) Second Actuality
Potential <i>qua</i> quality Potential <i>qua</i> affective	→ Actual <i>qua</i> quality Potential <i>qua</i> affective	→ Actual <i>qua</i> quality Actual <i>qua</i> affective
<i>X is potentially y</i> <i>Y is potentially affecting z</i>	→ <i>X is actually y</i> <i>Y is potentially affecting z</i>	→ <i>X is actually y</i> <i>Y is actually affecting z</i>
	Sound Unsound Quality ~ Action	Sound Sounding Quality + Action

The solution is now sufficiently clear. The actuality of perceptibles is not simple but multi-layered, which allows for the rather precise parallel with the multi-layered actuality of perception. For sound is twofold for the exact same reason that hearing is twofold: because both can be actual in at least two ways, as was just shown. What is more, while the first actuality state of each can exist in separation from the other (i.e., being blue and being able to see blue), the same does not hold for their second actuality exercise, which are *necessarily coordinate*. For the second actuality action of one just is what causes the second actuality passion of the other. This, in fact, is not only what makes perception a Df1 relative (the action is *of* the passion and passion *of* the action), but also what accounts for the actuality of perceptible and percipient being “one and the same but distinct in being” (425b26-27) per the SDD and single actuality solution. For while they are dispositionally distinct and even separable when in first actuality (i.e., sound and hearing), as with all other genuine instances of change the (second in this case) actuality in the action of one (sounding) and in the passion of the other (listening) lack any real distinction. Aristotle can thus be a genuine realist with respect to unperceived qualities *and* say that perceptions come to be from contradictory to contradictory via QG.

6.2.3.2.4.3 Problem 3: How Can Perception Both be a Product and a Process Change?

On the proposed solution just elucidated, Aristotle apparently wants to say two seemingly contradictory things. On the one hand, he says that perception is a “complete actuality” (τέλεια ἐνέργεια)¹⁰⁴³ or a product change^o, but on the other hand, he seems to indicate right here in *De Anima* 3.2 that it is a κίνησις which is itself an “incomplete actuality” (ἀτελὴς ἐνέργεια).¹⁰⁴⁴ Which is it, for surely it cannot be both? Let us examine this problem in detail, for it too will yield us insight into Aristotle’s explanatory strategy.

Second actuality perception does not *just* “come to be” (γίνεται),¹⁰⁴⁵ but, unlike κίνησις which *always* occurs over an interval of time,¹⁰⁴⁶ does so *instantaneously* as the at all times

¹⁰⁴³ See *EN* 10.4 1174b14-20: “Every perceptual capacity (αἰσθήσεως) is actual in relation to (πρὸς) its perceptible (αἰσθητὸν), and is complete (τελείως) when it is in a good condition in relation to (πρὸς) the noblest of the things subject to the perceptual capacity (αἰσθησιν) (for such especially seems to be complete actuality (τελεία ἐνέργεια); and let it make no difference whether one says that [the perceptual capacity] itself is actual (ἐνεργεῖν) or that in which it resides is so). In each particular case, then, that actuality (ἐνέργεια) is best that belongs to what is in the best condition in relation to (πρὸς) the most excellent of the things falling under its purview; and this would be what is most complete (τελειοτάτη) and most pleasant” (Bartlett & Collins translation, modified). αἰσθήσεως δὲ πάσης πρὸς τὸ αἰσθητὸν ἐνεργοῦσης, τελείως δὲ τῆς εὖ διακειμένης πρὸς τὸ κάλλιστον τῶν ὑπὸ τὴν αἰσθησιν (τοιούτων γὰρ μάλιστ’ εἶναι δοκεῖ ἡ τελεία ἐνέργεια· αὐτὴν δὲ λέγειν ἐνεργεῖν, ἢ ἐν ᾧ ἐστί, μὴτὲν διαφερέτω), καθ’ ἑκάστην δὲ βελτίστη ἐστὶν ἡ ἐνέργεια τοῦ ἄριστα διακειμένου πρὸς τὸ κράτιστον τῶν ὑπ’ αὐτήν. αὕτη δ’ ἂν τελειοτάτη εἴη καὶ ἡδίστη.

¹⁰⁴⁴ See e.g., *Phys.* 3.2 201b32, 5.4 228b14, 8.5 257b9, 8.9 265a22, *Meta.* Θ.6 1048b29, K.9 1066a21, *DA* 2.5 417a16, *EN* 10.4 1174a26, etc.

¹⁰⁴⁵ See, e.g., *Phys.* 7.3 248a6-9: “Thus it is evident from what has been said that being altered (ἀλλοιοῦσθαι) and alteration (ἀλλοίωσις) come to be (γίνεται) in perceptibles (αἰσθητοῖς) and in the perceptive part of the soul (αἰσθητικῷ μορίῳ τῆς ψυχῆς), and in nothing else except accidentally.” φανερόν οὖν ἐκ τῶν εἰρημένων ὅτι τὸ ἀλλοιοῦσθαι καὶ ἡ ἀλλοίωσις ἐν τε τοῖς αἰσθητοῖς γίνεται καὶ ἐν τῷ αἰσθητικῷ μορίῳ τῆς ψυχῆς, ἐν ἄλλῳ δ’ οὐδενὶ πλὴν κατὰ συμβεβηκός. *De Sensu* 1 436b6-8: “now it is clear, alike by reasoning and without reasoning, that perception (αἴσθησις) comes to be (γίνεται) in the soul through the medium of the body” (Barnes translation, modified). ἡ δ’ αἴσθησις ὅτι διὰ σώματος γίνεται τῇ ψυχῇ, δῆλον καὶ διὰ τοῦ λόγου καὶ τοῦ λόγου χωρὶς. *DA* 2.7 419a17-18 “seeing comes to be (γίνεται) when what is capable of perceiving is affected by something” πάσχοντος γὰρ τι τοῦ αἰσθητικοῦ γίνεται τὸ ὁρᾶν.

¹⁰⁴⁶ See e.g., *EN* 10.4 1174a19-23: “For every change (κίνησις), such as constructing a building, takes time, and aims at some end, and is *complete* (τελεία) when it produces the product it seeks, or [in other words, is complete] in this whole time [that it takes]. And in the parts and in the time they are all incomplete (ἀτελεῖς), and they differ in form from the whole and from each other” (Irwin translation, modified). ἐν χρόνῳ γὰρ πᾶσα κίνησις καὶ τέλους τινός, οἷον ἡ οἰκοδομική, καὶ τελεία ὅταν ποιήσῃ οὐ ἐφίεται. ἢ ἐν ἅπαντι δὴ τῷ χρόνῳ ἢ τούτῳ. ἐν δὲ τοῖς μέρεσι καὶ τῷ χρόνῳ πᾶσαι ἀτελεῖς, καὶ ἕτεραι τῷ εἶδει τῆς ὅλης καὶ ἀλλήλων.

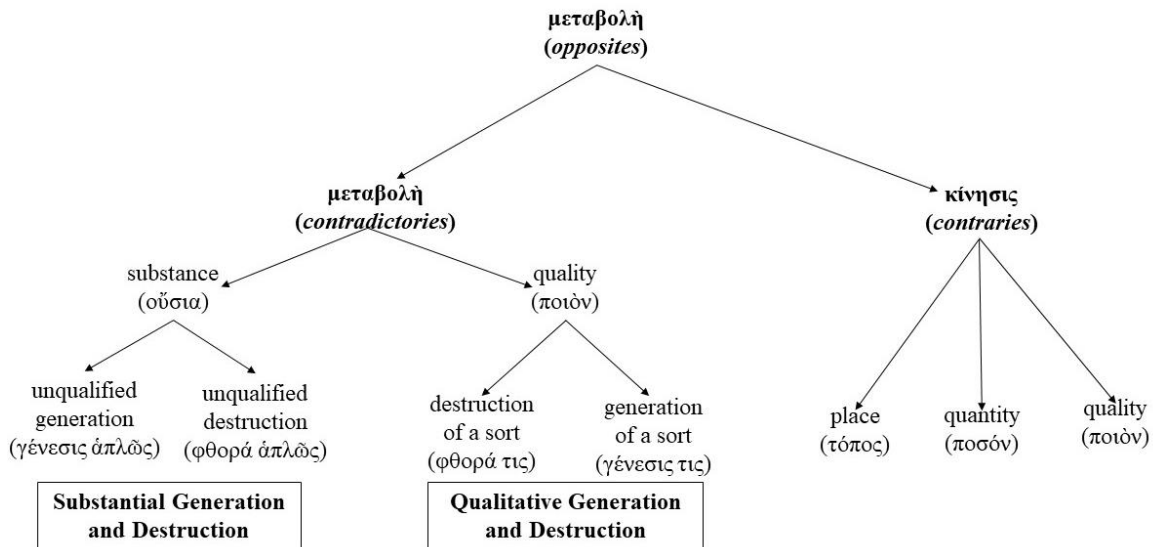
complete product of the causal interaction between agent and patient.¹⁰⁴⁷ On this account, second actuality perception (e.g., *seeing* red) is an actuality *simpliciter*, something that occurs *after* a change as the result or product of a change. Hence, our argument has been that in perception we have metabolic contradictory to contradictory change (from $\sim x$ to x) rather than kinetic contrary to contrary change (from x to y), and that this is what accounts for its completion and, in part, its instantaneity. This can be diagrammed as follows:

Capacity δύναμις	(D) State/Disposition ἔξις	(P) Actuality ἐντελέχεια/ἐνέργεια
(1) First Potentiality	→ (2) First Actuality Second Potentiality	→ (3) Second Actuality
(1) Perceiver <i>Able-to-be-able-to-see</i> <i>Not-able-to-see</i> <i>Not-seeing-white</i>	→ (2) Perceiver <i>Able-to-be-able-to-see</i> <i>Able-to-see</i> <i>Not-seeing-white</i>	→ (3) Perceiving <i>Able-to-be-able-to-see</i> <i>Able-to-see</i> <i>Seeing-white</i>

¹⁰⁴⁷ See e.g., EN 10.4 1174a14-16: “For seeing (ὄρασις) seems to be complete (τελεία) at any given moment (χρόνον): [seeing] is not deficient in anything that could subsequently come into being (γινόμενον) so as to complete (τελειώσει) its form (εἶδος).” δοκεῖ γὰρ ἡ μὲν ὄρασις καθ’ ὀντινοῦν χρόνον τελεία εἶναι· οὐ γὰρ ἐστὶν ἐνδεὴς οὐδενὸς ὃ εἰς ὕστερον γινόμενον τελειώσει αὐτῆς τὸ εἶδος. See too EN 10.4 1174b2-20 and esp. De Sensu 6 446b2-6, 28-447a3: “Now even supposing that hearing (ἀκούει) and having heard (ἀκήκοε), perceiving (αἰσθάνεται) and having perceived (ἤσθηται) are simultaneous (ἅμα), and involve no [process of] becoming (γίνεσθαι), but exist without [any such process], nevertheless [the interval of time still exists], just as sound (ψόφος) has not yet reached our hearing (ἀκοῇ) although the blow causing it has been struck—for the morphing letters of a word as heard proves that locomotion occurs (γιγνομένης τῆς φορᾶς) in the intervening (μεταξύ) [space].... Generally speaking, alteration of state (ἀλλοιώσεως ἔχει) and locomotion (φορᾶς) are different; for locomotion (φοραὶ) naturally first reach the intervening (μεταξύ) [space] (and sound is held to be the change (κίνησις) of something travelling (φερομένου)), but with alteration (ἀλλοιοῦται) it is not the same; for it is admitted that alteration may occur all at once (ἀθρόον), and not in half first [before the other half]; for instance, water may freeze at one time (ἅμα)” (Hett translation, modified). καὶ εἰ <καὶ> ἅπαν ἅμα ἀκούει καὶ ἀκήκοε, καὶ ὅλως αἰσθάνεται καὶ ἤσθηται, καὶ μὴ ἐστι γένεσις αὐτῶν, ἀλλ’ εἰσὶν ἄνευ τοῦ γίνεσθαι, ὅμως οὐδὲν ἦττον, ὥσπερ ὁ ψόφος ἤδη γεγεννημένης τῆς πληγῆς οὐ πω πρὸς τῇ ἀκοῇ—δηλοῖ δὲ τοῦτο καὶ ἡ τῶν γραμμάτων μετασχημάτισις, ὡς γιγνομένης τῆς φορᾶς ἐν τῷ μεταξύ.... ὅλως δὲ οὐδὲ ὁμοίως ἐπὶ τε ἀλλοιώσεως ἔχει καὶ φορᾶς· αἱ μὲν γὰρ φοραὶ εὐλόγως εἰς τὸ μεταξύ πρῶτον ἀφικνοῦνται (δοκεῖ δ’ ὁ ψόφος εἶναι φερομένου τινὸς κίνησις), ὅσα δ’ ἀλλοιοῦται, οὐκέτι ὁμοίως· ἐνδέχεται γὰρ ἀθρόον ἀλλοιοῦσθαι, καὶ μὴ τὸ ἥμισυ πρότερον, οἷον τὸ ὕδωρ ἅμα πᾶν πήγνυσθαι. For this sort of instantaneous ‘alteration’ with contradictories such as white to non-white, see Phys. 8.8 263b22.

