

TELEOLOGY AND ITS LIMITS IN ARISTOTLE AND KANT

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Aristotle was a realist about natural teleology, Kant an anti-realist. My dissertation explains why each accorded it the epistemic and ontological status that he did. I articulate and defend novel conceptions of the problems they were addressing and their solutions to them.

Aristotle's natural teleology constitutes an essential part of his solution to a larger problem: how is motion or change possible? Motion had been thought by some to be unlimited and, therefore, unknowable. If there is to be a science of natural motion, then, motion must have limits. The *telos* was one such limit. Aristotle often glosses *telos* with limit, and this association is consistent with prior usage. It was, in fact, one of the three standardly recognized limits, together with beginning and middle—*archē* and *meson*. All three figure in Aristotle's account of natural motion. The *archē* is the efficient cause, and the *meson* is that by which the *archē* brings about some *telos*. So understood, the *telos* has a natural relation to the possibility of motion: it serves as a limit in virtue of which motion is intelligible.

Kant's teleology is intimately related to disputes about universals and our empirical classifications of things. Central to my account is the category of community. Our discursive intellects require that we approach nature *as if* it were ordered into a system of genera and species. In such a system, the species are parts of the genus and stand together in community

under it, thereby constituting a whole. Similarly, an organism or natural end possesses the form of a system and its parts stand together in community under a common or communal ground. They too constitute a whole. But as with nature's kinds, we can only approach an organism *as if* its parts formed a real whole: their communal ground is simple and so not to be met with in space. They possess, in other words, a noumenal ground. Consequently, organisms can be explained neither teleologically nor mechanistically, and teleology itself can never be accorded genuinely scientific status. Natural ends can be understood only on analogy with ourselves.

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How is it possible that someone with knowledge of the beginning should be ignorant of the end?

—Lady Philosophy

Boethius, *Consolatione* 1.vi.27ff

Miraculously, a plant twists itself out of a rock's cleft; clinging to the harsh bluffs, living organization maintains itself in the midst of desolation; the formative drive [*Trieb der Bildung*] leaps from it like the spark hidden in the stone.¹

—W. von Humboldt, *Gesammelte Schriften*, v. 3, p.115

¹ in Reill (2005).

PREFACE

This dissertation would not have been possible without a great many people. I would like to thank my committee—Stephen Engstrom, James Lennox, John McDowell, Jessica Gelber, James Allen, and Andrew Chignell—for their support and interest in the project from the start, which now seems so long ago. I would also like to thank Jim, Steve, and Jessica in particular for reading so many drafts and for so many conversations over the past several years about the philosophical issues involved. I shudder to imagine what the result would have been without their very generous help, for which I am very grateful.

I should also like to thank the late Allan Gotthelf, *requiescat in pace*. Though I had always expected my dissertation would involve Aristotle (and indeed Kant) in no small measure, it was Allan who encouraged me to write on Aristotle's teleology in particular. My thoughts on the issue first took shape in a course he co-taught with Jim Lennox in my early years in the graduate program. In response to a paper I had written, Allan said after pledging to help develop the ideas presented therein that 'I'm not averse in the least to helping—if I can—to improve the presentation of a view I think so wrong, when it's so well-conceived as yours is.' I hope he would think that the presentation of the view has improved, and that the quality of its conception has not diminished—even if, as I suspect, he would still think it quite wrong.

I owe in addition great thanks to the friends I have made in my time at Pittsburgh. I have profited tremendously from conversations with them on any number of topics, but they are most to be thanked for their friendship, and thus for the gift of a true human good. I should mention in particular Steve Makin, Casey Doyle, Preston Stovall, Laura Tomlinson, David de Bruijn, Eric Palmer, Ben Schulz, and Brooke McLane-Higginson, without whom I can scarcely imagine my time in Pittsburgh. But I would also like to thank in a very special way Jon Buttaci, whose friendship has been invaluable. Not only have I learned from him a great deal about Aristotle, but his energy, enthusiasm, and philosophical optimism always balanced what might otherwise have been an excessive skepticism and pessimism. He has been a true friend and gadfly, a lover of justice and, in many ways, an image of it.

Finally, I should like to thank my beloved wife, Meghan: “*sed quid plura? parcamus orationi quae debet et potest esse brevis ne maxuma opera tractando parum digne peragamus quom pro maxumo documento meritorum tuorum oculis omnium praeferam titulum salutis meae.*”²

I would like to dedicate this dissertation to my mother and father, who have spent their lives invested in their children in ways that, now a father, I know I shall never be able to return.

² *Laudatio Turiae*, §22

NOTES ON SOURCES AND ABBREVIATIONS

In what follows, I use the translations mentioned in the bibliography, sometimes modified using the editions mentioned in the same. Quite generally, I have for the sake of clarity made translations consistent in their renderings of *telos*, *apeiron*, *archē*, *Gemeinschaft*, and *gemeinschaftlich*.

For references to Kant's *Critique of Pure Reason*, I use the standard A/B citations. References to other works by Kant are by volume and page number to the standard *Akademie Ausgabe*, (1902-present, *Kants gesammelte Schriften*, edited by the Akademie der Wissenschaften (Berlin: G. Reimer, later De Gruyter). References to Aristotle include book, chapter, and Bekker numbers.

For the works of Aristotle, I use the following abbreviations:

<i>APo.</i>	<i>Analytica Posteriora</i>
<i>APr.</i>	<i>Analytica Priora</i>
<i>DC</i>	<i>de Caelo</i>
<i>DA</i>	<i>de Anima</i>
<i>DM</i>	<i>de Motu Animalium</i>
<i>EE</i>	<i>Ethica Eudemia</i>
<i>NE</i>	<i>Ethica Nicomachea</i>
<i>GA</i>	<i>de Generatione Animalium</i>
<i>GC</i>	<i>de Generatione et Corruptione</i>
<i>HA</i>	<i>Historia Animalium</i>
<i>Meta.</i>	<i>Metaphysica</i>
<i>PA</i>	<i>de Partibus Animalium</i>
<i>Phys.</i>	<i>Physica</i>
<i>Po.</i>	<i>Poetica</i>

For the works of Kant, I use the following abbreviations:

<i>KrV</i>	<i>Critique of Pure Reason</i>
<i>KpV</i>	<i>Critique of Practical Reason</i>
<i>KU</i>	<i>Critique of the Power of Judgment</i>
<i>JL</i>	<i>Jäsche Logic</i>
<i>DW</i>	<i>Dohna-Wundlacken Logic</i>
<i>VL</i>	<i>Vienna Logic</i>
<i>BL</i>	<i>Blomberg Logic</i>
<i>HL</i>	<i>Heschel Logic</i>
<i>MMr</i>	<i>Metaphysics Mrongovius</i>
<i>CTJ</i>	<i>Critique of Teleological Judgment</i>
<i>EE</i>	<i>First Introduction to the Critique of the Power of Judgment</i>
<i>A</i>	<i>Anthropology from a Pragmatic Point of View</i>
<i>P</i>	<i>What Real Progress has Metaphysics Made in Germany since the Time of Leibniz and Wolff?</i>
<i>MAN</i>	<i>Metaphysical Foundations of Natural Science</i>
<i>RM</i>	<i>Of the Different Races of Human Beings</i>
<i>TP</i>	<i>On the Use of Teleological Principles in Philosophy</i>
<i>RH</i>	<i>Review of J.G. Herder's Ideas for the Philosophy of the History of Humanity, parts 1 & 2</i>
<i>G</i>	<i>Groundwork for the Metaphysics of Morals</i>
<i>MS</i>	<i>Metaphysics of Morals</i>

<i>I</i>	<i>Idea for a Universal History with a Cosmopolitan Aim</i>
<i>LR</i>	<i>Lectures on the Philosophical Doctrine of Religion</i>
<i>R</i>	<i>Reflections</i>
<i>ML₂</i>	<i>Metaphysics L₂</i>

For all other historical references, I use these abbreviations:

Thomas Aquinas

<i>ST</i>	<i>Summa Theologica</i>
<i>SCG</i>	<i>Summa Contra Gentiles</i>
<i>De Ente</i>	<i>De Ente et Essentia</i>
<i>Sent.</i>	<i>Scriptum super Sententiis</i>
<i>De Hebd.</i>	<i>De Hebdomadibus</i>

Francisco Suárez

<i>DM</i>	<i>Metaphysical Disputations</i>
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Gottfried Wilhelm Leibniz

<i>NE</i>	<i>New Essays on Human Understanding</i>
<i>PE</i>	<i>Philosophical Essays</i> (eds.) Ariew and Garber, Hackett: 1989.

1.0 INTRODUCTION

In what follows I undertake an exercise in what might be called comparative philosophical anatomy. In particular, I undertake to compare and contrast the views of Aristotle and Kant on the status of natural teleology, i.e. the thought that nature or natural things do what they do with an eye towards some end or goal. Aristotle was a realist about natural teleology, Kant an anti-realist, and the aim of this dissertation is to understand why each accorded it the epistemic and ontological status that he did. One might explain the differences between them by highlighting the role of the changing conception of nature in the 17th century, when the tide turned against Aristotelianism. That story is by now familiar and some reference to it is very nearly standard in introductions to the topic of natural teleology.¹

But though there is no small truth in such an explanation, it is complicated by the emergence of naturalistic theories of function and purpose over the last fifty years. Generally taking their cue from the work done by Larry Wright in the 1970s, these theories deny that functions or purposes need to be grounded in the intention of some agent. And neither would they seem to depend on any particularly Aristotelian theses, e.g. about inner principles of motion or the distinction between act and potency. Consequently, insofar as they avoid the problems traditionally thought to belong to teleology and to hang free of the metaphysics on which teleology has long been thought to depend, one can wonder why Kant (among others) could not

¹ For recapitulations of this familiar story, cf. e.g. Shapin (1996) and Dear (2006). For introductions to the topic that frame the issue in these terms, cf. e.g. Perlman (2009) and (2004), Davies (2003), Hassing (ed.) (1997), Buller (ed.) (1999), Gilson (1984), Woodfield (1976), von Wright (1971).

have accorded biology a greater scientific status than he did.² Had he seen his way to something like contemporary accounts of functions, then while biology would still have fallen far short of physics, it need not have been any more problematic than, say, chemistry. Otherwise put, if we are not to say that Kant was simply blinded by a certain conception of what teleology was, or by a certain conception of design, one can wonder what prevented him from finding his way to a metaphysically acceptable account of purpose or function, even within in the confines of the critical philosophy.³ And in this, at least, Aristotle seems far more modern, for many have seen in Aristotle an account of function and purpose very similar to those on offer today.⁴ Thus, whatever we might say about some of his other metaphysical commitments, Aristotle seems to give us a picture of teleology and functional explanation recognizably scientific and free of the mysteries thought by so many to beset teleological explanation. For that reason, one might think, a charitable interpretation of Aristotle on this score is easier to come by than it is for Kant.

There are, however, dissenters. One of the most prominent challenges to the family of teleological views mentioned above has held that, in fact, they do depend for their cogency on illicit appeals to the intentions of some agent, and others have criticized their naturalistic

² Zuckert (2007), interestingly, says that Kant's analysis of purposive relations 'resembles' Wright's, though she does not explain how (fn. 46, 117). She also says nothing about how they might differ. Wright is a realist about teleology, and nothing in his account—if inserted into the critical philosophy—would seem to require the kind of anti-realism to which Kant ultimately subscribes. Kreines (2006), by contrast, argues that Kant's account is 'fundamentally incompatible' with Wright's.

³ Cf. McFarland (1970), ch. 6: 'Contemporary biologists are able to ask what purpose is served by a part of an organism without assuming that it was designed [...] But Kant does not seem to have been able to make a distinction between designed and undesigned function.'

⁴ Cf. e.g. Sedley (2007; 2010), Furley (1996), Gotthelf (2012), Depew (2008), and more besides. Whether explicitly or not, those mentioned all ascribe to Aristotle a view of function or purpose which is in the broad family of views originating with Wright. Gotthelf thinks that, faced with the resources of modern chemistry, Aristotle would have dispensed with a specific *dunamis* guiding generation and retreated to something quite like Wright's, but these details are discussed in chapter 3.

credentials on similar grounds.⁵ But what is more, Peter McLaughlin has suggested in his work on contemporary accounts of functions that being essentially stipulative, such views miss out on what is philosophically interesting about biological systems, namely their holism. This holism cannot be accounted for without greater metaphysical resources than many have allowed: ‘a bit of Aristotle [is needed] to reconstruct our functional attributions [...] That is going to be the metaphysical price.’⁶ But McLaughlin does not in fact advocate paying that price, concluding only that ‘many biologists are, in the end, closet Kantians in the sense that, while they adhere to strictly reductionistic explanatory mechanisms...they tend to prefer a somewhat holistic description of the phenomena to be explained.’⁷ Thus, while Aristotelian *descriptions* accurately capture the phenomena to be explained, the imagined cost of teleological *explanation* is not something biologists are thought to be willing to pay, and so they are functionally Kantians even if not avowedly so. Other contemporary writers on the topic have struck a similar chord: a Kantian approach to teleology allows us to use teleological descriptions heuristically while we search for underlying mechanisms.⁸

The dissertation to follow examines the nature and status of teleology in Aristotle and Kant against this background. By looking at both together and examining why they diverge as they do, we can make clear certain governing assumptions in their thought and what motivates them. At the same time, examining the metaphysical issues at play and the differences they make

⁵ Cummins (1975); Davies (2001) and (2009). For details, cf. chapter 3. Cummins’ view of functions is often described by others as ‘eliminativist’ or ‘anti-teleological.’ Kreines (2006) argues that Cummins’ view is similarly incompatible with Kant’s.

⁶ McLaughlin (2001), 14.

⁷ *Ibid.*, 213.

⁸ Lewens (2007).

to the status of teleology in Aristotle and Kant can help to illuminate contemporary discussions of functions and teleology, for as we have seen the metaphysical costs of teleology continue to be disputed. But it is a further aim of this study to determine the sense or extent to which Aristotle and Kant can be said to be addressing the same issues—to determine, in other words, the diachronic unity of the idea of teleology itself. There is indeed no small disagreement as to *what* teleology is, and thus *what it is* to give a teleological explanation of something, and it has already been alleged that the contemporary accounts of teleology mentioned above would not have counted as teleology at all for the medievals. In addition, it is by now a familiar fact that the mind-body problem is not a perennial one, but one arising out of particular philosophical presuppositions.⁹ We might then expect that the same will be true of any so-called ‘problem’ of teleology. With an eye to that further aim, then, the study that follows consists of historical reconstructions, not rational ones. It does not, in other words, consist in a ‘conversation with the re-educated dead,’ to borrow Rorty’s phrase, but in two case studies which attend closely to the conceptual contexts in which Aristotle and Kant were thinking.¹⁰ On their basis, we can examine what prior commitments shape and constrain the conceptual possibilities for each just as previous developmental commitments constrain the possibilities for future developments in organisms.

⁹ Cf. Pasnau (2001), Matson (1966), King (2007).

¹⁰ Rorty (1984), 52, in Rorty, Schneewind, and Skinner (eds.) (1984).

1.1 ARISTOTLE

In the first two chapters I articulate and defend a novel conception of Aristotle's teleology. Though it is common enough to think that for Aristotle 'goal-directedness is a basic fact of living nature' simply because for Aristotle teleology is a basic fact of living nature, I argue that goal-directedness forms no part of Aristotle's conception of teleology.¹¹ I argue instead that Aristotle's natural teleology constitutes an essential part of his solution to a larger problem in ancient Greek philosophy: how is motion or change possible? Motion had been thought by some to be infinite or unlimited because divisible without limit. For Aristotle, to lack limit means to lack form, and for that reason, the unlimited is (as such) unknowable—it is formless. This means, however, that motion would seem to be unknowable. And because Aristotle defines *nature* in terms of motion, nature too would seem to be unknowable. Reformulated in these terms, the problem is now this: knowledge of nature requires knowledge of natural motion, but motion seems to be unlimited or formless and thus unknowable. Aristotle's conception of teleology, I argue, is designed to meet just this problem. Seeing how, though, requires that we understand the vocabulary in which he frames that conception in a radically new way.

Both ancient and contemporary commentators have taken the '*telos*' in 'teleology' to mean something like 'goal' or 'aim.' As a result, its connection to the possibility of motion is obscure. I argue, however, that *telos* in fact means 'end' in the very concrete sense of 'limit.' Aristotle often glosses *telos* with limit, and this association is consistent with prior usage in both philosophical and non-philosophical contexts as far back as Homer. The *telos* was, in fact, one of

¹¹ Gotthelf (2012), 392.

three standardly recognized limits, together with beginning and middle—*archē* and *meson*. All three show up in important ways in Aristotle's natural philosophy. But so understood, the *telos* has a natural relation to the possibility of motion: it serves as a limit in virtue of which motion has form and is, therefore, intelligible. The *telos* is in fact the outer bound of a motion, i.e. the point at which it ends. House-building ends with the house, maturation with adulthood. Without such an end or limit, motion would be unlimited and unknowable—it would lack form.

