

THE CATHOLIC UNIVERSITY OF AMERICA

The Necessary and Necessarily Limited Role of Perception  
in Aristotle's Account of Human Knowing

A THESIS

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By

Mitchell Timothy Carson  
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Jonathan Buttaci, Ph.D., Director

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Ignacio De Ribera-Martín, Ph.D., Reader

## Table of Contents

<b>List of Abbreviations .....</b>	<b>iv</b>
<b>Acknowledgements .....</b>	<b>v</b>
<b>Introduction.....</b>	<b>1</b>
<b>The Necessary Role of Perception: The Common Insight .....</b>	<b>4</b>
1. <i>Criticisms of Other Thinkers .....</i>	<i>4</i>
2. <i>Beginning with the Particulars in Aristotle.....</i>	<i>9</i>
3. <i>Perception in Hume and Aristotle .....</i>	<i>16</i>
4. <i>Memory and Imagination .....</i>	<i>17</i>
5. <i>Experience .....</i>	<i>20</i>
6. <i>Discursive Activity.....</i>	<i>27</i>
<b>A Failure to Limit the Role of Perception: David Hume’s Epistemic Circle .....</b>	<b>30</b>
1. <i>The Problem as Hume Sees It.....</i>	<i>30</i>
2. <i>Remnants of Rationality: Dealing in Concepts .....</i>	<i>32</i>
3. <i>Hume’s Remedy: Replace Reason with Custom .....</i>	<i>34</i>
4. <i>Where We Are Left.....</i>	<i>45</i>
5. <i>One Response to Hume’s Skepticism.....</i>	<i>46</i>
<b>The Necessarily Limited Role of Perception: Aristotle’s Peculiar Insight .....</b>	<b>50</b>
1. <i>Possibility of Non-discursive Rational Activity.....</i>	<i>50</i>
2. <i>Aristotelian Induction.....</i>	<i>53</i>
3. <i>Induction and First Principles.....</i>	<i>65</i>
4. <i>Aristotelian Empiricism.....</i>	<i>70</i>
<b>Conclusion .....</b>	<b>74</b>
<b>Bibliography .....</b>	<b>75</b>

## List of Abbreviations

<i>APo.</i>	<i>Analytica Posteriora</i>
<i>APr.</i>	<i>Analytica Priora</i>
<i>Cat.</i>	<i>Categoriae</i>
<i>DA</i>	<i>de Anima</i>
<i>DC</i>	<i>de Caelo</i>
<i>EN</i>	<i>Ethica Nicomachea</i>
<i>GA</i>	<i>de Generatione Animalium</i>
<i>Mem.</i>	<i>de Memoria</i>
<i>Meta.</i>	<i>Metaphysica</i>
<i>Phys.</i>	<i>Physica</i>
<i>Pol.</i>	<i>Politica</i>
<i>Resp.</i>	<i>de Respiratione</i>
<i>Top.</i>	<i>Topica</i>

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## Introduction

The “Aha! moment” is always very satisfying, when one realizes a general truth from various particular perceptions and memories. Noticing that someone’s behavior is strange and realizing that he is up to something sinister, or realizing that members of a given class always have the same characteristic, brings with it a certain satisfaction of having brought order out of apparent chaos. The epistemic standing of such a moment, however, is something less clear than the emotional force that it brings. Aristotle offers an account of this moment, and the perceptual and intellectual activities that precede and follow it, in various works, most notably the *APo.* and *Meta.* Aristotle is clear in both texts that knowledge begins in the perception of particular things. David Hume, centuries later in the *Enquiry concerning Human Understanding*, also spells out an account of human knowing that begins in the senses. Critically, however, Hume asserts that the Aha! moment is nothing more than a customary maneuver that does not carry any epistemic weight.

The purpose of this thesis is to trace the commonalities between Aristotle and Hume and to show where and exactly how they differ. As the dialectic of the thesis concludes, I hope to have shown that Aristotle makes a convincing case for the legitimacy of inductive reasoning, and that Hume’s reduction of induction to mere custom is not necessary.

In the first chapter, I will look at the commonalities between Aristotle and Hume in their accounts of human knowing that begin in perception. I will first motivate the comparison by looking at the similar ways in which both criticize other thinkers who fail to handle properly what perception gives them and instead prefer some predetermined view. From there, I will start following both thinkers step by step in the pursuit of ever more general cognitive states, starting in perception. In the following section, I will look at what is common to both thinkers’ accounts of subsequent perceptual states, namely memory and imagination. In the next section, I will give

an interpretation of what Aristotle says about experience, since he is not exactly clear about the finer points of his account, while Hume's treatment of experience is fairly straightforward. Finally, I will investigate a sort of discursive mental activity that is not directly dependent on perception, which both thinkers recognize. In this first chapter I will exhaust the commonalities between the epistemological accounts of Aristotle and Hume.

In the second chapter, I will investigate Hume's account insofar as it differs from Aristotle's. The chapter starts with Hume's criticism of metaphysicians and establishes his lack of faith in any process that claims to lead us from the particular to the universal. In the next section, I will look at what sort of rational discursive activity is left once Hume has cut off the path from the particular to the universal. The next section will investigate the central component of Hume's account of human knowing, namely custom. The project of this chapter is to show that the moves that Hume makes in his *Enquiry* do not lead us to a place any different than the one in which he purports to have found us: we are still certain of our intellectual projects (albeit now on the grounds of custom) without any explanation of the certainty and regularity that we see. I conclude the chapter with a brief discussion of the inconsistencies that arise when applying Hume's account of knowledge to matters of religious faith.

In the third and final chapter, I will turn back to Aristotle to see what the Philosopher has to offer us beyond an appeal to custom. The goal of this chapter is to show how Aristotle is able to give an account of universal propositions arising from perception. The chapter begins by considering an objection that the only sort of intellectual activity that can yield certainty is deductive reasoning, so that something like induction would be as illegitimate as Hume suggests. This section will assert that induction is legitimate, and the following two sections will flesh out the account that Aristotle gives. First, I will give an account of how Aristotle explains induction,

paying close attention to some passages of *APo*. Second, I will investigate what Aristotle says about the power of induction to reach all the way to the first principles of particular sciences. The final section considers what distinguishes Aristotle's account of human knowing from many modern empiricists, namely, hylomorphism.



# I

## The Necessary Role of Perception: The Common Insight

Aristotle and Hume begin their accounts of human knowing in more or less the same way, by clearly acknowledging that perception has a necessary place in the beginning of any act of human knowing. This common insight into the necessary role that perception plays is made manifest in both thinkers' criticisms of other scientists and philosophers. After reviewing these criticisms, I will trace both of their accounts of knowledge as far as they run together, from the beginning in perception, into an account of how those perceptions are synthesized into experience, and through some slight agreement concerning the exercise of reason apart from the input of perception.

### 1. Criticisms of Other Thinkers

In their criticisms of other actual and hypothetical intellectual agents, both Aristotle and Hume show that they take perception and knowledge of particulars to be necessary elements of human knowing. Both of them make this clear in criticizing not only those engaging in theoretical discourse, but also in matters productive and practical. I will start with Aristotle.

In *Resp.*, Aristotle explains that previous natural scientists have been unable to make accurate statements about the nature of respiration in animals due to “a comparative lack of experience with the facts.”<sup>1</sup> Later, he elaborates that it is that “they have no experience with the internal parts.”<sup>2</sup> As a remedy to this, he says that “we must consult both dissections and the account

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<sup>1</sup> Aristotle, *On Youth, Old Age, Life and Death, and Respiration*, trans. G.R.T. Ross, in *The Complete Works of Aristotle, Volume I*, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984), 1, 470b6-12.

<sup>2</sup> *Resp.* 3, 471b24.

in the *HA*.<sup>3</sup> The dissections are clearly an instance of concrete experience with and perception of the particulars. The reference to the *HA* is apropos to the discussion of beginning an account of knowledge, as “the first stage [of investigation, the collection and organization of the relevant data] is represented by the *HA*.”<sup>4</sup> Thus, in the *Resp.* Aristotle shows a disdain for those investigators of the natural world who fail to look at the internal parts of animals and perform dissections. From this text, it is clear that Aristotle takes experience of the particulars to be the starting point of universal knowledge.

Similarly, in the *DC*, Aristotle criticizes certain astronomers following Empedocles and Democritus who made claims about the nature and movement of celestial bodies “without observing it themselves.”<sup>5</sup> With this criticism, Aristotle again makes it clear that he takes as a element of scientific knowledge the careful observation, akin to doing dissections in biology, of those things that one intends to explain, and rejects the project of declaring bodies to behave in a way that corresponds with theories accepted without any grounding in observation. In the same passage, Aristotle goes on further to criticize the same theorists, this time rejecting their conclusions because “in fact their explanation of the phenomena is not consistent with the

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<sup>3</sup> *Resp.* 16, 478a28. There is some controversy over the translation, as the Greek “τῶν ἀνατεμνομένων καὶ τῶν ἱστοριῶν,” here rendered as “dissections and the account in the *History of Animals*.” “Dissections” could also refer to the lost *Anatomies* of Aristotle, which seem to be collections of diagrams intended to supplement the *History of Animals* (cf Aristotle, *History of Animals*, trans. d’A.W. Thompson, in *The Complete Works of Aristotle, Volume I*, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984), I.17, 497a31-32). In either case, the referent of ἀνατεμνομένων is the result of a close work with the particulars, so there is nothing relevant at stake in choosing between these two possible translations. See James G. Lennox, “Aristotle, Dissection, and Generation: Experience, Expertise, and the Practices of Knowing,” in *Aristotle’s Generation of Animals: A Critical Guide*, ed. Andrea Falcon and David Lefebvre, 249-72 (Cambridge: Cambridge University Press, 2018), for a thorough investigation of Aristotle’s reference to the *Anatomies* (or, as he renders it, the *Dissections*), and comes to a similar conclusion that the reference is to some body of work closely connected with observation of particulars.

<sup>4</sup> Andrea Falcon and David Lefebvre, “Introduction: Aristotle’s Philosophy and the *Generation of Animals*,” in *Aristotle’s Generation of Animals: A Critical Guide*, ed. Falcon and Lefebvre, 1-12 (Cambridge: Cambridge University Press, 2018), 8.

<sup>5</sup> Aristotle, *On the Heavens*, trans. J.L. Stocks, in *The Complete Works of Aristotle, Volume I*, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984), III.7, 305b1-2.

phenomena.”<sup>6</sup> Here Aristotle expands the place of particular observations in scientific knowledge, as they are not only necessary in the beginning of a scientific inquiry, but also in the end of such an inquiry, as the particulars must be consulted to make sure that the scientific claims are in accord with what is actually observed of the particulars.

One consequence of this need for concrete observation is that one cannot advance an abstract theory contrary to what the particulars indicate. Aristotle makes this explicit as he continues his criticism, pointing out that the perception-ignoring theorists “had certain predetermined views, and were resolved to bring everything into line with them.”<sup>7</sup> By calling for the evidence of perceived particulars, Aristotle makes impossible such abstract shoe-horning of observable phenomena into previously accepted theoretical systems, thus showing that it is not the theories to which Aristotle gives priority but the particular observed facts.

Aristotle even extends this criterion to his own less certain investigations. In his *GA*, Aristotle acknowledges that his account of the reproduction of bees is based on incomplete observation, as he admits that “the facts, however, have not been sufficiently grasped” and goes on to say that “if they ever are, then credit must be given rather to the observation than to theories, and to theories only if what they affirm agrees with the observed facts.”<sup>8</sup> By doing so, he shows that his commitment is not to some particular thesis about the life of bees but rather to the empirically available fact of the matter, and thereby commends as necessary the actual observation of phenomena as necessary for scientific knowledge, if they should become available.

Aristotle criticizes those who abandon starting with perceiving particulars not only in matters theoretical but also in matters productive and practical. In an analogy in the *EN*, Aristotle

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<sup>6</sup> *DC* III.7, 306a5-6.

<sup>7</sup> *DC* III.7, 306a8-9.

<sup>8</sup> Aristotle, *Generation of Animals*, trans. A. Platt, in *The Complete Works of Aristotle, Volume I*, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984), III.10, 760a29-34.

compares men of moral excellence to those of productive excellence, saying that “men become builders by building and lyreplayers by playing the lyre; so too we become just by doing just acts, temperate by doing temperate acts, brave by doing brave acts.”<sup>9</sup> Here, it seems to be taken for granted that knowledge of building and lyreplaying come from nothing other than the particular acts of building a house and playing the lyre. In other words, it is in dealing with the particulars--building this house and playing this lyre---that one comes to possess the knowledge necessary to be properly called a builder or a lyreplayer. Aristotle extends this presupposition that productive knowledge is gained by experience with the particulars into the moral realm, claiming that the way to be properly called virtuous is through nothing other than the development of good habits by particular virtuous actions. Thus, for all types of knowledge, Aristotle takes expert familiarity with particulars to be a necessary step.

Likewise, Hume criticizes previous philosophers who abandoned consideration of perceptible particulars in their accounts of reality. Twice in the *Enquiry*, Hume refers to philosophies particularly detached from particular perceptions and concrete experience failing to “leave the shade.” Early in the *Enquiry*, Hume describes two sorts of moral philosopher; the first is “one who considers man chiefly as born for action,”<sup>10</sup> which is to say that their philosophies are very grounded in sentiment and immediate experience and focus less on correct intellectual achievement and more on the training of the desires and habits. The second sort are those who “consider man in the light of a reasonable rather than an active being,”<sup>11</sup> which is to say that these philosophers value right thinking more than right action. Of the latter he says that such “abstruse

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<sup>9</sup> Aristotle, *Nicomachean Ethics*, trans. W.D. Ross, in *The Complete Works of Aristotle, Volume II*, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984), II.1, 1103a34f.

<sup>10</sup> David Hume, *Enquiry Concerning Human Understanding*, ed. Eric Steinberg (Indianapolis: Hackett Publishing, 1977), 1 (hereafter cited as *Enquiry*).

<sup>11</sup> *Enquiry*, 1.

philosophy . . . vanishes when the philosopher leaves the shade, and comes into open day; nor can its principles easily retain any influence over our conduct and behavior.”<sup>12</sup> What this criticism amounts to is that the philosophies far removed from sentiment and immediate experience fail to make a return to those experiences, that they fail to change or to inform those experiences and actions that the moral philosopher should inform, precisely because such abstruse philosophy was not grounded in those experiences and actions from the start.

The second invocation of “leaving the shade” is much later in the *Enquiry*, when Hume discusses a theoretical position that, like the abstruse moral philosophies mentioned at the beginning of the book, fail to “leave the shade.” What he rejects is the radical skepticism to which one might be tempted to think that Hume ascribes, namely “*Pyrrhonism*, or the excessive principles of skepticism.”<sup>13</sup> He asserts that “as soon as [Pyrrhonian skeptical beliefs] leave the shade, and by the presence of real objects, which actuate our passions and sentiments, are put in opposition to the more powerful principles of our nature, they vanish like smoke, and leave the most determined skeptic in the same condition as other mortals.”<sup>14</sup> In other words, Hume is able to reject skeptical philosophy because it fails to offer an account of reality that can be used by anyone not engaged in philosophical discourse. In this and the preceding criticism, Hume shows a clear aversion to philosophy that disregards particular, concrete experience, in matters both practical and theoretical.

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<sup>12</sup> *Enquiry*, 2.

<sup>13</sup> *Enquiry*, 109. It is an ongoing question whether or not Hume himself actually ends up following down the path of Pyrrhonian skepticism that he lays out here. Richard H. Popkin, “David Hume: His Pyrrhonism and His Critique of Pyrrhonism,” *The Philosophical Quarterly* 1, no. 5 (1951), 407. Popkin suggests that he does, although Popkin offers an account of Pyrrhonism different than Hume’s. Dorothy Coleman, “Hume’s Alleged Pyrrhonism,” *The Southern Journal of Philosophy* 26, no. 4 (1988), 463-64. Coleman argues that Hume is not a Pyrrhonian skeptic because he does offer a way to distinguish between potentially contradictory claims, for example, the distinction between natural beliefs and natural illusions.

<sup>14</sup> *Enquiry*, 109-110.

Hume's criticism of ungrounded philosophies is motivated, at least in part, by a desire to preclude the vain philosophizing of those who seek "to foster a predominant inclination, and push the mind, with more determined resolution, towards that side, which already *draws* too much, by the bias and propensity of the natural temper."<sup>15</sup> Although this similar concern will lead Hume down a path quite different from Aristotle, which I will trace in the following chapter, it is worth noting for our present purposes that Hume begins from a similar philosophical concern against empirically ungrounded preconceptions.

## 2. Beginning with the Particulars in Aristotle

We will now transition from Aristotle's and Hume's negative comments and criticisms of bad philosophical methods to their positive methodologies and beginnings of philosophy, about which they say very similar things. The first point common to both of them is the prominent place given to particulars in the beginning of the enterprise of human knowing.

While Aristotle makes knowledge of particulars neither the only achievement of human knowing nor the crowning one, he does admit in various places that the act of human knowing ultimately begins with particular things, not with universal knowledge. As we have seen, in his scientific inquiry into animal respiration, Aristotle makes the point that "we must consult both dissections and the account in the *HA*,"<sup>16</sup> putting on equal footing with the pre-existing account in his *HA* the close observation of particulars done in dissection.

At the end of the *APo.*, Aristotle gives a concise account of the movement from perception to knowledge. "So from perception there comes memory, as we call it, and from memory . . . experience, for memories that are many in number form a single experience. And from experience,

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<sup>15</sup> *Enquiry*, 26.

<sup>16</sup> *Resp.* 16(22), 478a27-28.

or from the whole universal that has come to rest in the soul . . . , there comes a principle of skill and of understanding.”<sup>17</sup> This account is in harmony with what he says at the beginning of the *APo.*, that “[w]hat is most universal is furthest away, and the particulars are nearest,”<sup>18</sup> and before saying this, he makes clear the link between particulars and perception, saying that he calls what is “prior and more familiar in relation to us what is nearer to perception, [namely, particulars].”<sup>19</sup> So, Aristotle is quite clear that human knowing has as its first step the perception of particulars, which, as he says later in the *APo.*, ends in “a principle of skill and of understanding.”<sup>20</sup>

Similarly, in *Meta.*, Aristotle traces out a progression from perception to knowledge. He says that “from sensation memory is produced,”<sup>21</sup> then “from memory experience is produced,”<sup>22</sup> and finally “art arises, when from many notions gained from experience one universal judgment about similar objects is produced.”<sup>23</sup> Thus, in both his logical and his metaphysical works, Aristotle gives an account of knowledge that begins in the senses with the perception of particulars and then rises to the knowledge of universals.

At the beginning of the *Phys.*, Aristotle makes a comment in accord with this account of knowing beginning in the senses, that “[t]he natural way of doing this is to start from the things which are more knowable and clear to us,”<sup>24</sup> which he clarifies, restating that such progress is “from what is more obscure by nature, but clearer to us, towards what is more clear and more

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<sup>17</sup> Aristotle, *Posterior Analytics*, trans. Jonathan Barnes, in *The Complete Works of Aristotle, Volume I*, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984), II.19, 100a4-8.