Moreover, we have argued that this complete actuality product change^o just is the preservative “alteration of a sort” (ἀλλοίωσις τις) (DA 2.5 416b34) or “in a way” (πως, *Phys.* 7.2 244b11)¹⁰⁴⁸ Aristotle speaks of, and that it is suitably captured via the qualitative generation account, QG. And taking the suggestion of Aristotle (DA 2.5 417b15, 17, *Phys.* 5.1 225a14-15), we have further argued that QG itself is to be situated under μεταβολή and not κίνησις, despite that fact that we are speaking here of ‘alteration.’ This categorization is a bit strange, of course, given that destructive, canonical alteration is a form of κίνησις. But, as we have said, this is indeed the appropriate classification because QG involves metabolic contradictory to contradictory change rather than the kinetic contrary to contrary change as in the case of canonical alteration. Hence, while canonical alteration is necessarily kinetic, “alteration of a sort” or QG is necessarily metabolic—a categorization that coincides with the further fact that while the former is destructive, the latter is preservative. We diagramed these distinctions as follows:

¹⁰⁴⁸ Aristotle regularly uses ἀλλοίωσις to indicate alteration^o in *Physics* 7.3, speaking in other terms (e.g., “taking on” and “casting off”, λήψεσι καὶ ἀποβολαῖς, at 245b8) to indicate the *process* of alteration by which *product* alterations^o come to be. See 245b6-8, 246a8-9, 246a10-11, 246a12, 246b1-3, 246b11-12, 246b12-14, 247a4-5, 247a16-18, 247b1, and 248a6-9. Cf., Manuwald, *Das Buch H Der Aristotelischen “Physik,”* 71, who thinks it “very likely” (sehr wahrscheinlich) here that “ἀλλοίωσις means not only the *process* of a change in quality, but also its *result*” (ἀλλοίωσις bedeutet für den Verf. nicht nur den Vorgang einer Qualitätsveränderung, sondern auch deren Ergebnis) (Google AI translation, italics mine). Given the attendant language in many of these passages which *does* refer to a process (e.g., λήψεσι καὶ ἀποβολαῖς, 245b8), it is difficult to read ἀλλοίωσις as anything other than *alteration^o*.



While this all would appear to substantiate our QG account of perception, we sought to take the argument further in subsequent chapters by examining Aristotle’s division of the category of quality into four distinct species in *Categories* 8, which we followed up with an examination of his most thorough examination of alteration in the extant *Corpus* in *Physics* 7.3. That survey yielded the following exhaustive analysis of the species-relative modes of qualitative change:

SPECIES OF QUALITY	MODE OF CHANGE	CONTACT THESIS OPTION
Perceptibles/ Affective Qualities	Alteration	(a) – S1 Destructive Alteration <i>Or</i> – S2 Preservative ‘Alteration’
Shapes & Figures	Qualitative Generation	(c) – S1 Accompaniment Thesis
Bodily States	Qualitative Generation	(c) – S1 Accompaniment Thesis
Arational Psychic States	Qualitative Generation	(c) – S2 Accompaniment Thesis
Rational Psychic States	No Coming to Be	(b) – No Alteration or Change at all

Subsequent to this, the question we were left with, of course, has been where to situate perception in this schematic. For given that kinetic contrary to contrary change *al la* canonical alteration is off the table for the coming to be of first and especially second actuality

perception—even if he does want to retain the use of the term ‘alteration’ for perception—for Aristotle is clear in *De Anima* 2.5 that it is not of the kinetic sort. The remaining applicable options, absent canonical alteration, then became the knowledge model of no coming to be or mere Cambridge change as with rational psychic states, and the virtue model of QG as with arational psychic states. To which is perceptual change more akin? The burden of this chapter, of course, has been to show that, initial appearances to the contrary, the knowledge model is not what Aristotle applies to perception; rather, the mode of change with respect to S2 preservative ‘alteration’ is the same as it is with respect to change of shapes and figures, bodily states, and especially arational psychic states, viz., QG. While *De Anima* 3.2 read in light of *Physics* 3.3 would seem to radically confirm this thesis, a hidden problem lurks yet. For though Aristotle does confirm that in second actuality perception we are indeed faced with a *genuine* instance of change through his direct application of *Physics* 3.3 to perception, he nevertheless categorizes it differently than what we have suggested—and right here in *De Anima* 3.2. How so? Here is the pertinent line, at 426a2-4, itself specifically referring to second actuality perception: “If then the change (κίνησις)—both acting and being acted upon—is in the-thing-being-acted-upon, it is necessary that both the sound and the hearing as actual be in something potential.”¹⁰⁴⁹ While we are accustomed to Aristotle occasionally using kinetic language to refer to second actuality perception, it regularly occurs with some hedging¹⁰⁵⁰—except here. In itself, this is not problematic, for even if Aristotle does classify the alteration involved in the coming to be of second actuality perception as a κίνησις, one could easily argue on the basis of several other

¹⁰⁴⁹ εἰ δὴ ἐστὶν ἡ κίνησις (καὶ ἡ ποίησις καὶ τὸ πάθος) ἐν τῷ ποιούμενῳ, ἀνάγκη καὶ τὸν ψόφον καὶ τὴν ἀκοὴν τὴν κατ’ ἐνέργειαν ἐν τῷ κατὰ δύναμιν εἶναι. Shields translation, modified.

¹⁰⁵⁰ See e.g., *Phys.* 7.2 244b10-12, esp. 244b11; compare *DA* 2.5 416b33-35 and 418a2-3.

passages that this is just an instance of Aristotle being loose with his words.¹⁰⁵¹ But that sort of argument just will not work in this instance, for here Aristotle does not just verbally identify second actuality perception as a κίνησις—a process change or an incomplete actuality—but the details of the passage actually *require* this identification, at least in some sense. For what Aristotle defines here as the actuality (ἐνέργειαν, 425b27-28, 31-426a) which is second actuality perception is not just the presence of—to borrow the language of *De Anima* 2.12—a “perceptible form” (αἰσθητός εἶδος, 424a18, 424b2; cf. 3.2 425b24) in a perceptible mode (e.g., C sharp),¹⁰⁵² but a perceptible form *by* the action of the perceptible (sounding) and the passion of the percipient (hearing). Per the SDD and single actuality solution, this whole which just is second actuality perception is wholly in the patient and inseparable. Hence, even if via Suárez’s “precisive abstraction” (*abstractionem praecisivam*, DM 7.1.6) we can pull them apart conceptually given that there is between them a distinction of reason or “distinct in account” (*Phys.* 3.3 202b12, *DA* 3.2 425b27, 426a16-17), there is no real distinction of that which is “one and the same” (*Phys.* 3.3 202b8-9, *DA* 3.2 425b26-27, 426a15). But as we have previously pointed out, the only time this sort of genuine cohesion of parts (i.e., affective quality, action,

¹⁰⁵¹ See esp. *De Somno* 1 454a9-11 where perception is called “a sort of change” (κίνησις τις). See too *DA* 3.7 431a6, a passage we will examine below.

¹⁰⁵² See, e.g., *DA* 3.8 431b28-432a1, “it is necessary that they [i.e., knowables or perceptibles] be either these things themselves *or* their form (εἶδη). It is certainly not the things themselves, however: for the stone is not in the soul, but rather *its form* (εἶδος).” αὐτὰ μὲν δὴ οὐ· οὐ γὰρ ὁ λίθος ἐν τῇ ψυχῇ, ἀλλὰ τὸ εἶδος· ὥστε ἡ ψυχὴ ὥσπερ ἡ χεὶρ ἐστιν. We deal with this point explicitly and in detail in the Appendix under the guise of “*matterless form reception*”. See too on this point what even Sorabji calls Aristotle’s “most Cartesian remark” (Sorabji “Body and Soul in Aristotle,” 71) at *Phys.* 7.2 244b12-45a2: “Whatever way the inanimate (ἄψυχον) can be altered (ἀλλοιοῦται), then, the animate (ἐμψυχον) can also be altered, whereas not every way that the animate (ἐμψυχον) can be altered is a way the inanimate (ἄψυχον) can—for it cannot be altered (ἀλλοιοῦται) with respect to the perceptual faculties (αἰσθήσεις). Also, [the inanimate] is unaware (λανθάνει), whereas [the animate] is not unaware (οὐ λανθάνει) of being-affected (πάσχον). But nothing prevents the animate (ἐμψυχον) too from being unaware (λανθάνει) when the alteration (ἀλλοίωσις) is not with regard to the perceptual faculties (αἰσθήσεις)” (Reeve translation, modified). καθ’ ὅσα μὲν οὖν τὸ ἄψυχον ἀλλοιοῦται, καὶ τὸ ἐμψυχον, καθ’ ὅσα δὲ τὸ ἐμψυχον, οὐ κατὰ ταῦτα πάντα τὸ ἄψυχον (οὐ γὰρ ἀλλοιοῦται κατὰ τὰς αἰσθήσεις)· καὶ τὸ μὲν λανθάνει, τὸ δ’ οὐ λανθάνει πάσχον. οὐδὲν δὲ κωλύει καὶ τὸ ἐμψυχον λανθάνειν, ὅταν μὴ κατὰ τὰς αἰσθήσεις γίγνηται ἢ ἀλλοίωσις.

and passion) occurs is *in the midst of process change* (κίνησις, 425b28; cf. 426a4-6), not product change¹⁰⁵³. Let us spell this out more carefully.

We made the claim in a previous section above when detailing the SDD single actuality solution with respect to change that for Aristotle, “no form can be a simple, but is of necessity a mereological whole constituted by the inseparable ‘parts’ of action and passion.” But, as we saw, this is a temporally indexed fact and only applies to process change not product change¹⁰⁵⁴. Process changes *qua* κίνησις concern contraries and are partial actualities with some residual potentiality which is moment by moment being exhausted.¹⁰⁵⁵ Product changes¹⁰⁵⁶ *qua* μεταβολή, on the other hand, concern contradictories and are complete actualities without any residual potentiality which can be exhausted. But once a product change¹⁰⁵⁷ has come to be instantaneously—at least in the case of the metabolic change of qualities¹⁰⁵⁸—both action and passion have ceased to be. For once the potentiality has been exhausted, now we have, e.g., an actually yellow house but not a brush yellowing or a house ‘yellowedging.’ For action and passion cease to be just when the potentialities they were exhausting are exhausted. Or put differently, whereas incomplete actuality of what *is still* potential entails the *presence* of both action and passion, complete actuality of what *was* potential entails the *absence* of both action and passion.¹⁰⁵⁹ If this is correct, then how can Aristotle apply the SDD to perception? For if perception is a *completed* actuality as Aristotle claims here and as we have supposed on the QG account of instantaneous contradictory to contradictory change, then it must be something which comes temporally *after* the action of sounding and the passion of hearing. If this is correct, then one would only perceive

¹⁰⁵³ See e.g., *Phys.* 6.6 237a17-b3, b9-21 and *EN* 10.4 1174a19-23.