By itself, the above account would suggest that even death is an end or *telos* because death is an outer-bound, that beyond which there is nothing. But Aristotle is clear that death is *not* an end or limit. For that reason, the account given needs to be supplemented, and so I go on to argue that death cannot be an end because it is a privation. Because the species or form of a motion is determined by its end-state, any given motion is only as intelligible as its end state. And so because death is a privation, any motion leading to death is understood only derivatively, just as the doctor has knowledge primarily and essentially of health, but only accidentally of its privation, i.e. sickness. Thus, motions towards form and, indeed, the good are accorded a distinctive priority because only such motions are strictly speaking intelligible. Although there is a metaphorical sense in which death is an end, Aristotle thinks if a motion is to be intelligible in virtue of its end and limit, that limit must be some form. Only form, in other words, can play the role of a *telos* in natural motion if motion is to be and be knowable in the strictest sense.

I then turn in the following chapter to the relation between the final and efficient causes, together with the nature of functions, e.g. of the eye to see. I argue that if we understand the *telos* as I have proposed, namely as an end in the concrete sense of a limit, and if we further appreciate the fact the *telos* constituted one of three standardly recognized limits, together with *archē* and

meson, then the path to understanding how and why Aristotle thinks efficient and final causes are essentially correlative—why, in other words, efficient causes are by their nature directed on ends—becomes available. Aristotle’s preferred way of identifying the ‘efficient’ cause is not as the *aition poiētikon*, which occurs in later commentators, but as the *archē tēs kinēseōs*, i.e. the beginning, source, or origin of motion. Understood concretely, every motion has a beginning and end, and the ‘efficient’ and ‘final’ causes stand to one another as the left and the right. Motion from the *archē* is by that very fact motion toward some *telos* in the same way that motion from the left is by that very fact motion toward the right. I argue for this claim first by examining Aristotle’s notion of chance not only in the *Physics*, which has received a great deal of attention, but elsewhere as well. But second, the correlative character of efficient and final causes can be seen in Aristotle’s account of the analogical or proportional character of the four causes.

Finally, I turn to an account of biological functions. The literature surrounding functions has sometimes exhibited an excessively nominalist bent, and that bent is in evidence in the literature on Aristotle as well. But it ignores an important point made by Wright himself, namely that natural function ascriptions should be understood in terms of generics. We need not, in other words, concern ourselves with a criterion for ascribing functions to token individuals but with the metaphysical grounds for generic ascriptions, e.g. ‘the liver is for filtering blood.’ Those grounds are intimately related to what we have seen thus far: a part (taken generically) is for the sake of some activity insofar as it typically or customarily mediates between some user and that activity. Otherwise put, the parts of an animal body constitute the *mesa* by which its *archē* or soul customarily brings about its *telos*.

1.2 KANT

In chapters 3 and 4, I turn to Kant and articulate and defend a novel conception of his natural teleology. I argue that Kant's treatment of teleology is intimately related to medieval and early modern disputes about universals and the reality of our empirical classifications of things. Central to my account is the category of community, which has been largely neglected in the literature on Kant's teleology. Discursive intellects like ours, Kant says, require that we approach nature as if it were ordered into a system of genera and species. In such a system, species stand in community under their genus. They are, in fact, the parts of the genus and together they form a whole. The medievals had said the same, and when they disputed about the reality of universals, i.e. common forms, they were also disputing whether or not the community (*communitas*) of a given form was real or simply effected by the intellect. Kant side-steps the dispute, saying only that our intellects are such that we must act *as if* nature were ordered into relations of community.

I then argue that in delineating nature's communities—its genera and species—it is not enough that things share similar marks or characteristics. Rather, Kant thinks they must stand in a causal community. In the biological realm, this causal community is grounded in the reproductive capacity possessed by every member of a species, and this is in evidence in Kant's essays on the human races. Accepting that there are different races, Kant argues that they together constitute a single human species because they all possess the capacity to produce fertile offspring with one another. For that reason, Kant thinks, they constitute a real causal community,

indeed a *Zeugungssystem* or system of generation with each other, and they do so in virtue of their shared or common generative power.

Natural ends should be conceived in the same way. Something like an oak is said to possess the form of a system and its parts are all said to issue from a common or communal ground. This communal ground is responsible for the distinctive unity of a natural end: all the parts share in it and stand in community with one another because of it. I argue that this communal ground is nothing other than the power of nutrition, which Kant identifies with the power of generation. That is, one and the same power which binds the different human races into a system of generation and thus their biological community one with another binds the parts of each individual into a system of nutrition. The parts of a natural end are for the sake of the whole insofar as each is but a partial expression of it. And as in the case of genus and species, so here we can only approach organisms *as if* their parts formed a real whole in virtue of a common ground.

If in chapter 3 I articulate how Kant conceives of natural ends, in chapter 4 I explain why Kant thinks we cannot have any knowledge of them. I argue that what makes natural ends remarkable is their possession of features thought otherwise to belong only to persons. Natural ends such as an oak are, as it were, natural persons, which is for Kant something of a contradiction in terms. But we can make sense of the thought by again looking at the tradition prior to Kant. In that tradition, the unity and identity of living things had often been treated together with persons, e.g. in Locke's *Essay Concerning Human Understanding*. Therein Locke gives an account of personal identity for which he is justly famous, but he also treats of the synchronic and diachronic identity of plants and animals, and his treatment of these latter

parallels the treatment he gives of the former. And Leibniz, in both his response to Locke and in other works argues that our conception of the unity of natural substances is to be modeled on the 'I' or 'me,' i.e. the conception we have of ourselves upon reflection: the *I* is that by which we understand the soul or substantial form in other things. But what is more, we can see by looking at St. Thomas that this thought was really quite traditional. The person or individual substance of a rational nature was conceived of as substance in the highest sense and thus as 'the most perfect [substance] in all of nature.' As a consequence, persons were that which other substances could only be said to approximate, being by nature less perfect or complete than persons.

On this basis, I then turn to Kant's account of our theoretical knowledge of persons or rational souls in first *Critique*. Insofar as our grasp of non-rational substances such as plants and animals is to be modeled on or to approximate the grasp we have of persons, theoretical constraints on our grasp of the latter would plausibly also constrain our theoretical grasp of the former. And this is what we find. Kant argues that we can have no theoretical knowledge of our rational self or soul because we do not appear to ourselves in outer intuition. We do not appear to ourselves in outer intuition because the soul is simple, and nothing simple is to be met with in space. As a result, we cannot know about the rational soul what the rationalists had thought we could, namely that it is imperishable, immortal, etc.. More important still, the simplicity of the rational soul means that thinking beings *as such* never appear in intuition. Consequently, the representation of anything outside ourselves *as* a thinking being—and so, therefore, as a person—requires a 'transference' of our own consciousness to it.

But what was proscribed by theoretical reason becomes essential to practical reason. Those features of the soul or self which the rationalists thought they could derive through

concepts become, in other words, postulates of pure practical reason in its consciousness of the demands of the moral law. The soul is on this basis presumed to persist through any and every change, including death, and thus to be immortal. Only on the basis of practical reason, in other words, can we take ourselves to be ultimate subjects of change and so as more than the merely logical subject of our thinking. At the same time, we necessarily conceive of ourselves as free, i.e. as capable of initiating causal sequences. Indeed, so foreign is the concept of freedom or self-activity to theoretical reason that its theoretical possibility only arises as a question posed to it by practical reason. Finally, the idea of a real community of substances grounded in something other than their collocation in a common or shared space can only be had by our conception of the moral community of persons.

Natural ends, however, are not in fact persons and we do not represent them as such. As natural, they are instead objects of theoretical reason. But they are remarkable precisely because they are theoretical objects which nonetheless evince some of the features thought to belong to persons. For this reason, they stand uncomfortably between theoretical and practical reason. Consequently, I argue that what we ‘transfer’ to natural ends is made available only by the conscious exercise of that power which Kant says ‘mediates’ between theoretical and practical reason—the power of judgment. In particular, we transfer the ‘feeling of life’ which constitutes an essential part of our appreciation of the beautiful. This feeling arises out of the free and spontaneous activity of our powers and is characterized by a unity and reciprocity among them. It is a felt unity of our subject, and indeed that in virtue of which we are conscious of our animality, i.e. the unity of our rational and sensible faculties. At the same time, the experience of beauty depends on what Kant calls a common sense (*Gemeinsinn*), by means of which we put

ourselves ‘into the position of everyone else’ (*KU* 5:294). And that is just to say that the feeling of life found in aesthetic experience constitutively involves reference to others with that same feeling, i.e. to a community of others animated by the same feeling of life. While not yet the moral community of persons or rational substances which is the object of practical reason, neither is it merely the community of bodies in one and the same space.

I then argue that the reason we cannot have theoretical knowledge of natural ends is the same reason we cannot have theoretical knowledge of persons: their ultimate grounds are simple, and so not to be met with in space. Some of Kant’s notes from 1780s say precisely this, but what is more, in the Critique of Teleological Judgment, Kant says we should understand natural ends such as oaks on analogy with life, but in the *Metaphysical Foundations of Natural Science*, Kant argues that natural science treats of objects only insofar as they are lifeless. To treat something as lifeless is to treat it as an aggregate of matter in space. Because life depends on an inner causal principle, living things cannot be accounted for simply in virtue of the causal relations of their parts in space. That is to say, if something is to be subject to mechanical explanation, what is so explained is caused by something external to it. But because living things are possessed of an inner causal principle, they are caused to act not by something external to them, but by themselves, and so they are mechanically inexplicable. And this is confirmed by neglected passages in the Critique of Teleological Judgment.

1.3 CONCLUSION

I conclude with a substantive discussion of the differences in Aristotle and Kant on the status of natural teleology, in light of what has come before. In Aristotelian fashion, I suggest that while there are certain ways in which they were addressing the same problem, there are others in which they were not. First, their teleological vocabulary is not immediately inter-translatable. While *Zweck* is sometimes used in translations of Aristotle, Kant uses *Zweck* in ways which would be unthinkable to Aristotle. Thus, Kant will say that an end or *Zweck* is the matter of choice, or that ends stand together in a system. But Aristotle could never say that a *telos* is the matter of anything because it is only ever the source of form, never bound into a unity, only ever binding into a unity. Second, the contexts out of which their accounts of teleology arise are sufficiently different as to suggest that they were responding to different issues. Thus, for Kant, our ignorance of natural ends is shaped largely by Kant's doctrine of the ideality of space and time, together with the distinction between *phenomena* and *noumena*, the purpose of which is largely to avoid Spinozism. In that respect, at least, some of the features of Kant's account which make it distinctive from Aristotle's have more to do with doctrines developed in response to quite different issues for which there is no obvious analogue in Aristotle. Our ignorance of natural ends has less to do with teleology, *per se*, and more to do with the (traditional) simplicity of soul or form together with the ideality of space and time.

In other respects, however, their views have a great deal more in common, and are shaped among other things by their differing attitudes towards our grasp of natural kinds. For both Aristotle and Kant, our grasp of ends is quite dependent on our grasp of natural kinds, and our

knowledge of natural kinds is had by induction. But Aristotle and Kant differ on the status of induction, with Kant calling it in places a ‘crutch for human understanding’ and an underdeveloped field of logic. Inductive judgments for Kant are mere ‘presumptions’ or ‘presuppositions’ by which we take to be true of all what we know to be true only of some. Whether rightly or wrongly, Aristotle has no such qualms, and thinks our knowledge of natural kinds is very nearly as robust as any other. Part of the reason, I suggest, is that Aristotle thinks inductive judgments are articulated in generics, which means that their truth conditions are non-quantifiable. As a consequence, induction is not the numbers game that it later becomes—it was never a requirement for Aristotle that one examine every instance of a kind in order to determine what belongs essentially to that kind.

I thus conclude with the thought that their conceptions of teleology, while bearing family resemblances to each other, are not easily isolable from the larger contexts in which they thought. And so while parallels can be drawn, the holism which characterizes the thought of both resists reduction into independent parts.

*For just as the Pythagoreans say, the whole
and the all are defined by the number three,
for beginning, middle, and end give the
number of the whole, and their number is
the triad. Wherefore taking it from nature, as
if it were one of her laws, we use this
number even in the worship of the gods.¹
—de Caelo, I.1.*

2.0 TELOS KAI PERAS

Influenced in part by the development of robust accounts of biological functions and perhaps broadly-speaking naturalist sensibilities, many recent accounts of Aristotle’s teleology argue that Aristotle was a realist and an empiricist about final causes, in some senses of those terms.² There are of course exceptions, but the general trend has been, sensibly enough, to ground interpretations of Aristotle’s teleology in the study of his narrower biological works, which examine precisely those natural beings which most clearly exhibit final causality, namely

¹ καθάπερ γάρ φασι καὶ Πυθαγόρειοι, τὸ πᾶν καὶ τὰ πάντα τοῖς τρισὶν ὄρισται. τελευτὴ γὰρ καὶ μέσον καὶ ἀρχὴ τὸν ἀριθμὸν ἔχει τὸν τοῦ παντός, ταῦτα δὲ τὸν τῆς τριάδος. διὸ παρὰ τῆς φύσεως εἰληφοτὲς ὥσπερ νόμους ἐκείνης, καὶ πρὸς τὰς ἀγιστείας χρώμεθα τῶν θεῶν τῷ ἀριθμῷ τούτῳ.

² E.g. Leunissen (2010); Johnson (2006); Bradie and Miller (1999); Depew (2008); Cameron (2002); Cooper (1987); Balme (1987); Gotthelf (1976). Cooper, it should be noted, refers to a ‘recent tendency’ to emphasize the strictly epistemological side of Aristotle’s teleology—what it helps us explain—citing in particular Nussbaum (1978) and Sorabji (1983). Kahn (1985) also notes such emphases and cites the same. On the general point, cf. also Bolton (1991), who, though he does not talk about teleology in particular, argues against an influential view articulated by Owen (1961), which claims that Aristotle’s method in the *Physics* is more properly ‘philosophical’ and ‘a priori’ than ‘scientific.’ I agree instead with Waterlow (1982) that ‘to Aristotle the notion of intrinsic direction is of logical, not merely teleological, significance; or we might say rather that the teleology is grounded on the logic.’ As I shall argue, this is true in an even profounder way than Waterlow appreciated.

animals.³ His teleology is then taken to be grounded in his sober scientific practice, and indeed ‘scientific’ as opposed to merely ‘philosophical,’ often enough serves as a mark of praise for Aristotle and his theory of teleology, to the extent that ‘scientific’ means to have good, non-speculative and therefore generally empirical reasons for holding that, e.g., nature does nothing in vain. Precisely what a final cause is, however, differs with each account, and so despite general agreement about the ontological status of and epistemic grounds for our knowledge of final causes, disagreement on the specifics persists.⁴ Few now follow what have been called the ‘heuristic’ or ‘anti-realist’ views articulated most notably by Wieland, Nussbaum, and Sorabji, which emphasize and perhaps even give priority to the epistemic necessity of teleological and functional ascriptions. Their views are sometimes mentioned only to be dismissed.⁵

Undue emphasis on Aristotle’s scientific respectability, however, risks neglecting the real import of his teleology, and the larger role it is intended to play.⁶ That it is intended to play such a role is signaled in a fact often noted in discussions of Aristotle’s teleology—the *telos* is a *peras*

³ Margaret Scharle complains in her (2008) that Aristotle’s teleology has been ‘widely misunderstood’ because of an ‘excessively biological focus.’ She aims to correct that misunderstanding and argue that elemental activity is governed by final causality as well. In what follows, since I want to argue that teleology will necessarily apply to any intelligible change in nature, it stands to reason that it will apply to the elements as well, though I won’t discuss them in any detail.

⁴ It is worth noting that there exists disagreement as to whether or not there is even a single account to be given of Aristotle’s notion of ‘final cause.’ Leunissen (2010), e.g., argues for a distinction between primary and secondary teleology, and in that sense rejects any unified account. Cameron (2002) describes what he takes to be a common strategy amongst Aristotle’s interpreters on the issue as the ‘divide and conquer’ strategy: isolate a favored notion of teleology and call the others that don’t fit that notion precisely somehow ‘derivative.’

⁵ E.g., Cameron (2002), who ‘assume[s] mainstream scholarly opinion’ in rejecting their views.

⁶ Kahn (1985) similarly highlights what he takes to be the historical distortion that results from failing to recognize the importance of certain metaphysical claims for Aristotle’s teleology, though the claims he highlights are different from those I shall call attention to. That said, I can also agree with Kahn in claiming that there is nonetheless a certain autonomy to biological function and development.

or limit—but the import of which seems to have been insufficiently appreciated.⁷ Once we understand the logical and metaphysical resonances such a claim carries and the import of limits generally, we will be in a position to see precisely why Aristotle thinks that teleology grounds the possibility of a science of nature, and indeed why it must extend to all of nature.⁸ The *telos* was standardly conceived of as a limit prior to Aristotle, and postulating a *telos* was a well-recognized way of forestalling the claim that something was unlimited (*apeiron*). And since the *apeiron* was thought by some—not least of all Aristotle himself—to be unknowable (e.g., *Phys.* I.5; 187b7, *Meta.* α.2; 994b17-28), forestalling such a claim and identifying a thing’s limits constituted an essential philosophical task. Furthermore, the conceptual connections between *telos*, *peras*, and *apeiron* had no essential connection to motion or action, and to that extent the *telos* constituted a perfectly general principle of the being and intelligibility of things.