<sup>18</sup> *APo.* I.2, 72a4-5.

<sup>19</sup> *APo.* I.2, 72a3.

<sup>20</sup> *APo.* II.19, 100a8.

<sup>21</sup> Aristotle, *Metaphysics*, trans. W.D. Ross, in *The Complete Works of Aristotle, Volume II*, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984), I.1, 980a29.

<sup>22</sup> *Meta.* I.1, 980b28.

<sup>23</sup> *Meta.* I.1, 981a5-7.

<sup>24</sup> Aristotle, *Physics*, trans. R.P. Hardie and R.K. Gaye, in *The Complete Works of Aristotle, Volume I*, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984), I.1, 184a17-18.

knowable by nature.”<sup>25</sup> What he then says, however, appears at a first glance to complicate or contradict the present account,<sup>26</sup> that “we must advance from universals to particulars.”<sup>27</sup> This complication must be understood, however, differently than the way in which the standard deductive syllogism<sup>28</sup> moves from the universal to the particular.

In the sentence between the mention of moving from the things more knowable to us—that is, particulars—and the apparent departure in saying that we must begin with universals, Aristotle says that “what is to us plain and clear at first is rather confused masses, the elements and principles of which become known to us later by analysis.”<sup>29</sup> It is, I contend, these “rather confused masses” that are the reference of what is an unusual use of the term “universal.” I am not alone in so arguing, as “most commentators reasonably conclude [that] the use of the term [universal] in *Phys.* I.1 is peculiar and not the typical use displayed, for instance, in the passage at the beginning of the [*APo.*].”<sup>30</sup> Rather, here Aristotle can be read to be referring to the end of the intellectual journey, which involves a return to the particular (which has already been seen to be a principle in Aristotelian natural philosophy) from the universal, as “a child begins by calling all men father, and all women mother, but later on distinguishes each of them.”<sup>31</sup>

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<sup>25</sup> *Phys.* I.1, 184a18-21.

<sup>26</sup> See Robert Bolton, “Aristotle’s Method in Natural Science: *Physics* I.1,” in *Aristotle’s Physics: A Collection of Essays*, ed. Lindsay Judson (Oxford: Clarendon Press, 1991). Bolton notes that this passage has been reinterpreted in recent literature, now that “the *Physics* in particular is now standardly as a paradigm of Aristotle’s use of dialectical method, understood as a largely conceptual or a priori technique of inquiry appropriate for philosophy, as opposed to the more empirical inquiries which we, these days, now typically regard as scientific.” (1) My interpretation of this passage will follow Bolton and the older tradition of reading the *Physics* as “congenial that Aristotle’s intended method in his works on natural science is empirical.” (2) For a look at the other side of the debate, in which Aristotle is read as a rationalist, see Michael Frede, “Aristotle’s Rationalism,” in *Rationality and Greek Thought*, ed. Frede and Gisela Striker (Oxford: Clarendon Press, 1996).

<sup>27</sup> *Phys.* I.1, 184a24.

<sup>28</sup> That is, how “All men are mortal; Socrates is a man; therefore Socrates is mortal” goes from the universal premise that all men are mortal to a statement about a particular individual. Also see *APo* I.1, 71a1-7.

<sup>29</sup> *Phys.* I.1, 184a22-23.

<sup>30</sup> Bolton, “Aristotle’s Method,” 4.

<sup>31</sup> *Phys.* I.1, 184b12-13.



In other words, the use of “universal” and “particular” here does reverse some of the usual uses of the terms, enough to make them outliers in the Aristotelian corpus. They do, however, retain enough of the significant features of their usual use by Aristotle to merit their use in this first chapter of *Phys.* As Lucas Angioni puts it, “[t]he opposition between ‘*katholou*’ [universal] and ‘*kath’ hekaston*’ [particular] means in *APo.* I.2 an opposition between explanatory concepts and empirical data, whereas in *Phys.* I.1 it means an opposition between generic features (understood as data) and specific elements (understood as principles and causes).”<sup>32</sup> So, “universal” is used to mean broader things, “explanatory concepts” in *APo.* and “generic features” in this passage of the *Phys.*, and “particular” is used to mean more narrow things, “empirical data” and “specific elements.” The uses from the *Phys.* depart from the more common use of the terms, in *APo.* and elsewhere, by failing to refer to a class of items and a member of that class, rather taking the member of a class to be the broader category and taking the parts of that member to be the more narrow things. Thus, the unusual case in the *Phys.* does preserve part of the normal usage of “universal” and “particular,” namely that in both cases the universal encompasses the particular, either as a species encompasses an individual or as a generic feature encompasses the particular elements that compose it. The use of those terms is thus not unreasonable on Aristotle’s part; however, their use does require qualification if they are to make sense in the light of the rest of the Corpus.

This explanation, however, does not yet allow one to conclude that the *Phys.* sets forth the same pattern of investigation as suggested at the beginning of the *APo.*, namely a path from

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<sup>32</sup> Lucas Angioni, “Explanation and Definition in *Physics* I.1,” *Apeiron* 34, no. 4 (2011), 318. Andrea Falcon, “*Physics* I.1,” in *Aristotle’s Physics Book I: A Systematic Exploration*, ed. Diana Quarantotto (Cambridge: Cambridge University Press, 2018), 51 offers a similar take, and points out that other instances of Aristotle’s use of words is not consistent with him expecting that his terminology be taken in the strict way that he employs it in his logical works: “For instance, we have seen that division (*διάρρησις*) is not used in the technical sense to refer to the Academic method of division, let alone a specific version of that method.”

particular things to universals. What we can say on the account to this point is that, in the *Phys.*, knowledge starts with a “jumbled-up or compounded”<sup>33</sup> individual thing and ends with an understanding of the more particular parts and principles that compose the thing first considered, which is a process that seems to lead us in the other direction, from knowledge of particulars to knowledge of smaller particulars, or, in a way that directly contradicts the story in the *APo.* and *Meta.* I.1, from definitions to particular things, which Aristotle suggests with his first example, saying that “a name, e.g. ‘circle,’ means vaguely a sort of whole: its definition analyzes into particulars.”<sup>34</sup> This could be read to suggest that knowledge begins with definitions known beforehand by the mind and ends with the recognition that such a particular does in fact sufficiently correspond with the known definition. Yet, this account given in the *Phys.* can still be seen to be in harmony with the account of the *APo.* and the *Meta.*, once we consider what is distinctive about the examples that Aristotle uses. The second example, that of “a child [who] begins by calling all men father, and all women mother, but later on distinguishes each of them,”<sup>35</sup> will shed light on the matter. In both examples, the grasp of the universal is not complete, as the definition of a circle is held “vaguely,” and the child does not understand that words for parents refer only to specific individuals.<sup>36</sup> When we consider other contexts where Aristotle mentions unrefined grasp of a form, it will become clear that in both examples he is referring to the perception of an individual.

In *APo.* II.19, Aristotle says that “when one of the undifferentiated things makes a stand, there is a primitive universal in the mind.”<sup>37</sup> The undifferentiated thing to which he refers is a perceived particular, and from its “making a stand” in the mind, a “primitive universal” is grasped

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<sup>33</sup> Here I use Bolton’s translation; see Bolton, “Aristotle’s Method,” 3.

<sup>34</sup> *Phys.* I.1, 184b11-12.

<sup>35</sup> *Phys.* I.1, 184b12-13.

<sup>36</sup> Falcon “*Physics* I.1” suggests that the example of the child shows how one goes from a vague grasp of the whole to clear knowledge of the parts, namely by employing conceptual distinctions to things that show up to perception in initially jumbled ways.

<sup>37</sup> *APo.* II.19, 100a15-16.

by the mind. This primitive universal seems to be the sort of thing that the child has in *Phys.* I.1 whereby he mistakenly calls all men “father” and all women “mother.” What seems to be happening with the child is that he is given a universal, “father,” and only one particular, his father, and with this primitive understanding gained from a single sample, the child does not yet have the full understanding of “father,” and thereby mistakenly thinks that the universal term applies to all beings more or less similar to his father, namely, any man. Thus, the primitive grasp of the universal, described in both *APo.* II.19 and *Phys.* I.1, is the same degree of understanding had upon perceiving a particular without already having knowledge of the universal.<sup>38</sup>

All that remains is to show that the example of the definition of a circle begins in the same place as the child and the first soldier, namely, that it begins with an initial and incomplete grasp of the universal. Aristotle says that the name “means vaguely” (ἀδιορίστως σημαίνει) the universal to which it refers. The adverb rendered by Hardie and Gaye as “vaguely” can be more pointedly translated as “undefined,” lacking a ὁρισμός (“definition”)<sup>39</sup> whereby proper understanding is achieved. Thus, the example of the definition of a circle is in line with the account given by Aristotle in the same section of the *Phys.* and in the end of the *APo.*, and both seemingly troublesome examples in the *Phys.* do in fact start in the same place as the accounts given in the *APo.*

It must now be established that both accounts of knowledge end in more or less the same place. Although this is not strictly necessary for the current project of showing the beginnings of

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<sup>38</sup> *APo.* I.4-5 offers a similar account of unrefined knowledge, this time based on a lack of demonstrations that know that a feature obtains of a sort of thing (e.g. That the sum of a triangle’s three angles is equal to two right angles) of many or all instances of a kind, but fails to recognize that such a feature belongs to the sort by virtue of the sort of thing. Similarly, in the case of perceiving a particular without knowing its universal, certain judgments can be made, but there is missing the sort of perfected knowledge that comes from knowing that such a judgment holds over all members of a sort by virtue of them being a certain sort of thing.

<sup>39</sup> Robin Smith, “Aristotle’s Logic,” *The Stanford Encyclopedia of Philosophy* (2020), accessed December 12, 2020, <https://plato.stanford.edu/archives/sum2020/entries/aristotle-logic/> §13: Glossary of Aristotelian Terminology.

Aristotle's account of knowledge, it will be helpful to see the total harmony of these two accounts to reinforce the unity of their common beginning. The critical step for connecting the endpoints of these two accounts is to equate the grasp of a universal in the *APo.* with the ability to apply that universal to particulars. Aryeh Kosman makes the point that “ἐπιστήμη [scientific knowledge] is, as Aristotle repeatedly urges, a discursive disposition or habit of soul, a ἔξις, the locus of whose ἐνέργεια is in the activity of ἀπόδειξις, an activity that I shall with qualification call in English ‘explanation.’”<sup>40</sup> I maintain that one very clear way to show forth (ἀποδεικνύναι) that one understands a universal is rightly to apply it to particulars, as the child “later on distinguishes” that other men are not called “father.” Similarly with the example of the circle, the act of the definition that ‘analyses this into particulars,’<sup>41</sup> the act of understanding, is shown forth in application to particular circles, not in the vaguely understood definition. With all of this said, the trouble of *Phys.* I.1 with respect to the unity of Aristotle's account of scientific knowledge beginning in perception ought now to be set aside, as the account in the *Phys.* has been shown to be consistent with the account of the *APo.*

Before, however, moving on to what Hume says, I will note that Aristotle considers perception not only the best starting point, but rather the necessary starting point. Elsewhere in the *APo.*, Aristotle argues that “understanding . . . can[not] be got . . . without perception.”<sup>42</sup> Earlier in the chapter, he said that “[i]t is evident too that if some perception is wanting, it is necessary for some understanding to be wanting too.”<sup>43</sup> Thus, for Aristotle, it is not the case that the best path to knowledge begins in the senses, but rather that the only path ultimately begins there.

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<sup>40</sup> Aryeh Kosman, “Understanding, Explanation, and Insight in Aristotle's *Posterior Analytics*: Essays on Plato and Aristotle” in *Virtues of Thought*, by Kosman (Cambridge: Harvard University Press, 2014), 7.

<sup>41</sup> See Aristotle, *Prior Analytics*, trans. A.J. Jenkinson, in *The Complete Works of Aristotle, Volume I*, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984), II.21. In the discussion here, Aristotle discusses errors in knowledge that occur when universal knowledge is not properly analyzed back to the particulars.

<sup>42</sup> *APo.* I.18, 81b7-9.

<sup>43</sup> *APo.* I.18, 81a38-39.

### 3. Perception in Hume and Aristotle

Now, there is some need to indicate an ambiguity between Aristotle and Hume as to what exactly these sense impressions are. Hume's discussion of impressions makes no reference to the external world, but is content to treat of impressions as they come to us, without making too much of what causes them to come to us.<sup>44</sup> Aristotle, on the other hand, takes perceptions to be caused by things in the world, and truly to be manifestations of them.<sup>45</sup> This ambiguity, however, should not be taken to vitiate the comparison of Aristotle and Hume, because both accounts are starting from what is most evident to us, namely sensory perceptions. In both cases, the starting point is what is evident to the senses.

I will, before leaving this consideration to the side, briefly mention where exactly this disagreement about the nature of perception is located. There seem to me to be two possibilities: either Aristotle and Hume differ about the nature of the perceptive faculties, or they differ about the things being perceived. It seems to me that they do not differ concerning the way in which perception works; in either case, perceptions (impressions, as Hume calls them) are received directly by the senses. Where they differ, it seems, is how those perceptions come to the senses in the first place. Hume is unwilling to say how impressions come to be present, since to give such an explanation would require a causal account, which, as we will see in the next chapter, he does

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<sup>44</sup> "Let us therefore, uses a little freedom, and call them impressions; employing that word in a sense somewhat different from the usual. By the term *impression*, then, I mean all our more lively perceptions, when we hear, or see, or feel." *Enquiry*, 10. It is curious that Hume uses these usually transitive verbs without a direct object. The editor notes that "he claims to be employing the term to refer to perceptions, independent of their origin or causal implications concerning their production." *Enquiry*, n.9.

<sup>45</sup> "They [i.e. the senses] bring in tidings of many distinctive qualities *of things*." Aristotle, *Sense and Sensibilia*, trans. J.I. Beare, in *The Complete Works of Aristotle: Volume I*, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984), 1, 437a2-3, emphasis added.

not think is legitimate. Aristotle, on the other hand, seems to think that sense impressions are made on the senses by real things in the world, that we really do come to know.

This discussion, however, begins to get into matters beyond the accounts of coming to know that are the primary focus of this thesis. For the sake of the rest of the discussion, I will treat Aristotle and Hume as comparable concerning perception, precisely insofar as the immediate results of perception are the primary matter from which human knowing arises.

#### 4. Memory and Imagination

In both *Meta.* I.1 and *APo.* II.19, Aristotle includes memory among those faculties necessary in the ascent to knowledge. In *APo.*, he briefly characterizes it as “retention of the percept”<sup>46</sup> and says that it occurs also in “some animals.”<sup>47</sup> In *Meta.*, Aristotle gives basically the same account, saying that, in some animals, “from sensation memory is produced.”<sup>48</sup> Thus, it seems clear that Aristotle treats memory as the faculty whereby perceptions are stored in the soul for later use. Aristotle expands his consideration of memory slightly in *Meta.*, saying that those animals with memory “are more intelligent and apt at learning than those that cannot remember.”<sup>49</sup> We will see that Hume follows Aristotle in considering memory as the capacity for holding onto perceptions.

First, however, it would be helpful to flesh out the terminology that Hume uses in his account of the importance of starting with the particular. He uses the term “perception” in a standard way, to refer to the process of receiving input from the bodily senses, and as a plural to denote the immediate cognitive result of such sense reception, and which he uses as synonymous

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<sup>46</sup> *APo.* II.19, 99b37.

<sup>47</sup> *APo.* II.19, 99b37.

<sup>48</sup> *Meta.* I.1, 980a28.

<sup>49</sup> *Meta.* I.1, 980a29.

with “sensations.” Perceptions or sensations belong to a class he calls “impressions,” which also includes inner acts or emotions of the person, such as “love, or hate, or desire, or will.”<sup>50</sup> Finally, Hume uses “sentiment” to refer to the nonrational means of accepting propositions as true, treating the term as equivalent to “feeling.”<sup>51</sup> Such sentiment is often a reaction to impressions. Thus, perceptions or sensations are sorts of impressions, which can change or create sentiments.

Before detailing this menagerie of terms for immediate sensory and emotive experience, Hume gives a brief account of memory. In his account of the origin of ideas, he mentions the process whereby a man who has experienced “the pain of excessive heat, or the pleasure of moderate warmth . . . afterwards recalls to his memory this sensation.”<sup>52</sup> Thus, Hume seems to take memory to be the simple faculty of storing perceptions that have passed, which allows one, in a less vivid way, to perceive the particular again, even though the instance of perception has passed. Hume is also very clear that this faculty of memory is not capable of reproducing sensations with the same clarity and force of emotion, saying “our thought is a faithful mirror, and copies its objects truly; but the colours which it employs are faint and dull, in comparison of those in which our original perceptions were clothed.”<sup>53</sup>

What Hume has to say about memory matches both what we have seen in *APo.* and *Meta.* and the account of μνήμη in *Mem.*<sup>54</sup> Aristotle defines memory as “neither perception nor conception, but a state or affection of one of these, conditioned by the lapse of time.”<sup>55</sup> It is not itself the perception of particulars, nor is it an intellectual activity of forming a concept, but rather

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<sup>50</sup> *Enquiry*, 10.

<sup>51</sup> *Enquiry*, 11.

<sup>52</sup> *Enquiry*, 9.

<sup>53</sup> *Enquiry*, 10.

<sup>54</sup> See Aristotle, *On Memory*, trans. J.I. Beare, in *The Complete Works of Aristotle, Volume I*, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984). There, Aristotle distinguishes between the μνήμη (memory) we discuss here and ἀνάμνησις (recollection), which he argues is present only in humans. As we will see in Chapter III, this is part of what separates Aristotle’s account from Hume’s.

<sup>55</sup> *Mem.* 1, 449a24-25.

is somehow related to both the perceptive and intellectual faculties. Later, Aristotle clarifies that “memory belongs incidentally to the faculty of thought, and essentially it belongs to the primary faculty of sense-perception.”<sup>56</sup> To reinforce that memory is a basic extension of perception, he adds that “many also of the other animals have memory.”<sup>57</sup> Since animals, on Aristotle’s account, are certainly not capable of any amount of abstraction, this statement makes it abundantly clear that memory is, for Aristotle as it is for Hume, a basic extension of perception.

Hume also includes imagination as an immediate extension of perception. In both cases, the material supplied comes from impressions. However, while memory holds on to the circumstances and order in which the impression arose, imagination is free to go about “compounding, transposing, augmenting, or diminishing the materials afforded us by the senses and experience.”<sup>58</sup> Thus, it is restricted to the raw materials provided by experience, but it is free to put them together in new ways not experienced, and even not possible to experience.

Hume is very clear that neither memory nor imagination have any sort of priority over the perceptions or sensations on which they are based, saying “[t]hese faculties may mimic or copy the perceptions of the senses; but they never can entirely reach the force and vivacity of the original sentiment”<sup>59</sup> and that “[t]he most lively thought is still inferior to the dullest sensation.”<sup>60</sup> Thus, for Hume, it is not the mental activity that creates whatever intellectual or quasi-intellectual activity that Hume will later argue that humans can do; rather, it is the concrete perception of individual instances that later create the “less forcible and lively [perceptions of the mind] commonly denominated Thoughts or Ideas.”<sup>61</sup>

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<sup>56</sup> *Mem.* 1, 450a13-14.