¹⁰⁵⁴ See, e.g., *Phys.* 8.8 263b15-26, *De Sensu* 6 446b2-6, 28-447a3, *EN* 10.4 1174a14-16, and 10.4 1174b2-20.

¹⁰⁵⁵ See *GC* 1.7 324b15-17: “For when the agent is [present] the patient becomes something, but when states (ἔξωον) are present (παρουσῶν) the patient no longer becomes but already is (ἔστιν ἤδη)” (Forster translation, modified). καὶ γὰρ τοῦ μὲν ποιούντος ὅταν ὑπάρχη, γίνεται τι τὸ πάσχον, τῶν δ’ ἔξωον παρουσῶν οὐκέτι γίνεται, ἀλλ’ ἔστιν ἤδη.

after one hears but not *at the time* one hears, which is surely absurd. For in the typical case as we said, once a product change¹⁰⁵⁶ has come to be it indicates the absence of both action and passion—and thus, the absence of the changer or cause as well—such that the SDD no longer applies. Hence, our quandary: either, it seems, the QG account is false, Aristotle’s language of “actuality” is misleading us here, and the SDD applies to perception, *or* the QG is correct, Aristotle’s language accurate, but his application of the SDD to perception is a *misapplication*. Which it is?

Fortunately for us, Aristotle has a ready reply. While in *typical* cases of product change¹⁰⁵⁶ or complete actuality, the action and passion are absent along with the agent or cause, but present in typical cases of process change, *perception is not a typical case*. For in perception—as in a few other cases—what we have is a complete actuality which *nevertheless* requires the presence of action and passion for the duration of the actuality. Hence, for these atypical cases we find Aristotle applying to them at one and the same time *some* of what is true of product changes¹⁰⁵⁶ and *some* of what is true of process changes. But why would he be inclined to do this? Because, for this unique subset of changes, as Sorabji puts it for the case of thinking, “as soon as you can use the present tense ‘is thinking’, you can use the perfect ‘has thought’.”¹⁰⁵⁶ That is, in these “blended” cases we have the simultaneity of the present and perfect tenses. Aristotle spells this out most fully in *Metaphysics* Θ.6 1048b18-35:

Since, though, of the doings (πράξεων)¹⁰⁵⁷ that have a limit none is an end (τέλος), but all are in relation to (περὶ) an end (τέλος)—for example, making thin, these things

¹⁰⁵⁶ Sorabji, *Time, Creation, and the Continuum*, 148.

¹⁰⁵⁷ It would appear that Aristotle refers to “doing” (πράξις) here, contextually out of the blue, because as an instance of κίνησις (*EE* 2.3 1220b26-27, ἡ πράξις κίνησις) it references for him a certain sort of ἐνέργεια (which he equates with πράξις; see: *EN* 1.1 1094a1-6, 1.7 1098a12-14 (cf. 10.7 1177a12), *MM* 1.34 1197a3-10, and *Pol.* 7.3 1325a32). What sort of ἐνέργεια is it? In the *Magna Moralia* he contrasts πράξις (doing) with ποιητικός (acting), and it hones in on just this sense of actuality which we see here in *Meta.* Θ.6 1048b18-35 (as we shall see). Here is the passage in question, *MM* 1.34 1197a3-10: “When things are acted (ποιουμένων) and done (πραττομένων), that which can act (ποιητικὸν) and that which can do (πρακτικόν) are not the same. For what can act (ποιητικὸν) has some other end

themselves when being made thin are in change (ἐν κινήσει) in this way (οὕτως), [namely,] that what the change (κίνησις) is for the sake of does not yet belong to them (ὑπάρχοντα)—these things are not (οὐκ) a doing (πρᾶξις) or at least are not complete (οὐ τελεία), since none is an end (τέλος). But the sort (ἄλλ' ἐκείνη) in which the end (τέλος) belongs (ἐνυπάρχει) really is a doing (πρᾶξις). For example, at the same time (ἅμα) one is seeing (ὁρᾷ) and has seen (έώρακε), is thinking (φρονεῖ) and has thought (πεφρόνηκε), is understanding (νοεῖ) and has understood (νενόηκεν), but it is not (ἄλλ' οὐ) the case that one is learning (μανθάνει) and has learned (μεμάθηκεν), nor (οὐδ') that one is being made healthy (ὑγιάζεται) and has been made healthy (ὑγιάσται). And one is living well (εὖ ζῆ) at the same time (ἅμα) has lived well (εὖ ἔζηκεν), and is flourishing (εὐδαιμονεῖ) and has flourished (εὐδαιμόνηκεν). If not (εἰ μή), these would have had to stop at some time (παύεσθαι ὥσπερ), as when one is making thin, but as things stand it is not so, but one is living (ζῆ) and has lived (ἔζηκεν). Of these then [one sort] should (δεῖ) be called changes (κινήσεις) and the other actualities (ἐνεργείας). For every change (κίνησις) is incomplete (ἄτελής), [for example,] making thin, learning, walking, building; these are changes (κινήσεις) and are certainly incomplete (ἄτελεῖς). For it is not at the same time (ἅμα) one is walking (βαδίζει) and has walked (βεβάδικεν), nor (οὐδ') that one is building (οἰκοδομεῖ) and has built (ὠκοδόμηκεν), nor (οὐδὲ) is becoming (γίνεται) and

(ἄλλο τέλος) apart from the acting (ποίησιν): for instance, apart from housebuilding, since that is the craft of making a house, there is a house as its end (τέλος) apart from the acting (παρὰ τὴν ποίησιν), and similarly in the case of carpentry and the other actings (ποιητικῶν). But *in that which can do* (πρακτικῶν) *there is no other end* (οὐκ ἄλλο τέλος) *apart from the doing* (πρᾶξιν): for instance, apart from playing the harp there is no other end (οὐκ ἄλλο τέλος), but the end (τέλος) simply is the actuality (ἐνέργεια) and the doing (πρᾶξις)" (Barnes & Kenny translation, modified). ἔστιν δὴ τῶν ποιουμένων καὶ πραττομένων οὐ ταὐτὸ τὸ ποιητικὸν καὶ πρακτικόν. τῶν μὲν γὰρ ποιητικῶν ἐστὶ τι παρὰ τὴν ποίησιν ἄλλο τέλος, οἷον παρὰ τὴν οἰκοδομικὴν, ἐπειδὴ ἐστὶν ποιητικὴ σικίας, οἰκία αὐτῆς τὸ τέλος παρὰ τὴν ποίησιν, ὁμοίως ἐπὶ τεκτονικῆς καὶ τῶν ἄλλων τῶν ποιητικῶν· ἐπεὶ δὲ τῶν πρακτικῶν οὐκ ἔστιν ἄλλο οὐθὲν τέλος παρὰ αὐτὴν τὴν πρᾶξιν, οἷον παρὰ τὸ κιθαρίζειν οὐκ ἔστιν ἄλλο τέλος οὐθὲν, ἀλλ' αὐτὸ τοῦτο τέλος, ἡ ἐνέργεια καὶ ἡ πρᾶξις. In cases of doing there is no process; for once they begin they are already at their end.

has become (γέγονεν), or (ἦ) is being changed (κινεῖ) and having been changed (κεκίνηκεν), but they are different (ἄλλ' ἕτερον), as if something is bringing about change (κινεῖ) and has brought about change (κεκίνηκεν). By contrast the same thing (τὸ αὐτό) at the same time (ἅμα) has seen (έώρακε) and is seeing (όρᾷ), is understanding (νοεῖ) and has understood (νενόηκεν). So I call such as this an actuality (ένέργειαν), but that thing a change (κίνησιν).¹⁰⁵⁸

Why note that for some things the present and perfect tense are simultaneously true of them? First, it is interesting as it delineates a subset of changes or actualities Aristotle calls “doing” (πρᾶξις), which is elsewhere classified as both change and actuality.¹⁰⁵⁹ Second, it is not just that the present and perfect are simultaneously true of them, but *because* the present is true that the action of the agent and passion of the patient *must also* be simultaneously present, just as with all changes—even *though* like other actualities (as indicated by the perfect tense) it is complete or at

¹⁰⁵⁸ Ἐπεὶ δὲ τῶν πράξεων ὧν ἔστι πέρας οὐδεμία τέλος ἀλλὰ τῶν περὶ τὸ τέλος, οἷον τὸ ἰσχυαίνειν ἢ ἰσχυασία [αὐτό], αὐτὰ δὲ ὅταν ἰσχυαίνη οὕτως ἔστιν ἐν κινήσει, μὴ ὑπάρχοντα ὧν ἕνεκα ἡ κίνησις, οὐκ ἔστι ταῦτα πρᾶξις ἢ οὐ τελεία γε (οὐ γὰρ τέλος)· ἀλλ' ἐκείνη <ἦ> ἐνυπάρχει τὸ τέλος καὶ [ἡ] πρᾶξις. οἷον ὁρᾷ ἅμα <καὶ έώρακε,> καὶ φρονεῖ <καὶ πεφρόνηκε,> καὶ νοεῖ καὶ νενόηκεν, ἀλλ' οὐ μανθάνει καὶ μεμάθηκεν οὐδ' ὑγιαίνει καὶ ὑγιαίνει· εὖ ζῇ καὶ εὖ ἔζηκεν ἅμα, καὶ εὐδαιμονεῖ καὶ εὐδαιμόνηκεν. εἰ δὲ μή, ἔδει ἂν ποτε παύεσθαι ὥσπερ ὅταν ἰσχυαίνη, νῦν δ' οὐ, ἀλλὰ ζῇ καὶ ἔζηκεν. τούτων δὴ <δεῖ> τὰς μὲν κινήσεις λέγειν, τὰς δ' ἐνεργείας. πᾶσα γὰρ κίνησις ἀτελής, ἰσχυασία μάθησις βάδισις οἰκοδόμησις· αὗται δὴ κινήσεις, καὶ ἀτελεῖς γε. οὐ γὰρ ἅμα βαδίζει καὶ βεβάδικεν, οὐδ' οἰκοδομεῖ καὶ ὠκοδόμηκεν, οὐδὲ γίγνεται καὶ γέγονεν ἢ κινεῖται καὶ κεκίνηται, ἀλλ' ἕτερον, καὶ κινεῖ καὶ κεκίνηκεν· έώρακε δὲ καὶ ὁρᾷ ἅμα τὸ αὐτό, καὶ νοεῖ καὶ νενόηκεν. τὴν μὲν οὖν τοιαύτην ἐνέργειαν λέγω, ἐκείνην δὲ κίνησιν. Reeve translation, modified with suggestions from Makin. This passage is missing from the α-text family of *Metaphysics* manuscripts, and so was absent to a great many medieval commentators like Aquinas. Nevertheless, it is present in the β-text family as well as the text possessed by Alexander, and so appears authentic—which is my assumption here. For more, see, e.g., Ross, *Aristotle's Metaphysics*, 1924, 2:253: “This passage occurs in most of the manuscripts (including A^b [the exemplar of the β-text family], and a paraphrase of it occurs in a good manuscript of Alexander (F). It is omitted by EJTT [three exemplars of the α-text family and the thirteenth century Latin translation of William of Moerbeke which relies on J] and Bessarion [Latin, 1515], and is very corrupt in the other manuscripts. But it contains sound Aristotelian doctrine and terminology, and is quite appropriate to the context, and there is no apparent motive for its introduction if it were spurious, so that on the whole it seems safe to treat it as genuine. The text has been vastly improved by Bonitz [1849].” Both Ross (1924) and Jaeger (1957) make great use of Bonitz' suggestions and offer an identical text, which I follow here, apart from a few very minor differences in punctuation and bracketing.