These conceptual connections, I argue, constitutes the defining features of Aristotle’s teleology.⁹ Beginning with a world differentiated into sorts of things, Aristotle understands these

⁷ Noted by Balme in his (1987), but also Johnson (2008), Leunissen (2010). Mirus (2004) and Hennig (2009) perhaps make the most of this fact, and the account to follow is most similar to theirs. Neither Mirus nor Hennig, however, note the continuity between Aristotle and his predecessors on the importance of the limit, and though Hennig mentions it, neither he nor Mirus understand the teleological principle at the beginning of *GA* as I shall propose we should.

⁸ Some will object that ‘the possibility of a science of nature’ has an unpalatable Kantian flavor, and so misconstrues Aristotle’s interests and the problems he was facing. But the point can be made in fairly innocuous language: if the unlimited is as such unknowable, then any object of knowledge must be in some sense limited, i.e. possessed of limits. It will, in other words, be a necessary (though perhaps not sufficient) condition of knowledge or *epistēmē* that its object have limits, and it will be knowable precisely in virtue of them. In that way, the *possibility* of knowledge of nature rests nature being marked in some way or other by limits.

⁹ On this basis, we can then identify two axes along which we should understand Aristotle’s teleology. As form is opposed to both privation and matter, so the *telos* is opposed to both the *apeiron* and the *archē* of motion, or what is generally called ‘the efficient cause.’ As we shall see, even in the second case, Aristotle has in mind a very different understanding of the opposition between *telos* and efficient cause than we generally do, and that opposition cannot be understood without the one discussed in this chapter, any more than one could have the concept of ‘form’ without understanding its relation both to privation *and* to matter.

sorts to constitute the ends and limits of motion, by which motions are counted and individuated. The *telos*, that is, helps to introduce number into nature because it helps to ground the unity of change or motion, i.e. to make a motion *whole, complete, and one*, thereby making motions countable. The *telos* plays this role precisely in virtue of being a limit for, as we shall see, there was thought to be an intimate connection between limit, unity, and number. At the same time, ‘*telos*’ comes to have a more distinctive sense than it had had in Aristotle’s predecessors. Though it could mean ‘end’ and ‘limit’ in a quite general way, it comes (generally) to designate in Aristotle’s thought principally an end and limit of motion (or action): to call something a ‘*telos*’ is to identify the point of completion of a process, which is marked by the appearance of something we already know to be a piece of the natural furniture of the world.¹⁰ That furniture is given by the variety of natural forms, which punctuate motion—a continuous magnitude—by providing its beginning and end-points, its *archai* and *tele*.¹¹ So understood, not every last or final thing will be a *telos*. That is to say, because it means principally ‘limit of motion or action’,

¹⁰ Further restrictions will, of course, need to be added for this conception to count as something recognizably teleological, but I aim here in the introduction only to give a very general characterization of the view. Indeed, one might put the thesis this way: *telos* is to be understood primarily as limit, but that the essential features of the final cause are built around this understanding and precisely in virtue of it. In other words, for a variety of reasons to be examined, there are in Aristotle a number of constraints on the application of the term or what is to count as a *telos* understood as *peras*, deriving largely from his analysis of motion, his understanding of goodness, and the act/potency distinction, which give it many of the features ordinarily thought to belong to ‘goals’ and ‘teleological’ causation. These will be touched on in what follows.

¹¹ As we shall see, in some respects the account proposed will be similar in important respects to that put forward by Gotthelf (1976; reprinted 2012), though the manner of approach will be very different. Gotthelf attempts to understand the ontological basis for Aristotle’s teleology, as I shall, but Gotthelf’s starting point is in stark contrast to my own. Gotthelf begins with the question ‘How would/does Aristotle respond to the problem of reduction in biology?’, while my own question is something more like ‘what standing philosophical problems, if any, does the *telos* concept, antecedently understood non-teleologically, solve for Aristotle in the realm of natural philosophy?’ Gotthelf thinks Aristotle posed the problem of reduction, and so thinks he can avoid the charge of anachronism. I am less confident. I am, to that extent, in agreement with Meyer (1994). Nonetheless, I can agree with Gotthelf that the potential for form is an essential part of Aristotle’s teleology, that that potential is ‘irreducible’ as he affirms, and yet deny that Aristotle’s understanding of the *telos* or purposiveness has anything to do with the complexity or simplicity of biological processes.

'*telos*' comes to have a whole host of connections to other concepts which it had not previously had, or which were merely accidental to its real sense. In particular, because every limit is a limit of something, whether of motion or of a plane figure, the essential character of the limit is determined by what it limits. In other (more Aristotelian) words, what it is to be the limit of motion will be different from what it is to be the limit of a figure, because motions and figures are different things. Thus, while retaining its primary meaning of 'limit,' '*telos*' can come to have a distinctive sense insofar as it now designates one kind of limit in particular, for its sense is shaped by that of which it is the limit.¹²

This proposed reading can, I believe, provide us with a deflationary account of Aristotle's teleology while at the same time situating the *telos* among some of the central metaphysical concepts in early Greek philosophy.¹³ The language of limits provides Aristotle the vocabulary in terms of which the problem is formulated and solved. Once we come to understand this vocabulary, we will understand why the difficulties afflicting later attempts to account for final causation can seem so irresolvable: the language in which it is now generally discussed does not permit the kinds of inferences which were available to Aristotle, given his own terminology. My goal is to understand that terminology anew, and to argue that when properly understood, many

¹² The basic point here is consistent with Aristotle's method quite generally, which is something of an innovation and advance over his predecessors. No longer will 'limit' be spoken of univocally, but will, like so many other terms, be spoken of analogically or homonymously from case to case. In this, it will be like 'good' or 'being,' or perhaps 'form.' In part for this reason, Aristotle's 'teleology' was unavailable to his predecessors, even if they understood the importance of limits and understood the *telos* to be a limit. On the analogical meaning of terms like 'form' or 'source of motion', cf. Crebullier (2000), who comments on *Meta.* Λ.4 and argues that the conception developed there is in response to Plato. More will be said of the analogical meaning of *telos* in particular in the next chapter.

¹³ By 'deflationary', I mean just that the account attempts to make sense of Aristotle's natural teleology without appeal to minds, vitalistic powers, *nisuses*, etc.. The account is, however, still fundamentally ontological in character, unlike the accounts offered by Wieland, Nussbaum, and Sorabji, mentioned above. It is deflationary only *relative* to much of the discussion today. In Aristotle's own context, the account is metaphysically robust.

of the problems and difficulties long thought to belong to teleology disappear. The conceptual connections between the terms employed are quite distinct, and no commensurate set of terms is currently employed in discussions of teleology. As Rorty says, a philosophical problem is often ‘a product of the unconscious adoption of assumptions built into the vocabulary in which the problem was stated.’¹⁴ If that is right, then neither philosophical problems nor their proposed solutions are to be grasped independently of the vocabularies in which they are formulated. And if there is a parallel between grasping the meaning of a word and seeing a *Gestalt*, then seeing Aristotle’s teleology as I propose we should requires something of a *Gestalt* shift.

I begin in §1 with a teleological principle articulated by Aristotle in the *Generation of Animals* and argue that it expresses a juxtaposition of concepts commonly accepted prior to Aristotle and, further, that that juxtaposition lacks of itself any ‘teleological’ import. The principle in question exhibits Aristotle’s broad agreement with Plato and the Pythagoreans on the importance of form and limit (which in fact often amount to the same thing). I then describe in §2 an impasse between two identifiable camps among Aristotle’s predecessors: those who, like Democritus and Empedocles, investigated nature but failed to appreciate the ontological and epistemic importance of limits, and those who, like Plato and the Pythagoreans, neglected the study of nature but, like Aristotle, insisted on the import of limits. In §3, I then explain why, in Aristotle’s terms, nature might have seemed beyond scientific understanding to his Platonico-Pythagorean predecessors, and outline Aristotle’s own solution to the difficulty. In particular, motion presents a philosophical problem because it was thought to be divisible without limit and thus *apeiros*. Motion, in other words, seems to possess just that feature which would make it

¹⁴ Rorty (1981), xiii.

unintelligible and relegate it to the realm of non-being, as Plato and the Pythagoreans would have it. But an understanding of motion is necessary for an understanding of nature because the latter is, at least for Aristotle, defined in terms of the former. If motion is to be intelligible, then, it must have limits, and so I identify a sense in which motion, on Aristotle's view, can be said to have limits, one of which is the *telos*.

The aim of §5 is to answer a natural objection: for all that has been said, death might still be counted an end. But Aristotle denies that death is an end, and so more needs to be said to understand exactly why. I argue that death or decay count as motions only derivatively, for Aristotle, because a motion is defined by its end-state, and so any given motion will only be as well defined as its corresponding end-state. Because the end-state of death or decay is non-being, motions leading to them will be ill-defined: one can only define what something is, not what something is not. Generative and degenerative motions exhibit the same relations of priority that Aristotle takes to obtain quite generally between opposites and our knowledge of them. Knowledge, Aristotle says, is primarily of form, but accidentally of privation: the doctor knows first and foremost the nature of health and how to bring it about, and only secondarily the nature of sickness.

On this basis, I then argue that the teleological principle with which we began should be understood, broadly, as a logical and metaphysical principle.¹⁵ Nature, strictly speaking, moves in the direction of an end and form, rather than privation, because only motions proceeding to the former can be said to *be* and *be known* in the strict and proper sense. What is more, the principle in question should be understood in light of Aristotle's repeated claim that pursuit and avoidance are to action what affirmation and denial are to (assertoric) speech: generation stands to decay as affirmation to denial.¹⁶ If I am right, then one consequence of the account proposed will be that Aristotle's thought exhibits a hitherto unappreciated unity across the domains of thought, action, and nature, and that unity is explicable in terms of some central but neglected concepts of Greek philosophy prior to Aristotle. On this way of understanding, what stands in opposition to

¹⁵ Some work has been done on the status of Aristotle's teleological principles generally, e.g. 'nature does nothing in vain.' Cf. Lennox' (1997) and chapter 4 of Leunissen (2010), which, she says, is heavily indebted to Lennox. The former is concerned in large part with the role of such principles in demonstration, and the latter with their role as 'heuristics.' My concern is principally with understanding a single principle, which shall serve as a point of entry into Aristotle's understanding of teleology more generally. Most important, for my purposes, is that the principle in question be an indemonstrable starting-point necessarily assumed in natural inquiry. Neither Lennox nor Leunissen appear to disagree on this point. The principal difference between us, I suspect, is in the sense given to the idea that the principles are 'empirical.' Rather than enter into dispute over the conditions under which something is to be counted as 'empirical,' I'll register my agreement with Lennox that the principle is arrived at through experience with nature, in some broad sense—it is certainly not innate or recognized through recollection. As Lennox notes, in at least one place Aristotle seems to suggest that we *see (horomen)* that nature does nothing in vain (*Resp.* 476a13). Nonetheless, I should like to say that the principle in question lies at the far edge, as it were, of empirical refutation for reasons that shall, I hope, become clear.

¹⁶ I would also suggest that teleology stands to intrinsic efficient causes and chance as essential to accidental predication. Aristotle's remark in *Phys.* II.5 is in this respect suggestive: 'just as something can *be* in its own right or accidentally, so a cause may be a cause either in its own right or accidentally.' This remark occurs, of course, in the preparation for the contrast between final causation and chance in II.8. If I am right, then there are two 'logical' analogues by reference to which Aristotle's teleology should be understood: generation and decay as affirmation and denial, and intrinsic efficient causation and chance as essential and accidental predication. I defer discussion of the relation between final and efficient causes to the next chapter.

‘teleological’ motion is decay or degenerative motion, not mechanism or mechanically caused motion.¹⁷

Before beginning, however, I want to mention—only to set aside for the purposes of this chapter—a possible concern, one which will only become more pressing as we proceed: the absence of purposive language in the account of the meaning and sense of *telos* in Aristotle. It is common enough to think of the *telos* as the goal or aim of an action or motion, that for the sake of which things are done and which is not done for the sake of anything else.¹⁸ Cicero defines *finis* in this way (*Fin.* 1.42; 3.26), and others have called this the ‘dominant’ sense of ‘end.’¹⁹ But little will be said about *to hou heneka* in what follows. As a result, one might worry that the characteristically ‘teleological’ character of Aristotle’s thought drops out, and that while what follows may say something important, it nonetheless fails to contribute to our understanding of Aristotle’s *teleology*. The concern is perhaps especially pressing because Aristotle himself clearly understands the *telos* as ‘that for the sake of which’ throughout his corpus, and so any treatment of his understanding of the *telos* must similarly treat the for-the-sake-of relation. All of that is true enough. But it is also true that in a number of places Aristotle very clearly identifies *telos* in

¹⁷ Insofar as (a) teleological motions are essentially generative, and insofar as (b) ‘being is better than non-being’ for Aristotle, it is a further consequence of the view defended that all properly teleological motions are motions towards the better and the good.

¹⁸ It is worth noting, however, that English ‘goal,’ according to the OED, comes from the older (14th c.) *gol*, meaning ‘boundary, limit.’ Cf. also German *Ziel*.

¹⁹ Allen (2014). Allen, far more than other recent commentators in the discipline, pays special attention to the history of the term *telos*, but his researches are in the service of another aim, namely understanding the sense of the title of one of Cicero’s works, *De Finibus Bonorum et Malorum*. Nonetheless, he distinguishes between dominant and basic senses of ‘end,’ the former being ‘that for the sake of which,’ the latter being the issue or outcome of some action or process. And this latter sense is said to ‘lie behind the sense of *telos* meaning that for the sake of which or goal’ (244). That is consistent with what I go on to say, though I argue that there is good reason *not* to think that *telos* generally means ‘goal’ in Aristotle, and that there are good textual and historical reasons for thinking that the sense of *telos* that does the heavy philosophical lifting, as it were, is the sense of ‘end’ *qua* ‘limit.’

the sense of *to hou heneka* with *telos* as *peras*. Consequently, there is good reason to suppose that there are not two distinct senses of *telos* employed, and every reason to think they are the same: the *telos kai peras* is *to hou heneka*.²⁰ About *to hou heneka* more will be said later, and so I simply beg the reader's patience as I set the stage. All I will say at the moment is that Aristotle's understanding of the 'teleological' aspect cannot in fact be grasped independently of the more basic line of thought articulated in this chapter. What I go on to say does, I think, capture or begin to capture some essential features of Aristotle's understanding of the *telos*, even in paradigmatically teleological contexts. But it also lays the foundation for the next chapter, in which the 'for the sake of' relation will occupy a central place.

2.1 IN THE BEGINNING: TELOS AND PERAS IN SOME PRESOCRATICS²¹

Near the beginning of *Generation of Animals*, Aristotle contrasts the unlimited (*apeiron*) with the end (*telos*), saying that nature flees the former and seeks the latter because the former is

²⁰ Cf. *DM* 6, *Meta.* α.2, *Meta.* Δ.17.

²¹ It is of course the ever-present task of an historian to choose where to begin her narrative. Mine begins with the Pre-Socratics. One could, however, have begun even earlier, indeed with Homer. There is some dispute about the etymological origins of *telos* and its meanings in archaic literature. Cf. Onians (1951; 2011), Ambrose (1965), Holwerda (1963), Waanders (1983), and Beekes (2010). On the origins and archaic meanings of *peirar* (*peras*), cf. Bergren (1975) and Beekes (2010). I will note here only that *telos* had a connection with *peirar* from the very beginning. The terms occur in parallel phrases in Homer, e.g. *polemoio peirar* and *polemou telos*, which scholars have used in order to illuminate one or the other term. Furthermore, ancient lexicographers give *peras* as one of the six meanings of *telos*, while Eustathius identifies *peras* as the *core* meaning. On this cf. Waanders, 20. In his lexicon of Homeric Greek, Cunliffe refers the reader to *peirar* no less than three times in his entry on *telos* (and vice versa). To that extent, the connection we find between *telos* and *peras* in Aristotle is quite well attested and would appear to be quite fundamental to the ordinary understanding of the term. The point is all the more important given Aristotle's attention to what is customarily said and meant, and his reluctance to depart too radically from ordinary speech. But whatever we might say about the archaic usage of the term, the more recent philosophic history will be sufficient for my purposes.

ateles or incomplete (*GA* 715b15-16). Quite understandably, one might here take Aristotle to be saying that nature seeks or pursues some goal or has some aim. That is, because seeking is a goal-directed activity, one might very naturally understand ‘*telos*’ here to mean something like ‘goal’ or ‘aim.’ It would then be a ‘logical’ or ‘conceptual’ truth that nature seeks a *telos*, if indeed ‘seeking’ is what nature does. This would be less a fact about nature than about ‘seeking.’ If so, however, we should need to make sense of the corresponding claim that nature flees the *apeiron*, and that conceptual connection is more difficult to discern. The contrast drawn between a goal sought, the *telos*, and the unlimitedness avoided, the *apeiron*, is to that extent an unexpected one.²²

We can avoid this puzzle if we put aside the customary understanding of *telos*. ‘Goal’ is of course an English word, but it has a semantic cousin in the Greek ‘*skopos*,’ meaning ‘mark’ or ‘target,’ i.e. that at which one aims.²³ Aristotle has been said to use it interchangeably with *telos*, and indeed he uses *skopos* in conjunction with *telos* in his ethical and political works with some frequency.²⁴ In addition, ancient commentators use *skopos* when treating of Aristotle’s natural

²² Preuss (1975), 236, finds in this principle a ‘play on words.’ As we shall see, however, no such creative or speculative explanation is needed if one simply understands the term as it had long been, i.e. as an end and limit.