<sup>57</sup> *Mem.* 2, 453a7-8.

<sup>58</sup> *Enquiry*, 11.

<sup>59</sup> *Enquiry*, 10.

<sup>60</sup> *Enquiry*, 10.

<sup>61</sup> *Enquiry*, 10.



With this common account of perception and memory, we will now move to what both Aristotle and Hume have to say about what follows from many perceptions and memories: experience.

## 5. Experience

Just beyond memory, Aristotle lists experience as the next step in ascending to universal knowledge. Recent scholarship on the matter seems to agree that “it is questionable whether Aristotle ever produces a definition of experience.”<sup>62</sup> Some basic facts can be established with clarity, but at a certain point it becomes impossible to advance without controversy.

In the accounts of both *Meta.* I.1 and *APo.* II.19, experience is listed between memory and universal knowledge.<sup>63</sup> *Meta.* I.1 offers more clarifying remarks, noting that experience comes “from many memories of the same thing.”<sup>64</sup> Thus, memory takes a step beyond memory by not only storing past perceptions, but by organizing them in some way that keeps similar things together. Aristotle offers the example of an experienced medic lacking universal knowledge who knows that “when Callias was ill of this disease this did him good, and similarly in the case of Socrates and in many individual cases.”<sup>65</sup> In other words, the man of experience is able to group together various cases that he can recognize to be similar, but cannot yet put his finger on what

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<sup>62</sup> Pavel Gregoric and Filip Grgic, “Aristotle’s Notion of Experience,” *Archiv für die Geschichte der Philosophie* 88 (2006), 1. The following also begin their treatments of Aristotelian ἐμπειρία by acknowledging in one way or another that Aristotle’s account of experience is in great need of clarification: Pieter Sjoerd Hasper and Joel Yurdin, “Between Perception and Scientific Knowledge: Aristotle’s Account of Experience,” *Oxford Studies of Ancient Philosophy* 47 (2014); Scott LaBarge, “Aristotle on *Empeiria*,” *Ancient Philosophy* 26 (2006); Travis Butler, “*Empeiria* in Aristotle,” *The Southern Journal of Philosophy* 41 (2003).

<sup>63</sup> At *Meta.* I.1, 981a3, Aristotle calls the step beyond experience “science and art,” and at *APo.* II.19, 100a9 “a principle of skill and of understanding.” In both cases, the focus is on knowing what is universally and necessarily the case, as opposed to knowing, as the man of experience does, that different particular cases happen to be a certain way.

<sup>64</sup> *Meta.* I.1, 981b29.

<sup>65</sup> *Meta.* I.1, 981b8-9.

exactly makes them to be similar. To offer another image, the man of experience is able to recognize many similar pictures and put them in the same folder, but cannot yet name exactly what causes all the items to belong in the same folder. Similarly, Aristotle says that the medic with universal knowledge beyond experience is able “to judge that it has done good to all persons of a certain constitution, marked off in one class, when they were all ill of this disease, e.g. to phlegmatic or bilious people when burning with fever.”<sup>66</sup> Thus, the man of universal knowledge knows to label the folder causally containing pictures of Callias, Socrates, and all others cured in such a way of a burning fever as “phlegmatic,” while the man of experience is only certain that Callias, Socrates, and others belong together because they happened to respond well to a certain treatment.

Aristotle is keen to point out, however, that just because the man of experience does not know exactly *why* the various people respond well to the treatment, he is able to tell *that* certain people, even those he has not treated before, will belong in the same group, because he is able to recognize the presence or absence of what makes Callias, Socrates, and the others to be similar. Thus, Aristotle says that “we even see men of experience succeeding more than those who have theory without experience.”<sup>67</sup>

Hasper and Yurdin take Aristotle to mean that experience is knowledge of facts that are universal in scope, “of the form ‘*F*s are *G*’—whether all *F*s, some, many, or none.”<sup>68</sup> This interpretation seems to be at odds with the account in the *Meta.*, which suggests that the man of experience is not fully able to articulate what he knows. However, if we take *F* and *G* to refer not to fully fleshed-out predications but rather more general sorts of things (e.g. “people like Callias,

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<sup>66</sup> *Meta.* I.1, 981a9-12.

<sup>67</sup> *Meta.* I.1, 981a14.

<sup>68</sup> Hasper and Yurdin, “Between Perception and Scientific Knowledge,” 120.

Socrates, and the others”, “responding well to this treatment”), then this interpretation makes a great deal of sense.<sup>69</sup> The universal judgment “all phlegmatic people will respond well to this treatment” is rather, Aristotle suggests, something that the man of experience does not know.

A common view of the difference between experience and universal knowledge is that the man of experience knows *that* such is the case, but the man of universal knowledge knows *why* such is the case.<sup>70</sup> On the surface, there seems to be more going on between the experiential claim “people like Callias, Socrates, and the others respond well to this treatment” and the universal claim “all phlegmatic people respond well to this treatment.” I will argue that there is no additional mediating step between experience and universal knowledge.<sup>71</sup>

The critical difference between experience and universal knowledge for Aristotle is that experience tells you that some often vaguely described state of affairs is the case, and universal knowledge tells you that one member of a universal class always has a given attribute by virtue of being in that class. Thus, the universal knowledge that phlegmatic people will respond well to this treatment not only tells you exactly what to look for in a person when determining the applicability of this treatment but also suggests that it is exactly because they are phlegmatic that this treatment will work for them. That is to say, universal knowledge is not only a description of a general state of affairs but also a causal explanation of that state of affairs.

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<sup>69</sup> Butler, “*Empeiria* in Aristotle,” 333-34, also suggests that the claims of experience take the general form of a ὑπόληψις, and the same correction can be made to his account to bring it into line with the view I am advancing here.

<sup>70</sup> See, for instance, LaBarge, “Aristotle on *Empeiria*,” 33.

<sup>71</sup> A logical distinction can be made here that puts some pressure on this claim. With universal knowledge, propositions are known. Propositions are made up of terms, which are known through simple apprehension. Thus, there should be a step of simple apprehension between experience and universal knowledge. To this objection I say that this logical distinction does not have epistemological value, since to know a term without being able to make propositions about it seems only trivially different from not knowing the term at all. This discussion will come back up in Chapter III, section 2, pp 56-57. So, in coming to know, there is no middle step in which one first becomes aware of concepts without propositions involving them.

Now, this presentation might suggest that there is in fact some non-causal step between experience and universal knowledge, namely a universal description of the form “All Fs are G” that does not have the causal explanation of universal knowledge.<sup>72</sup> I assert that this is not the case for two reasons. First, I see no reason in the text to posit additional, intermediate steps between experience and universal knowledge. Aristotle goes right from one to the other not only in *Meta.*, but also in *APo.*, which I will look at shortly. Second, such an intervening step is something that I take never to occur, for it would require that one know that all Fs are G without knowing that all Fs are G precisely *because* they are Fs. Yet such knowledge seems to be trivially different from the experiential knowledge that all F-like things that one has encountered have all been G, since it is nothing more than a more general statement of what one has experienced, without any sort of explanation to back it up beyond experience. With universal knowledge, however, a proper explanation is entailed, as the claim is not that all observed Fs happen to be G, but that all Fs are G by virtue of being Fs. Thus, it seems that the move beyond experience is one that lands immediately on some sort of causal explanation.<sup>73</sup>

So goes the account of experience in *Meta.* I.1. In *APo.* II.19, there remains one controversial matter to be discussed. In describing the progress from experience to universal knowledge, Aristotle says that “from experience, or from the whole universal that has come to rest in the soul (the one apart from the many, whatever is one and the same in all those things), there comes to be a principle of skill and understanding.”<sup>74</sup> The controversy stems from the ambiguity

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<sup>72</sup> The middle step that I am denying here is distinct from the other middle step of knowing only a concept, mentioned above in n71. Here, the middle step to be denied is one in which one knows in a universal way that Fs are G without knowing that any F is G precisely because it is an F. On my view, once one knows that all Fs are G, one knows in a basic way why all Fs are G, namely because it is essential, not coincidental, that all Fs are G.

<sup>73</sup> It should be clarified here that the sort of causal explanation I have in mind here is not the sort of causal explanation given by a syllogism. In the syllogistic sense, the explanation is given by the middle term. In the sense used here, the explanation is simply that all Fs are G not because all Fs are B, and all Bs are G, but more basically because to be G it is part of what it means to be F.

<sup>74</sup> *APo.* II.19, 100a6-8.

of the word “or” that connects “experience” and “the whole universal that has come to rest in the soul.” Some interpreters take it to mean “or rather,” suggesting that the two terms are distinct steps in the process of coming to universal knowledge.<sup>75</sup> Others take it to mean “or, in other words,” suggesting that the two terms are more or less synonymous.<sup>76</sup> It is this latter reading that I will defend.

The critical step is to handle properly the Greek that Barnes translates as “that has come to rest,” ἡρεμήσαντος. The dominant idea of the Greek word ἡρεμίζειν is that of “making still” or “being quiet.”<sup>77</sup> Thus, I think the better translation is “the whole universal *that has quietly rested* in the soul.” This translation will explain both that the man of experience is able to recognize the commonality between Callias, Socrates, and the others, and why he cannot yet form the judgment that is indicative of universal knowledge.

That the universal is in some sense present to the soul suggests that the man of experience has had some encounter with the universal, namely as instantiated in the particulars of his perceptual experience. From these encounters, the universal takes up some sort of silent residence in the soul of the man of experience. It is distinctive, however, that at this stage the universal is present *and quiet*. This key feature of the universal at this stage corresponds to the fact that the man of experience cannot yet articulate the universal judgment on which he already has a slight

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<sup>75</sup> See Bronstein, “Origin and Aim,” and Gregoric and Grgic, “Aristotle’s Notion.” Both explicitly accept this “corrective” reading of the “or”. Also see Butler, “*Empeiria* in Aristotle.” Butler does not come down hard on the issue but seems more sympathetic to this reading than the other.

<sup>76</sup> Hasper and Yuridin, “Between Perception and Scientific Knowledge,” and LaBarge, “Aristotle on *Empeiria*,” support this “epexegetical” reading.

<sup>77</sup> See Henry James Liddell and Robert Scott, *An Intermediate Greek-English Lexicon* (Mansfield Centre: Martino Publishing, 2013), 354. This translation can alleviate the concern that motivates Bronstein’s corrective reading of the “or” at 100a6. See David Bronstein, “The Origin and Aim of *Posterior Analytics* II.19,” *Phronesis* 57 (2012). Bronstein cites *Meta* I.1, 981a7-12 as establishing that art and science are of the universal, while experience is essentially of particulars, so that “experience” and “the *universal* coming to rest in the soul” need to be distinguished. However, if I am right and ἡρεμήσαντος should be read as “having quietly rested,” we can say that the soul has some encounter with the universal but does not yet *grasp* it in the way that the soul with universal knowledge grasps it.

grasp. In other words, the man of experience has the universal present enough in him so that he can sort all the phlegmatic patients into the same folder, but cannot yet identify that their being phlegmatic is what makes them to be members of this group. He, like the universal, must remain silent of the matter until universal knowledge is achieved. With all of this, the most helpful translation of 100a6-8 reads “from experience, *or, in other words*, from the whole universal *that has quietly rested* in the soul (the one apart from the many, whatever is one and the same in all those things), there comes to be a principle of skill and understanding.”

Now, this account of experience in Aristotle as it currently stands applies best to theoretical knowledge. Elsewhere in the Aristotelian Corpus, however, experience (ἐμπειρία) is named as necessary also for productive and practical knowledge. And in both cases, it is tied to a concept that is common also to Hume’s treatment of experience, namely habituation. And for both thinkers, this sort of habitual experience is shared by some non-rational animals.

First, Aristotle says that some animals “have but little of connected experience,”<sup>78</sup> suggesting that there is some non-trivial capacity that animals have for keeping memories together and using these unified memories to direct action. Pavel Gregoric and Filip Grgic offer a helpful example of what animal experience is like. “Take the instance of a dog who, wanting to go for a walk, brings his leash to the master.”<sup>79</sup> In this non-rational activity, perceptions and memories are put together in some sort of basic connection—the leash and the master are associated with going for a walk, so bringing the master and the leash together should yield the desired walk. This dog, exercising some version of practical reasoning, could be compared to the novice baker, who knows what ingredients go together to make a cake, but does not know why each ingredient is needed nor what each ingredient does in the cake. However, his grasp of the situation is enough to allow him

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<sup>78</sup> *Meta.* I.1, 980b27.

<sup>79</sup> Gregoric and Grgic, “Aristotle’s Notion,” 12.

to exercise productive knowledge, for instance, to bake a cake. In both cases, the dog and the baker know what steps to take to get a desired result, but they do not know why the particular parts are related as they are. They know what to do in the particular set of circumstances with which they are familiar, but they do not have knowledge that is universal in scope and applicable to all particulars that they can recognize as belonging to a given group.

Hume offers a similar account of experience by way of comparing some aspect of human understanding to the way in which animals learn from memory. He begins by noting that “animals, as well as men learn many things from experience,”<sup>80</sup> as “experience . . . makes [a dog] answer to his name, and infer, from such an arbitrary sound, that you mean him rather than any of his fellows, and intend to call him.”<sup>81</sup> This is in accord with Aristotle’s observation that some animals share in experience. Hume understands experience to be the process and result of inferring “that the same events will always follow from the same causes,”<sup>82</sup> which is to say that experience is an awareness that two different objects have such a relation, which matches the Aristotelian account of experience as generally knowing *that* F is G. Additionally, in attributing experience to animals, Hume reasonably concludes that “it is impossible that this inference [that like events must follow like objects] of the animal can be founded on any process of argument or reasoning.”<sup>83</sup> This corresponds to the Aristotelian account of animal experience as a non-rational process that can nevertheless help the experienced animal get the desired result.

It should be noted here that Hume’s account of experience does not allow for the ascent to universal knowledge that we have described in the first part of this section. Nevertheless, there

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<sup>80</sup> *Enquiry*, 70.

<sup>81</sup> *Enquiry*, 70.

<sup>82</sup> *Enquiry*, 70.

<sup>83</sup> *Enquiry*, 70.

remains a salient similarity between both accounts of how animals and unreflective men can advance from many memories to practically and productively useful experience.

## 6. Discursive Activity

I begin this section by explaining what I mean by “discursive activity.” For present purposes, “discursive activity” is best understood as that mental activity of man that does not immediately rely on sense perception, but rather deals in those concepts and propositions that are furnished by perception, memory, and experience. This activity does not include any means of going between perception and such discourse, such as induction. As has been shown, both Aristotle and Hume largely concur in the way in which these concepts and propositions have been furnished. Their agreements concerning human knowing extend little beyond this point, but there does remain a very narrow conception of discursive activity that is worth mentioning.

For Hume, the most complex mental activity that humans do is a sort of dealing in concepts and conventions, a process of associating ideas “with a certain degree of method and regularity.”<sup>84</sup> Hume argues that there are three such principles, “Resemblance, Contiguity in time or place, and Cause or Effect.”<sup>85</sup> Hume does allow the possibility that there exist other principles of association between ideas, but he does not allow that there exists an intellectual process beyond the uses of principles such as he has described.

In the next section of his *Enquiry*, Hume makes an exhaustive distinction of the sorts of things that humans know, “Relations of Ideas, and Matters of Fact.”<sup>86</sup> Things of the second sort are known by “the present testimony of our senses, or the records of our memory,”<sup>87</sup> that is, they

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<sup>84</sup> *Enquiry*, 14.

<sup>85</sup> *Enquiry*, 14.

<sup>86</sup> *Enquiry*, 15.

<sup>87</sup> *Enquiry*, 16.



are the things present to our perception, memory, and experience, albeit Hume will take great pains to explain how the associative principle of Cause and Effect can also establish a Matter of Fact.

Relations of Ideas are “either intuitively or demonstratively certain,”<sup>88</sup> and are the objects of discursive activity, for they are “discoverable by the mere operation of thought, without dependence on what is any where existent in the universe,”<sup>89</sup> that is, without any input from perception. In this set of objects, Hume seems to place only the mathematical knowledge—“Geometry, Algebra, and Arithmetic”<sup>90</sup>—which is indeed one of the subsets of theoretical knowledge that Aristotle distinguished in *Meta.*, along with natural science and metaphysics.<sup>91</sup> In sum, Hume attributes to man’s rational capacities the ability to reason about mathematical constructs with absolute certainty.

None of what Hume includes in his account of discursive activity would be excluded by the Aristotelian account. Comparable to Hume’s dealing in concepts is Aristotle’s dealing in universals with deductive reasoning in the syllogism, as this too is done, in itself, without any direct reference to perception. Aristotle defines this dealing in universals early in the *APr.*, saying that a “deduction (συλλογισμός) is a discourse in which, certain things being stated, something other than what is stated follows of necessity from their being so.”<sup>92</sup> In other words, a syllogism, which is Aristotle’s sole method of deduction (hence the translator using “deduction” as a fair translation of συλλογισμός), is a sequence of propositions that entail a conclusion. Although the premises themselves may be known through a process of induction starting in perception, they are not treated as relying on perception but are rather used in the same way that one might also use a

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<sup>88</sup> *Enquiry*, 15.

<sup>89</sup> *Enquiry*, 14.

<sup>90</sup> *Enquiry*, 15.

<sup>91</sup> *Meta.* VI.1. Hume’s decision not to include the natural sciences and metaphysics in his account of discursive activity will be discussed in the next chapter.

<sup>92</sup> *APr.* I.1. 24b19-20.

hypothetical statement or indemonstrable first principle as a premise in a syllogism. So, while the premises of a given syllogism might be propositions learned from experience, when considered as parts of the syllogism, the way in which they came to be known is not important, giving Aristotle an account of knowing that is independent of perception, as the mathematical sciences are for Hume.

Aristotle also gives an account of mathematical reasoning similar to Hume's account. He says that mathematics "considers some mathematical concepts qua immovable and qua separable from matter."<sup>93</sup> That is to say, math for Aristotle looks at the unchanging—"immovable"—principles in things, and considers these principles not as they are embodied in perceptible things but as they exist abstracted from all particulars. This science represents another instance of dealing in abstractions, mathematical entities instead of universals, in a way very similar to Hume's "abstract reasoning concerning quantity or number."<sup>94</sup>

Thus far and no further do Aristotle and Hume agree on their accounts of human knowing. Both thinkers begin their accounts of knowledge in the perception of concrete particulars and advance it through the accumulation of perceptions into experience and allow for at least some cognitive activity independent of perception. In the next chapter, I will show that Hume takes any cognitive activity not based in perception to be an ungrounded exercise in conjecture and convention.

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<sup>93</sup> *Meta.* VI.1, 1026a9f.

<sup>94</sup> *Enquiry*, 114.