¹⁰⁵⁹ For the equation of πρᾶξις with ἐνέργεια in Aristotle, see *EN* 1.1 1094a1-6, 1.7 1098a12-14 (cf. 10.7 1177a12), *MM* 1.34 1197a3-10, and *Pol.* 7.3 1325a32. While he also identifies it with a form of κίνησις (*EE* 2.3 1220b26-27, ἡ πρᾶξις κίνησις), undoubtedly in the sense here in *Meta.* Θ.6 1048b18-35.

its end. Now, this is truly interesting, but so what? Why should Aristotle note something like this—just for the sake of completeness? Not at all. Hence our third point: by making this distinction about an odd class of phenomenon that bridge the κίνησις/actuality gap, he can claim a phenomenon (e.g., perception) for either category when it suits him, and thereby claim for it some special advantage had only by items in one or the other of the classes. And this is precisely what he does here: even though QG is the correct account of second actuality perception and one instantaneously changes (perfect) from qualitative contradictory (e.g., not-seeing-red) to qualitative contradictory (seeing-red) such that the change takes no time and is complete at every moment (i.e., if one is *seeing* one also has *seen*) and thus is never an actualizing potentiality, it is nevertheless the case that just as with all process changes the action of the agent and the passion of the patient must be *present* at all times during the change. Hence, it acts *in a way* like a process change (action and passion must be present), even as it is never incomplete but a completed product change at all times it exists (i.e., at all times it is true that one is seeing red). For as soon as one removes agent from patient (and thus, the action and passion), one reverts to the former contradictory (e.g., not-seeing-red). Hence, as Aristotle finally clarifies matters concerning second actuality perception in *De Anima* 3.7 431a4-8:

Everything which becomes (γινόμενα) does so from (ἐξ) something existing in actuality (ἐντελεχεία). Now it is evident that the perceptible (αἰσθητὸν) causes (ποιοῦν) the percipient (αἰσθητικόν) to become actual (ἐνεργεία) from (ἐκ) existing potentially (ὄντος δυνάμει); for it is neither affected (οὐ πάσχει) nor altered (οὐδ' ἀλλοιοῦται).

Consequently this is a different kind of change (ἄλλο εἶδος τοῦτο κινήσεως); for change (κίνησις) is the actuality (ἐνέργεια) of what is incomplete (ἄτελοῦς), whereas unqualified

actuality (ἀπλῶς ἐνέργεια) is distinct (ἐτέρα), namely [the actuality] of what is complete (τετελεσμένου).¹⁰⁶⁰

It is not the point of either passage that perceptions are not changes; rather, they *are* changes, just of a “different kind”, i.e., not *process* changes at any point but always complete. Likewise, he does not wish to say that perception is not to be classified as an instance of being-affected (πάσχειν) or an alteration (ἀλλοίωσις). As we saw in *De Anima* 2.5, perception is to be called both so long as we recognize that it is not in the canonical sense of either term (418a2-3; cf. 417b9-19). For canonically, whatever we say alteration applies to is altered^ω because it went through a process of *altering*—and the same goes for affection as well. But in atypical cases such as perception where the present and perfect tenses are always simultaneous, there is no process. Hence, it is not that perception fails to be either, but that the process as captured by the verbs here rather than the usual functional nouns πάσχειν and ἀλλοίωσις, does not occur: “for it is neither affected (πάσχει) nor altered (ἀλλοιούται)” (431a5).¹⁰⁶¹ Rather, they are the instantaneous results of changes as *product* changes^ω.¹⁰⁶² What Aristotle in this passage positively characterizes as “a different kind of change” (ἄλλο εἶδος τοῦτο κινήσεως, 431a6) he elsewhere calls “change of a sort” (κίνησις τις, *De Somno* 1 454a9), classifiable as μεταβολή (*DA* 2.5 417b15, 17, *Phys.* 5.1 225a14-15). And what he is negatively characterizing as “neither affected

¹⁰⁶⁰ Apostle translation, modified. ἔστι γὰρ ἐξ ἐντελεχείᾳ ὄντος πάντα τὰ γινόμενα.—φαίνεται δὲ τὸ μὲν αἰσθητὸν ἐκ δυνάμει ὄντος τοῦ αἰσθητικοῦ ἐνεργείᾳ ποιοῦν· οὐ γὰρ πάσχει οὐδ’ ἀλλοιούται. διὸ ἄλλο εἶδος τοῦτο κινήσεως· ἢ γὰρ κίνησις τοῦ ἀτελοῦς ἐνέργεια, ἢ δ’ ἀπλῶς ἐνέργεια ἐτέρα, ἢ τοῦ τετελεσμένου.

¹⁰⁶¹ οὐ γὰρ πάσχει οὐδ’ ἀλλοιούται. Aristotle usually refers to “being-affected” via the verbal infinitive πάσχειν which functions in Greek as a noun, and ἀλλοίωσις, a nominative singular noun. For virtually the same interpretation which I give here, see Simplicius, in *DA* 264.20-35; cf. Aquinas, *Sentencia libri De anima* 3.7.12, 765-766.

¹⁰⁶² The argument seems to be structured as follows: (1) Perceptibles act as agents and cause perceivers as patients to change from potentiality to actuality. (2) They are not *actualizing* in the process sense of being-affected or being altered. (3) Those are instances of κίνησις which is incomplete actuality of a potentiality. (4) Rather, the sense of actuality here is complete or completed product. (5) Hence, perceptions are instances of product affections or alterations, but not processes. (6) Processes are necessary incomplete, products are complete—and perceptions are complete. (7) Therefore, perceptions are product alterations which is a different kind of κίνησις, kinetic *products*.

nor altered” in 431a5, he elsewhere calls “alteration of a sort” (ἀλλοίωσις τις, *DA* 2.5 416b34). This is analogous to how he categorizes qualitative generation in *Physics* 5.1 as “generation of a sort” (γένεσις τις, 225a12-17) as opposed to “unqualified generation” (γένεσις ἀπλῶς, 225a12-14).¹⁰⁶³ The common theme, it would seem, is that from none of the three is there a *temporal process* as there would be in all their canonical instances, only instantaneous products which are at all times simultaneously spoken of in the present and perfect tense.¹⁰⁶⁴

This problem, in sum, is not really a problem at all. Rather, the SDD single actuality solution is applied to perception just as with all canonical instances of κίνησις even as perception is itself a noncanonical instance. The result of this application, of course, is noncanonical as well: perceptual change acts *in a way* like a process change (action and passion must be present), even as it is never incomplete but a completed product change at all times it exists (i.e., at all times it is true that one is seeing red). For as soon as one removes agent from patient (and thus, the action and passion), one reverts to the former contradictory (e.g., not-seeing-red).

6.2.3.2.5 Conclusion of Inquiry Two: The Metabolic Status of Perception

This brings us to the conclusion of our second line of inquiry, viz., *what does the direction of the causal arrows between agent and patient entail for the metabolic status of perception?* Having established as a result of our first inquiry that perceptibles or affective qualities act as agents on percipients which act as patients, we determined that the causal arrows in the case of perception went from perceptibles to percipients. In our second inquiry, we applied this finding in our analysis of perception, discovering via *Physics* 3.3 and its application to perception in *De Anima* 3.2 that it correlates with a ‘positive’ metabolic status in that in instances

¹⁰⁶³ See too “destruction of a sort” (φθορά τις) at *Phys.* 5.1 225a17-20.

¹⁰⁶⁴ *Meta* B.5 1002a28-b11, H.5 1044b21-22, K.2 1060b18-19, *De Caelo* 1.11 280b26-28, *EN* 10.4 1174b10-13, and *De Sensu* 6 446b2-6.

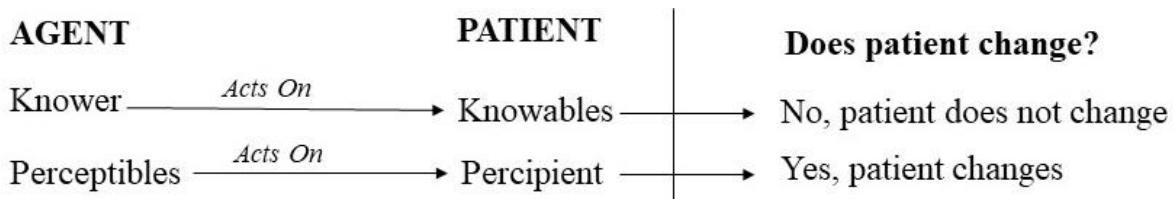
of perception count as *genuine* instances of qualitative change, albeit of the noncanonical QG variety. This allows us to conclude the following: that second actuality perception, like contemplation and virtuous action, is a Df1 relative which is, metaphysically, a dual-categorized entity as both a quality and a relative; but that like virtuous action and unlike contemplation, it changes *qua* quality and *qua* relative rather than just *qua* relative. As a result, we also conclude that the model of qualitative change from *Physics* 7.3 which is most akin to cases of the coming to be of both first and second actuality perception is the virtue model rather than the knowledge model.

SPECIES OF QUALITY	MODE OF CHANGE	CONTACT THESIS OPTION
Perceptibles/ Affective Qualities	Qualitative Generation	(a) – S2 Preservative ‘Alteration’
Rational Psychic States	No Coming to Be	(b) – No Alteration or Change at all

First actuality virtuous states and second actuality virtuous actions, as we demonstrated in chapters 4 and 5 above, come to be via QG from contradictory to contradictory and count as *genuine* instances of qualitative change, not just relative ‘change.’ A relative pseudo-change does occur upon their coming to be, but not just a relative pseudo-change. Rather, the relative ‘change’ is parasitic upon a prior, more basic instance of genuine change. None of this is the case, however, on the knowledge model. While first actuality knowledge and second actuality contemplation are, like instances of perception and virtue, Df1 relatives metaphysically classifiable as both qualities and relatives, they do not have such dual metabolic status but only ‘change’ *qua* relative. In sum, it is indeed the case with respect to virtue and perception we are dealing with entities which are both metaphysically and metabolically dual, while with knowledge an entity which is metaphysically dual but metabolically unary.

6.2.4 Conclusion: QG Vindicated

As for why this is, we have already been given our answer. In *De Anima* 2.5 417b18-27, Aristotle notes that active perception is *like* contemplation in that both are transitions from a sort of potentiality to actuality. But they *differ* as well: the objects of contemplation (“knowables”) are universals that are *internal* to the knower, whereas the objects of perception (perceptibles) are particulars *external* to the perceiver (417b19-23). What this entails is a *reversal* of the agent-patient relation in each case: knowables are patients for Aristotle, while knowers are agents. Perceptibles, contrarily, are agents while percipients are patients. This works out in the following way:



Given the reversal of roles along with single actuality SDD doctrine that the actuality of the agent is in the patient, this would entail that percipients as patients are the locus of the actuality of their agent-perceptibles as we saw in *De Anima* 3.2, while knowables as patients are the locus of the actuality of their agent-knowers. Hence, in perception, the change is *in* the percipient, while in contemplating, it is *in* the knowables. But agents do not themselves change just in acting on their patients. Nor can Aristotle say the intelligible changes *qua* patient, for intelligibles (τὰ νοητά) are *universals* (καθόλου). And not only is *all* knowledge (ἐπιστήμη) of universals (*Meta.* M.10 1087a10-11), but universals are themselves necessary and hence unchanging (*APo* 1.33 88b30-36). Hence, whether Smith comes to possess knowledge in sense (2) or (3), Aristotle *cannot* say that she thereby qualitatively changes nor that Smith’s patient changes, for agents do not themselves change merely in exercising their agency, nor is the patient, in this case,

something that is capable of change. Thus boxed in on either side by his very own principles, Aristotle appeals to the only thing he can appeal to in this case: *relative* “change.” And in so doing, he saves the *reductio* for his cosmological argument. But the same does not hold in the case of perception. Percipients are the sorts of things that can change, and it is not necessary to require that perceptibles as agents undergo change upon perception. This, of course, makes the knowledge model inapplicable to perception. And if so, and if our only other options are alteration and QG as on the virtue model, then it is clear as to what Aristotle would choose. QG, with respect to perception, has thus been vindicated.