²³ The term is sometimes used in the context of archery (e.g. *Od.* 22.6; Aesch. *Ag.* 628), which has historically provided a relatively stable metaphor for purposiveness. In his commentary on *Physics* II.8, for example, Aquinas says that ‘it must be pointed out that nature is among the number of causes which act for the sake of something. And this is important with reference to the problem of providence. For things which do not know the end do not tend toward the end unless they are directed by one who does know, as the arrow is directed by the archer. Hence if nature acts for an end, it is necessary that it be ordered by someone who is intelligent. This is the work of providence’ (*Liber* II, *lectio* 12).

²⁴ E.g. *NE* I.2; 1094a22-24; *EE* 1214b6-11; 1226b29. For claims that *telos* is roughly interchangeable with *skopos*, cf. Annas (1995), 34; Alpers-Gözl (1976). Annas says that though Aristotle uses them interchangeably, this is unfortunate, for *skopos* suggests an object, the target, while the *telos* of something is not an object, but an activity of the agent. Alpers-Gözl says that the two terms are ‘nearly’ (*fast*) synonyms. The philosophical history of the terms is complex, and made especially so by the Stoics (the principal object of Alpers-Gözl’s study), who distinguished between them in their ethical theory. For the purposes of this chapter, however, we must put aside their post-Aristotelian trajectories.

philosophy. Simplicius, for example, uses it in his commentary on the *Physics*, not least when discussing *Physics* II.8, where Aristotle famously defends the importance of teleology against the seemingly Darwinian views of Empedocles. Philoponus uses it as well, occasionally glossing *telos* as *skopos* quite explicitly.²⁵ And Alexander does likewise, explaining in his commentary on *Meta.* A.3 that ‘even in things that come into being by nature the *telos* is a *skopos*, and the *skopos* exists before [generation begins].’²⁶ But while ancient commentators are quite willing to treat *telos* and *skopos* as roughly synonymous in the natural works, or to elucidate the one in terms of the other, and some contemporary commentators to do the same when discussing Aristotle’s ethical thought, it has not been noticed that the term ‘*skopos*’ occurs exactly nowhere in the entirety of Aristotle’s own natural philosophic works—not once.²⁷ This fact is all the more striking given that his natural philosophic writings are so much more voluminous than his ethical or political ones. And so, given the freedom with which he uses it in his ethical works and its complete absence from the natural ones, we might suppose that in the latter he avoided the term quite studiously.

If *skopos* is nowhere to be found in the entirety of Aristotle’s natural philosophic works, then if we wish to understand the sense of *telos* found therein, we might look instead at that term with which it is contrasted in the principle from *GA* above, ‘*apeiron*’ or ‘unlimited.’ By understanding nature in contrast with what is boundless or unlimited, Aristotle positions himself

²⁵ Cf. e.g. 298, 4, where Philoponus explicates the four causes. He says of form that ‘as not yet existing but being an aim [*skopos*] (for [nature] pursues this) it is an end’. At 310, 12-15, he explains that a monster, being contrary to nature, is not a *skopos* and so neither is it a *telos*.

²⁶ *Comm. Meta.* 22, 13-15.

²⁷ I should add that, though it is used in the *Metaphysics*, it is absent from any relevant discussion of the final cause.

within a pre-existing camp of Greek philosophy generally that stands in opposition to figures like Anaximander and Anaximenes, who identified the *apeiron* as the principle of all things. As the *fons et origo* of all of nature, the *apeiron* is perhaps a good candidate: one might think that what unites all the various things of nature is something not to be identified with any one of them. This stuff—*Urstoff*, as Barnes calls it—has been thought to be qualitatively and spatially undefined.²⁸ Anaximenes, said to be a student of Anaximander, posited something seemingly more definite, air, as the principle, but this too was called *apeiron*—again, it seems, because of its spatial extension and perhaps also its relatively undefined qualities (147). And though coming at the matter from a very different perspective than the Ionians just mentioned, Melissus too thought Being unlimited (*apeiron*) (*Phys.* I.2), and this for two reasons. First, as a good student of Parmenides, Melissus thought of Being as everlasting and ungenerated. But for that reason, Being cannot have either a beginning (*archē*) or an end (*telos*) (383). It must, therefore, be *apeiron* (382). *Archē* and *telos* would seem here to refer to the first and last moments of something's being, and so the thought seems to be that if Being is to be everlasting and ungenerated, then it surely cannot have either of those. But second, Being must be unlimited because it is also, in good Parmenidean fashion, one, and if it were bounded or limited (*peranei*), it would be bounded by something else (384). Boundaries separate two things, or two parts of the same thing, but in either case this would be enough to violate Eleatic *sacra doctrina*. Thus, if Being were characterized by a beginning and end or limits, it would fail to meet at least two of

²⁸ Given the paucity of information, precisely what Anaximander meant by the '*apeiron*' is unsurprisingly a matter of some dispute. That mentioned is one possible interpretation, and the details need not distract us from the main point, namely the ontological primacy of the *apeiron*, the indefinite or unlimited, whatever exactly that may come to. Cf. Barnes (1982); Kirk, Raven, and Schofield, (2004) (henceforth, 'KRS'; Huffman (1993), and McKirahan (2010). Citations of the Presocratics, with the exception of Philolaus, are taken from KRS (2004).

the essential attributes of being, according to the Eleatics, namely unity and eternity: ‘since, then, it did not come to be, and both is and always was and always will be, and has neither beginning (*archē*) nor end (*teleutēn*), Being is unlimited (*apeiron*)’ (381).

The same contrast can be found in the *Philebus* as well. Socrates says of those things ‘susceptible of degrees’ that they admit of a more and a less (26d1-2) and have neither beginning (*archē*), middle (*mesa*), nor end (*telos*) (31a9). Being incomplete (*ateles*), they are unlimited (*apeiron*) (24b1-7).²⁹ For Socrates, like Melissus, then, the *apeiron* lacks both an *archē* and a *telos*. The point seems not to have been a particularly controversial one, and the resonances with the slogan from Aristotle’s *Generation of Animals* and mentioned at the beginning are clear, despite the fact that nothing teleological is at issue. There is no mention of action or motion, seeking or avoiding. In these contexts there indeed appears to be little difference between *telos* and *teleutē*, the latter of which Aristotle rarely uses when speaking of teleology, and uses often in non-teleological contexts.³⁰ Both are limits and both can be opposed to the *apeiron*. Melissus seems to use them interchangeably, and it seems nothing would be lost from the point made in the *Philebus* by replacing *telos* with *teleutē*.³¹ Indeed, what is evidently the same point is made

²⁹ Hennig (2009) cites the same, saying that Socrates, like Aristotle, established a close connection between *telos* and *peras*. I am suggesting, by contrast, that the connection between *telos* and *peras* was not one that needed establishing because that connection was unproblematic and ready-to-hand, constituting one of the very oldest and most secure meanings of the term.

³⁰ Cameron (2002) cites, with no further comment, *Po.* 1450b23-25 as an example of a non-teleological use of the notion of ‘end’ in Aristotle, presumably because there Aristotle uses *teleutē*, instead of *telos*. The suggestion is not without difficulties, however, because there Aristotle is discussing the limits of plot, which is in fact the mimesis of an *action* (*praxis*). As a result, and without more discussion, the example he cites may have more teleological overtones than he would like to admit. A less problematic choice might have been *de Motu* 8, 702a22-23, where Aristotle says that ‘a joint is that which is, on the one hand, the beginning of one thing and, on the other, the end of something else, as has been said.’ A similar remark is made in *de Anima* III.10.

³¹ One also finds, with apparent indifference between the two, both *biotoio teleutē* (e.g. *Il.* VII. 104) and *telos biou* (*Oed. Col.* 1721) to mean ‘death’ in non-philosophical literature.

elsewhere in Plato's corpus with *teleutē* instead. Thus in the second half of the *Parmenides*, he writes 'the end (*teleutē*) and beginning (*archē*) are limits (*peirata*), so the One is unlimited (*apeiron*) if it has neither beginning nor end (*teleutē*)' (137d). Later in the same dialogue, Parmenides says that the One was said to have parts, a beginning (*archē*), a middle (*meson*), and an end (*teleutē*), after which he says that 'all these others are parts of some whole, but that it itself [the whole] has come to be one and whole at the same time as the end (*teleutē*). The end (*teleutē*), I take it, comes to be last (*hustaton*) (153c).'

One finds clear echoes of these thoughts in Aristotle. Indeed, 'echo' is an understatement. He, like the fictionalized Parmenides just quoted, asserts that 'the end (*telos*) comes to be last (*hustaton*)' in *GA* II.3 (736b4-5), and at the very beginning of *De Caelo* (quoted at the head of the chapter) he endorses a form of the preceding thought, which he attributes ultimately to the Pythagoreans and repeats in the *Poetics*: 'a whole is something having a beginning, a middle, and end (*teleutē*)' (1450b26-27).³² What is more, Aristotle says in the *Physics* that 'whole' and 'complete' are 'either utterly identical or very similar in nature, and nothing is complete unless it has an end (*telos*), and the end is a limit (*peras*)' (*Phys.* III.6; 207a12-14). As a result, it would seem that having a beginning, middle, and end is enough to make something not only whole, but

³² In light of the above, some remarks scattered through Aristotle's corpus take on additional significance. He remarks in *De Juventute*, for example, that 'there are three parts into which all complete animals are divided, one by which it takes in food, another by which waste is expelled, and the third mid-way (*meson*) between these' (468a13-15). That the complete animals are divided into *three* parts in particular no longer seems mere chance. (Though it should be mentioned that a parallel passage in *PA* mentions only two parts: II.10; 655b28-31. He there fails to mention the *meson*.) Cf. also *DA* II. 4, where Aristotle says in his account of nutrition that there are three (*tria*) factors: the thing fed (the body), the food, and the feeding agent (soul). And cf. *APo.* A.10, where Aristotle says that 'every demonstrative science is concerned with three things: 'what it posits to exist...the so-called common axioms...and thirdly, the attributes.' In addition, though I do not know what significance, if any, Aristotle would have attached to the parallel, it bears noting that the first plane figure—the triangle—consists of three sides, and the simplest syllogism consists of three terms. It seems likely, given the 'trinitarianism' of the tradition to which Aristotle adverts, that this fact would not have escaped his notice. Indeed, facts like these may very well have been thought of as *evidence* for the claim made in the passage from *De Caelo* above.

also complete.³³ And for Aristotle as for those before him, all three are limits. For this reason, Aristotle can even say, as he does in the *De Anima*, that demonstrations too have a beginning (*archē*) and end (*telos*) or conclusion (*DA* I.3; 407a27-28). And though there might be some (strained) sense in which the conclusion is the goal or aim of a demonstration, the point is really quite simple if we are mindful of the point I have been trying to call attention to: the word for ‘conclusion’ is of course *sum-PERAS-ma*. The root notion, in other words, is that of limit, and the conclusion is the *terminus* of a demonstration, its final point or where it comes to an end. It is for that very straightforward reason a *telos*, and the reason why Aristotle can describe it as such.

Needless to say, the real Parmenides, who thought of Being as characterized first and foremost by limits, was concerned with similar issues. In lengthy Fragment 8, he says that Being is

whole, both single-limbed and steadfast, complete (*teleion*)...motionless in the limits (*en peirasi*) of mighty bonds....Necessity holds it in the bonds of a limit (*peiratos*), which constrains it round about, because it is decreed by divine law that Being shall not be without end (*ateleutēton*)...it is complete (*tetelesmenon*) on

³³ ‘Complete’ here of course translates ‘*teleion*,’ which is also sometimes translated in English as ‘perfect’ and in Latin as *perfectum*. On the basis of passages like these, we can understand why something is perfect or complete when it reaches its end: ‘perfect’ just means ‘thoroughly done’ or ‘finished,’ in the sense that nothing is lacking, i.e. left out or undone, and so because the *telos* is the third of three parts making something whole, once one has reached it, one’s action is whole—lacking nothing—and therefore ‘perfect’ in the sense described.

every side...for in all directions equal to itself, it rests uniformly within its limits
(*en peirasi*).³⁴

We saw above that for Melissus Being was *apeiron* and so had no *telos* or *teleutē*. Here we find the same conjunction of ideas, but where Melissus denied Parmenides had affirmed: nature is limited and, by necessity—divine decree—it has some end (*teleutē*).³⁵ What is more, it would seem that Parmenides thought Being immobile or changeless precisely because of its limits: ‘motionless in the limits of mighty bonds.’ If, however, limits characterize Being and ‘the way of truth,’ i.e. the only way that can really be thought, the implicit suggestion that motion is as such without limits would mean that, for Parmenides, a science of nature, understood in terms of motion, is impossible. Insofar as motion is limitless, it is to that extent unintelligible and belongs more properly to the way of non-being, or at least to the route that mixes being with non-being, the way of mere opinion. The Way of Truth, that is, defines not only the essential characteristics of Being, but also the conditions that any object of knowledge, and perhaps even of thought in general, must meet. Parmenides’ project has for that reason been called a ‘critical metaphysics.’³⁶

³⁴ Onians (1951) has argued that both *telos* and *peras* were originally bonds or bands, ways of binding things and thus of constraining them or compelling them in some way or other, and so with a sort of necessity. Both *telos* and *peirar*, he says, can have something like the force of fate (*moira*), the lot woven by the gods and placed upon human beings. Onians’ citations are numerous, and it would take us too far afield to discuss them, but the relation between them is especially salient and pronounced here. If Onians is right, the connections seen here between the concepts deployed would have been very nearly analytic. Indeed, Parmenides’ inversion of *peirata* and *desmoi* in the two phrases (‘limits of mighty bonds’ and ‘in the bonds of a limit’) is striking, given the postulated senses. Being is here wrapped all around by fetters or bonds, and so is constrained or held fast and motionless, under the power of necessity and fate. In addition, that Parmenides should understand Being as a ‘well-rounded sphere’ (*eukuklon sphairēs*) makes a certain kind of sense, if indeed Okeanos, the *telēeis potamos*, is, as Onians argues, the encircling river—the river which forms a band around the earth.

³⁵ Aristotle clearly sides with Parmenides: ‘We have to conclude, therefore, that Parmenides has spoken more rightly than Melissus, for the latter says that the whole is unlimited, the former that the whole is limited’ (*Phys.* III.6; 207a15-17).

³⁶ Cf. Mourelatos (2008), who uses the phrase ‘critical metaphysics’ (135); and Barnes (1982), who argues, contra Owen, that ‘Parmenides’ starting-point is the possibility, not exactly of rational discourse, but scientific research’ (167), i.e. those properties ‘that must belong to every object of inquiry’ (175). Cf. also McKirahan (2010), 172. In saying this, of course, Barnes does not mean to align himself with Kant.

Among those conditions, it seems, are limitedness, completeness, and unity. For motion to become the object of a science, then, we would need to understand how it, too, could be limited, complete, and one.

Some in later antiquity counted Parmenides among the Pythagoreans, and Diogenes Laertius reports that Parmenides was a student of the Pythagoreans, or at least ‘associated with’ the Pythagorean Ameinias (D.L. IX. 21). Whatever we might think of that association, it is clear that the Pythagoreans too had placed a singular importance on the notion of limit, and indeed the other concepts to which Parmenides appeals. Aristotle reports in *Metaphysics A* that they had formulated a table of fundamental opposites in light of which all things were to be understood:

Limit—Unlimited	Rest—Motion
Odd—Even	Light—Darkness
One—Many	Good—Bad ³⁷

The left-hand term of any given pair possessed of course a certain priority, e.g. good over bad, one over many, rest over motion. ‘Limit’ was one of those opposites, and there is some reason to think that, for the Pythagoreans, the opposition between the limit and unlimited was the *fundamental* opposition, of which those between the one and the many and the good and the bad were but different manifestations.³⁸ And though the evidence for Pythagorean views is quite scarce, we do have at least fragmentary evidence of a certain Philolaus, whom Kahn calls, with Huffman, the ‘clear precursor to Plato,’ at least as far as some of their cosmological principles

³⁷ This is just a portion of the table Aristotle gives in *Metaphysics A.5* (986a21-27), but the other opposites can be safely omitted for my purposes.