## II

### A Failure to Limit the Role of Perception: David Hume's Epistemic Circle

From Aristotle's starting point that knowledge arises out of perception and experience, Hume departs the company of the Stagirite down a path of more extreme empiricism. While, as we will see in the next chapter, Aristotle limits the role of perception to the beginning of the epistemic process, Hume gives ultimate epistemic authority only to perceptions of particulars and to mathematical abstractions, with no process of going from the particular to the universal. Hume makes this exclusion to get around the problem that philosophy has, to this point, both included such a middle step—induction—and failed to arrive at certain and incontrovertible answers. In removing induction, Hume hopes to do away with millennia of philosophical failure. Hume will replace induction not with any sure process of coming to know, but with an appeal to custom, which will leave Hume with, it will be shown, a solution no better than the problem that he set out to solve.

#### 1. The Problem as Hume Sees It

Hume extends his criticism of past philosophers to anyone who engaged in metaphysics, arguing not that they were doing their investigation poorly, but that they were not investigating at all. “Here indeed lies the justest and most plausible objection against a considerable part of metaphysics, that they are not properly a science; but arise either from the fruitless efforts of human vanity, which would penetrate into subjects utterly inaccessible to the understanding, or from the craft of popular superstition.”<sup>1</sup> His explanation of the empirically verifiable phenomenon that

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<sup>1</sup> *Enquiry*, 5.

there are people who do metaphysics is that they seek either vainly to know things greater than anything humans can, in fact, know, or to codify superstition or other already accepted prejudices. The latter criticism is doubtlessly one that Aristotle would make of some metaphysicians, since he, as we have already seen, condemns those thinkers who “had certain predetermined views, and were resolved to bring everything into line with them.”<sup>2</sup> Pointing out this concord with Aristotle takes for granted that Hume’s criticism of superstition has the same root as Aristotle’s criticism of predetermined views, namely that investigations should not be done with a conclusion already made and not to be changed, even in the light of clear evidence against the assumed conclusion.

The former criticism of metaphysics, that it goes beyond the proper scope of human reason, is not one that Aristotle shares, and represents a major point of departure for the Humean account of human knowing. Hume’s reckoning that Aristotle’s loftiest intellectual investigation is nothing more than vanity shows that a significant difference exists between these two thinkers who both argue that knowledge begins in the senses. What Hume takes to be the remedy for this vanity is to stick closely to the only evidence that Hume takes to be proper to human beings—sense impressions.<sup>3</sup> Thus, the critical component of Aristotle’s account for going from experience to universal knowledge—induction—is something that Hume discards. By discarding this middle step, Hume sees no path forward to the result that he here decries, namely, metaphysics.

Before putting forth this remedy, however, he expresses pessimism that his remedy will ever be universally accepted: “In vain do we hope, that men, from frequent disappointment, will at last abandon such airy sciences, and discover the proper province of human reason.”<sup>4</sup> Here, Hume cites the “frequent disappointment” that metaphysicians must surely feel, since their

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<sup>2</sup> *DC* III.7, 306a8-9.

<sup>3</sup> Aristotle also agrees that sense data are proper to human beings, calling it “more knowable to us.” *Phys.* I.1, 184a17.

<sup>4</sup> *Enquiry*, 6.

investigation into the ultimate principles of reality have, in the centuries since Aristotle first systematically investigated them, not yet been unanimously accepted as long since wholly understood. This comment echoes the complaint of the “abstruse philosophers” that he mentions in the beginning of the *Enquiry*, who “think it a reproach to all literature, that philosophy should not yet have fixed, beyond controversy, the foundation of morals, reasoning, and criticism.”<sup>5</sup> To this reproach, then, Hume offers an explanation, namely that the abstruse search for theoretical certainty is a vain one. Hume, however, does share this desire to have as much certitude as possible concerning human knowledge. In the following section, I will investigate the first sort of certain knowledge for which Hume makes room on his famous “fork,” namely “abstract reasoning concerning quantity or number [and] experimental reasoning concerning matter of fact and existence.”<sup>6</sup>

## 2. Remnants of Rationality: Dealing in Concepts

Hume leaves a narrow space for discourse to be done without direct appeal to perceptions. This space is cleared by the first prong of the fork, “abstract reasoning concerning quantity or number.”<sup>7</sup> This pared down version of rationality includes only that theoretical science that, for Aristotle, considers physical bodies and their attributes “*qua* immovable and *qua* separable from matter,”<sup>8</sup> that is, mathematics, whose conclusions Hume considers strictly necessary. The litmus test for necessity, and thus for epistemic certainty, that Hume applies is that the negation of any necessary conclusion is a contradiction. The only such example he offers is “[t]hat the cube root

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<sup>5</sup> *Enquiry*, 2.

<sup>6</sup> *Enquiry*, 114. This pair is essentially the same that Hume names earlier in the *Enquiry* (15) as “Relations of Ideas and Matters of Fact.” We have already dealt with “experimental reasoning concerning matter of fact and existence” in Chapter I’s discussion of perception.

<sup>7</sup> *Enquiry*, 114.

<sup>8</sup> *Meta.* VI.1, 1026a9f.

of 64 is equal to the half of 10, is a false proposition, and can never be distinctly conceived.”<sup>9</sup> This mathematical certainty stands in contrast to that of the conclusions of the natural sciences, whose statements are not necessary in the same way. Hume offers the following example: “*That the sun will not rise to-morrow* is no less intelligible a proposition, and implies no more contradiction, than the affirmation, *that it will rise.*”<sup>10</sup> Hume takes the conclusions drawn by natural sciences, such as the laws of planetary motions from which one can conclude that the sun will rise tomorrow, not to have the necessity of mathematical laws. Rather, Hume supposes, it is quite possible that the future phenomena not be similar to past observations. So, Hume does allow for conclusions that can be drawn without appeal to perception, and that these conclusions have absolute epistemic certainty, but he limits such conclusions to the realm of mathematics, calling any other such claims to certain reasoning “sophistry and illusion.”<sup>11</sup>

As for the customary concepts that replace scholastic concepts such as universals, Hume allows that they can be used only in a process of creating ever more imperfect definitions. His example is the deduction “that where there is no property, there can be no injustice”<sup>12</sup> is nothing more than an unfolding of the customary definition that “explain injustice to be a violation of property.”<sup>13</sup> Thus, Hume relegates even this dealing in concepts to a place below mathematical proof-making.

In sum, Hume’s account of investigations that are not based immediately in perception leave us with little. Mathematics, for Hume, offers us nothing but non-contradictory statements

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<sup>9</sup> *Enquiry*, 113.

<sup>10</sup> *Enquiry*, 15. This example is a curious one given Hume’s model for scientific certainty, Newton, whose greatest achievement Hume takes to be the formulation of “the laws and forces, by which the revolutions of the planets are governed and directed.” (8) Such mathematical laws would seem in fact to lead one to believe that the claim *that the sun will not rise to-morrow* actually does imply a contradiction, namely of these Newtonian laws.

<sup>11</sup> *Enquiry*, 112.

<sup>12</sup> *Enquiry*, 113.

<sup>13</sup> *Enquiry*, 113.

derivable from basic definitions. Dealing in concepts does the same thing with provisional definitions, giving less and less grounded statements as the process goes on. Thus, the progress of human knowledge does not grow greater as man advances from the starting point of perception and definitions, but remains flat or, more likely, devolves into superstition and uncertainty. In the next section, I will look at what Hume uses to fill in what intellectual activity exists between the two certain prongs of his account of knowledge.

### 3. Hume's Remedy: Replace Reason with Custom

Perhaps the most important component of Hume's epistemology is the account given of "custom or habit."<sup>14</sup> By "custom," Hume means those actions we take that are not spurred by a process of reasoning; rather, he refers to that principle that is active "wherever the repetition of any particular act or operation produces a propensity to renew the same act or operation."<sup>15</sup> While a word like custom may connote a socially conditioned practice like carving pumpkins at the end of October, Hume intends something more like a nonrational force that connects a present thing, like it happening to be late October, with another thing, like the need to carve pumpkins.<sup>16</sup> By expounding custom in this way, Hume expands the scope of actions to which the term applies. Particularly, where Aristotle, as we will see in the next chapter, places inductive insight as the step past which perception and experience leave the knower, Hume asserts that the step to what we think of as knowledge is nothing more than a customary transition, saying that "[a]ll inferences

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<sup>14</sup> *Enquiry*, 28.

<sup>15</sup> *Enquiry*, 28.

<sup>16</sup> I should clarify here that although the common use of the word "custom" suggests some sort of habituation over time, Hume's use of the term seems to cover even spontaneous leaps from perceptions to generalizations, even if such a leap is neither habituated nor customary to a given group of people. H.O. Mounce, "The Idea of a Necessary Connection," *Philosophy* 60, no. 233 (1985), 384 characterizes this disposition to act beyond the experiential evidence as a brute fact, something that "it just so happens that most people do."

from experience, therefore, are effects of custom, not of reasoning.”<sup>17</sup> By “reasoning,” Hume here seems to mean something like “that mental process by which one has sure and certain grounds for asserting what one asserts.” By claiming that such assertions are grounded only in custom, Hume undermines confidence in the knowledge that human beings profess to have about such things. The upshot of this undermining is that it explains what Hume takes to be the failure of purportedly rational discourse to “have fixed, beyond controversy, the foundation of morals, reasoning, and criticism,”<sup>18</sup> since the difference in philosophical answers can, by this account, be reduced to a difference in custom.

Part and parcel of Hume making custom the bridge between what humans perceive and what they purport to know is Hume’s expansion of that part of life that comes before what an Aristotelian account would call “universal knowledge.” Part of this pre-universal experience is that of common life or nature, which Hume uses to indicate the demands of living in a bodily world. Some may fear Hume’s destruction of the foundation of knowledge will “destroy all action”<sup>19</sup> in this common life, but Hume addresses these concerned readers by saying that “[n]ature will always maintain her rights, and prevail in the end over any abstract reasoning whatsoever.”<sup>20</sup> Thus, Hume says that not even his account of what humans can really know will not be so persuasive as to cause anyone who accepts it to be unable to return to the common life that men naturally lead, that is, the life that men lead without the interruption of philosophical reflection.

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<sup>17</sup> *Enquiry*, 28.

<sup>18</sup> *Enquiry*, 2.

<sup>19</sup> *Enquiry*, 27.

<sup>20</sup> *Enquiry*, 27. Douglas Long, “Hume’s ‘Imagination’ Revisited.” *Theatre of the World* 17 (1998), 128 argues that any form of skepticism is mitigated in the way described here: “Scepticism, as I shall argue here, always contained the means of its own ‘mitigation’ in the form of recourse to a ‘practical criterion’ for living such as to enable the thoughtful individual to remain rooted in everyday life while facing up to the futility of philosophical system-building.” In other words, Long’s skeptic does not find universal answers to questions, but rather goes on living with practical success, in a way not unlike Aristotle’s man of experience in *Meta.* I.1.



Having asserted that rationality is custom-based and reassured the reader that life can still be led, Hume has still to explain what intellectual claims are left. To those looking for a litmus test to determine whether any piece of an intellectual claim is meaningful, Hume suggests that, whenever “we entertain, therefore, any suspicion that a philosophical term is employed without any meaning or idea (as is but too frequent), we need but enquire, *from what impression is that supposed idea derived?* And if it be impossible to assign any, this will serve to confirm our suspicion.”<sup>21</sup> With this claim, Hume gives absolute epistemic authority to perceptions and the impressions created by them. By “impression,” Hume means only that most immediate result of a perception, that seeing in the mind exactly what is seen with the eyes, without any action at all on the part of the receiver. There is no other way that sure knowledge can be achieved for Hume: either an idea is an impression of a particular thing, or it is, at best, the product of custom. Only the former case can be a sure basis for man’s ultimate claims to knowledge. Where Aristotelians might posit a universal that can be induced or abstracted from the particular thing, Hume allows that only the most immediate impression, with all the particularity (that is, non-universality) of the object perceived, can be said to have any certainty about it. The latter steps in which the perceiver applies customary reasoning do not have logical necessity for Hume and therefore cannot be taken as universally true. By erasing such a problematic middle, Hume has what he takes to be an incontrovertible foundation for reasoning.

Having stripped human knowledge of its claim to know more than impressions, Hume still has to account for the nontrivial discourse done by human beings in ways that are not done by other perceiving animals. To explain this discourse, as already mentioned in Chapter I, he appeals to Relations of Ideas, and to custom. In this way, Hume grounds a large part of distinctively human

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<sup>21</sup> *Enquiry*, 13.

intellectual activity in something that distinctly cannot reach universal truths, thereby expanding the role that pre-universal activity has in the life of the human person. Particularly, Hume is able to reduce three significant philosophical connections to non-necessary custom, namely universals, identity through time, and causality. When talking of the connection that people infer between cause and effect and take to be necessary, or determined, Hume says that “[t]his connection, therefore, which we *feel* in the mind, this customary transition . . . is the sentiment or impression, from which we form the idea of power or necessary connection.”<sup>22</sup> It seems not unfair to extend this characterization of connection as made out of emotion to the other forms of connection that elsewhere Hume reduces to sentiment, as universals connect distinct particulars to one species and identity through time connects perceptions perceived at different times to the same perceived individual.

Hume’s treatment of resemblance and contiguity in the *Enquiry* are both brief, so we will consult Hume’s earlier work to fill the missing space. In the *Enquiry*, Hume offers how “picture naturally leads our thoughts to the original”<sup>23</sup> to exemplify resemblance; and for contiguity, his initial treatment extends no further than to say that “the mention of one apartment in a building naturally introduces an enquiry or discourse concerning the others.”<sup>24</sup> He gives a slightly fuller treatment of these two principles of association early in his *Treatise on Human Nature*, in which he says that

in the course of our thinking, and in the constant revolution of our ideas, our imagination runs easily from one idea to any other that resembles it, and that this quality alone is to the fancy a sufficient bond and association. ’Tis likewise evident, that as the senses, in changing their objects, are necessitated to change them regularly, and take them as they lie contiguous to each other, the

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<sup>22</sup> *Enquiry*, 50.

<sup>23</sup> *Enquiry*, 14.

<sup>24</sup> *Enquiry*, 14.

imagination must by long custom acquire the same method of thinking, and run along the parts of space and time in conceiving its objects.<sup>25</sup>

Hume's example for resemblance given in the *Enquiry* suggests an analogous relationship between the thing perceived (the picture) and the thing associated (the original) which is unlike the relationship between a particular and a concept or universal. However, when he says that perceiving one thing leads the mind "to any other [idea] that resembles it," Hume can be read to say that seeing one dog, for instance, leads one to think of other dogs that one has seen, or to think of some idea of dog in general, which would be nothing more than a customary image of dogs, and which would take the place filled in Aristotelian thought by the essential universal.<sup>26</sup> Similarly with contiguity, Hume's example in the *Enquiry* of being made to think of an apartment building when one thinks of an apartment in that building, does not give as full an account of this principle of association as can be found with similar brevity in the *Treatise*. There, Hume explicitly mentions both space and time as dimensions in which a thing can be thought of as being contiguous. In this way, Hume suggests, identity over time is something customarily associated with different perceptions, although not anything itself properly perceived, and thus not something itself properly known. Thus, Hume is able to preserve that aspect of human discourse that Aristotelians would preserve with form, that thing that stays the same in an object while the matter is in flux, with his understanding of contiguity as a customary principle of association.

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<sup>25</sup> David Hume, *Treatise on Human Nature*, ed. David Fate Norton and Mary J. Norton (Oxford: Oxford University Press, 2000), 13.

<sup>26</sup> See Aristotle, *Categories*, trans. J.L. Ackrill, in *The Complete Works of Aristotle, Volume I*, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984), 2, 1a20-22, 1a29-1b1, where Aristotle distinguishes the essential universal from the accidental universal, albeit not by those names: "Of things there are: (a) some are *said of* a subject but are not *in* any subject. For example, man is said of a subject, the individual man, but is not in any subject . . . (c) Some are both said of a subject and in a subject. For example, knowledge is in a subject, the soul, and is also said of a subject, knowledge-of-grammar." Most particularly, I refer to the abstracted essential universal as grasped by the intellect, which Aristotle mentions in Aristotle, *On the Soul*, trans. J.A. Smith, in *The Complete Works of Aristotle, Volume I*, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984), II.5, 417b23: "what knowledge apprehends is universals, and these are in some sense within the soul itself."

Hume's account of causality, on the other hand, is well fleshed out in the *Enquiry*, and needs only an exposition.<sup>27</sup> Hume is very clear that causality is not something that we can perceive, and thus not something that we can know. Rather, "we never can, by our utmost scrutiny, discover any thing but one event following another."<sup>28</sup> In other words, there is nothing in the perception of one event following another that allows the perceiver to conclude that there is any relationship between the two adjacent events, since it is perfectly conceivable that the two events be completely unrelated, as the increased sales in ice cream in the summer are not related to, although connected in time with, the rise in instances of drowning that also occur in the summer. In light of the possibility of such events, related in time but not in causality, Hume laments that "men still entertain a strong propensity to believe, that they penetrate farther into the power of nature and perceive something like a necessary connection between the cause and the effect."<sup>29</sup>

Having disarmed the possibility of discovering how causes are related to their effects, Hume moves to do away with arguments from effects to cause. When discussing providence, or any investigation into what the future might hold on the basis of some steady cause of its being the way that it is (providence being the situation in which God, in his power and benevolence, makes the universe to be the way that it is), Hume asserts that "[t]he cause must be proportioned to the effect; and if we exactly and precisely proportion it, we shall never find in it any qualities, that

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<sup>27</sup> Giving such an exposition, however, is no easy task. See Justin Broackes, "Did Hume Hold a Regularity Theory of Causation?" *British Journal for the History of Philosophy* 1 (1993). Broackes describes the debate as between a regularity theory of causation (in which causality is just a description of what regularly occurs) and a reading in which Hume affirms that causes exist but denies that we can know them. Also see Katherin A. Rogers, "Hume on Necessary Causal Connections," *Philosophy* 66, no. 258 (1991). Rogers offers three different ways that Hume can be read to understand causality, as denying that it exists at all, treating it as a conditioned belief, or allowing that it exists while denying that we can know it. Also see P. Kyle Stanford, "The Manifest Connection: Causation, Meaning, and David Hume," *Journal of the History of Philosophy* 40, no. 3 (2002). Stanford defends a fourth option, that Hume took causal language to be meaningless according to his semantic theory that meaning is dependent on perception, and causality is never perceived. At the very least, Hume's text suggests that his clearest claim is that we cannot know anything about causal connections, and so we should say nothing about them.

<sup>28</sup> *Enquiry*, 49.