APPENDIX 1

A Problem with Matterless Form Reception?

On this “model of qualitative alteration” as we have just seen, perception as matterless form reception is specified in terms of both content and causation. In terms of content, perception is fleshed out as (1) the reception of perceptible forms of external objects without any quantity of the matter of those objects. In terms of causation, it involves (2) the matterless qualitative forms of external objects acting *qua* form rather than *qua* matter-form composite.¹⁰⁶⁵ While this certainly clarifies matters, it also presents us with a problem. If perception consists in matterless qualitative form *reception* on the part of the patient percipient, then, conversely, it must also consist in matterless qualitative form *transmission* on the part of the agent perceptible. “Form transmission” and “form reception” are just opposite sides of the same coin—the former from the point of view of the agent, the latter from that of the patient—and both referring to the exact same thing. That is, there is a distinction of reason, but not a real distinction, between form transmission and form reception.¹⁰⁶⁶ But as we noted in Chapter 1 and again in Chapter 3, ‘form transmission’ is a core component of *change* even in its the broadest sense, μεταβολή—which, of course, includes all instances of κίνησις. As such, ‘form transmission’ is core component of

¹⁰⁶⁵ For both of these components (i.e., content and causation) as being derived *from*, and as specifications *of*, the phrase “reception of the perceptible form without the matter” and its signet ring *explanans*, see the excellent discussion in Polansky, *Aristotle’s De Anima*, 341–44.

¹⁰⁶⁶ As Aristotle would put the point, “these things are one (ὓν), but their account (λόγος) is not one” (*Phys.* 3.3 202a20, ταῦτα γὰρ ἓν μὲν ἔστιν, ὁ μὲντοι λόγος οὐχ εἷς). Cf. *Phys.* 3.3 202b9, b12, b16, b22, *DA* 2.12 424a25–26, 3.2 425b26–27, 3.7 431a19–20, and 28–29. For I take it that when Aristotle says that something is “one and the same” (ἡ αὐτὴ ἐστὶ καὶ μία, *DA* 3.2 425b26–27) and yet *not* the same in “account” (λόγος, *Phys.* 3.3 202b9; cf. b12, b22) or “essence” (τὸ τί εἶναι, *Phys.* 3.3 202b12; cf. b9, b16, *DA* 2.12 424a25, 3.2 425b27, 3.7 431a19, and 29), I take him to be making this exact point. A real distinction would be of two terms refer to those things which *not* one and the same *nor* the same in account. A distinction of reason, on the other hand, occurs when two terms refer to that which *is* one and the same but *not* the same in account. That is, there is a distinction of reason (i.e., a *conceptual* distinction) between the two terms, even as *neither* is capable of independent existence from the other. For a discussion of the real distinction vs the distinction of reason (and the formal distinction) in Scholastic discussions, as well as centrality of the criterion of separability in marking the difference between the two, see Feser, *Scholastic Metaphysics*, 72–77.

alteration too, whether of the destructive kinetic or of the preservative metabolic varieties. If this is correct, then by specifying perception as he has in terms of (1) content and (2) causation does not just construe perception along the lines of some “*model* of qualitative alteration”, but rather on such an account perception *just is* qualitative alteration. This would seem to be a serious problem, but let us spell out the details a bit before addressing the problem in full.

Using kinetic alteration as an example, when a patient becomes, say, black, it is not just because the patient is potentially so, but because the agent is actually so. As we noted in Chapters 1 and 2 above, Aristotle’s characteristic term for actuality (ἐντελέχεια or ἐνέργεια) is “form” (εἶδος), while for potentiality (δύναμις) he prefers “matter” (ὕλη).¹⁰⁶⁷ Hence, it is not just that the agent is *actually* black but that it has the *form* of black; and it is not just that the patient is *potentially* black, but that patient’s *matter* is of the sort that is *receptive* of black. Moreover, it is not just that form *may* be involved in instances of change, but that form *must* be involved in all cases. For it is *only* by the form of the agent—the agent’s actuality—that a patient can come to be *actualized* or *in-formed* or *change* in any way. For as Aristotle so clearly puts it in *De Anima* 3.7, “everything (πάντα) which comes to be does so from something existing in actuality (ἐντελεχεία)” (431a3-4).¹⁰⁶⁸ Or as we have put this point previously, *all form comes from other form*. Aristotle puts the point this way *Physics* 3.2 202a9-12:

¹⁰⁶⁷ See, most famously, *DA* 2.1 412a9-10: “Matter is potentiality, while form is actuality” (ἔστι δ’ ἡ μὲν ὕλη δύναμις, τὸ δ’ εἶδος ἐντελέχεια). Cf. 2.3 414a16-17. See too Beare, 220: “The distinction between matter and form is allied to the distinction between potentiality (δύναμις) and actuality (ἐνέργεια, ἐντελέχεια), also of capital importance in Aristotle.”

¹⁰⁶⁸ ἔστι γὰρ ἐξ ἐντελεχείᾳ ὄντος πάντα τὰ γινόμενα. Cf. *Meta.* Θ.8 1049b24-29: “For what actually (ἐνεργείᾳ) is always comes to be from what potentially (δυνάμει) is as a result of what actually (ἐνεργείᾳ) is (for example, human from human, musician as a result of musician), there being always a first changer^k; and the [first] changer^k already actually (ἐνεργείᾳ) is. For it was stated in the accounts concerned with substance that everything that comes to be, comes to be something, from something, and as a result of something, and this is the same in form (εἶδει) as it.” ἀεὶ γὰρ ἐκ τοῦ δυνάμει ὄντος γίγνεται τὸ ἐνεργείᾳ ὄν ὑπὸ ἐνεργείᾳ ὄντος, οἷον ἄνθρωπος ἐξ ἀνθρώπου, μουσικὸς ὑπὸ μουσικοῦ, ἀεὶ κινουντός τινος πρώτου· τὸ δὲ κινεῖν ἐνεργείᾳ ἤδη ἔστιν. εἴρηται δὲ ἐν τοῖς περὶ τῆς οὐσίας λόγοις ὅτι πᾶν τὸ γινόμενον γίγνεται ἐκ τινος τι καὶ ὑπὸ τινος, καὶ τοῦτο τῷ εἶδει τὸ αὐτό.

That which produces change (τὸ κινουῦν) will always (ἀεὶ) carry some *form* (εἶδος), either ‘this’ (τόδε) or ‘of such a kind’ (τοιόσδε) or ‘so much’ (τοσόνδε), which will be the principle of (ἀρχή), and responsible for (αἴτιον), the change (κινήσεως), when it produces change (κινῇ)—e.g. what is actually (ἐντελεχεία) a human being makes (ποιεῖ), out of which is potentially (δυνάμει) a human being, a human being.¹⁰⁶⁹

If then “form transmission” and “form reception” are just opposite sides of the same coin, we would seem to have a serious problem in that not only must all instances of perception be instances of qualitative alteration, but so too all instances of qualitative alteration must be instances of *perception*. Without a difference in cases of perception and instances of alteration generally, a biconditional obtains between them as classes.¹⁰⁷⁰ Aquinas too sees this as a problem. He puts it thusly in his *Sentencia libri De anima* at II.24.551:

So Aristotle says first that we must universally and generally hold this to be true of every sense: that sense is capable of taking on *species* [i.e., form] without matter, just as wax receives the ring’s seal without the iron or gold. But this seems common to everything that is affected (*commune omni patienti*). For everything affected receives something from its agent, considered as its agent. An agent, however, acts through its form and not through its matter. Therefore everything affected receives form without matter. This is apparent even to the senses. For air does not receive matter from the fire acting on it but

¹⁰⁶⁹ εἶδος δὲ ἀεὶ οἴσεται τι τὸ κινουῦν, ἥτοι τόδε ἢ τοιόνδε ἢ τοσόνδε, ὃ ἔσται ἀρχὴ καὶ αἴτιον τῆς κινήσεως, ὅταν κινῇ, οἷον ὁ ἐντελεχεία ἄνθρωπος ποιεῖ ἐκ τοῦ δυνάμει ὄντος ἀνθρώπου ἄνθρωπον. See this same principle elsewhere in the *Corpus* at, e.g., *Phys.* 8.5 257b7-10, *Meta.* A.1 993b23-27, *APo.* 1.2 72a29-30. See too the account of it in Hussey, *Aristotle’s Physics*, xv–xvi. See also A.C. Lloyd, “The Principle That the Cause Is Greater than Its Effect,” *Phronesis* 21, no. 2 (1976): 147, who calls this the “transmission theory of causation,” saying it is “essentially Aristotle’s.”

¹⁰⁷⁰ One might again be inclined to cite Aristotle’s real distinction/distinction of reason formula: “these things are one (ἓν), but their account (λόγος) is not one” (*Phys.* 3.3 202a20).

instead receives a form. Therefore it does not seem to be special (*proprium*) to sense that it can take on *species* [i.e., form] without matter.¹⁰⁷¹

So, what exactly is the problem with immaterial form reception, specified just in terms of content and causation, being *commune omni patienti* for Aquinas? It is that, given that a biconditional obtains between the classes since they lack any difference which is *proprium*, when one obtains necessarily so does the other. The result of this, of course, is that not only must we say that when a tub full of bathwater heats a rubber ducky such that it immaterially receives the form of heat it is *altered*, but also that in this alteration it *perceives*. Now, certainly, *I* perceive heat when *I* am heated by the bathwater, and it is also the case that I am altered *bodily* by the heat as well by becoming physically hot. Since these two things—the perception and the bodily alteration—occur in me simultaneously, perhaps one might be tempted to take them to be only conceptually distinct. But surely the rubber ducky is bodily altered but does not thereby perceive. Nor, to use Aquinas' example, does the air perceive when *it receives* the fire's form without its matter. And as Theodore Scaltsas puts the point, “although the wax receives the form without the matter, the wax does not perceive. Aristotle needs to explain *why*”.¹⁰⁷² If neither the rubber ducky nor the air nor the wax *perceive* even though they are *altered*—as seems to be the case even for Aristotle¹⁰⁷³—then a biconditional cannot hold between the classes of perception and alteration. Rather, there must be a *further* difference between the two which marks one off from the other.

¹⁰⁷¹ Dicit ergo primo quod hoc oportet accipere, universaliter et communiter omni sensui inesse, quod sensus est susceptivus specierum sine materia, sicut cera recipit signum anuli sine ferro et auro. Sed hoc videtur esse commune omni patienti. Omne enim patiens recipit aliquid ab agente secundum quod est agens. Agens autem agit per suam formam, et non per suam materiam: omne igitur patiens recipit formam sine materia. Et hoc etiam ad sensum apparet: non enim aer recipit ab igne agente, materiam eius sed formam: non igitur videtur hoc proprium esse sensus, quod sit receptivus specierum sine materia.

¹⁰⁷² Theodore Scaltsas, *Substances and Universals in Aristotle's Metaphysics* (Ithaca, NY: Cornell University Press, 1994), 202. Italics, mine.