³⁸ Cf. KRS (2004), 339; McKirahan (2010), 102; 107.

are concerned.³⁹ Diogenes Laertius, for example, reports second-hand that Philolaus' book began with the claim that 'Nature in the world-order was fitted together both out of things which are unlimited (*apeiron*) and out of things which are limiting (*perainontōn*), both the world order as a whole, and all the things in it' (D.L.VIII. 85). Elsewhere we get the report that 'one cosmos is completed (*apoteleitai*) having been fitted together from opposites, constituted from limiters (*perainonton*) and unlimiteds (*apeiron*) according to Philolaus,' and still elsewhere that 'being is from limit and unlimited (*ek peratos kai apeirou*) as Plato says in the *Philebus* and Philolaus in *On Nature....*'⁴⁰

Granting, then, their importance, we might wonder what exactly the limiters and unlimiteds were thought to be. Indeed, determining just what Philolaus meant by those two terms and what sorts of things played those roles is 'the major problem' in understanding him.⁴¹ Barnes seems to think we are reduced to conjecture, but insists nonetheless that 'conjecture is not difficult.' The conjecture he thinks plausible and intuitive is that limiters are shapes of stuffs, e.g. the shape given to a mass of bronze or the configuration given to timber to make it a table, etc..⁴² For this reason, Barnes says he is 'prepared to credit Philolaus with the discovery of Aristotelian "form"' and even sees fit to title his chapter on Philolaus, 'Philolaus and the Formal Cause.'⁴³ A slightly different view has been offered by Huffman, who thinks that limiters and unlimiteds are

³⁹ Kahn (2001), 30. It's also worth noting that some in later antiquity alleged that Plato's *Timaeus* was more or less plagiarized from Philolaus. Thankfully, we need not pause over the difficulties to be found in the fragments of Philolaus, and efforts to tackle those difficulties can be found elsewhere, e.g. Burkert (1972) and Huffman (1993). Burkert is taken to have established the authenticity of many of the fragments, which were formerly thought to be largely post-Aristotelian forgeries.

⁴⁰ All fragments of Philolaus and their translation are taken from Huffman (1993).

⁴¹ Huffman (1993), 37.

⁴² Barnes (1982), 388.

⁴³ *Ibidem*.

not just shapes and stuffs, but also boundaries and continua, and so we should take Philolaus to be claiming that the intelligibility of the world arises from setting boundaries along different continua. Differences aside, however, Huffman agrees largely with Barnes, saying that ‘Philolaus’ adoption of limiters and unlimiteds as principles makes sense as precisely a development of Presocratic ideas which anticipates Aristotelian and Platonic distinctions in interesting ways,’ and that ‘Philolaus is approaching something akin to a distinction between form and matter.’⁴⁴ It is perhaps for this reason that Aristotle says at *Meta* A. 5 that the Pythagoreans, in apparent contrast to his other predecessors, began to talk about the what-it-is and to give definitions, albeit superficially. They looked more to form than to matter, and Aristotle himself seems to have understood form in terms of limit. Thus, in his metaphysical lexicon (*Meta*. Δ.17), Aristotle lists form as a kind or species of limit in the entry on the latter: “‘limit’ means...the substance of each thing, or the what-it-is-to-be of each thing, for this is said

⁴⁴ Huffman (1993), 52. Onians (1951), toward the close of his discussion of the archaic meaning of *telos*, and well before Barnes and Huffman, connects the original meaning of *peirar* or *peras*, which again he identifies as band or bond, through the Pythagoreans to the later notions of form and matter in Plato and Aristotle. He says that the Pythagoreans were the first to face consciously the problem of universals and explains that ‘its solution once again was spatial and its terms were Homer’s *peirar* and *peirainō*, namely *to peras* or *to perainon*, and that which receives this, *apeiron*; which terms Plato accepts and from which the Aristotelian φαμὲν τὸ μὲν περιέχον τοῦ εἶδους εἶναι, τὸ δὲ περιεχόμενον τῆς ὕλης [*DC* IV. 4] is not far removed.’ Onians also refers to *Phys.* IV.4, 211b12-14, where Aristotle (again) describes form (*eidos*) as a limit: ἔστι μὲν οὖν ἄμφω πέρατα, ἀλλ’ οὐ τοῦ αὐτοῦ, ἀλλὰ τὸ μὲν εἶδος τοῦ πράγματος, ὁ δὲ τόπος τοῦ περιέχοντος σώματος’ [both then are limits, but not in the same way, form being the limit of the thing, place of the surrounding body].

to be the limit of knowledge; and if of knowledge then of the thing also.’⁴⁵ And if in some places he understands form in terms of limit, elsewhere he would appear to understand limit in terms of form. In the survey of his predecessors in *Metaphysics A*, he says that ‘Parmenides seems to conceive the One with respect to form (*kata ton logon*), but Melissus conceives of it with respect to matter (*kata tēn hulēn*); for which reason the former says that it is limited (*peperasmēnon*) and the latter that it is unlimited (*apeiron*)’ (Meta. A.5).⁴⁶ To limit something is to give it shape, form, and definition.

In light of these facts, it is worth returning to Plato’s *Philebus*, which I mentioned very briefly above and which has been thought, both recently and in antiquity, to be deeply indebted to Philolaus’ thought. The subject of the dialogue is, as it so often is, the best kind of life, and Socrates and Protarchus are trying to decide in particular whether that life is defined by pleasure or knowledge. Early on, however, the conversation runs aground on the problem of what might be called specious unities. All pleasures go by the single term ‘pleasure,’ and yet a myriad of seemingly incommensurate pleasures fall under that term. The problem affects Socrates’ position

⁴⁵ It is worth noting also that the notion of limit had an epistemic import for Philolaus just as much as it did for Parmenides, for the former too is interested in the conditions necessary for something to be knowable. He says, for example, that ‘there will be nothing to be known if everything is unlimited,’ and makes a distinction between divine knowledge, which is unavailable to us, and human knowledge. The knowledge of things available to us is made possible by the principles of limit and unlimited. Cf. Barnes (1982): ‘Like Parmenides, Philolaus approached metaphysics from epistemology: Parmenides’ initial question was: what conditions must any object of scientific inquiry satisfy? Philolaus began by asking what things must be like if they are to be known; and the connection between being and knowledge remains prominent in the development of his ideas.’ Similarly, I take it that the connection between being and knowledge is prominent in the development of Aristotle’s ideas, and that there is enough material in his corpus which might be taken as a direct response to the question ‘what conditions must any object of scientific inquiry satisfy?’ It must, at least, be possessed of limits.

⁴⁶ Cf. also *Phys.* IV.4, 211b12-14 (quoted in fn. 44 above), as well as *Phys.* III.6; 207a21-22, 27-30. In the latter passage, Aristotle says that the unlimited is the matter of the complete magnitude, which is potentially whole, and then says that ‘the unlimited as such does not contain (*periechei*), but is contained (*periechetai*), wherefore it is unknowable, *qua* unlimited, for matter has no form. Consequently, it is clear that the unlimited is rather more to be considered a part than a whole, for the matter is a part of the whole, just as the bronze is of the bronze statue.’

as well, since many quite different things fall under the heading of ‘knowledge.’ The problem is supposed to give rise to the question, ‘how exactly can the one be many and the many, one?’ Fortunately, there appears to be a solution, or rather a way or method (*hodos*) through the thicket of problems that this question generates for discourse in general. This way, Socrates says, is ‘difficult to apply,’ but it has also ‘been responsible for bringing to light everything that has been discovered in the domain of any skill’ (*technē*). Indeed, it was

a gift from the gods to men, thrown down from the gods in a blaze of light by some Prometheus. Our forefathers, superior beings to us as they lived closer to the gods, passed on this tradition, that those things which are from time to time said to be are made up of one and many, with limit (*peras*) and unlimitedness (*apeirian*) inherent in them.⁴⁷

After describing the method in greater detail, Socrates says that ‘this is the procedure for inquiring, learning, and teaching each other that the gods have handed on to us.’ There is no small measure of difficulty in determining precisely what the method is, but it seems to consist in resolving things of a single class into their elements (18c7), from which the otherwise unlimited number of members of that class can be derived or explained. So, for example, vocal sound is ‘just a single thing...of unlimited variety,’ but we then distinguish, among other things, high and low pitch (17b). Socrates also mentions musical scales and notes that these provide the limits between the intervals and the grounds of our understanding. He continues by saying that ‘the

⁴⁷ Limit and the unlimited here are glosses on the one and the many, and just a few lines later, it is the one, *to hen*, that is immediately opposed to the *apeiron*. Also, of both interest and importance is the connection between limit, *peras*, and boundary, *horos*. At 17d1, in the context of an example which is supposed to illustrate the principles just provided, Socrates uses *horos*, without any apparent difference in sense from *peras*. Aristotle himself refers in *Physics* III to what is apparently the Pythagorean table of opposites, and says of the items in the one column that they are all *aoristoi*, where we might have expected *apeiroi* (*Phys.* III.2; 201b26). Indeed, in II.8, when discussing the ‘ox-progeny’ of Empedocles, he says that they were ‘incapable of reaching some *horos* and *telos*.’

unlimited (*apeiron*) plurality of anything in any case leaves you with an indeterminate (*apeiron*) grasp of the subject' (17e3-5).

The principles articulated clearly have a very definite epistemic character: all skills owe their discoveries to them, which, again, provide the 'procedure for inquiring, learning, and teaching' (16e3-4). Mere unlimitedness, as we just saw, leaves one with an undefined knowledge of the object since knowledge (and discovery) requires a limit, a *peras* or *horos*. As Philolaus had said, 'there will be nothing that is going to know at all if everything is unlimited.'⁴⁸ If the limits sought are what they were traditionally thought to be—the triad of beginning, middle, and end—then the procedure for inquiring will consist in the search for those very things: the *arche*, *meson*, and *telos/teleutē*. But the limits in question serve more than a merely epistemic or heuristic function, for we see in both Philolaus and Plato the claim that *things* are essentially composites of limit and unlimitedness. That is, these are at the same time *metaphysical* principles (16c9-10, 23c9-10), and these seem again to correspond to the combination of discrete units with a magnitude, as the musical examples suggest. The limits mark boundaries along continua.⁴⁹ The epistemic or heuristic function of limits can thus be explained in terms of their metaphysical import: we know a thing by knowing its limits because a thing is constituted of limit and unlimitedness. Finally, we learn later that the limiting or determining elements in knowledge and things consists in whatever introduces *number* into them, by which they are made commensurate

⁴⁸ Cf. also the remark in the *Introduction to Arithmetic* by the later Pythagorean, Nichomachus of Gerasa: 'sciences are always sciences of limited things, and never of unlimiteds' (trans. D'Ooge 1972), and compare that to Aristotle's remark in the *Posterior Analytics*: 'Qua unlimited, things are not knowable, but qua limited, they are' (ἔστι δ', ἣ μὲν ἄπειρα, οὐκ ἐπιστητά, ἣ δὲ πεπεράνται, ἐπιστητά) (*APo.* 86a5-7).

⁴⁹ If Aristotle's thought is as continuous as I am trying to suggest, one might expect, if forms are limits, that the many species of a genus, e.g. of animals, differ from each other by the more and the less. One might, that is, have some further reason to think that a view like the one advanced by Lennox (1980) should turn out to be the correct one. Meinwald (1998) makes a similar suggestion.

and harmonious (25e1-3).⁵⁰ Philolaus had likewise claimed that ‘all the things that are known have number, for it is not possible for anything at all either to be comprehended or known without this.’⁵¹ The indeterminate class, on the other hand, consists of what is ‘susceptible of degrees,’ those things that admit of a more and a less (26d1-2) and, as we noted earlier, have neither beginning (*archē*), middle (*mesa*), nor end (*telos*) (31a9). It is because they are incomplete or never-ending (*ateles*) that they are entirely unlimited (*apeiron*) (24b1-7).

Returning, then, to the passage from *GA* with which we began, we find there a classic teleological slogan: ‘nature always seeks a *telos*.’ This succinct formula might be said to encapsulate, if by no means explain, Aristotle’s ‘teleological’ view of the natural world. But the contrast expressed in the whole principle—nature flees the unlimited and seeks a *telos* because the unlimited is *ateles*—would have been familiar to those acquainted with disputes over the priority of limit and unlimited in the thought prior to him, because in opposing the *telos* to the *apeiron*, Aristotle is simply following established usage. The *telos* was one of the three limits making something whole or complete, and so Aristotle could invoke the *telos* to forestall the claim that nature is *unlimited* and, therefore, unknowable. But it can only really do this work if it is understood as ‘end’ in the sense of ‘limit.’ And though perhaps *we* do not find the notion of limit or boundary to be a particularly important or central philosophical notion, it is clear that some of the ancients did, and so understanding the *telos* as in the first instance a limit is not in any way to minimize its importance. Taking it to mean simply ‘goal’ or ‘aim’ simply obscures the philosophic history of the term and prejudices our understanding of Aristotle’s teleology. The

⁵⁰ Cf. Aristotle’s claim that the principle of number, the one, is the principle of the knowable (*Meta.* Δ.6).

⁵¹ Fr. 4 in Huffman (1993).

term would have had profound philosophical importance among his contemporaries precisely *because* it meant in the first instance ‘end’ in the sense of ‘limit,’ *not* because it could also mean ‘goal’ or ‘aim.’⁵² Given the contrast Aristotle thinks it important to draw (in the context of the generation of animals, no less) we might begin to suppose that the oppositions in light of which we ordinarily understand purposiveness are not Aristotle’s, and that Aristotle’s ‘teleology’ is, at least in part, intended as a response to questions and problems different from our own, even if the domain of objects to which it is said to apply most paradigmatically is largely the same.

2.2 ARISTOTLE’S CRITICISM OF HIS PREDECESSORS⁵³

If Aristotle can be said to agree with Plato and the Pythagoreans on the importance of limits, he disagrees with them on the prospects and methods of a science of nature. The latter ‘having been brought up in [the study of mathematics], regarded the principles of mathematical objects as the principles of all things’ (*Meta.* A.5; 985b25-26). Even though they do try, to some extent, to give accounts of the sensible world—claiming that sensible things in fact *are* numbers

⁵² It is worth noting again (fn. 48) Aristotle’s conjunction of *horos* and *telos* in II.8. That would have been an opportune time to gloss *telos* as *skopos*, as some later commentators did, but instead he glosses *telos* with a synonym of *peras*, suggesting that it is the sense of *telos* as limit or boundary which is doing real philosophical work, even in this most teleological of all chapters. Aristotle is not trying to show us how to understand talk of ‘goals’ in a naturalistic way, because he simply does not think of the *telos*, at least primarily, as a goal.

⁵³ Lennox (2008) provides a compelling account of how Aristotle navigates between the materialist theories of thinkers like Democritus and the excessively mathematical theories of Plato and the Pythagoreans, which is the theme of this section. Like Lennox, I think it is Aristotle’s understanding of natural substance in teleological terms that allows him to avoid the two opposing errors. I will go on to articulate that understanding in slightly different terms, though nothing said will conflict with the account he gives. As we shall see, Aristotle’s innovation is grounded on a distinctive appreciation of Platonic and Pythagorean insights.

—the principles and elements they thought appropriate to explain it were ‘more foreign than those which the natural philosophers use’ and ultimately lacked the machinery necessary to understand motion or change (*Meta. A. 8*; 989b30).⁵⁴ Plato, on the other hand, subscribed to a Heraclitean view of nature, and believed as a result that no science of it was possible. Consequently, the objects of knowledge, i.e. the Forms, must be distinct from the sensible things, because there can be no definition of what is always changing (*Meta. A. 6*). The problem, however, is that these Forms do not, in Aristotle’s eyes, contribute anything to our understanding of those things (*Meta. A. 9*):

what do the Forms contribute to the eternal things among the sensibles or to those which are generated and destroyed? For they are not the causes of motion or of any other change in them [...] Any chance thing may be or become like another thing without even being copied from it [...] No thing which participates in something is generated unless there is a mover [...] The whole inquiry into nature is discarded (991a9-11; a22-23; 991b4-5; 992a9).

Because of the Heraclitean flux, Plato postulates separated Forms. Because of their separation, Aristotle thinks they cannot explain anything in the natural world. Forms, one might have thought, are supposed to account in some way for those sensible things participating in them. But if the relation between some particular and the Form(s) in which it comes to participate is not to be simply a brute fact, we must be able say *why* the thing comes to have the form it does. One needs perhaps to be able to identify some mover or *archē* from which the motion proceeds. In the absence of any such cause or explanation, there are no clear constraints on why a thing comes to have the shape or form it does, and so it would seem that any chance thing may be or become like any other.

⁵⁴ Aristotle cites their disciplinary parochialism as the explanation, but we might also surmise that the relative superficiality of their definitions permitted a rather promiscuous application of mathematical definitions to non-mathematical things.