<sup>29</sup> *Enquiry*, 61.

point farther, or afford an inference concerning any other design or performance.”<sup>30</sup> The relevant thrust of what Hume here says is that any argument from an effect to a cause would, at the most, allow one to conclude that there is a being that can cause exactly the effect before one’s eyes, without allowing one to conclude that the cause has the power to do so again, or to do anything else at any other time. Thus, any conclusions drawn about the cause of a particular event are so narrow as to hardly count as any new knowledge at all.<sup>31</sup> A natural consequence of this narrow conception of causal inference is that Aristotelian natural science is ruled out, for Aristotle asserts at the beginning of the *Physics* that “[w]hen the objects of an inquiry, in any department, have principles, causes, or elements, it is through acquaintanceship with these that knowledge and understanding is attained.”<sup>32</sup> With causes being unknowable, natural science joins metaphysics as a branch of theoretical knowledge discarded by Hume’s epistemology. “In vain,” Hume asserts, “do you pretend to have learned [the object of natural science, namely] the nature of bodies from your past experience.”<sup>33</sup>

Part of Hume’s disarming of causal inference is a scaling back of what exactly can be perceived. Hume posits a distinction between properties of objects, some of which are plain to the eye and some of which are hidden. He offers bread as an example, saying that “senses inform us of the colour, weight, and consistence of bread; but neither sense nor reason can ever inform us of

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<sup>30</sup> *Enquiry*, 94.

<sup>31</sup> This is, I think, the same reason that statistics-driven analytics has not taken off in football the way that it has in baseball. A given play in baseball starts in exactly the same way, making it much more reasonable to compare the present at-bat to those that have taken place in the past, and to make probability claims and subsequent strategic decisions with reasonable expectation of success. A given football play, on the other hand, has many more variables at the start—offensive and defensive formation, personnel, play-calls, down and distance, game situation, etc.—, which makes the amount of past situations like it from which to get helpful data very small, perhaps even non-existent. Similarly, Hume would say, any knowledge gained from observing a particular event is so affected by the specific circumstances of the event that it cannot be fairly compared to a future event with similar, but inevitably different (in at least some small way) circumstances.

<sup>32</sup> *Phys.* I.1, 184a10-12. Hume’s replacing Form with other principles of association (resemblance and contiguity) also serve as destructive of Aristotle’s natural science, which relies on there being repeating natures really in things, and not just customary associations made by people pretending to gain real knowledge.

<sup>33</sup> *Enquiry*, 24.

those qualities, which fit it for the nourishment and support of a human body.”<sup>34</sup> This notion of a power unobservable under any circumstances may well have been a premature claim. At least those qualities that make bread nutritious—its having certain constituent compounds that can be observed with the right equipment (that, in fairness, may not have existed when the *Enquiry* was published), and that those compounds have been observed, again with the right equipment, to bring about effects constitutive of human health---can in fact be perceived. Louis Groarke has gone so far as to say that “[Hume] assumes, wrongly, as it turns out, that the power in bread which causes nourishment is eternally hidden from our understanding.”<sup>35</sup> With this example having been handled, we see that Hume does not give enough credit to what the human being can know by perception, even without appeal to induction or universals.

Hume attempts to buffer his explanation that humans cannot know the secret powers and natures of substances with a thought experiment about discovering causality that ultimately begs the question, and thereby fails to support his radical empiricism. Hume gives this example right before he introduces custom as the non-rational means by which human beings claim to have knowledge of causality. It is supposed to show that human beings have no means of bridging the gap between perceptions and claims of knowledge. Hume begins:

Suppose a person, endowed with the strongest faculties of reason and reflection, to be brought on a sudden into this world; he would, indeed, immediately observe a continual succession of objects, and one event following another; but he would not be able to discover any thing farther. He would not, at first, by any reasoning, be able to reach the idea of cause and effect; since the particular powers, by which all natural operations are performed, never appear to the senses; nor is it reasonable to conclude, merely because one event, in one instance, precedes another, that therefore one is the cause of the other. And in a word, such a person, without more experience, could never employ his conjecture or reasoning concerning any matter of fact, or be assured of any thing beyond what was immediately present to his memory and senses.<sup>36</sup>

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<sup>34</sup> *Enquiry*, 21. See Stanford, “Manifest Connection,” 347. Stanford argues that this appeal to secret powers is not an attempt to admit that causality may refer to something in the real world, but is rather allowing that such unperceived qualities may exist. Stanford would deny, however, that these secret powers could have any causal power according to Hume’s understanding of it.

<sup>35</sup> Louis Groarke, *An Aristotelian Account of Induction: Getting Something from Nothing* (Ithaca, McGill-Queen’s University Press, 2009), 47.

<sup>36</sup> *Enquiry*, 27.

Of note is that Hume's reasonable man is given "the strongest faculties of reason and reflection" and, presumably, the standard human senses whereby he can "observe a continual succession of objects."<sup>37</sup> Since "the particular powers, by which all natural operations are performed, never appear to the senses,"<sup>38</sup> Hume thinks that he is licensed to conclude that such a man would never "be able to reach the idea of cause and effect" from perceptions and reason alone.

So, Hume has given this man the two tools that he talks about elsewhere, namely "experimental reasoning concerning matter of fact an existence"<sup>39</sup>—perception—and "abstract reasoning concerning quantity and number"<sup>40</sup>—reasoning as Hume understands it. Thus, Hume's skeptical minimalism is not extended to the senses nor to the reliability of human reasoning and logic as it is to the ability to discern the general from the particular. Thus, with this selectively stripped back example being the starting point for Hume's investigation into what humans can know, Hume seems destined from the start to arrive at the conclusions that he does, not because he is aimed straight at the obvious truth of the matter, but because he has very cleverly smuggled his conclusion into the very premise of his argument. Thus, we should be on guard that Hume's rejection of any path between perception and reasoning is not something concluded from the premises of this discussion, but rather something smuggled into the premises themselves. This example, then, serves not as a proof but rather as a restatement of Hume's position.

We need now to investigate what Hume systematically excludes from his consideration, in other words, what power he does not think his reasonable man has. Hume rejects any process, outside of contingent connections of custom, that makes a singular, unified claim about a plurality of perceptions. A particularly helpful example of discovering and making such a statement can be

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<sup>37</sup> *Enquiry*, 27.

<sup>38</sup> *Enquiry*, 27.

<sup>39</sup> *Enquiry*, 114.

<sup>40</sup> *Enquiry*, 114.

found in positivist political philosophy. When talking about rules and habits that people habitually follow and do, respectively, H.L.A. Hart offers the following example of an observer making a general claim about what he observes: “After a time [an] external observer may, on the basis of the regularities observed, correlate deviation [from an observed pattern of behavior] with hostile reaction, reproofs, or punishments, and be able to predict with a fair measure of success, and to assess the chances that a deviation from the group’s behavior will meet with hostile reaction or punishment.”<sup>41</sup> In other words, the observer is able to piece together from repeated observations of like phenomena an account of future behavior, given that the things he is observing are in fact creatures who, like the observer himself, tend to do the same sort of thing over and over again.

It seems that Hume leaves no room at all for the inference of a rule from observation, even in cases in which the observer could at a later time find hard evidence that such a rule exists (for instance, the observer could later find in a lawbook the rule that requires the behavior that he observes), for such an inference would rely, on Hume’s account, on a connection “which we *feel* in the mind [and is nothing more than] a customary transition of the imagination from one object to its usual attendant.”<sup>42</sup> That such an epistemic process as this inference, which can in this case of politics be empirically verified, is omitted from Hume’s account of knowing shows that he conceives of only one way—direct perception—to get to knowledge, at the exclusion of another way that departs from perception and, in the case of observing and inferring rules, can be verified by perception.

Underpinning Hume’s rejection of any purported knowledge gained by departing from perception is a rejection<sup>43</sup> of the proposition that the universe is consistent and predictable. Hume

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<sup>41</sup> H.L.A. Hart, *The Concept of Law* (Oxford: Oxford University Press, 1961), 89.

<sup>42</sup> *Enquiry*, 50.

<sup>43</sup> Kenneth Winkler, “The New Hume,” *The Philosophical Review* 100, no. 4 (1991), 543 opts for an agnostic reading of Hume, when Winkler “argue[s] that Hume *refrains from affirming* that there is something in virtue of which the



says as much when he explains why he cannot accept the epistemic authority of claims about the future or about similar cases (which, since these claims would necessarily be verified at a time yet to come, can be taken also as claims about the future). Hume takes any such claim about the future implicitly to take the form of a syllogism whose first premise is that a certain action has occurred many times in such circumstances in the past and whose conclusion is that the action will occur in like circumstances in the future. Concerning the intermediate premise, Hume says that “[t]here is a required medium, which may enable the mind to draw such an inference, if indeed it be drawn by reasoning or argument. What that medium is, I must confess, passes my comprehension.”<sup>44</sup>

Of course, the content of this medium through which the induction passes is easy enough to formulate, namely that the world is consistent and predictable, that things will occur in the future as they did in the past, at least *ceteris paribus*. What passes Hume’s comprehension is how such a premise can be accepted. Since there is no lawbook of nature that any man can consult, there is, on Hume’s account, no perception on which such a claim can be based. We now turn to how Hume plans to continue the possibility of intellectual discourse.

As we have seen, Hume uses custom to replace universals, identity through time, and causality, concepts that enable discourse beyond the describing of perceptions and conveying of emotions. Hume accomplishes this reduction by doing away with induction and by placing custom as the bridge between experience and discourse, saying that “[a]ll inferences from experience, therefore, are effects of custom, not of reasoning.”<sup>45</sup> Thus, the ultimate grounds of all that we think and the way in which we come to think what we think is not any sure process of reasoning

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world is regular in the way it is. This is not to *deny* that there is such a thing, but merely not to believe in it.” In point of fact, however, such agnosticism amounts to a denial for the purposes of advancing to universal knowledge.

<sup>44</sup> *Enquiry*, 22.

<sup>45</sup> *Enquiry*, 28.

to necessary conclusions, but rather a contingent process of agreement among large groups of people to reach conclusions that easily could have gone otherwise.

#### 4. Where We Are Left

Hume, in his attempt to save us from the arrogance and superstition of the metaphysicians, has left us with nothing but custom and a poorly grounded certainty that there is nothing we can know with certainty beyond the immediate impressions of sense data. In other words, he has left us no better than he found us, having replaced superstition, which Hume takes to be ungrounded with a system built on custom that is taken to be good enough to preserve the common life, and the supposed arrogance of the metaphysicians is replaced by an unwavering confidence that would “[c]ommit . . . to the flames”<sup>46</sup> anything that does not fit the chosen criteria of his enquiry.

That we are left in the same place would be excusable, albeit unfortunate, if the path by which we returned were a reasonable one. However, it seems that Hume’s criteria are not subjected to the same scrutiny as is the ability to go from particular sense data to universal claims, and this uncertain foundation does great damage to the credibility of his later conclusions. Particularly, why the senses escape similar scrutiny is unclear. Bealer suggests that this special treatment of the senses is one of what he calls “starting-points intuitions,”<sup>47</sup> namely that “a person’s experiences and/or observations comprise a person’s *prima facie* evidence.”<sup>48</sup> The trouble that empiricists like Hume encounter is that intuitions,<sup>49</sup> including starting-points intuitions, are not admissible as

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<sup>46</sup> *Enquiry*, 114.

<sup>47</sup> George Bealer and P.F. Strawson, “The Incoherence of Empiricism,” *Proceedings of the Aristotelian Society, Supplementary Volumes* 66 (1992), 106.

<sup>48</sup> Bealer and Strawson, “Incoherence,” 99.

<sup>49</sup> Bealer, “Incoherence,” 104 goes to great lengths to define intuition as “intellectual seeming” as distinct from imagination, belief, judgment, guessing, hunch-making, and common sense.

*prima facie* evidence by ruling of their own starting point. Hume's appeal to "the force and vivacity"<sup>50</sup> of perception is hardly sufficient to avoid such an inconsistency. In short, Hume's accepted epistemic process of sensation (and mathematical deduction) are not so much found impervious to his skepticism as they are systematically protected from it.

A similar point can be made with reference to the final lines of the *Enquiry*. It seems clear that the claims of Hume's work are themselves neither "experimental reasoning concerning matter of fact and existence"<sup>51</sup> that can be verified by immediate sense data nor self-evident "abstract reasoning concerning quantity or number,"<sup>52</sup> and are thus themselves fit to be thrown out.

### 5. One Response to Hume's Skepticism

Having seen that Hume's rejection of necessary conclusions in favor of exclusive sense perceptions is not an internally coherent starting point, it can be added that Hume's claim that any move from perception to universal statements is nothing more than an unwarranted extension of perceptions is not one that he consistently applies, even within the *Enquiry*. Rather, it seems to be a belief that he, on the one hand, upholds when convenient for his attack against metaphysics and, on the other, drops when attacking faith traditions other than his own. Hume demonstrates this inconsistency twice,<sup>53</sup> first when discussing miracles such as the resurrection of Christ,<sup>54</sup> and second when attacking the Catholic doctrine of transubstantiation.<sup>55</sup> The former instance will be left aside, as there is no shortage of literature discussing Hume and miracles. The latter matter of

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<sup>50</sup> *Enquiry*, 10.

<sup>51</sup> *Enquiry*, 114.

<sup>52</sup> *Enquiry*, 114.

<sup>53</sup> Both of these inconsistencies are also pointed out in Groarke, *Aristotelian Account*, 51-55.

<sup>54</sup> *Enquiry*, 76.

<sup>55</sup> *Enquiry*, 72-73.

transubstantiation will be briefly investigated, however, to show that Hume does not consistently apply his philosophical principles.

Hume condemns as irrational the Catholic doctrine of transubstantiation, that bread and wine become the Body and Blood of Christ during the Mass despite undergoing no changes in appearance. Hume's argument against such a claim rests on the relative reliability of different types of evidence. For transubstantiation, the evidence is "in the testimony of the apostles, who were eye-witnesses to those miracles,"<sup>56</sup> which Hume takes to be "less than the evidence for the truth of our senses."<sup>57</sup> In other words, the sensory evidence that suggests that no change has taken place should not be overruled by the evidence of millenia-old testimony.

The soundness of the argument aside,<sup>58</sup> this account runs into trouble when one considers what Hume says about the hidden powers of particular things. In discussing the limits of perception, Hume says that nature "has afforded to us only the knowledge of a few superficial qualities of objects; while she conceals from us those powers and principles, on which the influence of these objects entirely depends."<sup>59</sup> These "secret powers"<sup>60</sup> cannot be known by man through

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<sup>56</sup> *Enquiry*, 72.

<sup>57</sup> *Enquiry*, 73.

<sup>58</sup> Michael Levine, "Belief in Miracles: Tillotson's Argument against Transubstantiation as a Model for Hume," *International Journal for Philosophy of Religion* 23, no. 3 (1998), 126-27, 133. He points out that Hume's argument is in fact not sound. He presents Hume's argument as follows: (1) Testimony must provide evidence that is less reliable than direct experience, (2) Testimony supports belief in transubstantiation; direct experience contradicts it, Therefore (3) there is better evidence against transubstantiation than for it, so it should not be believed. Premise (2), Levine notes, "is false and therefore the argument he presents is unsound," because the doctrine of transubstantiation does not claim that the senses should be able to detect the change in substance.

<sup>59</sup> *Enquiry*, 21.

<sup>60</sup> *Enquiry*, 21.

perception or, Hume supposes, through investigation,<sup>61</sup> and thus, that feature whereby, for instance, “the bread, which I formerly eat, nourished me,”<sup>62</sup> cannot be known.

To apply this doctrine of secret powers to the case of transubstantiation, however, poses a serious problem. It seems inconsistent to say, on the one hand, that no significant change can occur without perceptible changes occurring concomitantly (as he does in the case against transubstantiation) and that secret powers can be different in the same things that “may be only in appearance similar.”<sup>63</sup> If it is the case that things can appear to be the same and yet possess different secret powers, Hume does not have the grounds to reject the doctrine of transubstantiation at all, and certainly not with the vehemence whereby he calls it “a doctrine, so little worthy of a serious refutation.”<sup>64</sup> Rather, it would suit Hume better to be like his “wise man [who] proportions his belief to the evidence”<sup>65</sup> and withhold judgment on the matter.

That Hume did not withhold judgment on the matter suggests that, at least with this particular matter of transubstantiation, Hume was participating in an intellectual exercise but rather a volitional one, in which he chose not on the basis of evidence but on the basis of something else, perhaps emotion or belief, to mount an argument against Catholic doctrine. Bringing this inconsistency into the light of the previous section, in which it was made clear that the starting point of Hume’s empiricism cannot be consistently applied to his own thought, it seems that

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<sup>61</sup> Groarke, *Aristotelian Account*, 51. He points out that this supposition is factually incorrect: “The easiest way to undermine his stance is to simply point out that although he correctly believed that the physical world we interact with is determined by a corpuscular substratum (molecules, atoms, elementary particles, etc.), he was wrong to assume we could never come to know anything about the nature of that corpuscular realm. Indeed, the history of modern science seems to suggest just the opposite. Contemporary physicists, equipped with high-speed particle accelerators, lasers, electron microscopes, spectrosopes, computers, and a whole panoply of technical and mathematical aids are arguably able to test and probe the nature of atomic and even subatomic events. We can thus know the “secret powers” or “hidden essences” that cause the properties of things we actually perceive, and Hume’s take on induction is therefore factually wrong.”

<sup>62</sup> *Enquiry*, 21.

<sup>63</sup> *Enquiry*, 21.

<sup>64</sup> *Enquiry*, 72.

<sup>65</sup> *Enquiry*, 73.

Hume's philosophical endeavor is ultimately one that cannot satisfy the question of how meaningful discourse arises from sense perception. Given his common starting point with other great thinkers of Western philosophy, including Aristotle, this failure could come as a discouraging surprise. To combat this disappointment, we will now return to that starting point common to Hume and Aristotle and move forward along the path pointed out to us by the Stagirite.

### III

#### The Necessarily Limited Role of Perception: Aristotle's Peculiar Insight

This final chapter will explain the part of Aristotle's account of human knowing that extends beyond perception and reaches all the way to the first principles of particular sciences. Aristotle's account of induction is of particular interest, even though he never offers a systematic account of it.<sup>1</sup> I will start, however, with a response to a potential rationalist objection, namely that such a non-discursive rational activity like induction is not possible, and that the only true reasoning is discursive in form, like the syllogism.

##### 1. Possibility of Non-discursive Rational Activity

Although Hume does not give epistemic authority to knowledge gained from observation and what he takes to be customary generalizations, he does acknowledge the legitimacy of reasoning of a different sort, which he calls "abstract reasoning concerning quantity or number."<sup>2</sup> A similar although not analogous<sup>3</sup> sort of discursive reasoning can also be found in Aristotle in the form of the syllogism. The thrust of this "rationalist objection" is that all knowledge is of this form, that is, discursive, so there is no way to advance from perception to knowledge.

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<sup>1</sup> Groarke, *Aristotelian Account*, 5-7. Groarke notes that Aristotle himself seems to assume that his readers have a working understanding of induction already. See Aristotle, *Topics*, trans. W.A. Pickard-Cambridge, in *The Complete Works of Aristotle, Volume I*, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984), VIII.1, 157a6-7: "What sort of process induction is is obvious."

<sup>2</sup> *Enquiry*, 114.