¹⁰⁷³ See *De Somno* 1 454a7-11: “But since when one perceives it does not belong to soul or body exclusively (ἰδίον), then—since the subject of actuality is identical with that of potentiality, and what is called perception is an

While it has sometimes not been noticed, Aristotle does actually offer this *proprium* or third criterion in the very chapter in *De Anima* we have been examining, 2.12. After the presentation of the “reception of the perceptible form without the matter” formula and signet ring and wax analogy (424a17-24), Aristotle briefly addresses the relation between the perceptual faculties and the sense organs (424a24-28) as well on how excesses in perceptibles disturb the “mean” (μεσότης)¹⁰⁷⁴ of sense organs—which the psychic faculty uses in perception¹⁰⁷⁵—(424a28-32) before turning to “why plants (τὰ φυτὰ) do not perceive, even though they have one psychic part (μόριον ψυχικόν) and are affected in a way (πάσχοντά τι) by the objects of touch, since they are cooled and heated” (424a32-25b1).¹⁰⁷⁶ Aristotle justifies this limitation on perception—but not affection (i.e., alteration)—at 424b1-3 as follows:

The reason is that they do not have a mean (μεσότης), nor do they have the sort of principle (ἀρχὴν) for receiving (δέχεσθαι) the forms of perceptibles (τὰ εἶδη τῶν αἰσθητῶν); rather, they are affected with the matter (ἀλλὰ πάσχειν μετὰ τῆς ὕλης).¹⁰⁷⁷

Plants cannot perceive for two reasons, says Aristotle. First, plants lack a μεσότης and for that reason could not have functioning sensory organs capable of being used to discriminate between

actualized sort of change^k of the soul through (διὰ) the body—it is clear that it is not an affection of the soul exclusively, and that *a soulless body has not the capacity for perceiving*.” Barnes translation, modified. ἐπεὶ δὲ οὐτε τῆς ψυχῆς ἴδιον τὸ αἰσθάνεσθαι οὔτε τοῦ σώματος (οὗ γὰρ ἡ δύναμις, τούτου καὶ ἡ ἐνέργεια· ἡ δὲ λεγομένη αἴσθησις ὡς ἐνέργεια κινήσις τις διὰ τοῦ σώματος τῆς ψυχῆς ἐστὶ), φανερόν ὡς οὔτε τῆς ψυχῆς τὸ πάθος ἴδιον, οὐτ’ ἄψυχον σῶμα δυνατόν αἰσθάνεσθαι.

¹⁰⁷⁴ Interestingly, μεσότης (424b1) used interchangeably with λόγος (424a27-28, a31) in this chapter, even as λόγος (424a24) is also used interchangeably with εἶδος (424a18, 24b2)—and yet μεσότης and εἶδος are not interchangeable. The ambiguity of the term, it seems, is here exploited. For evidence that λόγος retains *both* meanings at specifically at 424a24 and perhaps in the other instances here too, see Polansky, *Aristotle’s De Anima*, 344 and Bradshaw, “Aristotle on Perception,” 149–50.

¹⁰⁷⁵ Most perceptively on this, no pun intended, see Beare, *Greek Theories of Elementary Cognition*, 231–34. See too, more recently and more thoroughly, Bradshaw, “Aristotle on Perception.”

¹⁰⁷⁶ καὶ διὰ τί ποτε τὰ φυτὰ οὐκ αἰσθάνεται, ἔχοντά τι μόριον ψυχικόν καὶ πάσχοντά τι ὑπὸ τῶν ἀπτῶν· καὶ γὰρ ψύχεται καὶ θερμαίνεται.

¹⁰⁷⁷ αἴτιον γὰρ τὸ μὴ ἔχειν μεσότητα, μηδὲ τοιαύτην ἀρχὴν οἷαν τὰ εἶδη δέχεσθαι τῶν αἰσθητῶν, ἀλλὰ πάσχειν μετὰ τῆς ὕλης.

perceptibles in the same range.¹⁰⁷⁸ As he points out later at 3.12, touch is the most basic of the perceptual faculties such that no animal (ζῷον) can be without it (434b23-24).¹⁰⁷⁹ But as he goes out in the following chapter, plants (φυτὰ) do not even have touch. And why is this? Because “touch serves as a sort of mean (μεσότης) between objects of touch, and the perceptual faculty is receptive not only of the differentiations belonging to earth (γῆς), but also of hot and cold and all the objects of touch” (435a21-24).¹⁰⁸⁰ Touch—along with all the other perceptual faculties—requires a sensory organ with a mean between the perceptible opposites within a range. This requires, in part, that sensory organs be composed of a mixture of the various elements (i.e., earth, water, air, and fire) which are jointly capable of being affected by the full range of a given genus of perceptible (3.12 434b9-14). Whatever is elementally simple, for this reason, cannot act as a proper sense organ—for it cannot have a μεσότης between the opposites as it lacks the appropriate array of elements capable of *having* such qualities. He continues on: “and this is why we do not perceive with bones or hair or parts of this sort, because they are of earth (γῆς)” (3.13 435a24-25).¹⁰⁸¹ Whatever part is monoelemental cannot possess a mean and, thus, cannot act as a

¹⁰⁷⁸ See, e.g., Beare, *Greek Theories of Elementary Cognition*, 232–33: “Each αἰσθησις or sensory faculty is for him [Aristotle] a unity, ruling as it were over its own province which is also one and consists of its αἰσθητα. The unity is, of course, qualitative or formal, not quantitative.... Thus seeing presides over or discerns (κρίνει) the province including colour. Colour is a province lying between and bounded by the opposites white and black.... Between these opposites come other species which mediate between them, and which Aristotle endeavoured to arrange in a scale of succession reaching continuously from the one opposite to the other. Seeing preside over all these species alike, comparing and distinguishing them. This power, he tells us, it possesses in virtue of being a μεσότης or λόγος. It is a μεσότης *qua standing in a middle character between extremes*—white and black—or between any other pair of different species or different colours in the scale, so that it can relate itself to either at the same time as to the other. It is a λόγος or ratio in the sense that it involves *in its organ* a λόγος τῆς μίξεως [“ratio of a mixture” DA 1.4 408a28-29] of physical elements which constitute αἰσθητα, and therefore is capable of taking the ‘form’ of any of them indifferently.” Italics, mine.

¹⁰⁷⁹ “And it is evident that an animal cannot be without touch.” καὶ φανερόν ὅτι οὐχ οἷόν τε ἄνευ ἀφῆς εἶναι ζῷον.

¹⁰⁸⁰ πάντων γὰρ ἡ ἀφή τῶν ἀπτῶν ἐστὶν ὥσπερ μεσότης, καὶ δεκτικὸν τὸ αἰσθητήριον οὐ μόνον ὅσαι διαφοραὶ γῆς εἰσὶν, ἀλλὰ καὶ θερμοῦ καὶ ψυχροῦ καὶ τῶν ἄλλων ἀπτῶν ἀπάντων.

¹⁰⁸¹ καὶ διὰ τοῦτο τοῖς ὅστοις καὶ ταῖς θριξὶ καὶ τοῖς τοιοῦτοις μορίοις οὐκ αἰσθανόμεθα, ὅτι γῆς ἐστίν.

sense organ.¹⁰⁸² This entails, of course, that is something is *only* monoelemental, then no part of it can have a mean and thus it cannot perceive at all. And this is precisely the case for plants (435b1-3):

This is also why plants (φυτὰ) do not have perception: because they are of earth (γῆς), and none of the other perceptual faculties can be present without touch, while this perceptual faculty (αἰσθητήριον) is neither of earth (γῆς) nor of any one of the other elements (στοιχείων).¹⁰⁸³

The bodies of plants are too simple, just as are bone and hair, and thus no part of them can act as a sense organ with a proper mean. This is the first reason why plants cannot perceive. Let us call this the “means” by which perception occurs, and add it as the third component of Aristotle’s account along with content and causation. But even if the means were part of the story for why *whatever* is altered (e.g., rubber duckies, air, wax, etc.) does not perceive, it cannot be the whole story. Dead bodies too, are appropriately arrayed with sensory organs of the appropriate elemental mixture and means, yet when they are altered they do not thereby perceive.¹⁰⁸⁴ So too, living bodies with sensory organs that are *functionable* per this specification, but not capable of *functioning* (perceptually) even when altered. Accordingly, Aristotle needs another criterion besides the means in order to fully separate the perceptions from non-perceptual alterations which nevertheless comply with the “reception of the perceptible form without the matter” formula.

¹⁰⁸² Cf. Beare, *Greek Theories of Elementary Cognition*, 198–99. See too Bradshaw, “Aristotle on Perception,” 149–50.

¹⁰⁸³ καὶ τὰ φυτὰ διὰ τοῦτο οὐδεμίαν ἔχει αἴσθησιν, ὅτι γῆς ἐστίν· ἄνευ δὲ ἀφῆς οὐδεμίαν οἷόν τε ἄλλην ὑπάρχειν, τοῦτο δὲ τὸ αἰσθητήριον οὐκ ἔστιν οὔτε γῆς οὔτε ἄλλου τῶν στοιχείων οὐδενός.

¹⁰⁸⁴ *De Somno* 1 454a11: “A soulless body has not the capacity for perceiving” (Barnes translation, modified). οὐτ’ ἄψυχον σῶμα δυνατόν αἰσθάνεσθαι.

Fortunately, Aristotle provides us with just this in the lines following his requirement for a μεσότης when he says, “nor do they have the sort of principle (ἀρχὴν) for receiving the forms (εἶδη) of perceptibles” (αἰσθητῶν, 2.12 424b1-2). The principle, here, refers to the soul—or, more precisely, a *part* of the soul.¹⁰⁸⁵ And a principle is, of course, “the primary thing from which something either exists or comes into being or becomes known” (*Meta.* Δ.1 1013a17-19).¹⁰⁸⁶ The point here is that while plants have one part of soul (μόριον ψυχικόν, *DA* 2.12 424a33-34) which acts as a principle for nutrition (2.4 416b17-19),¹⁰⁸⁷ they lack another part of the soul which acts as the principle for perception, viz., “the perceptive part of the soul” (τῷ αἰσθητικῷ μορίῳ τῆς ψυχῆς, *Phys.* 7.3 248a8).¹⁰⁸⁸ And that plants in lacking this psychic principle which is essential to animals, have no part in which perception can be generated by perceptibles.¹⁰⁸⁹ He goes on: “rather, they are affected with the matter” (ἀλλὰ πάσχειν μετὰ τῆς ὕλης, *DA* 2.12 424b2-3). Now, this cannot mean what some commentators like Hicks think it means when they say it ought to be taken in a manner *contrary* to that of 424a18-19. There we were told in perception one receives the perceptible form “without the matter” (ἄνευ τῆς ὕλης), meaning the matter of the external object. Plants, on Hicks’ view, cannot receive perceptible forms “without the matter”, but only “with the matter” (μετὰ τῆς ὕλης, 424b3), and this is why

¹⁰⁸⁵ For the soul as the ἀρχὴ of the body, see *DA* 1.1 402a6-7: “For the soul is a sort of first principle of animals.” ἔστι γὰρ οἷον ἀρχὴ τῶν ζώων. And *DA* 2.1 415a8: “The soul is the cause and principle of a living body.” ἔστι δὲ ἡ ψυχὴ τοῦ ζῶντος σώματος αἰτία καὶ ἀρχή.

¹⁰⁸⁶ πασῶν μὲν οὖν κοινὸν τῶν ἀρχῶν τὸ πρῶτον εἶναι ὅθεν ἢ ἔστιν ἢ γίγνεται ἢ γινώσκεται.

¹⁰⁸⁷ See *DA* 2.4 416b17-19 where in speaking of the faculty of nutrition he says: “consequently, this principle (ἀρχή) of the soul (ψυχῆς) is a capacity of the sort which preserves the thing which has it, as the sort of thing that it is.” ὥσθ’ ἡ μὲν τοιαύτη τῆς ψυχῆς ἀρχὴ δύναμις ἐστὶν οἷα σώζειν τὸ ἔχον αὐτὴν ἢ τοιοῦτον.

¹⁰⁸⁸ See the same phrase in *GA* 2.3 736a30-31: τὸ μόριον τῆς ψυχῆς τὸ αἰσθητικόν. For the soul perceiving precisely perceptibles with this “perceptive part” (τὸ αἰσθητικόν μέρος), see *De Sensu* 7 449a7-8. For the shorthand version of the phrase elsewhere, which does not specify that the part is ‘of the soul’, see *Phys.* 7.2 244b10 (αἰσθητικὰ τῶν μερῶν) and 7.3 247a67 (αἰσθητικοῦ μέρους). For parts of the soul generally in *DA*, which include both the nutritive and perceptual parts, see 2.2 413b7-8 (μόριον τῆς ψυχῆς) and 413b14 (μόριον ψυχῆς).