Aristotle is no more satisfied with the *physiologoi*, the investigators of nature, for these investigated only the material and efficient causes, and even then only as through a glass darkly: ‘the thinkers up to the time of Empedocles appear to have touched upon two of the causes...the material cause and the moving cause, but lightly and not at all clearly, as untrained men box in fights’ (*Meta.* A.4; 985a11-13). All things were variously water, fire, or combinations of such basic elements, and though they investigated what matter is and how things come to be in matter, whether through strife or friendship or mind, they never moved on to the other two causes that Aristotle so clearly thinks are essential to any account of the natures of things (*PA* I.1; 639b413-16), the formal and final causes.⁵⁵ People who talk only about wood can never tell us what exactly a bed is or what we might ordinarily take to be its parts, such as the headboard and the footboard and whatever else there may be (*PA* I.1; 640b20-25). Thus, Aristotle thinks the *physiologoi* missed out on real investigation into the sorts of things that we ordinarily take to be paradigmatically natural beings, like sheep and goats. To the extent that his predecessors investigated such things, it was often only the stuff they are made of, and so they essentially eliminated all the differences between them: the difference between goat and lamb is scarcely relevant if one is only after the nature of fire. In so doing, they also failed to notice the importance of the distinction we make between what is really a hand and what merely looks like one (*PA* I.1; 640b35-641a1). Two things may possess the same outward shape or even be made of the same basic stuff, and yet one may be capable of moving in a way the other cannot. A real hand is able to do very definite things, to move and change in very specific ways. Because a real

⁵⁵ He does say at *Phys.* 194a18-20 that Empedocles and Democritus made some use of form, but only very limited use. At *PA* 642a17, he says that Empedocles occasionally ‘stumbles upon’ the formal cause, as if forced by the truth itself.

hand can act in ways a stone hand cannot, we say that the real hand has certain capacities or abilities, just as vision belongs to the eye and is said to be the form or soul of the eye itself. The failure of his predecessors, in this regard, seems to be due in no small measure to their ignorance of the formal cause—i.e., there was no ‘what it is to be’ or ‘defining of substantial being’ (*PA* I.1; 642a24-27). Natural things are defined by what they characteristically *do*, how they act or move, and Aristotle only ascribes real advances in the practices of defining to the time of Socrates (*PA* I.1; 642a30). Even then, however, definitional inquiry was applied only to practical matters, i.e. the realm of virtue and politics, while interest in nature waned.

The dialectic we find between these two camps generates a certain problem, one all the more pressing if we keep in mind Aristotle’s own general insistence on form, suitably construed, and definition. Though Aristotle is not a Platonist, he certainly prioritizes form and thinks of material and efficient causation in terms of it: the matter of a thing is relative to its form, and it is in virtue of having the form that it does, being of the sort that it is, that an efficient cause causes what it does non-accidentally. In that sense, the importance of form cannot be over-stated. But Aristotle complains that those thinkers who most of all contributed to definition and employed the notion of form were least of all interested in or successful at natural inquiry. The Pythagoreans, as we saw, made the mistake of employing mathematical principles for all things, which are foreign to the subject matter of physics. Plato, by contrast, simply thought the sensible world unknowable, and he, or those who insist on the Forms, turn all philosophy into mathematics (*Meta.* A. 9; 992a33-b1). On the other hand, the *physiologoi* lacked the formal cause and the knowledge of definition that provides the cornerstone for scientific demonstration. Given Aristotle’s recognition of the importance of form, which is necessarily unmoved if it is to

be an object of knowledge, and his simultaneous insistence on the importance and possibility of a science of nature, which studies moving things, we must ask how one can reconcile these two camps and what such a reconciliation might contribute, if anything, to an understanding of the final cause.

Unfortunately, Aristotle is not as forthcoming about his solution as we might like. One might think that the problem can be resolved by the so-called ‘mixed sciences,’ which seem to incorporate both formal and material elements.⁵⁶ But as Lennox argues, this requires an unpalatable ‘bifurcation’ in the study of nature between the *physikos* and the mathematician, where the one provides the *hoti* and the other the *dia ti*, the one the fact and the other the cause or reason why.⁵⁷ A genuinely single science of nature will require instead uniting the material and formal aspects previously thought to belong to the *physikos* and mathematician, respectively. Part of what is lost in the mathematizing approach to nature is the thought that it belongs to natural objects as such to *change* or *move*, and any account of form which ignores this fact will fail to make the distinctive character of *natural* being perspicuous.⁵⁸ Natural things are dynamic—they have *dunameis*—but to treat of something mathematically is to treat certain of its features as if they were independent of the bodies in which they are found, i.e. the bodies that actually do the moving or changing. Lennox argues that the reconciliation is a teleological one: the unity between formal and material explanation is achieved precisely through the purposive relation of matter to form, where the former comes to be and is for the sake of the latter. While this seems right, there is, however, nothing yet to dissuade us from thinking of the *telos* as a quasi-

⁵⁶ Cf. Lennox (2008) on this.

⁵⁷ *Ibidem*, 150, 160.

⁵⁸ *Ibid.*, 168-9.

intentional object on the part of non-conscious nature—the object of nature’s ‘seeking’. If then it is necessary to understand how form might enter into a unified, as opposed to a mixed, science of nature, and if nature is essentially characterized by motion, we might begin with an effort to understand how or in virtue of what form belongs to motion.

2.3 KINĒSIS

We saw earlier that Aristotle’s predecessors understood the *telos* to be a limit and that, as consequence, having a *telos* was incompatible with being unlimited. We have seen some evidence that Aristotle thought likewise, and we shall see still more in what follows. But we have also seen evidence that Aristotle understood limit to be a source of *form*, and understood unlimitedness to be a kind of *matter*. Importantly, *motion* was among those things thought to be unlimited and, therefore, to lack a *telos*. This would also mean, then, that motion was thought to lack form. When therefore in *Physics* II.1 Aristotle defines nature in terms of motion, he might seem to be saying that unlimitedness (and thus formlessness) belongs essentially to nature and natural things. If so, he would seem to be committed to the thought that natures or natural motions lack ends (*telē*). But as we have seen, he also thinks the unlimited is as such unknowable (e.g., *Phys.* I.5; 187b7, *Meta.* α.2; 994b17-28, *APo.* I.24; 86a5-6), which means anything knowable must possess limits and be knowable precisely in virtue of them. Consequently, knowledge of natural motions requires that they be limited or have limits in some sense or other, and this is as much as to say that they must have form. If we understand the problem Aristotle is

addressing in this way, then we can start to see how the *telos* might be essential to the possibility of a science of nature: motion is knowable precisely because it possesses a *telos* and limit. And because it possesses a *telos* and limit, it possesses form. Aristotle's account of natural motion would then be 'teleological' in just that sense. In what follows, I outline Aristotle's definition of motion and explain why motion had been thought to be unlimited. I then identify a sense in which, Aristotle thinks, motion has limits, one of which is the *telos*.

In *Phys.* III.1, Aristotle defines change as the actuality (*entelecheia*) of what is in potential, insofar as it is in potential (*Phys.* 201a27-29, 201b3-4). Such a definition is far from transparent to be sure, but it will be sufficient for our purposes just to sketch the thought in broad outline.⁵⁹ Daniel Graham, in particular, urges us to pay close attention to the examples Aristotle gives, which he says have suffered undue neglect.⁶⁰ Those examples all follow the same pattern: in each case, motion is the *V*-ing of the *V*-able, where these are marked by a verbal adjective ending in -τός on the one side, and a verbal noun marked by -σις on the other. Thus, the actuality of the build-able is the process of build-ing, or of the alter-able the process of alter-ing. The verbal adjective and the verbal noun are both formed from the present stem, and Aristotle is clear

⁵⁹ There is a significant literature on Aristotle's account of motion, which I cannot here explore in any great detail. Kosman's (1969) has been singularly influential, and has found support in Waterlow (1982), and Gill (1984). There are, however, dissenters, e.g. Kostman (1987) and Graham (1988). More recently, cf. Anagnostopoulos (2010) and Charles (2015). Graham takes Kosman's view to have become the standard reading and seeks to rebut what he calls simply 'the Kosman view,' only mentioning Waterlow and Gill as further iterations of the view he takes to be fundamentally flawed. The disagreements between Graham and Kosman are less significant than Graham takes them to be, however, which is not to say that there are no real disagreements. Part of the difficulty is the notion of 'process' operative in each, for Graham affirms, while Kosman denies, that Aristotle defines motion as a process. Though Graham thinks that motion is a process, it is not a 'process of actualizing a potential,' where that means the process of a motion coming into being, which is the error Kosman endeavors to correct (1969), 45. But Graham does deny that Aristotle's definition depends upon the distinctions between first and second actuality found in *De Anima*. The conclusions I ultimately draw about Aristotle's teleology are perfectly consistent with all the accounts of motion mentioned, though Graham's lends a particular kind of support lacking in the others, as we shall see.

⁶⁰ Cf. Graham (1988).

in his use of the present when explicating the examples used: ‘whenever the buildable *is* in actuality, it is being built (*oikodomeitai*), and this is building (*oikodomēsis*)’ (201a17-18). The buildable, sitting idly in the brickyard, is merely buildable. The *motion* of building, on the other hand, i.e. the ongoing building itself, is the actuality of the buildable, precisely insofar as it is buildable. The actuality of the potential in question can be expressed by a verb of the ongoing action, e.g. is learning, is healing, is leaping, and the broader point is analogous to more familiar act-potency relations: the bricks in a house actually constitute a house, as its matter, but the bricks in the brickyard are potentially (the matter of) a house, becoming so only on the occasion of being suitably assembled. Similarly, the buildable is as such the matter of the corresponding motion, the actuality of which—the activity of building—arises only when set upon by a builder.

Most essential for our purposes is the progressive aspect of the present stem and the terms built from it, i.e. the abstract ‘process’ nouns ending in -σις. It is for this reason that Graham says the definition of motion we find in III.1 is the definition of motion not as a state, but as a process. Graham cites his debt to Mourelatos (1978), who, with the help of work done by linguists and grammarians, had developed certain lines of thought suggested by Zeno Vendler and Anthony Kenny. Mourelatos had sought to delineate three different categories of verbal predication: process, event, and state. Linguists and grammarians had customarily distinguished between stative and processive predications (the latter sometimes called ‘eventive’, unfortunately), e.g. ‘Helen knows Greek’ and ‘Helen is learning Greek’.⁶¹ Stative predications do

⁶¹ Binnick (1991), 179, says ‘one difficulty with writings in this area is that there is a manifest terminological confusion. The same term, for instance *process* or *event*, may be used in different ways by various authors....’ Tenny (2000) expresses the same frustration.

not admit of progressive aspect, e.g. ‘Helen is knowing Greek’, whereas processive ones do.⁶² In addition, one cannot in the case of a processive predication infer to a statement in perfective aspect: that Helen has learned Greek by no means follows from ‘Helen is learning Greek.’ The same is not to be said of stative predications: if Helen loves her father, then she has loved her father—there is no durative or progressive sense of ‘love’ available here.⁶³ But while linguists have customarily distinguished between stative and eventive verbal predications, under which uses of progressive verb forms are generally classed, Mourelatos thinks processes need to be marked out as a category distinct from events.⁶⁴ While processes are marked by ‘progressive’ or ‘imperfective’ aspect, events are marked by ‘perfective’ aspect: ‘Jim is building the house’ vs. ‘Jim built the house.’⁶⁵

Aristotle himself is often concerned to draw the distinctions among verbal predications just described, and those distinctions have been taken to be manifestations of more fundamental

⁶² There are a variety of further features that mark the difference between stative and non-stative verbs or verb predications, e.g. only non-statives can occur in an imperative: ‘Push the cart’ but not ‘Know the answer.’ Cf. Binnick (1991) and Lakoff (1966). Graham (1980) argues that *energeiai* in Aristotle correspond with state predications. There he aims to elucidate the infamous passage in Θ .6, where Aristotle distinguishes between *energeiai* and *kinēseis*. For more recent work on this, cf. Beere (2009) and Burnyeat (2008), who like Graham draw attention to the important features of the Greek perfect and so the linguistic nuances involved in the passage.

⁶³ Beere (2009) and Burnyeat (2008) argue that the present and the perfect in such cases are mutually entailing.

⁶⁴ E.g. Sihler (1995), 445, who classifies statements in progressive aspect under ‘events’, along with those eventive forms identified by Mourelatos, namely achievements and developments.

⁶⁵ Cf. again Binnick (1991) for a variety of expressions thought to differentiate events from processes. E.g. process predications take the expression *for x time*, while event predications will take *in x time*: ‘John walked for an hour’ vs. *‘John walked in an hour.’

features of language and thought.⁶⁶ In particular, the difference in aspect between process and event predications has been thought to correspond to the nominal distinction between mass- and count-nouns, respectively.⁶⁷ Count-nouns are of course those nouns which can be modified by adverbs like ‘many,’ ‘few,’ ‘several,’ etc. One can have several cats, or few cats, seven or two cats. By contrast, mass-nouns are modified by adverbs like ‘much,’ ‘little,’ or ‘enough,’ and often designate homogenous stuffs, like water or air. Mass-nouns, that is, are quantified indeterminately by comparison along a scale, not by the enumeration of discrete units. To make the measurement more precise, one measures what is referred to by mass-nouns with count nouns: a cup of flour, a pinch of salt, and a dash of cinnamon. Event predications are thought to correspond to count nouns because only event predications are capable of being transformed in such a way as to be subject to a count. That is, for any event predication, the verb can be nominalized and then serve as the subject for an existential claim. Mourelatos gives as examples ‘Vesuvius erupted three times<—> There were three eruptions of Vesuvius,’ and ‘Mary capsized the boat<—>There was a capsizing of the boat by Mary.’ By contrast, no such

⁶⁶ Aristotle’s interest is perhaps most evident in the (in)famously difficult conclusion to Θ .6, already mentioned, where he distinguishes between *energeiai* and *kinēseis*. On ‘Aristotelian’ aspect theory, cf. Binnick (1991), ch 6. Beere (2009) resists, indeed rejects, the idea—endorsed by Graham—that in Θ .6 Aristotle gives us a linguistic ‘test’ or ‘model’ for determining whether a given action is an *energeia* or a *kinēsis*. He criticizes those who, perhaps like Mourelatos and Graham (he does not mention them), unduly assimilate Aristotle’s metaphysical concerns to the purely linguistic concerns of Ryle, who himself took interest in the chapter. Graham need not be taken to mean that Aristotle is offering a decision procedure, however: certain linguistic features can be said to correspond to certain categories of doings, without yet counting as a rule, just as examples of justice with a general characterization of justice do not provide a ‘test’ for classifying actions as just or unjust. Mourelatos himself is clear that in any given case, how something is to be classified is not necessarily determined *solely* by aspectual marking. Cf. his (1978), 421.

⁶⁷ Mourelatos (1978), 424; Taylor (1977), 210ff. ; Tenny (2000), 5. Graham (1999) suggests that Aristotle at the end of *Meta*. Θ .7 recognizes the connection between mass-nouns and process predication verbs, for there Aristotle seems to say that progressive forms like ‘walking’ correspond to their countable instances (‘a walk’) as matter to some substance, some *this*. The linguistic literature on this topic has described the distinction between what is here called the process/event distinction as the ‘bounded/non-bounded’ distinction, the ‘telic/atelic’ distinction, or the ‘delimited/non-delimited’ distinction. Cf. Tenny (2000), 5.

construction is available in the case of ‘Peter was painting the Nativity.’ ‘There was painting of the Nativity by Peter’ is rather more like ‘there was water in the basement.’ Similarly, if one says, ‘Jon was writing his dissertation,’ we can ask how much of it he wrote, whether a lot or a little. But if it is said that ‘Jon wrote his dissertation’, though we might ask how long it was, we could not ask how much of it he wrote.

Processes, then, would seem to have a character analogous to mass nouns, which is to say that they are subject to ‘the more and the less’. For that reason, they would seem to have the character of the *apeiron*, and this is consistent with Socrates’ remark in the *Philebus*, seen above. If the account of motion that Aristotle gives in *Physics* III.1 is an account of motion as a process, as a consequence of which it has the character of the *apeiron*, then given that the limits of *archē*, *meson*, and *telos/teleutē* traditionally furnish intelligibility to what would otherwise be unintelligible precisely because *apeiros*, we might expect that someone who understands motion in this way will understand the task of natural philosophy to consist, at least in part, of finding and discerning those limits in natural motion, i.e. its *archē*, *meson*, and *telos*.⁶⁸

But this is too quick. Because Aristotle denies that motion is in fact unlimited, it must be the case that every motion is limited. Aristotle says on a number of occasions that all motion is from something to something (*Phys.* V.1; 224b35-225a12; VI.5; 235b6-7, VI.10; 241a26-28;

⁶⁸ The reconciliation between the two camps described above in §2 also of course depends on Aristotle’s understanding of the act/potency distinction, which his predecessors lacked. Without that distinction, one is forced to assign motion unqualifiedly to either one or the other of the two columns of opposites, which Aristotle mentions in III. 2. But Aristotle’s ‘teleology’, as I understand it, simply would not have been available to earlier thinkers who did not subscribe to the Platonic-Pythagorean conception of limits, or understand motion as an extensive magnitude falling under the general category of ‘the More and the Less’.