<sup>3</sup> The proper Aristotelian analogue to Hume's "abstract reasoning concerning quantity and number" is mathematics, not the syllogism. The syllogism is appropriate for the discussion here, however, because it entails the same sort of logical necessity that Hume seeks for sure reasoning, namely that the negation of a syllogism's conclusion entails a logical impossibility, a direct contradiction of either the premises or still more basic principles. Such more basic principles for Hume would be something like numerical identity, as would be violated if one were to conclude that 3 = 5.

As we have seen in the second chapter, Hume considers neither metaphysics nor natural science to be a legitimate intellectual endeavor, but he does regard mathematics as impervious to the criticisms that he levies against the other two forms of Aristotelian theoretical knowledge. However, when pushed to give an account of what gives mathematical items their unique standing, Hume says only that “the ideas of [the mathematical sciences], being sensible, are always clear and determinate, the smallest distinction between them is immediately perceptible, and the same terms are still expressive of the same ideas, without ambiguity or variation.”<sup>4</sup> In other words, Hume only says that, once we accept and sufficiently grasp the meanings of mathematical terms, their meanings are clear enough that there is no possible space for confusion or error. However, beyond this appeal to clarity and a later appeal to the success of mathematical reasoning,<sup>5</sup> Hume does not seem to offer any grounding for these mathematical arguments. There seems to be no reason to prefer mathematics, on Hume’s account, to any other system of rules that can produce internally consistent results.

Now, if Hume were only claiming that mathematics is a system that produces internally consistent results, his account of mathematics would not be problematic. Such internal consistency would be trivial, since it has no connection to the world of perception. However, Hume seems to think that mathematics has something to say about the actual operation of the world that we perceive, that it makes a nontrivial contribution to what we know.<sup>6</sup> Thus, there seems to be some need for a way to go between the perceived phenomena of, for instance, planetary movement and the universal truths of such movement stated as mathematical laws. However, as we saw last

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<sup>4</sup> *Enquiry*, 39.

<sup>5</sup> See *Enquiry*, 40. There, Hume appeals to the complexity and the certainty of geometric proofs to demonstrate their superiority to arguments used in ethical philosophy.

<sup>6</sup> See *Enquiry*, 8. Hume takes as an example the success that Newton had in formulating laws of astronomy, which are internally consistent mathematical laws that also have something to say about the operation of the world that we perceive.



chapter, such a way between—i.e. induction—is exactly what Hume makes unavailable. Thus, the model for his philosophy, the success of Newtonian physics,<sup>7</sup> is undermined by the conclusions of Hume’s philosophical endeavor. It seems then, on his own account, that Hume does not leave us with any more than he found us with, he has in fact taken away even that which he took to be most certain, namely the apparent progress of Newtonian science. With all inference from observation reduced to custom and all relations of ideas confined to definition and tautology, discovering the laws of nature seems to be impossible.

As it happens, Aristotle himself considers a similar objection early in *APo*. A brief exposition of his dealing with this objection will suffice to get out of it, and to show us a path beyond Hume. Aristotle argues that all syllogistic demonstrations “depend on what is primitive and non-demonstrable”<sup>8</sup> and that “neither is all understanding demonstrative, but in the case of the first principles it is non-demonstrable—and that this is necessary is evident.”<sup>9</sup> These immediate first principles<sup>10</sup> are the foundation of all deductions, but they cannot themselves be proven. That such principles cannot be demonstrated by a syllogism is not, however, an argument against such principles. If these principles could be shown as the conclusion of an argument, then those premises by which they were proven would, in fact, be prior to what we had taken (mistakenly) as first principles, and one would be led to wonder whether or not these new principles were themselves the sort of things of which an argument can be given. The notion of first principles is put forth, then, to defend against those who say “that we are led back *ad infinitum* on the grounds that we would not understand what is posterior because of what is prior if there are no primitives

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<sup>7</sup> *Enquiry*, 8-9. Here, Hume hopes to apply a method analogous to Newton’s in physics to reach a similarly incontrovertible philosophy.

<sup>8</sup> *APo*. I.2, 71b26-27.

<sup>9</sup> *APo*. I.3, 72b19-20.

<sup>10</sup> The Greek that I chose, for clarity’s sake, to translate as “first principles” is ἄμεσος, meaning literally “without a middle,” which is to say that the proposition is known without the intervention of a syllogism’s middle term.

... for it is impossible to go through infinitely many things.”<sup>11</sup> The alternative to accepting such indemonstrable principles is to admit that all deductive arguments are based on nothing at all, a position that Aristotle rejects.<sup>12</sup> Thus, we are left here with essentially a claim that knowledge is possible, and that we can reach knowledge of first principles by some means other than deductive argument.

It seems that here Aristotle has in mind first principles that give us substantive knowledge about the subject matter of a given field of inquiry, such as “man is a rational animal” for zoology or “planets are celestial bodies near earth” for astronomy,<sup>13</sup> rather than the first principles of reasoning in general, like the Principle of Non-Contradiction.<sup>14</sup> For the former sorts of principles, however, it is still not yet said how exactly these principles come to be known. We now turn to such an account of how such knowledge comes to be.

## 2. Aristotelian Induction

We have seen responses to two possible objections against the possibility of getting knowledge from perception: Hume’s objection from below in Chapter II, that no such upward movement is possible on account of human limitations, and the rationalist objection in the previous section that nothing can count as knowledge except for deductive conclusions. Now we will consider how, in Aristotle’s account, knowledge rises from and goes beyond the act of perception. The critical part of this discussion is to notice that it is not by magic that Aristotle grasps universal knowledge from particular experiences. Whereas Hume could not make the move from universal

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<sup>11</sup> *APo.* I.3, 72b8-9.

<sup>12</sup> “Now some think that because one must understand the primitives there is no understanding at all; others that there is, but that there are demonstrations of everything. Neither of these views is either true or necessary.” *APo.* I.3 72b5-7.

<sup>13</sup> These examples are from Gasser-Wingate “Induction and First Principles,” 3.

<sup>14</sup> Aristotle discusses the PNC in *Meta.* IV, but in *APo.* he seems to be more focused on more particular sciences.

to particular without appeal to custom, we will see that Aristotle offers a reasonable path from the sensible to the intelligible.

Let us start with some general accounts of induction. Aristotle explicitly says very little about induction, often mentioning it in passing and taking for granted that his reader understands the matter thoroughly, as we have already seen him say in the *Top* that “what sort of process induction is, is obvious.”<sup>15</sup> He is clear in the beginning of *APo.* that induction is “proving the universal through the particular’s being clear.”<sup>16</sup> That is to say, induction goes from the perception of particular things, which was discussed in detail in Chapter I and which is not universal knowledge, to universal knowledge, which the unperceivable universal.<sup>17</sup> Thus, the inductive process seems to be a sort of move in which one concludes that what has been perceived to be the case for a particular<sup>18</sup> (or for a set of particulars) is the case for all things that are relevantly similar to those perceived particulars. We also had occasion to see in Chapter I Aristotle’s implicit mention of induction in the ascent to knowledge at *APo.* II.19, when “from experience, or, in other words, from the whole universal that has quietly rested in the soul (the one apart from the many, whatever is one and the same in all those things), there comes to be a principle of skill and understanding.”<sup>19</sup> This move from experience of particulars to a principle of universal knowledge is precisely what induction is.

The same sort of move occurs, again unmentioned, in the ascent to knowledge that Aristotle describes in the beginning of *Meta.* The Philosopher says that “art arises when from many notions

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<sup>15</sup> *Top.* VIII.1, 157a6-7.

<sup>16</sup> *APo.* I.1, 71a9.

<sup>17</sup> *APo.* I.31, 87b31-32: “It is impossible to perceive what is universal and holds in every case.”

<sup>18</sup> Richard D. McKirahan, Jr. “Aristotelian *Epagage* in *Prior Analytics* 2.21 and *Posterior Analytics* I.1,” *Journal of the History of Philosophy* 21, no. 1 (1983), 9 is clear that Aristotle considers as inductive even conclusions made from a single observed particular, citing Aristotle’s example at *APo.* I.31 88a12-17 in which one would be able to know universally how magnifying glasses work by seeing up close the operation of only one.

<sup>19</sup> *APo.* II.19, 100a6-8, modified translation.

gained by experience one universal judgment about similar objects is produced.”<sup>20</sup> This claim is in line with what we have just seen in *APo*, although Aristotle here mentions two different components worth discussing. He says that it is often not just one particular that is the source of the induction, but rather “many notions gained by experience,” which should calm any fears that Aristotle is sanctioning the drawing of universal conclusions from clearly insufficient grounds. Second, Aristotle introduces a necessary diachronic component, as the “many notions gained by experience” make it evident that there is need for past notions<sup>21</sup> to be remembered and organized. Such memory and organization will be discussed later in the final section of the chapter. For now, it is sufficient to note that this move mentioned in *Meta.* is the same as the one mentioned in the *APo.*, namely induction, with the added specifications that the antecedents of the move are not just one percept, but many experiential notions.

With this general picture in mind, let us now turn to Aristotle’s famous rout simile at the end of *APo.*, in which Aristotle serves as an image of coming to know the universal through experience with the particulars. When considering how ideas first come to be in the mind, he says that

thus the states [of having a principle of skill and of understanding in the mind] neither belong to us in a determinate form, nor come about from other states that are more cognitive; but they come about from perception—as in a battle when a rout occurs, if one man makes a stand another does and then another, until a position of strength is reached. And the soul is such as to be capable of undergoing this.<sup>22</sup>

Here, Aristotle makes it clear that, although rounding out one’s knowledge by having a full account of causes is a process that involves deductive reasoning, the acquisition of the basic principles that will furnish those deductions come about not from “states that are more cognitive”—that is, from

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<sup>20</sup> *Meta.* I.1, 981a6-7.

<sup>21</sup> The Greek word translated as “notions” is ἐννοημάτων, literally rendered as “things had in one’s mind.” This seems to be a general term that encompasses others, such as perceptual images, memories, and primitive experiential concepts (such as the one has whereby one knows that a treatment is good for Callias, Socrates, and others like them but does not know that it is because they are phlegmatic).

<sup>22</sup> *APo* II.19, 100a10-14, emphasis added.

states of preexisting knowledge—but rather from perceptions.<sup>23</sup> Before philosophizing about this very difficult passage, however, there are some matters of translation with which to deal.

Most prominently, the phrase translated as “until a position of strength is reached” is the subject of a great deal of debate. Most Greek texts read “ἕως ἐπὶ ἀρχὴν ἦλθεν,” literally, “until it comes to an ἀρχή.” Ἀρχή is rendered variously as “a starting point”<sup>24</sup> or something like “original configuration”<sup>25</sup> or “initial formation.”<sup>26</sup> I am most sympathetic to Barnes’s decision to emend ἀρχὴν to ἀλκὴν, “a position of strength,” as it fits in sensibly with the battle image and communicates the basic point that some new and unmoving piece of knowledge is attained. The “starting point” translations of ἀρχὴν accomplish more or less the same thing, as we still end up with a new and unmoving piece of knowledge, but the word’s fit into the simile is much weaker than Barnes’s alternative.

We need now to settle here exactly what sort of knowledge we are getting in this ascent, especially as it is portrayed in *APo*. Several readers have noticed that Aristotle seems to go back and forth between concepts and principles as the final achievement of this ascent.<sup>27</sup> Thus, we need

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<sup>23</sup> Aristotle considers perception to be something cognitive—a γνῶσις—as the discussion in Chapter I makes clear, but perception is certainly not the same sort of cognitive state as universal knowledge. The task of this section is to spell out how such a primitive γνῶσις can give rise to significantly more sophisticated ones. See Greg Bayer, “Coming to Know Principles in *Posterior Analytics* II.19,” *Apeiron* 30, no. 2 (1997), 114.

<sup>24</sup> J.H. Leshner, “‘Just as in Battle’: The Simile of the Rout in Aristotle’s *Posterior Analytics* ii.19,” *Ancient Philosophy* 30 (2010), 95; Bronstein, “Origin and Aim,” 50; and Zeev Perelmuter, “*Nous* and Two Kinds of *Episteme* in Aristotle’s *Posterior Analytics*,” *Phronesis* 55, no. 3 (2010), 245. Leshner takes this phrase not to be part of the rout simile but to apply to the larger discussion about knowledge—it is the process of knowing that reaches a starting point, not the soldiers.

<sup>25</sup> Bayer, “Coming to Know,” 124.

<sup>26</sup> Peter Adamson, “*Posterior Analytics* 2.19: A Dialogue with Plato?” *Bulletin - Institute of Classical Studies* 54, supplement 107 (2011), 12-13. Adamson interprets the rout simile as presenting a Platonic view of recollection that Aristotle is modifying in the rest of the passage. While Adamson makes a compelling case that Aristotle is engaging with ideas from various Platonic dialogues, I am not convinced that the rout simile needs to be read in the way that he suggests.

<sup>27</sup> Concepts are single terms, such as “Man,” and principles refer to composite propositions, such as “Man is a rational animal.” Perelmuter, “*Nous* and Two Kinds,” makes a great deal about this inconsistency and argues that Aristotle has two different sorts of thing going on in this passage: he introduces νοῦς as the faculty that grasps concepts and alludes to “non-demonstrative understanding” that he developed in *APo* I.3. This apparent inconsistency is also part of what motivates Bronstein, “Origin and Aim,” 32 to read *APo*. II.19 as an account of only how knowledge begins in perception, and not an outline of how universal knowledge is fully achieved.

first to determine what sort of knowledge Aristotle expects us to have attained at the end of the ascent that he has described. I find that *APo* II.19 reads sensibly if we take it that Aristotle is referring to the same intellectual act as grasping both the concept and immediate premises at the same time.<sup>28</sup> Indeed, I doubt that anyone would say that one has grasped a concept if one cannot articulate at least one basic proposition about it. So, while the two intellectual achievements may be able to be considered separately, I do not think that they ever actually occur apart from one another.

Now that we have these controversial points out of the way, we should consider what I take to be the main way that Hume would object to the legitimacy of this battle rout simile. For it is probable<sup>29</sup> that Hume would object to the presupposition that the way in which the soldiers stand their ground does in fact represent the way in which perceptions hold in the mind. Since, on Hume's account, "these faculties [of memory and imagination] may mimic or copy the perceptions of the senses; but they never can entirely reach the force and vivacity of the original sentiment."<sup>30</sup> It seems that Hume could object that any one present perception may be able to hold its ground against the rout so long as it is being perceived, but that, once it slips into memory, it is no longer vivid enough to fend off the onslaught of unknowing. A response to this objection is that vividness is hardly a necessary criterion for applying an experience to one's knowledge. One may only

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<sup>28</sup> D.W. Hamlyn, "Aristotelian *Epagoge*," *Phronesis* 21, no.2 (1976), 178, is sympathetic to the same sort of reading, saying that "It is this passage over which there has been most argument as to whether Aristotle is concerned with concept formation or knowledge as reflected in more and more general propositions. I do not myself think that it matters much which one says since I think the two are correlative, and I suspect that Aristotle thought so too." Perelmuter "Nous and Two Kinds," 234 takes issue with such a reading, since concepts cannot be true or false, whereas propositions can. He sees this difference to indicate that concepts and propositions cannot be grasped by the same faculty. I take him to be making the mistake of applying strictly logical categories to a matter of epistemology. This disagreement can be pinpointed to a reading of *APo*.: "But  $\nu\omicron\upsilon\varsigma$  is not concerned with [what could be otherwise . . .], nor is non-demonstrative understanding." *APo*. I.33 88b36-37. The interpretative question is whether the Greek  $\omicron\upsilon\delta\acute{\epsilon}$  . . .  $\omicron\upsilon\delta\acute{\epsilon}$  is best translated along the lines of "not . . . in other words, not," which coordinates synonyms, or as "neither . . . nor" introducing a second, distinct term. Hamlyn and I are sympathetic to the synonymous reading, while Perelmuter would argue for the latter reading.

<sup>29</sup> But only probable, for Hume himself never offered a direct argument against the battle rout of *APo*. II.19.

<sup>30</sup> *Enquiry*, 10.

faintly remember all the details of an eclipse, but that hardly prevents one from remembering the relevant universal feature: in this case, a certain privation of light. Thus, remembered particulars, though less vivid in clarity, are still able to join current perceptions in building up a position of strength.

To make this point more clearly, we should consider Aristotle's full treatment of memory in *Mem.*<sup>31</sup> Hume asserts that "[t]he most lively thought is still inferior to the dullest sensation,"<sup>32</sup> and since Hume gives absolute epistemic priority to impressions, empiricist that he is, the comparative dullness of memory gives it a second-class standing in Hume's account of knowing. And it is this second-class standing, as we shall see in a moment, that disarms notions of knowledge that abound in Aristotle's account.

Now, Aristotle places memory second to perception not in authority, as Hume does, but in time, as lived experience dictates. He takes for granted the standing of memory as sufficient to form a bridge between perceptions and more intellectual activity, as shown by the progression in *APo.* and when he discusses the progression from memory to experience in *Meta.*, saying that "the several memories of the same thing produce finally the capacity for a single experience."<sup>33</sup> Thus, for Aristotle, memory is the sort of thing that can hold its ground to turn around a battle rout.

There is another critical difference in Aristotle's account of memory that must be noted. Whereas Hume treats memory as a single phenomenon, Aristotle recognizes a distinction that is to be drawn between memory (*μνήμη*) and recollection (*ἀνάμνησις*). Aristotle gives a treatment of memory in line with Hume's, calling memory "a state or affection of [perception or conception],

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<sup>31</sup> We treated the first half of this work in Chapter I, where Aristotle talks about *μνήμη*, memory in the sense of stored past perceptions.

<sup>32</sup> *Enquiry*, 10.

<sup>33</sup> *Meta.* I.1, 980b28-981a1.

conditioned by lapse of time,”<sup>34</sup> and says that perceptions act “just as persons do who make an impression with a seal.”<sup>35</sup> Hume falls short of Aristotle, however, by failing to give an account of recollection, which Aristotle expounds in the second chapter of *Mem.* Recollecting is done “when one recovers some knowledge which he had before, or some perception, or some other experience.”<sup>36</sup> This process of recollection is unique to humans<sup>37</sup> and corresponds to the rationality that differentiates man from the rest of animals. Aristotle calls recollection a “mode of inference (οἶον συλλογισμός),”<sup>38</sup> that is, a specifically rational activity. The role that recollection plays in moving from memory to knowledge is to organize those perceptions gathered in memory into a unified whole that is much more useful for gaining universal knowledge than is a disparate collection of memories. Hume’s failure to discuss this feature of human memory accounts in part for the more fundamental shortcomings of his account of human knowing.

Now that we have seen how the battle rout simile shows how knowledge comes to be after different perceptions and memories happen over time, a non-temporal analysis of how greater cognitive states can arise out of lesser will serve as a final clarification of the battle rout simile. I will make this analysis by way of comparison to the development of the *polis* in *Pol.* I.2. This comparison has two parts. First, a similarity to an account given in *Pol.* will shed light on the rise from perceptions to general knowledge. Early in the treatise, Aristotle describes the way in which the city arises from smaller, more basic groups, “of male and female . . . and of natural ruler and subject,”<sup>39</sup> and that, “out of these two relationships between man and woman, master and slave,

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<sup>34</sup> *Mem.* 1, 449b24f.