¹⁰⁸⁹ See, e.g., *De Juventute* 4 469b4: “animal (ζῷον) is defined by the possession of perceptive soul.” εἴπερ οὖν τὸ ζῷον ὥρισταί τῷ τὴν αἰσθητικὴν ἔχειν ψυχὴν. Cf. *De Somno* 1 454b24-25: “for an animal (ζῷον) is defined as such by its possessing sense-perception.” τῷ γὰρ αἰσθῆσιν ἔχειν ὥρισταί τὸ ζῷον.

they cannot perceive.¹⁰⁹⁰ But, as Scaltsas points out, this must be wrong for the soulless or inanimate¹⁰⁹¹ wax is said to be able to receive the *seal* of the signet ring without its matter (i.e., “not insofar as it is gold or metal”, 424a21).¹⁰⁹² Yet, while the wax is thus affected, the wax does not perceive.

Aquinas surely exaggerated when he said that “*everything* affected receives form without matter” (*Sentencia libri De anima* at II.24.551). For even if all change necessarily involves the transmission of form—and we assert that Aristotle takes this as a given¹⁰⁹³—it does not follow that it must be form *alone* as Aquinas intimates.¹⁰⁹⁴ Rather, as Philoponus points out there are a number of affective qualities which can *only* be transmitted to inanimate objects *with* the matter of what affects them:

But inanimate things when they are affected by perceptibles are affected not only by their forms but by both [form and matter] together. For it is because something is mixed in, to

¹⁰⁹⁰ Hicks, *Aristotle De Anima*, 419: “Plants are acted upon, or affected, but *not* (like animals) in such a manner as to take the form of objects *without* the matter” (italics, mine). For others who read the passage in a like manner see Bradshaw, “Aristotle on Perception,” 148 n 12, who lists Ross, Hamlyn, Sorabji, and Silverman. We might also mention, as Hicks does, Themistius, *In de an.* 78.36 where he takes this passage to mean that “[plants] are affected because matter enters *along with* what affects them.”

¹⁰⁹¹ “Animate” translates ἔμψυχον, “the-with-soul”, while “inanimate” translates ἄψυχον, “the-without-soul.”

¹⁰⁹² οὐχ ἢ χρυσὸς ἢ χαλκός. Scaltsas, *Substances and Universals in Aristotle’s Metaphysics*, 205. One problem here might be that a seal is a shape—the *fourth* species of quality—not an affective quality or perceptible proper, the *third* species of quality. Does this invalidate Scaltsas’ objection? I do not think so. As we shall see below, certain affective qualities are also received in such a manner as the wax receives the form, even by what is inanimate.

¹⁰⁹³ As we have seen, per *Phys.* 5.1 224a34-b1 all change necessarily involves five factors: an agent, a patient, an interval of time, that from which (ἐξ οὗ), and that to which (εἰς ὃ)—and the “from” and “to” if contraries (e.g., from white to black) are *forms*. If contradictories, then either the “from” or “to” would be a lack or privation. Hence, in *In de an.* 301.36-302.1, Philoponus calls contradictory to contradictory change “from lack to form” (ἐκ στερήσεως εἰς εἶδος), whereas change “from contrary to contrary” (ἐξ ἐναντίου εἰς ἐναντίον, 301.36-02.1) is also called change “from form to form” (ἐξ εἶδους εἰς εἶδος, 304.35)—a phrase that only occurs once in Aristotle and there specifies precisely this sort of change in *Phys.* 6.10 240b20-22. As Aristotle goes on to say in *Phys.* 5.1 at 224b24-26, “the change is *not* in the form (εἶδει) *but* in the thing which is changing, that is, whose potentiality to move is actualized” (Reeve translation, modified. καὶ ἐπὶ κινουντος καὶ ἐπὶ κινουμένου, δῆλον, καὶ ὅτι ἡ κίνησις οὐκ ἐν τῷ εἶδει ἀλλ’ ἐν τῷ κινουμένῳ καὶ κινητῷ κατ’ ἐνέργειαν). That is, the form does not itself change by e.g. cold becoming hot, but the cold *thing* changes, the *thing* losing the form of cold and gaining the form of hot as that from which and to which.

¹⁰⁹⁴ *Sentencia libri De anima* at II.24.551: “An agent, however, acts through its form and not through its matter. Therefore everything affected receives form without matter.” Agens autem agit per suam formam, et non per suam materiam: omne igitur patiens recipit formam sine materia.

water, perhaps, that it then becomes sweet, and similarly the smoke adhering to the garment makes it sweet-smelling. And similarly colors too act upon bodies, for instance, when they are dyed; they are mixed into the garments *along with their own material* (*In de an.* 440.33-441.4).¹⁰⁹⁵

Surely this is so. When a fence changes from brown to white, it does not *just* receive the form, but the form precisely *in* some matter, *the paint*. The same applies in cases of inanimate objects receiving smells and tastes as well—some matter in which the form is present carries the form to the object affected. *But*, there are very clear exceptions to this, even if they are narrow.

Philoponus goes on (*In de an.* 441.5-9):

It seems to be only in the case of hot and cold that this does not happen. When there is a fire adjacent, its heat alone alters underlying things such as air, and similarly with cooling: ice when adjacent cools without having its substance mixed in with the thing that is cooled, but altering it just by its quality.¹⁰⁹⁶

Inanimate air receiving the heat of the fire without the matter of the fire is the same example used by Aquinas, which shows not only that he was familiar with Philoponus on this point, but knew of the counterexamples he gives as well. All the same, it is important to see the point made by Philoponus that this only seems to occur in the case of hot (θερμὸν) and cold (ψυχρόν). For not only are hot and cold instances of the tangible (ἀπτός) genus of perceptibles (2.11 422b25-

¹⁰⁹⁵ Charlton translation, modified. τα μέντοι άψυχα πάσχοντα υπό των αισθητων ουχ υπό των ειδών αυτών πάσχει μόνον, αλλ υπό του συναμφοτέρου. τω γάρ εγκαταμίγνυσθαι το μὲν ει τύχοι τω ύδατι, ούτω γλυκό γίνεται· ομοίως ο ατμός τω έματίφ προσιζάνων ευώδες αυτό ποιεί. ωσαύτως δε και τα χρώματα ποιεί εις τα σώματα, οίον τα βαπτόμενα· εμίγνυνται γαρ μετά της ιδίας ύλης τους έματίοις.

¹⁰⁹⁶ δοκεί δε μόνον επί θερμού και ψυχρού τούτο μή συμβαίνειν· μόνη γαρ η θερμότης παρατεθέντος του πυρός ήλλοίωσε τα υποκείμενα, οίον τον αέρα· και επί ψύξεως ωσαύτως· παρακείμενος γάρ και κρύσταλλος ψύχει ουκ έμμιχθείσης αυτου της ουσίας τω ψυχομένω, αλλά ποιότητι μόνον αλλοιόσας.

27)¹⁰⁹⁷, but they are the examples used by Aristotle as well in the passage examined above 2.12 424a34-b1: plants “are affected in a way by the objects of touch (τῶν ἀπτῶν), since they are cooled (ψύχεται) and heated (θερμαίνεται).”¹⁰⁹⁸ Hence, *even if* the other perceptibles are received by inanimate objects regularly *with* the matter, this is not so for cold and heat which are *can* be transmitted immaterially to *any* body.¹⁰⁹⁹ Notice the modal sense here: even if e.g., an odor must *always* be transmitted materially to what is inanimate, hot and cold at least *can* be transmitted immaterially to the inanimate—and indeed often are.¹¹⁰⁰ Hicks and those of his ilk are flatly wrong here, Philoponus and Aquinas right.¹¹⁰¹ But if so, what is there alternative reading of this passage?

If plants cannot perceive in part because they lack the appropriate sort of matter for sensory organs and a μεσότης, but they nevertheless *can* receive some immaterial perceptible forms even without a μεσότης, then why is it that they cannot perceive *those* forms? The other

¹⁰⁹⁷ “But among objects of touch are included many pairs of contraries: hot and cold (θερμὸν ψυχρόν), dry and wet, hard and soft, and whatever else is of this sort.” ἐν δὲ τῷ ἀπτῷ πολλαὶ ἐνείσιν ἐναντιώσεις, θερμὸν ψυχρόν, ξηρὸν ὕγρὸν, σκληρὸν μαλακόν, καὶ τῶν ἄλλων ὅσα τοιαῦτα.

¹⁰⁹⁸ πάσχοντά τι ὑπὸ τῶν ἀπτῶν· καὶ γὰρ ψύχεται καὶ θερμαίνεται. Cf. the similar point made at 3.13 435a21-b1: “Touch serves as sort of a mean of all the objects of touch, and the perceptual faculty is receptive not only of the differentiations belonging to earth, but also of hot (θερμοῦ) and cold (ψυχροῦ) and all the objects of touch. And this is why we do not perceive with bones or hair or parts of this sort, because they are of earth.” πάντων γὰρ ἡ ἀφή τῶν ἀπτῶν ἐστὶν ὥσπερ μεσότης, καὶ δεκτικὸν τὸ αἰσθητήριον οὐ μόνον ὅσαι διαφοραὶ γῆς εἰσὶν, ἀλλὰ καὶ θερμοῦ καὶ ψυχροῦ καὶ τῶν ἄλλων ἀπτῶν ἀπάντων. καὶ διὰ τοῦτο τοῖς ὀστοῖς καὶ ταῖς θριξὶ καὶ τοῖς τοιοῦτοις μορίοις οὐκ αἰσθανόμεθα, ὅτι γῆς ἐστὶν, καὶ τὰ φυτὰ διὰ τοῦτο οὐδεμίαν ἔχει αἴσθησιν, ὅτι γῆς ἐστὶν. The point here seems to be about the μεσότης of the sensory organ and how it is limited in the case of bone and hair to only *some* of the tangibles (i.e., hot or cold, dry, and hard) while lacking the others (i.e., hot or cold, wet, and soft), which does not allow the perceptual faculty to use the organ as a mean. While certainly related, the point made is not the same.

¹⁰⁹⁹ Certainly there are cases where matter goes along with the heat, as when lava warms the ocean waters, or when hot and cold water are combined in a facet to create warm water, etc.

¹¹⁰⁰ One thinks of instances which go beyond hot and cold as well. When a warm wind blows and dries up a mud puddle, does the puddle thereby partake of the matter of the wind—or just its form of warmth? Similarly, when the floor and walls of a cathedral sanctuary are colored by the light passing through blue stained glass, does the stone arch take on some of the matter of the glass—or just its form of blue? What of when the bright, white light of the sun whitens the various items on which it endlessly gleams? Undoubtedly such examples could be endlessly multiplied.

¹¹⁰¹ See Philoponus, *In de an.* 440.18-29, and Aquinas, *Sentencia libri De anima* at II.24.552-554, 557. To this group we should add, per Bradshaw (“Aristotle on Perception,” 148 n 12), Burnyeat, Scaltsas, and Ward. See too, Michael Esfeld, “Aristotle’s Direct Realism in De Anima,” *The Review of Metaphysics* 54, no. 2 (2000): 323, 328, esp. 332.

part of the answer, the fourth criterion, must lie in the fact that they *lack* the part of the soul which acts as the principle for perception, “the perceptive part of the soul” (*Phys.* 7.3 248a8) as we have said, and that *by lacking* this psychic principle have no part in which perception can be generated by perceptibles. As Aristotle goes on to say, “rather, they are affected with the matter” (ἀλλὰ πάσχειν μετὰ τῆς ὕλης, *DA* 2.12 424b2-3). If this does not mean what Hicks thinks it does as we have shown, then what is the alternative? Per Philoponus and Aquinas, the alternative is not to read this line as specifying *what* is transmitted (i.e., the ‘content’ piece as in immaterial perceptible form) nor *how* it is transmitted (i.e., the ‘causation’ piece as in *qua* form)—both of those were already done in earlier at 424a18-19—nor the *means* by which it is done so (i.e., the μεσότης piece)—but rather the *mode of reception*: immaterially. *Content*, *causation*, *means*, and *mode*, then, are the jointly necessary and sufficient conditions for perception per Aristotle’s theory, not anything less.