On the analogies between process predications and spatial quantities, cf. Smollett (2005), and Jackendoff (1996). The analogy is of course clear at the very beginning of Aristotle’s discussion of motion, for as we noted, he says that motion belongs to the class of continuous things (*Phys.* III.1; 200b16-20).

Meta. K.12; 1068a23-25; Z.7; 1032a13-15), and he takes this to be a relatively common sense view of the matter. Indeed, he says the word, *metabolē*, indicates this since it just means ‘something thrown in after another’ (*Phys.* V.1; 225a1-2). But he also takes this to be the reason why motion cannot actually be unlimited (*Phys.* VI.10; 241a26). All motion is between opposites and with an underlying subject: the child, previously uneducated, becomes educated, and the buildable, previously unbuilt, becomes built. The opposites fall under some one of the categories and they will, for that reason, consist in something predicable of the underlying subject. In other words, motion is circumscribed or limited by the possibilities of affirmation and denial because the something that comes to be or into what something changes must be something we can say of or deny of some subject. Thus, even though Aristotle takes motion itself to have the character of the *apeiron* and, consequently, to be *ateles*, we can see that what he must mean is simply that motion qua motion is incomplete because it constitutes the *meson*, as it were, lying between that from which it begins and that towards which it proceeds, where these can be described in simple categorical statements of the form ‘x is A’ and ‘x is B.’⁶⁹ It is in this sense that every motion must be marked by limits (*perasi*) (*Phys.* VI.10; 241b11), and in the *De Caelo*, Aristotle says precisely this:

"Change in general is a change from something to something, and these two states are different in form (*eidei*). Now every change is within fixed limits (*peperasmene*), e.g. for a patient who is being cured it is between sickness and health...This must also be true for that which is being moved locally...therefore fire and earth do not move to infinity (*eis apeiron*), but towards opposite points (*eis antikeimena*); and in speaking of place, the opposition is between top and bottom, so that these will be the limits (*perata*) of their movement (*DC* I.8; 277a14-17, 19-20, 21-23).

⁶⁹ Cf. *Meta.* α.2, 994a26-29: ‘something which *has* become comes from that which *is* becoming...For just as becoming is always in between (*metaxu*) being and non-being, so is that which is becoming between what is and what is not.’

Motion is thus defined to the extent that it is bounded by limit and form (*eidos*), just as some quantity of bronze is defined by its shape and form. In the case of motion, shape and form are given by those values one provides for the the two ‘somethings’ in the formula ‘from something to something.’⁷⁰

If the above is the sense in which motion is limited, it would be natural to suppose that the second of the two somethings is the *telos*, for that is where motion comes to an end. A thing is no longer whitening when it has become white, and a person is no longer learning when they have become learned. And this is indeed Aristotle’s thought. In the passage from *De Caelo* just quoted, he had said that all change is from something to something, and then argued that this is just as true of local motion:

Fire and earth do not move to infinity (*eis apeiron*), but towards opposite points (*eis antikeimena*); and in speaking of place, the opposition is between top and bottom, so that these will be the limits (*perata*) of their movements...there must therefore be an end (*telos*), and motion cannot go on without limit (*eis apeiron*)’ (*DC* I.8; 277a21-23, 27-28).

If the opposites are the limits, the *telos* is one of those opposites, and in particular that into which something changes. In the case of the elements, these opposites are their respective natural places, and they move to these as to their form (*DC* IV.3; 310a35-b1). And in the *Parts of Animals* he says the same: ‘everything coming to be is in passage from something to something,

⁷⁰ Graham (1980) cites Ackrill (1965), who had said that ‘the whence and the whither [*ek tinos eis ti*, presumably] constitute the form’ of a motion. The linguistics literature on the topic has often put forward a similar claim, arguing that the object of the verb determines the category into which it falls, whether process or event. In particular, quantized objects of verbs of motion yield ‘delimited’ or ‘telic’ readings of the actions involved, which is to say, actions for which there is a measure of completeness. Thus, to use the example Mourelatos gives on this point: ‘He played a Mozart sonata’ vs. ‘He played a little Mozart.’ The former is an event predication, the latter activity. On this, cf. Mourelatos (1978), Tenny (1994) ch.2, Smollett (2005). If this is right, then substance, which is most of all one and thus countable, would be the paradigm case of a limit and *telos* of motion, because it most of all would confer a measure of completeness on the motion. In other words, the primary *telē* would be natural organisms.

from an origin...towards some shape or another such *telos*' (*PA* II.1; 646a31-33). In finding the limits of motion, we have thus also found the *telos*: it is the outer bound of a motion given by the second 'something' in Aristotle's formula, 'from something to something.' As we have already seen, 'the end (*telos*) comes to be last (*hustaton*)' (*GA* II.3 736b4-5), and only when it has come to be is the motion thereby complete—no longer *ateles*—for as we have also seen, 'nothing is complete unless it has an end (*telos*), and the end is a limit (*peras*)' (*Phys.* III.6; 207a12-14). It is because it has a *telos* that motion does not go on without limit (*eis apeiron*), and it is in virtue of this that motion is ultimately possible at all: 'if generation and motion are to be, there must also be a limit (*peras*); for no motion is unlimited (*apeiros*), but every motion has an end (*telos*)' (*Meta.* B. 4; 999b10-11).

To conclude this section, I want only to draw the reader's attention to a point which will be essential in what follows. In the passage from *De Caelo* above, Aristotle says that motion is between two states differing in form, and in the schematic characterization I gave according to which in any given motion we move from 'x is A' to 'x is B', there was no indication of any internal complexity between the opposed predicates, A and B. The two terms of the opposition are not in fact on a par, however, even though nothing said thus far would indicate a difference between them. The opposites in question are just those identified in Book I of the *Physics*, which were there judged to be two of the necessary principles of motion, along with the underlying subject to which those opposites are said to belong (e.g. *Phys.* I.7; 190b35ff). In particular, it is clear there that he understands this trio of principles to consist of form, matter, and privation, (*Phys.* I.7; 19b23-28), and Aristotle thinks of opposites in terms of form and privation quite generally. These are the same principles identified again in the early chapters of *Metaphysics* Λ,

in which he says that among the principles and causes of all things are form, privation, and matter, where the first two are the opposites, the last their subject. Thus in *Meta.* Λ.2, after discussing motion, he says that ‘the causes and principles, then, are three; two of them are contrary (*enantiosis*), of which one is the account or the form, and the other is the privation, and the third is the matter.’ In the passage from the *De Caelo* above, he can attribute ‘form’ to each of the two opposites, even if it applies strictly speaking to only one of them, since ‘we even say that nonbeing *is* nonbeing’ (*Meta.* Γ.2; 1003b11). And in *Phys.* I, Aristotle had talked about matter and privation being one in number, but different in ‘form,’ using the example of the uneducated person, where what it is to be *uneducated* and what it is to be a person are each different. Clearly, the ‘form’ in question is a privation.

2.4 SOME DIFFICULTIES CONCERNING GENERATION

In the above, I have been summarizing certain aspects of Aristotle’s account of motion in general, in accordance with his dictum that ‘the study of what is special to this or that kind of change is subsequent to the study of what is common to them all’ (*Phys.* III.1; 200b23-25). Nonetheless, one might think that there are unavoidable difficulties in assimilating generation or substantial change to change in the other categories, like place or quality. In particular, there is the difficulty is that nothing is opposite (*enantion*) to a substance, and so ‘there is no motion

(*kinesis*) with respect to substance' (*Meta.* K.12; 1068a11-12).⁷¹ Indeed, in the *Generation of Animals*, Aristotle discusses the senses in which something can be said to come 'from something,' which is one half of the oft-repeated principle that change is 'from something to something,' and which I just tried to illuminate. We are given four possibilities: (1) as day comes 'from' night; (2) as a statue is formed 'from' bronze; (3) as a person may become sick 'from' health; and (4) 'cumulatively', as from slander comes an abuse, and from an abuse a fight (*GA* I. 18; 724a18-35). In determining the appropriate sense in which natures arise 'from' semen, Aristotle immediately rejects both (1) and (3). The first sense of 'from' is merely that of 'after.' The third sense Aristotle understands in terms of destruction: what comes to be destroys that from which it comes to be, as sickness destroys health, and so Aristotle seems to think that coming 'from' an opposite is essentially destructive, which is clearly inadequate if we are talking about generation. Aristotle makes a similar distinction in *Meta.* *α.2* (and in *DA* II.5), where he says that the changes 'from' air to water and vice versa are unlike changes from boy to man because the former are, again, destructive, while the latter completes what is in the process of being completed. One might think, therefore, that substantial change is really quite different from change between opposites. Not only do substances have no opposite (*enantion*) to come 'from,'

⁷¹ There is of course a further difficulty about the matter of generation in organized beings, which would seem not to pre-exist the being in the way that bronze pre-exists the statue. This has received no little attention, but it would take us too far afield to discuss it here. Freeland (1987) argues that the persisting matter is the blood, present as the matter in the adult but also the matter of the embryo. Cf. for example, *PA* II.4: 'blood is the matter of the entire body.' Henry (2015) criticizes this claim, denying that the persistence or survival of an underlying subject throughout a change is a requirement on any and all changes. Though I am sympathetic with Freeland's claim, my argument does not depend on it. Cf. also Gill (1991), ch. 3. Since my questions concern the *metaphysical* foundations of teleology, it is only important for my argument *that* Aristotle should think there is matter for generation, not any particular view about *what* that matter is, concretely. In other words, one could have a whole host of views about *what* the matter of generation is, so long as one held *that* there is some matter, and it would be compatible with the view put forward. Of course, *what* exactly that matter is supposed to be is interesting in its own right, but investigating it would take us too far afield from the project of this dissertation which, especially given the scope of the topic, must be selective.

but given our interest in teleology, change from such opposites seems even to be the wrong sort of change to focus on, if the latter is essentially destructive. We want, that is, the sense of ‘from’ present in talk of ‘from a boy to a man.’

Such an objection rests on an excessively narrow understanding of ‘opposite.’ We need to take ‘opposite’ in the broadest possible sense, i.e. *antikemeinon*, which we saw in the passage from *De Caelo* above and which includes not just those things admitting of intermediates, i.e. *enantia* such as hot and cold, but also contradictories, e.g. being a man and not being a man, between which there is no intermediate (Cf. *Meta.* Δ. 10). In *Physics* I, Aristotle uses the language of ‘*enantia*’, rather than what seems to be the broader ‘*antikeimena*.’ As a result, one might think that there is perhaps a tension between the claim in the *Physics* that all change is from *enantia* and what appears to be a denial of the same in *GA* (*Phys.* I.5; 188a19, 188b23, 191a5; *GA* I.18; 724a14-b4)). There is, however, every reason to suspect he means to be more inclusive in his discussion in the *Physics* than the use of *enantia* might otherwise suggest. Indeed, it is clear in I.7 that his account is meant to apply to plants and animals, since he explicitly mentions them (190b3-5). The problem there is not whether or not substances have an *enantion*, but whether or not there is also some need for a substrate (there is): it seems not to be the case that something comes to be a substance, but rather that substances come to be *simpliciter*. Nonetheless, one still needs matter, he says. To that extent, Aristotle does wonder whether or not substances fall outside of his three-element schema, construed as matter plus opposites, but that wonder extends only to one of those elements, namely matter, *not* the contrary, and one might have thought that since he pauses to consider whether substantial change is an exception in the one respect, he would have considered the other as well. But he does not.

Furthermore, in *Meta.* K.12, for example, Aristotle says quite explicitly that both motion (*kinēsis*) and generation are change (*metabole*) ‘from something to something’ (*ex allou eis allo*) i.e. changes ‘into opposites (*antikeimena*),’ albeit each in their own way (1068a23-26). And in Λ. 2, he lists substantial generation with the other kinds of change, saying that they are all changes *eis enantioseis* (1069b14). Finally, the example Aristotle uses for ‘from’ in the sense of completion in *Metaphysics* α.2, ‘from the boy comes the man,’ is one of the examples he uses in *GA* for ‘from’ in the sense of ‘after’ (I.18; 724a23). As a result, we should not think that where an example is placed in the discussions exhausts the senses of ‘from’ relevant to understanding that example. More than one sense of ‘from’ can apply to a given example: changes outside the category of substance can be in some sense destructive of that ‘from’ which they come while at the same time completing that ‘from’ which they come, taken in another sense.⁷² What I have said above, then, would apply as much to substantial generation as to anything else.

2.5 DEATH AND THE DIRECTION OF MOTION

I have been arguing that we might understand Aristotle’s teleology as a response to the problem of the apparently unlimited character of motion. As we have seen, the unlimited is as such unknowable, and Aristotle defines nature in terms of motion. If nature is to be knowable, then, motion must be limited in some way. It must, in other words, have limits. As I have shown, for Aristotle and for others, the *telos* was such a limit, and whatever was thought to be unlimited

⁷² Indeed, one might plausibly think that the destructive sense of ‘from’ characteristic of opposites is applicable even in the case of a boy, e.g. Billy, becoming a man, for in becoming a man, Billy is to that extent ceasing to be boy until, at last, he is no longer a boy at all.

was thought thereby to lack a *telos*. Motion could, therefore, be knowable if motion were to have a *telos*. I then explained the sense in which motion has limits, and argued that one of those limits was in fact the *telos*. Consequently, knowledge of natural motion is possible, and it is possible at least in part because it has a *telos*—a limit. This is the sense in which Aristotle’s understanding of motion is essentially teleological.

If we were to stop here, however, Aristotle’s account of motion would not be recognizably ‘teleological’ as we typically understand that term. Thus far, I have argued only that motion as Aristotle understands it is delimited by opposites and that the second opposite, that towards which motion proceeds, is the *telos*. On these grounds, there seems nothing to rule out dying as a teleological process, and it is anything but. If we were to understand Aristotle’s teleology as it traditionally has been, however, it would be easy to say why death is not a *telos*: it is not a goal for living things, i.e. not a *skopos*, and so not something at which they can be said to aim. Death plausibly is, however, a limit, for it is that beyond which something no longer exists. Thus, if the account I offer is to be recognizably teleological, in our sense of ‘teleological,’ I need to be able to rule out death as an end. In what follows, then, I explain why only motions toward being and form can be said to have ends, strictly speaking, and so why dying and decay cannot count as teleological processes on Aristotle’s view.

I said above that motion was defined by opposites. I said in addition that those opposites are not quite on a par, since the opposites by which we make the generic formula ‘from something to something’ concrete always consist of some form and its non-being, i.e. its privation: sickness and health, learned and unlearned, etc.. Their asymmetry is metaphysical. Of the two, Aristotle identifies the *telos* of a motion with the form in a wide variety of places: *GA*

715a5-6, *Phys.* 198a23-26, 199a31-33 and *Meta.* 1044b1-2.⁷³ In the *GA* passage, for instance, he says of the *hou heneka* or *telos* and the substantial form (*logos tēs ousias*) that we ‘must suppose them to be nearly (*schedon*) one and the same thing.’ A few lines later he drops the ‘nearly’ and says simply that they are the same (*tauton*). In the *Metaphysics* passage mentioned, drawn from H.4, he says of the *telos* and *eidos* that ‘these are perhaps both the same thing.’ Thus, if we think of the opposites between which change or motion occurs in terms of the contrast between form and privation, as Aristotle suggests, then it would seem that the *telos* is to be identified with the form, not the privation, since the form and the *telos* are the same.⁷⁴ There is, however, another asymmetry. Of the two somethings, that toward which motion proceeds (as opposed to that from which it begins) determines the kind of motion it is, i.e. its genus and species and thus its form. Something becoming white is whitening, someone becoming learned is learning (*Phys.* V.4; 227b3-10). Because a motion owes its identity—its specific form—to the second something

⁷³ Rosen (2014) argues against this identification, concluding that when Aristotle makes it, he ‘was speaking loosely, or was making a subtle mistake,’ (106). Interpretations leading to such conclusions warrant skepticism. Rosen distinguishes, sensibly enough, between having a task and exercising it, and argues that identity of form and *ergon* means just that something has a task in virtue of its form, not that form is identical with the *exercise* of the task, the true *telos*. That is to say, something has a function in virtue of its form, but does not necessarily thereby exercise it. I shall not engage the bulk of Rosen’s paper here, but suffice it to say that the transition from the possession of the task to its exercise does not seem to be a motion or generation for Aristotle, both of which are possessed of parts (*NE* X.4), and so no more needs to be done, nothing needs to be traversed, to exercise the *ergon*. As so often in Aristotle, there can be a conceptual distinction and nonetheless real unity. Rosen in fact entertains something like this near the end of his article, but he considers it overly subtle. He suggests that perhaps once having arrived at the form, e.g. the art of building, the transition to activity does not count as the acquisition of a new property, but something else—a transition into ‘another mode of being.’ He thinks it unlikely that Aristotle’s identification of formal and final causes, ‘made in an easy tone’, should rest on such a ‘subtle and difficult’ idea. If, however, we put aside the language of ‘property acquisition,’ which is not Aristotle’s, and speak instead of what is perhaps the nearest, genuinely Aristotelian approximation, i.e. *alloiōsis* or ‘alteration’, then Aristotle does explicitly deny that the change from possession of an art to its exercise is an *alloiōsis* at *DA* II.5.