<sup>35</sup> *Mem.* 1, 450a33-b1.

<sup>36</sup> *Mem.* 2 451b2f.

<sup>37</sup> “Many also of the other animals have memory, but, of all that we are acquainted with, none, we venture to say, except man, shares in the faculty of recollection.” *Mem.* 2 453a7-9.

<sup>38</sup> *Mem.* 2, 453a10.

<sup>39</sup> Aristotle, *Politics*, trans. B. Jowett, in *The Complete Works of Aristotle, Volume II*, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984), I.2, 1252a26-31.



the first thing to arise is the family.”<sup>40</sup> Then, “when several families are united, and the association aims at something more than the supply of daily needs, the first society to be formed is the village,”<sup>41</sup> and finally “several villages are united in a single complete community, large enough to be nearly or quite self-sufficing, the [*polis*]<sup>42</sup> comes into existence.”<sup>43</sup> Thus, something that is altogether different from previous groups and individuals, namely the *polis*, which is self-sufficing in a way that the smaller groups are not. Similarly, in the battle rout of *APo.*, the formation of soldiers that makes “position of strength,” while composed of individual soldiers who could not as individuals hold a position against an enemy, is able to hold the position as a unit. Thus, the building blocks of the whole come together to be something more than they would be on their own. In the *Pol.*, men and women and masters and slaves come together to form a *polis* that can provide “the bare needs of life, and . . . of a good life,”<sup>44</sup> which would be beyond their grasp as unassociated individuals. In the battle rout, the soldiers come together to hold off an enemy whom they could not stop alone. And in knowledge, the various perceptions that do not individually constitute any universal knowledge come together to cause a knowledge that is true in all cases.

Secondly, we should note the way in which this difference in kind comes about. A mob of ten thousand men is hardly a *polis*, a line of untrained men does not form a position of strength in a battle, and a lengthy memory of past particulars does not on its own constitute knowledge of a universal.<sup>45</sup> This point that induction is not wholly reducible to perception and memory will be discussed in more detail later. Here it is sufficient to note that Aristotle appeals to the same sort

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<sup>40</sup> *Pol.* I.2, 1252b10.

<sup>41</sup> *Pol.* I.2, 1252b16-18.

<sup>42</sup> I leave this word untranslated because words such as “state” and “city” carry modern connotations foreign to Aristotle, and “city-state” is at least as obscure and phonetically displeasing as the transliterated Greek.

<sup>43</sup> *Pol.* I.2, 1252b28-29.

<sup>44</sup> *Pol.* I.2, 1252b30.

<sup>45</sup> Hamlyn “Aristotelian *Epagoge*,” 182 notes that “objections such as those which I mentioned earlier are largely, if not entirely, directed against the thesis that what happens at one stage is, when repeated, a sufficient condition for the development of the next stage; and it is clear that it cannot be anything of the kind.”

of thing in each case to account for the unity that arises above the multiplicity. In the *Pol.*, it is the constitution that gives shape to the *polis*, for “the sameness of the [*polis*] consists chiefly in the sameness of the constitution.”<sup>46</sup> In the battle rout, it is the training of the soldiers that allows them to hold a position of strength. And in the case of knowledge, it seems to be the form already present in the perceived particular that assures that the case about the particular will be the case about all those things that share the same form. Thus, in all three cases, it is something intelligible that brings about unity in the many things. A constitution—the result of human deliberation—makes a city out of otherwise unrelated villages. Training makes individual soldiers able to hold a position. Form grasped by the knower makes what is the case about one particular apply to other related particulars.

To what does this entire example amount? What do we now know about induction that we did not know before? With induction, Aristotle offers us a process whereby particulars of a given sort are remembered and articulated together by experience, then given general descriptions before finally being understood on a causal level. The battle rout shows not only that perceptions play a necessary role in human knowing but also that they are, on their own, insufficient to account for the universality of such knowing. As the soldiers become a wall, what matters to the gaining of a position of strength is not the individual idiosyncrasies of each particular soldier, but only that he is a soldier, trained to be part of a formation that stops an onslaught. Similarly, each perceived thing, insofar as it contributes to the perceiver coming to have universal knowledge, matters not in its individual idiosyncrasies that a retentive memory can catalog. Rather, the particular contributes that part of itself that makes it to be what it is generally, that is, its form.

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<sup>46</sup> *Pol.* III.3, 1276b10-11.

Now that we have seen, through the battle rout simile and from his accounts of the ascent to knowledge, what Aristotle takes induction to be positively, let us now turn to consider what induction is not. Having seen that it is not an inexplicable appeal to magical powers, we should avoid the other extreme of mistaking it for something lower than what it actually is. Aristotle is clear that something beyond perception and memory is necessary to arrive at knowledge, saying that “it is impossible to perceive what is universal and holds in every case.”<sup>47</sup> The role, then, that perception plays in Aristotle’s account of human knowing is to get the knower to the threshold of universal knowledge, to show what has been the case with various particulars, and leave it to the intellect to arrive at what holds in all cases. How exactly this step or process works is not described in detail at *APo.* I.31, but, in the same passage, Aristotle also says that “one necessarily perceives particulars, whereas understanding comes by becoming familiar with the universal.”<sup>48</sup> In this way, Aristotle takes induction to be a sort of “becoming familiar with” what is universally the case.

It will be helpful here to consider a case of what Aristotle does not have in mind when talking of this “becoming familiar with.” Bertrand Russell offers the example of “[t]he man who has fed the chicken every day throughout its life [and] at last wrings its neck instead.”<sup>49</sup> Here, Russell supposes that the act of induction is nothing more than the claim that what has been perceived will continue to be perceived without change or interruption, that the man who has fed the chicken will continue to feed the chicken without change or interruption. Rather, the proper act of induction would not be the sort of assumption that things will continue but would rather be a certain insight into what is going on, namely that the man is fattening up the chicken to eat it one day. If an observer or the chicken arrives at this insight, neither will be surprised by the man

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<sup>47</sup> *APo.* I.31, 87b31-32.

<sup>48</sup> *APo.* I.31, 87b38-39.

<sup>49</sup> Bertrand Russell, “On Induction,” in *The Problems of Philosophy* (Mineola: Dover Publications, 1999), 43.

finally killing the chicken. And if the chicken did not have this insight, it would seem unreasonable to say that the chicken had really become familiar with what was going on.

We can now look at an example that Aristotle gives to consider what a more appropriate relationship between memories and induction is. A few cursory mentions that he makes will serve to start. In *APo.* I.31, the Philosopher describes induction as the process whereby “[after] we hunted the universal . . . , from several particulars the universal is [made] clear.”<sup>50</sup> Aristotle is in this passage discussing how reasoning works to understand the cause of a phenomenon, such as an “eclipse.”<sup>51</sup> Aristotle argues that perceiving even the mechanism whereby an eclipse occurs—“the earth screening [the moon]”<sup>52</sup>—is not enough to understand the cause of an eclipse. Rather, he says that such a realization is only likely to happen after several particulars have been observed, perhaps after hunting down, so to speak, the cause of an eclipse. This process of going from many particulars to a single explanation is consistent with Aristotle’s account of induction, and thus the process that “makes clear” refers to induction. Thus, it is not merely the accumulation of memories of eclipses that is necessary for coming to knowledge. Rather, there is need for at least one step to go from the γνῶσις of memory<sup>53</sup> to that of universal knowledge.<sup>54</sup>

Aristotle continues to use the eclipse example later in another passage from *APo.* relevant to this matter, II.8, in which he discusses definition and demonstration. Here, Aristotle handles an opposite concern about how knowledge comes about, not from memories, but from definitions and

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<sup>50</sup> *APo.* I.31, 88a2-3.

<sup>51</sup> *APo.* I.31, 88a1.

<sup>52</sup> *APo.* I.31, 88a1-2.

<sup>53</sup> At *APo.* II.19, Aristotle is clear that perception is a sort of knowledge, or γνῶσις, since he says at 99b38-39 that, in some animals, “there is no knowledge (γνῶσις) outside perceiving.” Shortly after he begins the ascent from perception through memory to universal knowledge, and it is safe to say that all steps along this ascent are γνώσεις.

<sup>54</sup> It should be clarified here that the knowledge that Aristotle has in mind is not the knowledge of first principles, which will be discussed in the next section of this chapter. Induction as Aristotle is treating it in *APo.* I.31 is the sort of deduction that supplies the middle term of a syllogism (for instance, “a screening of the earth by the moon” to link “eclipse” and “darkness”). He says that “for the first principles there is a different account.” *APo.* I.31, 88a8.

deductions from prior principles. At the conclusion of the section, he says that he has explained “how what a thing is is grasped and becomes familiar,<sup>55</sup> hence no deduction and no demonstration of what a thing is comes about.”<sup>56</sup> Here, Aristotle seems to be describing a move from one stage of incomplete knowledge that he outlined earlier in the same chapter,<sup>57</sup> in which one knows that something exists and is a sort of way but does not know exactly what that something is. For instance, one might observe an eclipse and know that it is “a sort of privation of light”<sup>58</sup> without knowing the true nature of the eclipse, namely that it is a “privation of light from the moon by the earth’s screening.”<sup>59</sup> Aristotle seems here to be suggesting that the sort of knowledge gained from experience, in this case exemplified by the general knowledge that an eclipse is some sort of privation of light, is not the complete form of knowledge. This complete knowledge, which yields not only a description of the phenomenon but also an explanation of the phenomenon in question, is achieved in another way. Having ruled out positing definitions and providing demonstrations as the way to get this complete knowledge,<sup>60</sup> Aristotle leaves room to say that this knowledge

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<sup>55</sup> The Greek word rendered as “becoming familiar” is *γνωρίζειν*, and Aristotle uses this word or related words when he is talking about induction and gaining experience through dealing with particulars as a way to gain universal knowledge. At *APo.* I.31, 87b38-39, he says that “one necessarily perceives particulars, whereas understanding comes by becoming familiar (*γνωρίζειν*) with the universal.” At *APo.* II.19, 100b3-4, he says that “it is necessary for us to become familiar with (*γνωρίζειν*) the primitives by induction”. Finally, at *EN* VI.8, 1142a13-15, he says that “such [practical] wisdom is concerned not only with universals but with particulars, which become familiar (*γνώριμα γίνετα*) from experience.” Thus, it is fair to treat the discussion of “becoming familiar” in this passage as related to induction.

<sup>56</sup> *APo.* II.8, 93b15-16.

<sup>57</sup> *APo.* II.8, 93a19-24: “we cannot grasp what it is to be something without grasping the fact that it is; for it is impossible to know what a thing is if we are ignorant of whether it is. But as to whether it is, sometimes we grasp this accidentally, and sometimes when grasping something of the object itself--e.g. of thunder, that it is a sort of noise in the clouds; and of eclipse, that it is a sort of privation of light; and of man, that he is a sort of animal; and of soul, that it is something moving itself.”

<sup>58</sup> *APo.* II.8, 93a23.

<sup>59</sup> *APo.* II.2, 90a15.

<sup>60</sup> *APo.* II.7, 92b35-38: “From this, then, it is evident . . . that definition neither demonstrates nor proves anything, and that you can become aware of what a thing is neither by definition nor by demonstration.” What Aristotle rules out here is coming to understand the nature of something by positing definitions or arguing from prior principles. Both methods would allow you to claim to know what a thing is without any experience of the thing you are defining.

comes from a leap past experience and into the realm of universal knowledge. Such a rational leap, we have seen, is induction.

### 3. Induction and First Principles

We have seen now that induction is how Aristotle accounts for universal terms and propositions coming into the mind at the end of a process that begins with perception. What remains to be seen is how the mind can reach beyond the conclusions of scientific knowledge to reach the first principles of science.<sup>61</sup> There are two controversies in interpreting Aristotle on this matter, and responses to both should leave us with a clearer idea of what the Philosopher has to say about the ascent to first principles.

The first controversy concerns whether or not Aristotle should be read as a rationalist or an empiricist. Terence Irwin and Michael Frede take Aristotle to be a rationalist, and claim that, although perception plays a causal role in coming to knowledge, it does not play an epistemic role.<sup>62</sup> Others, such as Robert Bolton and Marc Gasser-Wingate take perception to have an authoritative role in coming to know.<sup>63</sup> To resolve this controversy, I will examine the rationalist case and then see how the empiricist side is able to get the same results while avoiding an essential pitfall.

Frede's account boils down to the claim that some sort of insight is responsible for our knowledge of universal principles, and the states of perception and experience that precede such

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<sup>61</sup> I am leaving to the side the first principles of reasoning in general, such as the Principle of Non-Contradiction and that a whole is greater than one of its parts. Principles such as these, which undergird all knowledge and not just a particular science, are a different matter that will not be addressed in this thesis.

<sup>62</sup> Terence Irwin, *First Principles* (Oxford: Clarendon Press, 1988), 136: "Experience and familiarity . . . form no part of the justification of first principles." Frede, "Rationalism," 172: "Our knowledge of first principles is not epistemically, but only causally, based on perception."

<sup>63</sup> Bolton, "Aristotle's Method," 29; Marc Gasser-Wingate, "Conviction, Priority, and Rationalism in Aristotle's Epistemology," *Journal of the History of Philosophy* 58, no. 1 (2020), 25: "The main claim of this paper is that we should not . . . think of this rational intuition as a unique, foundational source of justification."

insights are only part of the temporal story, not any essential and epistemically necessary part of the account. It seems that Frede's account of epistemic causality is the same things that Aristotle considers as deductive certainty, which Aristotle describes in the *APr* when discussing the way in which a conclusion follows from the premises in a syllogism: "I mean by the last phrase<sup>64</sup> that it follows because of them, and by this, that no further term is required from without in order to make the consequence necessary."<sup>65</sup> Since the advance from perceptions to universal knowledge does not follow this model, it does not count as a legitimate source of knowledge. Something else, namely rational insight, has to supervene on the empirical ascent to give it the status of universal knowledge.

The trouble with this reading of Aristotle, especially at *APo*. II.19, is that it is not the most convincing portrayal of an important part of the Aristotelian project, namely, the rejection of Platonic innatism. While the following argument is not a decisive refutation of the rationalist reading, it does suggest that a reading that does not leave open the door to innatism would be preferred. Early in *APo*. II.19, Aristotle rules out the possibility that such cognitive possessions of first principles "are present in us but escape notice."<sup>66</sup> He says that such a position is "absurd; for it results that we have pieces of knowledge more precise than demonstration, and yet this escapes notice."<sup>67</sup> To be clear, Frede does not claim that the first principles of particular sciences are innate; the problem with his reading is that it would still be possible to read Aristotle's later account as consistent with innatism. If it is not the perceptions and experience that at least in part confer epistemic standing upon universal knowledge, then it is entirely possible that it is not some

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<sup>64</sup> "A deduction is a discourse in which, certain things being stated, something else other than what has been stated follows of necessity from their being so." *APr* I.1, 24b18-19.

<sup>65</sup> *APr* I.1, 24b20-22.

<sup>66</sup> *APo* II.19, 99b25.

<sup>67</sup> *APo* II.19, 99b26-27.

power of intuition but rather innate but as-yet-unrecognized knowledge that causes such knowledge to come to be.<sup>68</sup> Therefore, for Aristotle to reject innatism as clearly as he intends, the rationalist reading should be resisted.

I will set this debate to the side however, for the argument that settles the upcoming controversy will also prove decisive in the next debate that I will consider. Now, it remains to be seen what sort of process is necessary to go between knowing a proposition to be true and knowing that a proposition is in fact the first principle of a science. Again, two camps can be discerned: on the one hand those who take induction to be capable of grasping principles as principles,<sup>69</sup> and on the other those who take that something beyond induction (usually  $\nu\omicron\delta\zeta$  understood as a faculty of the soul, or else “intuition”) is necessary to understand principles as principles.<sup>70</sup> The appeal to intuition or to  $\nu\omicron\delta\zeta$  will be shown to be unnecessary and not in accord with Aristotle’s larger project.

First, I will show that there is a possible path to first principles that does not require anything in addition to induction. Before doing so, however, it should be said that my claim here is not that, upon inducing a universal proposition that happens to be a first principle, one can immediately recognize first principles as what they are and know them as such. Indeed, such a claim would seem to require some sort of mysterious ability to recognize first principles at a glance, and such a position is inconsistent with my intention here to be as parsimonious as possible

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<sup>68</sup> Gasser-Wingate, “Conviction, Priority, and Rationalism,” 21 makes a similar observation: “innatism is compatible with perception’s being a causal starting-point for our learning.”

<sup>69</sup> Marc Gasser-Wingate, “Aristotle on Induction and First Principles,” *Philosopher’s Imprint* 16, no. 4 (2016), and Kosman, “Understanding, Explanation, and Insight,” 18-21 defend similar readings, both emphasizing that  $\nu\omicron\delta\zeta$  in this context is the result of having learned principles, not the faculty whereby they are learned.

<sup>70</sup> Bayer, “Coming to Know,” 136-141 takes  $\nu\omicron\delta\zeta$  to be a faculty as well as a product, and Irwin, *First Principles*, 134-37 takes intuition to be essential to the justification of principles.



with Aristotle's account of knowledge.<sup>71</sup> Rather, what I am saying is that induction, rightly understood, can serve as a path not only to knowing the content of principles, but also to recognizing principles for what they are.

To be able to recognize principles as such, however, it is insufficient to regard induction as nothing more than a process of reaching universal propositions from particular instances. Rather, we will need a slightly broader account, in which induction is "understood as a form of cognitive process from a range of particular truths to some universal explanation why all these truths hold."<sup>72</sup> Such a broadening of the definition of induction is justified, I think, because it still properly accounts for what induction does in moving from particular to universal propositions. Namely, the move is from the range of particular truths about observed particulars to an explanatory truth about the class as a whole.<sup>73</sup> The same sort of move can be made over universal judgments to determine which ones are the first principles of a science. Namely, once one has sufficiently surveyed the particulars and come up with a satisfactory list of universal propositions, one can see which propositions explain others, and which are not themselves explained by any others.<sup>74</sup> Those propositions that cannot be explained by any other propositions are then taken to be the most explanatorily basic propositions of the science.

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<sup>71</sup> Kosman, "Understanding, Explanation, and Insight," 19 agrees: "We must avoid thinking that Aristotle takes there to be some immediate act of mental seeing that in itself is the source of or validates our knowledge of principles as principles."

<sup>72</sup> Gasser-Wingate, "Induction and First Principles," 15.

<sup>73</sup> The move from, for instance "all of these N that I have seen have quality X" to "All N are X," when a proper induction and not merely a generalization, is a move to something explanatory because the universal claim that all N are X means that all N are X *because they are N*. Aristotle makes this point at *APo*. I.5, 73b25-26: "I call universal whatever belongs to something both in every case *and in itself as such*," emphasis added. That is to say, the universal proposition is true for every particular and is true because the particulars fall into a certain universal class.