When a plant—or a dead body for that matter¹¹⁰²—is heated and receives the immaterial form and is causally acted up by that perceptible, it still does not *perceive* the heat. Why? Because, the *mode* in which it receives the heat is a *material mode*. That is, even though the plant has transmitted to it an *immaterial* perceptible form, it still receives it *materially*—in *the plant’s* own matter. That is why the plant becomes hot even though the plant does not perceive heat. For

¹¹⁰² *De Somno* 1 454a11: “A soulless body has not the capacity for perceiving.” Barnes translation, modified. οὐτ’ ἄψυχον σῶμα δυνατόν αἰσθάνεσθαι. Cf. *Phys.* 7.2 245a10 for “what is soulless and incapable of perception.” ἐπὶ τῶν ἀψύχων καὶ ἀναισθητῶν. And *DA* 2.1 412b25-26 for dead bodies: “the body which has cast off its soul is not a being which is potentially such as to be alive; this is rather the one which has a soul.” ἔστι δὲ οὐ τὸ ἀποβεβληκὸς τὴν ψυχὴν τὸ δυνάμει ὄν ὥστε ζῆν, ἀλλὰ τὸ ἔχον. See too *PA* 1.1 640b34-35: “a dead body has exactly the same configuration as a living one; but for all that is not a man.” ὁ τεθνεὺς ἔχει τὴν αὐτὴν τοῦ σχήματος μορφήν, ἀλλ’ ὁμως ἐκ ἐξίν ἀνθρώπος. And 641a17-21: “If now the form of the living being is the soul, or part of the soul, or something that without the soul cannot exist; as would seem to be the case, seeing at any rate that when the soul departs, what is left is no longer an animal, and that none of the parts remain what they were before, excepting in mere configuration, like the animals that in the fable are turned into stone.” εἰ δὴ τέτο ἐξὶ ψυχῇ ἢ ψυχῆς μέρος ἢ μὴ ἄνευ ψυχῆς—ἀπελθεσης γενεκετι ζῶον ἐσιν, ἐδε τῶν μόνων ἐδεν το αὐτὸ λείπεται, πλὴν τῷ σχήματι μόνον, καθάπερ τὰ μυθεύμενα λιθεσθαι.

perception to occur, it is not enough to have *transmitted* to one a matterless perceptible form; rather, one must also *receive* it matterlessly. That is, what was not prior to perception must be so once perception occurs *in the perceptive part of the soul*. The *soul* receives the immaterial form, not just the bodily sense organs, and *it* thereby perceives by means of this immaterial reception of this immaterial form. Plants, dead bodies, and otherwise inanimate objects either do not have a soul or do not have that *part* of the soul which acts as a principle for these activities, and so they do not perceive because they must always be affected “with the matter” (μετὰ τῆς ὕλης).

Animate bodies, on the other hand, *do* have soul and even this part, and thus are capable of immaterial form reception of immaterial forms transmitted, i.e., they can receive immaterial forms “without the matter” in the sense of receiving them not in a bodily mode, but in a psychic mode.¹¹⁰³ As Scaltsas puts it, “in perception, the form is not received in the matter of the sentient being. The point of this criterion is to establish the difference between physical and perceptual reception of form.”¹¹⁰⁴ The fourth component, thus is mode—and content, causation, means, and mode and the jointly necessary and sufficient conditions for perception.

This is precisely what we should have expected from *Physics* 7.2, a passage we have examined earlier in this Chapter when distinguishing between two sorts of alteration, S1 destructive alteration and S2 preservative ‘alteration’. The animate being—that *with* soul (ἔμψυχον), Aristotle told us there, can undergo *both* sorts, while the inanimate being—that

¹¹⁰³ “Without the matter of the patient” is the third sense intended to be culled from the “without the matter” clause of 424a18-19—and is to be joined with the first sense (“without the matter of the agent”) and second sense (“caused by the perceptible alone, without the matter in which it is imbedded”). For a detailed analysis of this phrase in the context of *DA* 2.12 along with all the supposition that it was Aristotle’s intention to express all three sense, see Polansky, *Aristotle’s De Anima*, 341–46.

¹¹⁰⁴ Scaltsas, *Substances and Universals in Aristotle’s Metaphysics*, 207. Or as Aquinas puts it at *Sentencia libri De anima* at II.24.553: “for the form has a different manner of being in the mode and in the sense object: for in the sense object it has natural being, whereas in the sense it has intentional or spiritual being” (Pasnau translation, modified). Et per hunc modum, sensus recipit formam sine materia, quia alterius modi esse habet forma in sensu, et in re sensibili. Nam in re sensibili habet esse naturale, in sensu autem habet esse intentionale et spirituale.

without soul (ἄψυχον), can only undergo S1. Why is that? Now we know: the inanimate ἄψυχον lack that principle, that part of the *soul*, which *can receive* such ‘alterations’ immaterially and non-destructively. Aristotle puts these differences as follows at 244b12-45a2:

Whatever way the inanimate (ἄψυχον) can be altered (ἀλλοιοῦται), then, the animate (ἔμψυχον) can also be altered, whereas not every way that the animate (ἔμψυχον) can be altered is a way the inanimate (ἄψυχον) can—for it cannot be altered (ἀλλοιοῦται) with respect to the perceptual faculties (αἰσθήσεις). Also, [the inanimate] is unaware (λανθάνει), whereas [the animate] is not unaware (οὐ λανθάνει) of being affected (πάσχον).¹¹⁰⁵ But nothing prevents the animate (ἔμψυχον) too from being unaware (λανθάνει) when the alteration (ἀλλοίωσις) is not with regard to the perceptual faculties (αἰσθήσεις).¹¹⁰⁶

Rocks and squirrels alike can be colored and heated. The former of these instances of destructive S1 alteration is a receiving the form *with* the matter of the agent, whereas the latter is a receiving of the form *without* the matter of the agent. In this they are the same. But no rock, rubber ducky, or even sense-organ-equipped dead body can be S2 ‘altered’. For a dead body as much as a rubber ducky can have its sense organs titillated as little or as much as one desires and may even be in some manner altered, but in neither soulless body will such stimulation register as

¹¹⁰⁵ “Awareness” here, stated negatively as οὐ λανθάνει, refers to the capacity of the percipient to *perceive that* they perceive, i.e., second-order perceptual awareness. Aristotle addresses this issue in, among other places, *DA* 3.2 425b12-25, saying there that we must somehow “see that we see.” Elsewhere, he posits this as a singular activity of that faculty of soul which metaphysically grounds the five perceptual faculties, the so-called *sensus communis* (κοινῆς αἰσθήσεως, *De Mem.* 1 450a10-14, 451a17; cf. *De Sensu* 7 447b9-21). This faculty is coterminous with the common sensorium (κοινὸν αἰσθητήριον, *De Juv.* 1 467b28 and 3 469a12; cf. *DA* 3.1 425a13-b2, *De Insom.* 3 461a6, 31, b4, *De Juv.* 3 469a10, *PA* 2.10 656a28, 3.3 665a12, 4.10 686a31, and *GA* 2.6 743b626), an actual sensory organ which Aristotle identifies as the heart (*De Somno* 2 455b34-456a6, *De Juv.* 3 469a5-10). For an excellent overview, see Beare, *Greek Theories of Elementary Cognition*, 276ff.

¹¹⁰⁶ καθ’ ὅσα μὲν οὖν τὸ ἄψυχον ἀλλοιοῦται, καὶ τὸ ἔμψυχον, καθ’ ὅσα δὲ τὸ ἔμψυχον, οὐ κατὰ ταῦτα πάντα τὸ ἄψυχον (οὐ γὰρ ἀλλοιοῦται κατὰ τὰς αἰσθήσεις)· καὶ τὸ μὲν λανθάνει, τὸ δ’ οὐ λανθάνει πάσχον. οὐδὲν δὲ κωλύει καὶ τὸ ἔμψυχον λανθάνειν, ὅταν μὴ κατὰ τὰς αἰσθήσεις γίγνηται ἡ ἀλλοίωσις. Reeve translation, modified.

*perception.*¹¹⁰⁷ Where there is no receptive principle to generate, there can be no capacity to receive.

¹¹⁰⁷ For this reason, even Sorabji (“Body and Soul in Aristotle,” 71), calls this passage perhaps Aristotle’s “most Cartesian remark.”

APPENDIX 2

The *Physics* 3.3 SDD Solution in *De Anima* 3.2

Let us further solidify by presenting the *Physics* 3.3 solution along with the appropriate quotations from Part 1 of *De Anima* 3.2:

(1) Both agent and patient have an actuality;

- “The actuality of the perceptible and of the percipient are one and the same” (425a26-27; cf. 426a15-16); “I mean, for example, actual sound and actual hearing” (425b27-28); “But whenever what is able to hear is in actuality hearing and whatever is able to sound is sounding, then actual hearing and actual sounding come about simultaneously. One could say of these that one is hearing and the other sounding.” (425b29-426a1).

(2) Both actualities are changes;

- “The change^k (both acting and being acted upon)” (426a2); “For the actuality of what produces and causes change^k comes about in the thing which is affected” (426a4-5).

(3) The changes are different via a distinction of reason:

- “Their being is different” (425b27; cf. 426a16-17).

(a) all the actuality is in the patient.

- “If, then, the change(k) (both acting and being acted upon) is in the thing being acted upon” (426a2-3); “it is necessary that both the sound and the actual hearing be in something potential” (426a3-4); “for the actuality of what produces and causes change^k comes about in the thing which is affected” (426a4-5).

(i) Thus the actuality of an agent is not in the agent;

- “If, then, the change(k) (both acting and being acted upon) is in the thing being acted upon” (426a2-3); “it is necessary that both the sound and the actual hearing be in something potential” (426a3-4); “for the actuality of what produces and causes change^k comes about in the thing which is affected” (426a4-5); “for which reason it is not necessary that what initiates change^k be changing^k” (426a5-6).

(ii) and patients do not change via two simultaneous changes;

- “The actuality of the perceptible and of the percipient are one and the same” (425a26-27; cf. 426a15-16).

(b) no change can be split between agent and patient, for some agents cannot change.

- Cf. “For which reason it is not necessary that what initiates change^k be changing^k” (426a5-6).

(4) The changes are the same, lacking any real distinction;

- “The actuality of the perceptible and of the perceptual faculty/percipient are one and the same” (425a26-27; cf. 426a15-16).

(a) two different forms can have one actuality;

- “But whenever what is able to hear is in actuality hearing and whatever is able to sound is sounding, then actual hearing and actual sounding come about simultaneously. One could say of these that one is hearing and the other sounding” (425b29-426a1); “hence, the actuality of what is capable-of-making-a-sound is sound or sounding, and the actuality of what-is-capable-of-hearing is hearing or listening” (426a6-7).

(b) but action and passion are not therefore identical in account.

- “Their being is different” (425b27; cf. 426a16-17).

We now have our confirmation that *De Anima* 3.2 does indeed apply the *Physics* 3.3 SDD single actuality solution to perception. Moreover, given that Aristotle takes this to apply to *all* genuine instances of change (*Phys.* 3.3 202b23-29), this gives us a straightforward identification of perception by Aristotle as a genuine instance of change, and thus in favor of the QGA virtue model. Nevertheless, we still do not know *why* it is that Aristotle applies the SDD single actuality solution and thus categorizes it as a genuine instance of change rather than the using the knowledge model and categorizing it as an instance of pseudo-change. The answer to this question will emerge as we proceed further into the details of the passage.

[A] change necessarily takes place in the context of agents and patients;

[B*] Not everything that causes change (i.e., every agent) can itself change, so that no agent changes merely in the course of causing change but the change is solely in the patient.

[C*] the process change and product change^o of agent and patient consist in a single actuality in the patient.

[D*] the enabling conditions for change are the two respective potentialities in the agent and patient to change, both of which have an actuality which is a change.

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