<sup>74</sup> Gasser-Wingate, "Induction and First Principles," 15 puts it this way: "And if induction repeatedly fails to produce a universal explanation for some fact (that the celestial sphere moves in a circular way, say), it will "make evident" (46a27) its explanatorily primitive status." I should clarify here that this broader sense of induction does introduce a certain sort of discursive process, albeit one that is sufficiently distinct from the usual use of the term in Aristotle. Usually, "discursive" is used to describe arguments that end with conclusions that are new premises. Here, no new premises are learned; rather, already known premises are put in explanatory order.

Now that we have seen that the path of induction to full knowledge of first principles is a possible path, I now argue that the alternative—the rationalist’s appeal to *voũç* or intuition—is not a possible path in line with Aristotle’s larger project of natural science. The larger mindset that I refer to is Aristotle’s conviction that any theoretical system must answer to the particulars that it is trying to explain. We saw in Chapter I Aristotle’s criticism of certain astronomers in *DC* III.7, whose theoretical systems were “not consistent with the phenomena.”<sup>75</sup> At the heart of this criticism is the conviction that principles should be changed in light of newfound evidence that they are false, since “[the final issue] in the knowledge of nature is the phenomena always and properly given by perception.”<sup>76</sup> Therefore, first principles are rejected or confirmed explicitly by the particulars given in perception, and not by some mysterious power of intuition. To ground knowledge of first principles in something other than, ultimately, perception, is to go against one of the foundational principles of Aristotelian natural science.

This argument based on the fact that perceptions have the final say in confirming or rejecting the legitimacy of first principles is also decisive in settling the first debate in this section, concerning whether perception is epistemically related to knowledge, or only causally. If there were no epistemic connection between perceptions and knowledge of principles, it seems impossible to say that the perception of something contrary to an accepted principle would require one to change one’s principle. Yet, since Aristotle roundly condemns in *DC* those who fail to change their principles in light of new perceptual evidence, it must be that the rationalist reading must be abandoned.

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<sup>75</sup> *DC* III.7, 306a6.

<sup>76</sup> *DC* III.7, 306a17.

#### 4. Aristotelian Empiricism

Having argued that Aristotle cannot meaningfully be called or read as a rationalist, it will be good to wrap up this discussion of Aristotle's account of human knowing by considering in what way, if any, he could be called an empiricist. Of course, the categories of rationalism and empiricism as we use them did not come about without many intervening centuries of linguistic and philosophical development, so to apply either of those terms to him is anachronistic. Nevertheless, to consider how Aristotle would respond to empiricist and rationalist<sup>77</sup> claims will offer a good concluding look at how Aristotle describes the process of knowing relative to perception and experience.

In broad terms, empiricism revolves around the axiom that “we have no source of knowledge in [some field of discourse] or for the concepts we use in [some field of discourse] other than sense experience,”<sup>78</sup> or, as Aquinas puts it, “nothing is in the intellect that was not previously in sense.”<sup>79</sup> Hume certainly falls into this camp, as he offers the following as an exhaustive account of the origin of ideas: “When we entertain, therefore, and suspicion that a philosophical term is employed without any meaning or idea (as is but too frequent), we need but enquire, *from what impression is that supposed idea derived?* And if it be impossible to assign any, this will serve to confirm our suspicion.”<sup>80</sup> By here assigning the proper source of ideas to a

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<sup>77</sup> These terms are now being used in the more general sense pointed out at Peter Markie, “Rationalism vs. Empiricism,” *The Stanford Encyclopedia of Philosophy* (Fall 2017), accessed December 8, 2020, <https://plato.stanford.edu/archives/fall2017/entries/rationalism-empiricism/>. The dichotomy between rationalism and empiricism as it pertains to interpreting Aristotle is confined to the previous section.

<sup>78</sup> Markie, “Rationalism vs Empiricism.”

<sup>79</sup> Thomas Aquinas, *De Veritate*, in *Opera omnia iussu Leonis XIII*, (Rome: Editori di San Tommaso, 1975), art. II, q. 3, obj. 19.

<sup>80</sup> *Enquiry*, 13.

specific sensory or emotional<sup>81</sup> impression, Hume places himself squarely in the tradition of British empiricism, in which he is preceded by Locke and Berkeley.

Aristotle, though he agrees that perception is the first step in moving to knowledge, describes the process of knowing in this way: “from perception there comes memory, as we call it, and from memory . . . , experience . . . . And from experience . . . , there comes a principle of skill and of understanding.”<sup>82</sup> Thus, without encountering particular things through perception, there would be no knowledge. However, elsewhere, Aristotle is clear that “[n]or can one understand through perception [. . . for] it is impossible to perceive what is universal and what holds in every case.”<sup>83</sup> Thus, it is clear that, for Aristotle, what comes to be in the intellect comes from sense, but is mediated by other substantive processes.

What then, is the most basic distinction to be drawn between the thought of Aristotle and that of Hume? Michael Ferejohn offers some clear insight into the matter by drawing up two principles of empiricism, one Aristotelian and the other decidedly not. Ferejohn’s first principle of empiricism can be embraced both by Aristotle and by Hume, “The content of all knowledge (or all knowledge of a certain type) must be given by perceptual experience.”<sup>84</sup> The second tenet of empiricism that he lists, however, removes Aristotle from the ranks of empiricists so considered: “Because the *object* of perception is always a particular, the *content* provided by perception is always particular.”<sup>85</sup> Hume certainly seems to be on board with this premise. We have seen Hume

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<sup>81</sup> “By the term *impression*, then, I mean all our more lively perceptions, when we hear, or see, or feel, or love, or hate, or desire, or will.” (*Enquiry*, 10, italics original, underlines added) It is clear that Hume does not leave open with this notion of emotional impression any possibility of a rational inductive process.

<sup>82</sup> *APo.* II.19, 100a4-8.

<sup>83</sup> *APo.* I.31, 87b29-32.

<sup>84</sup> Michael Ferejohn, “Empiricism and the First Principles of Aristotelian Science,” in *A Companion to Aristotle*, ed. Georgios Anagnostopoulos (Chichester: Wiley-Blackwell, 2009), 71.

<sup>85</sup> Ferejohn “Empiricism and First Principles,” 71. With this second tenet, we now arrive at the fuller discussion of how Hume and Aristotle differ concerning perception, a debate that I postponed in Chapter I, section 3.

say that all ideas in the mind are the direct product of perceptions<sup>86</sup> and that we cannot have universal knowledge from our perceptual experience.<sup>87</sup> Aristotle, on the other hand, is decidedly not; rather, Aristotle asserts that “perception is of universals.”<sup>88</sup>

Scott points out that this seems to be a troubling claim,<sup>89</sup> since it appears that Aristotle is saying that we do not perceive the particular at all, which would undercut the entire project of Chapter I. To get around this trouble, it is important to remember two things. First, right before Aristotle says that perception is of the universal, he says that “one perceives the particular,”<sup>90</sup> suggesting that there may be some distinction between the individual act of one perceiving, which picks out the particular, and perception in general, which is “of the universal.” Scott suggests that this distinction is critical to making sense of this parenthetical remark that Aristotle makes, and cashes it out in the following way: “Perception denotes the potentiality . . . , while the use of the verb ‘perceive’ denotes an actualizing of that potentiality on a particular occasion with reference to a particular object.”<sup>91</sup> In other words, perception in general can perceive any particular or a given sort; for instance, it can perceive any man at any time, but any particular act of perceiving will necessarily perceive only a particular individual at a given time.

This distinction gets us very close to the ultimate Aristotelian principle that has been grounding his entire epistemological process from the start: hylomorphism. Scott and others have

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<sup>86</sup> *Enquiry*, 13: “When we entertain, therefore, any suspicion, that a philosophical term is employed without any meaning or idea . . . , we need but enquire, *from what impression is that supposed idea derived?*” At *Enquiry*, 11, Hume specifies that by “impression” he means “all our more lively perceptions, when we hear, or see, or feel, or love, or hate, or desire.”

<sup>87</sup> *Enquiry*, 24: “In vain do you pretend to have learned the nature of bodies from your past experience.”

<sup>88</sup> *APo.* II.19, 100b17.

<sup>89</sup> Dominic Scott, *Recollection and Experience: Plato’s Theory of Learning and Its Successors* (Cambridge: Cambridge University Press, 1995), 152. It is also a tricky claim because at *APo.* I.31, 87b32, Aristotle says that “it is impossible to perceive what is universal and holds in every case.” It is possible that the distinction between perception in general and particular acts of perception is also sufficient to untangle this *aporia*.

<sup>90</sup> *APo.* II.19, 99b17.

<sup>91</sup> Scott, *Recollection and Experience*, 154.

noted that it is because Aristotle locates the universal form in the particular composite that he has no trouble admitting of an epistemic process that leads from perception of the particular to universal knowledge.<sup>92</sup> Similarly, Jean De Groot notes that in certain mathematical instances, the universal principles themselves are directly observed.<sup>93</sup>

It could be objected at this point that an empiricist such as Hume could allow that the universal is truly present in the particular but does not in fact appear to us. This position seems to me to be trivially different from claiming that they do not exist in the particular at all. For to say that something exists but is in no way perceivable, and in no way has any effect on the rest of the world is to say that the thing in question might as well not exist at all.<sup>94</sup> Thus, I push back against this potential intermediate position, saying that, while it is an intelligible thing to say, it is not an intelligible thing around which to build a system of knowledge. Either the universal exists and is discoverable, or for all intents and purposes it does not exist at all. For Aristotle, the universal does exist in the particular. Thus, Aristotle couches his scientific endeavor in the assertion that the universal is present in and discoverable from the particulars that instantiate it.

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<sup>92</sup> Scott, *Recollection and Experience*, 155: "Aristotle answers that in a sense we do encounter the universal in perception, because the universal is not separate from the individual substances that we actually perceive." Also, Ferejohn "Empiricism and First Principles," 71: "This is possible because these universals are for him (as they are not for Plato) actually present at the site of perception," and Bayer, "Coming to Know," 111: "Aristotle sees no Humean problem of induction from perception to knowledge. . . . This is because the universal is already somehow *in* the perceived particulars, so that no gap between them and universals need be bridged."

<sup>93</sup> See Jean De Groot, *Aristotle's Empiricism: Experience and Mechanics in the Fourth Century BC*, Parmenides Publishing (2014), 10-12. She argues that, at least in the case of the moving radius principle, the mathematical principle at work was directly observed and not grasped by some later act of abstraction. Her general claim is that "at least in the case of mechanical principles, mathematical objects originate in perception."

<sup>94</sup> There is a great deal of analogous discussion in recent Hume literature about necessary causal connections, and whether he thought that they existed yet were unknowable or thought that they do not exist at all. For a good summary of the various sides, see Roger, "Causal Connections," 517-519. This debate would suggest that it does in fact matter whether the universals exist unknowably or do not exist at all. My contention is that, while it may be an interesting question for clarifying what exactly a given thinker thought, the answer to that question does not have any impact at all on the substance of an account of coming to knowledge.

## Conclusion

In this thesis, I have presented the comparable beginnings of Aristotle's and Hume's accounts of human knowing and their major point of difference concerning the possibility of a move beyond perception to universal knowledge. I hope to have appealed to the Humean's comfort in starting with perceptions and then gently shown how it is neither helpful nor necessary to follow down the path that Hume points out. I hope also to have offered some clarity to the interpretation of Aristotle's account, given the abundant ongoing debate concerning the best way to interpret the many things that he says about human knowing. There is still, no doubt, much to be said about Aristotle's account of knowledge, especially concerning the account in the *DA* which was not the focus of this thesis. Nevertheless, I am confident that the reader has come to a fuller understanding of what Aristotle does and does not say about the way in which human beings come to know in the treatises here discussed, and to a fresh appreciation for the foundation that makes his entire systematic endeavor possible, namely, hylomorphism.

## Bibliography

- Adamson, Peter. "Posterior Analytics 2.19: A Dialogue with Plato?" *Bulletin – Institute of Classical Studies* 54, supplement 107 (2011): 1-19.
- Angioni, Lucas. "Explanation and Definition in Physics I 1." *Apeiron* 34, no 4 (2011): 307-320.
- Aquinas, Thomas. *Quaestiones disputatae de veritate*. In *Opera omnia iussu Leonis XIII*. Rome: Editori di San Tommaso, Roma, 1975.
- Aristotle. *The Complete Works of Aristotle*. Edited by Jonathan Barnes. 2 Vols. Princeton: Princeton University Press, 1984.
- Bayer, Greg. "Coming to Know Principles in *Posterior Analytics* II.19." *Apeiron* 30, no. 2 (1997): 109-142.
- Bealer, George, and Strawson, P.F. "The Incoherence of Empiricism." *Proceedings of the Aristotelian Society, Supplementary Volumes* 66 (1992): 99-143
- Bolton, Robert. "Aristotle's Method in Natural Science: *Physics* I." In *Aristotle's Physics: A Collection of Essays*. Edited by Lindsay Judson, 1-29. Oxford: Clarendon Press (1991).
- Broackes, Justin. "Did Hume Hold a Regularity Theory of Causation?" *British Journal for the History of Philosophy* 1 (1993): 99-114.
- Bronstein, David. "The Origin and Aim of *Posterior Analytics* II.19." *Phronesis* 57 (2012): 29-62.
- Butler, Travis. "Empeiria in Aristotle." *The Southern Journal of Philosophy* 41 (2003): 329-350.
- Coleman, Dorothy. "Hume's Alleged Pyrrhonism." *The Southern Journal of Philosophy* 26, no. 4 (1988): 461-468.
- De Groot, Jean. *Aristotle's Empiricism: Experience and Mechanics in the Fourth Century BC*. Parmenides Publishing, 2014.
- Falcon, Andrea. "Physics I.1." In *Aristotle's Physics Book I: A Systematic Exploration*, edited by Diana Quarantotto, 41-59. Cambridge University Press (2018).
- Falcon, Andrea and LeFebvre, David. "Introduction: Aristotle's Philosophy and the *Generation of Animals*." In *Aristotle's Generation of Animals: A Critical Guide*, ed. Falcon and LeFebvre, 1-12. Cambridge: Cambridge University Press, 2018.



- Ferejohn, Michael. "Empiricism and the First Principles of Aristotelian Science." In *A Companion to Aristotle*, edited by Georgios Anagnostopoulos, 66-80. Chichester: Wiley-Blackwell, 2009.
- Frede, Michael. "Aristotle's Rationalism." In *Rationality in Greek Thought*, edited by Frede and Gisela Striker, 157-173. Oxford: Clarendon Press, 1996.
- Gasser-Wingate, Marc. "Aristotle on Induction and First Principles." *Philosopher's Imprint* 16, no. 4 (2016): 1-20.
- . "Conviction, Priority, and Rationalism in Aristotle's Epistemology." *Journal of the History of Philosophy* 58, no. 1 (2020): 1-27.
- Gregoric, Pavel and Grgic, Filip. "Aristotle's Notion of Experience." *Archiv für die Geschichte der Philosophie* 88 (2006): 1-30.
- Groarke, Louis. *An Aristotelian Account of Induction: Getting Something from Nothing*. Ithaca: McGill-Queen's University Press, 2009.
- Hamlyn, D.W. "Aristotelian *Epagoge*." *Phronesis* 21 no. 2 (1976): 167-184.
- Hart, H.L.A. *The Concept of Law*. Oxford: Oxford University Press, 1961.
- Hasper, Pieter Sjoerd and Joel Yurdin. "Between Perception and Scientific Knowledge: Aristotle's Account of Experience." *Oxford Studies of Ancient Philosophy* 47 (2014): 119-150.
- Hume, David. *Enquiry Concerning Human Understanding*. Edited by Eric Steinberg. Indianapolis: Hackett Publishing, 1977.
- . *Treatise on Human Nature*. Edited by David Fate Norton and Mary J. Norton. Oxford: Oxford University Press, 2000.
- Irwin, Terence. *Aristotle's First Principles*. Oxford: Clarendon Press, 1988.
- Kosman, Aryeh. "Understanding, Explanation, and Insight in Aristotle's *Posterior Analytics*." In *Virtues of Thought: Essays on Plato and Aristotle* by Kosman, 7-26. Cambridge: Harvard University Press (2014).
- LaBarge, Scott. "Aristotle on *Empeiria*." *Ancient Philosophy* 26 (2006): 23-44.
- Lennox, James G. "Aristotle, Dissection, and Generation: Experience, Expertise, and the Practices of Knowing." In *Aristotle's Generation of Animals: A Critical Guide*, edited by Andrea Falcon and David Lefebvre, 249-272. Cambridge: Cambridge University Press (2018).

- Leshner, J.H. “‘Just as in battle’: The Simile of the Rout in Aristotle’s *Posterior Analytics* ii 19.” *Ancient Philosophy* 30 (2010): 95-105.
- Levine, Michael. “Belief in Miracles: Tillotson’s Argument against Transubstantiation as a Model for Hume.” *International Journal for Philosophy of Religion* 23, no. 3 (1988): 125-160.
- Liddell, Henry James and Robert Scott. *An Intermediate Greek-English Lexicon*. Mansfield Centre: Martino Publishing, 2013.
- Long, Douglas. “Hume’s ‘Imagination’ Revisited.” *Theatre of the World* 17 (1998): 127-149.
- Markie, Peter, "Rationalism vs. Empiricism", *The Stanford Encyclopedia of Philosophy* (Fall 2017 Edition), edited by Edward N. Zalta. Accessed December 8, 2020.  
<<https://plato.stanford.edu/archives/fall2017/entries/rationalism-empiricism/>>
- McKirahan, Richard D., Jr. “Aristotelian *Epagoge* in *Prior Analytics* 2.21 and *Posterior Analytics* 1.1.” *Journal of the History of Philosophy* 21, no. 1 (1983): 1-13.
- Mounce, H.O. “The Idea of a Necessary Connection.” *Philosophy* 60, no. 233 (1985): 381-388.
- Perelmuter, Zeev. “*Nous* and Two Kinds of *Episteme* in Aristotle’s *Posterior Analytics*.” *Phronesis* 55, no. 3 (2010): 228-254.
- Popkin, Richard H. “David Hume: His Pyrrhonism and His Critique of Pyrrhonism.” *The Philosophical Quarterly* 1, no. 5 (1951): 385-407.
- Rogers, Katherin A. “Hume on Necessary Causal Connections.” *Philosophy* 66, no. 258 (1991): 517-521.
- Russell, Bertrand. “On Induction.” In *The Problems of Philosophy*, 60-69. Mineola: Dover Publications, (1999).
- Scott, Dominic. *Recollection and Experience: Plato’s theory of learning and its successors*. Cambridge: Cambridge University Press, 1995.
- Smith, Robin. “Aristotle’s Logic.” *The Stanford Encyclopedia of Philosophy* (Summer 2020), accessed December 12, 2020.  
<https://plato.stanford.edu/archives/sum2020/entries/aristotle-logic/>
- Stanford, P. Kyle. “The Manifest Connection: Causation, Meaning, and David Hume.” *Journal of the History of Philosophy* 40, no. 3 (2002): 339-360.
- Winkler, Kenneth. “The New Hume.” *The Philosophical Review* 100, no. 4 (1991): 541-579.

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