⁷⁴ As I noted above, there is of course a sense in which we can talk even of privation as form, since even ‘non-being is non-being.’ But this is derivative. Cf. *Meta.* Γ.2; 1003b5-11.

rather than the first, this too is a metaphysical asymmetry. And this second something, we saw above, Aristotle also identifies with the *telos*.

These two asymmetries need not line up, however. If the *telos* is identified with the form, on the one hand, and the second ‘something,’ on the other, then in some cases we are forced to identify two quite different ends for one and the same motion. As it happens, the problematic cases are all instances of decay or degeneration: the learned can become unlearned again, and the healthy sick.⁷⁵ If we identify the *telos* with form in such cases, it is that from which the motion begins rather than ends. If we identify it with the second something, then even things like sickness will be ends. But Aristotle is clear that privations, such as sickness, which is the privation of health, or death, which is the privation of life, are ends only metaphorically:

‘since the end is something last (*eschaton*), by transferring the meaning even to bad things we use the expressions “a complete loss” and “complete destruction” when no thing escaped destruction or badness....Because of this, by a transfer of meaning (*kata metaphoran*), even death is called ‘the end’ in view of the fact that both are last (*eschata*)’ (*Meta.* Δ16; 1021b24-30).

Privations are thus not *really* ends. If the *telos* is to be identified with form, as we have noted, then those motions ending in destruction will not have ends or *telē*, in the strict sense, because the end-state is not some form but precisely the opposite, i.e. the negation or privation of form. Being the second ‘something’ in the formula for change, ‘from something to something’, is therefore a necessary but not a sufficient condition for being an end or *telos*. That something must also be a form, rather than a privation. But we should now like to know why nature should

⁷⁵ I emphasize that *all* the problematic cases will be instances of decay because there are no neutral cases, i.e. cases in which there is no metaphysical asymmetry between the opposing terms. As I noted, because all change is between form and privation, there will be some metaphysical asymmetry in every change. This is largely just a reflection of the fact that every motion or change is thought to be either a coming to be of something new or a passing away of something old or already existing, even if it is only coming to be in a new place. If nothing new came to be, or nothing old passed away, then you would have not change, but rest, because everything would remain the same.

have a primary orientation towards form, what it is about form that draws nature toward itself, as it were: why might not nature be simply neutral with respect to coming to be and passing away, generation and degeneration?

Perhaps we can make progress by returning to Aristotle's claim that form is a limit. In *Meta. Δ*, as we noted, he gives as a species of limit the what-it-is-to-be for a thing, and elsewhere he takes talk of limit to be talk of form. Matter, on the other hand, is taken to be unlimited or *apeiron*. But why should form be a limit, and matter unlimited? There are, it would seem, any number of ways *not* to be a tabby cat: something might be a car or a cupcake, a tree or a turtle. Being other-than-a-tabby-cat is in that sense indefinite. By contrast, being a tabby cat is some one way for something to be. Otherwise put, a question such as 'what is Mittens?' is answered or satisfied by 'he is a cat' in a way that it is not by 'he is not a dog.' The former completes the question while the latter leaves it open precisely what of an indefinite number of things Mittens might actually be. What it is to be a tabby cat, one might say, is well-defined. As that out of which something is generated, matter on the other hand is potentially but not yet actually what it will become. For this reason, motion is said to proceed from non-being: 'a man is generated from what is not a man but what is potentially a man, and the white is generated from what is not white but is potentially white' (*Meta. N.2*; 1089a29-31).⁷⁶ Matter and potentiality are to that extent undefined or indefinite (*a-oristos*), while form is correspondingly well-defined (*horismenos*) (*Meta. M.10*; 1087a17-19).⁷⁷ Aristotle registers a similar thought in an ethical

⁷⁶ Here Aristotle seems to be eliding whatever the differences might be between substantial change and alteration.

⁷⁷ Of course, all matter is in another sense some definite thing, as the matter of a statue is bronze, or of the educated man the man. To that extent, all things pass away into something definite. But matter is *as such* a form of non-being, as Aristotle says, and so when the statue is destroyed it is reduced to mere clay or bronze, but precisely as matter it is now defined by a lack of the form once possessed.

context when he notes that ‘failure [in action] is manifold, but success single—for what is bad belongs to the unlimited (*apeiron*), as the Pythagoreans supposed, but the good to the limited’ (*NE* II.6; 1106b29-33).

A form is a limit, then, because a form is some quite definite way for something to be—to have form is to be some quite definite sort of thing, and thus set apart from or distinguished from others.⁷⁸ On this basis, we can now understand why only motions towards form have *telē* and, indeed, why only such motions are motions in strictest sense. If (i) motion is from something to something, where those two ‘somethings’ consist of form and privation, i.e. being and non-being, and if (ii) the name and form of a motion is taken from its end-state, i.e. that to which rather than that from which it proceeds, it follows that any motion leading to a privative end-state will itself be understood only in terms of non-being. Because motion is between form and privation, any given potential from which a motion proceeds will be a potential either for *x* or not-*x*, i.e. the privation of *x*. But in the case of a potency for not-*x*, what it is actually a potential *for* is undefined, as a result of which the potency itself is undefined. This is simply a function of the fact that potency is logically posterior to actuality: any given potency is only as well defined as its corresponding actuality. As a result, though, a potency can neither be nor be known any more

⁷⁸ Indeed, one might think that therein lies the primordial importance of limits: they are that by which one distinguishes one thing from another, e.g. your plot of land from another’s, or one kind from another. Limits, in other words, permit one to say that ‘S is P and not Q.’ Though it would surely be speculative, this might be why in some cases there is a temptation to translate ‘*telos*’ in, e.g. certain passages of the *Protagoras*, as ‘standard’ or ‘criterion.’ On this, cf. Allen (2014), 235-6. Allen argues that while ‘the function of ends of goods and evils is to serve as standards,’ nonetheless ‘standard’ is not the meaning of *telos*.

than its actuality.⁷⁹ Potencies for privations, for that reason, can scarcely be said to ‘be’ at all. Consequently, those changes with a positive end-state will be privileged because (knowledge of) their termini will have greater definition and will, therefore, be prior to the corresponding instances of decay, the end-points of which are privations. Otherwise put, because decay is precisely change into non-being (*to mē on*) (*Phys.* V.1; 224b5-10), any motion leading to a privative end-state will itself be essentially privative, and only those motions that are motions toward form will themselves have form. And because it is with respect to form that we know each thing (*Meta.* Γ.5; 1010a25), only those changes leading to form relative to their matter will be strictly speaking knowable. Deprivative or degenerative motions are, as it were, the shadows of those motions which are most properly said to ‘be’ at all, and which are the primary objects of thought, namely generative motions towards some form. To be sure, knowledge is also accidentally of privation (*Meta.* Θ.2; 1046b7-16), just as there is an accidental sense (*kata metaphoran*) in which death or decay is a *telos*, but changes toward form will necessarily have primacy. This is why animals cannot be potentially dead or have the potency for decay, in the strict sense, because ‘destructions are accidental’ and there is no science of the accidental, which is *apeiron* and close to non-being (*Meta.* H.5, 1045a1; E.2). Death is, considered by itself, unknowable.

⁷⁹ One can here see some of the similarities with Gotthelf’s view emerging, since his central idea is that of an ‘irreducible potential for form.’ I agree with Gotthelf that a ‘potential for form’ is essential to Aristotle’s teleology, but I understand it to be essential to Aristotle’s account of change in general, and to that extent constitutive of nature. Irreducibility will be discussed in the next chapter, but suffice it to say that the potential is as such irreducible simply because, or to the extent that, the corresponding actuality is. If the actuality is irreducible, so is the potentiality, since the latter is defined in terms of the former. The point is simply a logical one. Cameron (2002) objects to Gotthelf on the grounds that his slogan ‘potential for form’ is illicit because the ‘for’ ‘is ambiguous between definitional priority and genuine teleological direction.’ For Aristotle, I suggest, this is a distinction without a difference.

On the basis of the foregoing, then, we might think that if something, some possible state or other, is to be a genuine limit for a certain x , then that state must somehow either make x to be truly what it already is, in some sense, or preserve it as the sort of thing that it is, because only *being such as it is* will be a limit relative to *it*. That is, if the ‘what it is to be’ is different for the many different sorts of things we find around us—if the ‘to be’ of each sort of thing is spoken of homonymously—then the ‘limit’ for each in the sense specified will be correspondingly different. In a word, not just any chance thing will be the limit of any chance thing. The actions of Mittens, for example, must in essence conduce either to his self-preservation—his continuing to be actually what he is—or at the very least to the propagation of more things of his type. Death, on the other hand, cannot be an end for Mittens because the end is a limit, and death, understood as non-Mittens, is as such unlimited precisely because it is a privation. All change is, in that sense, essentially generative in character with respect to its matter, which is potentially the actuality it is becoming.⁸⁰ But again, this is not to say that decay or death are *simply* inexplicable, but that whatever being and intelligibility they do have is derived from the corresponding

⁸⁰ This is a point made by Kelsey (2010), though not on quite the same grounds offered here: “[Aristotle] thinks of the constructive side of change as in the business, not of taking the materials on which it operates and dislodging them from or leaving them in a condition they began by exemplifying perfectly well, but rather of moving them *towards* a condition they began by exemplifying only imperfectly”. Aristotle thinks of change, Kelsey says, “in fundamentally developmental terms.”

instances of generation, in the same way that the moon shines not with its own light, but only reflects that of the sun.⁸¹

I want now to conclude this section with a tentative proposal, one which promises to reveal an underlying unity to Aristotle's thought. I said above that motion was circumscribed by the possibilities of affirmation and negation. The limits of motion, we now know, are to be understood in terms of form and privation, not simply two different forms, i.e. two positive states. A privation is of course described by a negation (*apophasis*) (*Meta.* Δ. 22; 1022b33). The *apeiron*, for example, is precisely what is *not* limited or has no limit. Aristotle understands negation as a kind of separation (*Meta.* Θ.10; E.4).⁸² In saying 'Socrates was not a Spartan,' I am separating the subject, 'Socrates,' and the predicate, 'Spartan.' Affirmation, on the other hand, is a kind of combination: Socrates was an Athenian. This same basic thought is recapitulated in Aristotle's understanding of generation and decay. Generation, Aristotle says, is the combination of some subject, i.e. matter, with some definite shape and form. What is generated is neither the

⁸¹ A corollary of this thought is that all motion in the sense discussed is towards some good. The causality of the good is of course traditionally one of the defining features of teleology, and naturalist accounts of teleology have tried in various ways to make sense of this feature. Gotthelf has argued that goodness is to be understood in terms of form, actuality, and *telos*, not the other way around. I am generally quite sympathetic with his account, and without recapitulating his paper, I will only advert to Aristotle's claims in *GC* II.10 that nature strives after the better (*ton beltion*) and that 'being is better than non-being.' Insofar as motion is, in the first instance, from privation toward form, i.e. from potentiality or non-being toward actuality or being, what moves moves towards the good. The account I've given captures this fact, and disallows the possibility of motion towards the worse, save in a derivative sense.

But I should also that on the view offered, we can make sense of the respect in which the good consists not just in arriving at the *telos*, but also in hitting the *meson*. If we accept the thesis defended by Lennox (1980) that species within a genus differ by the more and the less, then the *telos* of a process of generation of a particular species will also be the *meson* relative to it. That is to say, coming to the *telos* of generation will require that the process end with the *meson* between excess and deficiency in a number of its attributes, e.g. the sharpness of the beak, and this will be determined by the species kind.

⁸² Aristotle's views on affirmation and negation, discussed in the chapters mentioned, are certainly complex, but in both he talks of affirmation and denial as separation and combination: 'in the case of truth, affirmation is of objects which are combined, and denial is of objects which are divided' (*Meta.* E. 4). Conversely when one utters a falsehood, one combines in thought or speech what is divided in truth or divides in thought or speech what is combined in truth—affirms what is not or denies what is.

matter nor the form, but the composite of both. And decay is the separation of the same, i.e. the separation of matter from its form. Thus, like affirmation and negation, underlying generation and decay are acts of combination and separation, where what is combined or separated is a subject and some form. For that reason, there exists a parallel between motion and assertion: generation stands to decay as affirmation to negation.

But we can also take the proposal one step further: Aristotle says on two occasions that pursuit and avoidance are to action what affirmation and negation are to speech (*DA* III.7, 431a9-10; *NE* VI.2, 1139a21-23). In action, what is pursued is the good (itself a *telos* and *peras*), and what is avoided is the bad, which is as we saw unlimited or *apeiron* (*NE* 1066b). Like generation and decay, or affirmation and negation, then, we can understand action in terms of the relation between some subject and a pair of contraries, i.e. good and bad. If that is right, we can, on this basis, formulate two sets of columns thus:

Passing-Away	Coming-to-Be	<i>Apeiron</i>	<i>Telos</i>
Avoidance	Pursuit	<i>Bad</i>	<i>Good</i>
Negation	Affirmation	<i>Privation</i>	<i>Form</i>

As we saw earlier, formulating such columns was part of the tradition with which Aristotle was familiar, and so the idea of such a table would hardly have been foreign to him. The two columns on the right would have been readily intelligible to Aristotle's Platonist and Pythagorean predecessors, and the columns on the left are simply acts corresponding to them. Coming-to-be, pursuit, and affirmation all have as their objects some limit, while passing-away, avoidance, and negation all have as their objects something indefinite, *apeiron* or *aoriston*, some lack of shape, form, or definition.

We might, then, cash out the metaphor in the teleological principle from the *Generation of Animals* with which we began in terms of acts of combination and separation. That is, we might think that nature ‘seeks’ a *telos* in the sense that pursuit is, like affirmation, a form of combination, for in seeking one closes the distance between oneself and the object sought.⁸³ Correspondingly, nature ‘flees’ the *apeiron* in the sense that fleeing is, like negation, a form of separation, for in fleeing one puts some distance between oneself and the object fled. If so, then our teleological principle might be considered a ‘logical’ principle, for its whole sense is animated by the contrasts between being and non-being, affirmation and negation. There could no more be a third form of motion, i.e. one which was neither a seeking nor a fleeing—a combination or separation of a subject with some form or privation—than there could be a form of assertoric speech which was neither affirmation (*kataphasis*) nor negation (*apophasis*). To that extent, the principle would be, by Aristotle’s lights, constitutive of nature and could only be overturned with some difficulty. It is, presumably, only recognized through reflection on one’s prior experience with nature, but the principle has the marks of universality and necessity which

⁸³ This is, perhaps, ultimately the way in which we should understand Aristotle’s occasional talk of matter ‘desiring’ form, a way of describing things which has caused headaches for quite some time (e.g. Hocutt (1974), p. 398). The point is not to anthropomorphize nature, or to attribute mental states to non-conscious things, but to understand nature and change as essentially copulative, as it were: being is prior to non-being, affirmation to denial. (The vulgar half of that double entendre is not without point, especially for one for whom animals were the paradigmatic substances.)

would make it more than a merely empirical generalization.⁸⁴ But if the above is right, there would for Aristotle be a certain parallelism and unity across the domains of thought or speech, nature, and action, one which becomes apparent only when we give due attention to some unduly neglected concepts in ancient Greek philosophy.

2.6 CONCLUSION

There is then an important strand of Aristotle's teleology that runs orthogonal to contemporary concerns with teleology. Beginning with the teleological principle found near the beginning of the *Generation of Animals*, I suggested that the contrast adduced therein makes little sense if the term *telos* is understood to mean 'goal'. Once we look to Aristotle's predecessors, we see that the contrast between *apeiron* and *telos* was a standard one, recognized by authors with quite diverse philosophic commitments. Seen against that background, it is clear

⁸⁴ One concern—one among many perhaps—which may have arisen in the minds of some readers in the course of this chapter: one of the damning features of at least late Scholastic natural philosophy was its alleged profligacy in the use of teleological explanation. Safer, one might think, to limit teleological explanation to the biological realm, where its application is less impugnable, which is not to say unimpugned. Philosophers are much more amenable to teleological explanation there than anywhere else in the natural world, a fact which can lead a sympathetic interpreter to suppose that teleology in Aristotle is similarly restricted. Above I noted Scharle's criticism of this line of thought in her (2008), but I do wish to say something about the scope of Aristotle's natural teleology, for an implication of the account given above is that on Aristotle's understanding, teleology is found in all (sublunary) motion. That is in fact my view, but the strength of the claim can be mitigated without changing anything above. Given the identity, rough or exact, between form and *telos*, natural motions will have *telē* just to the extent that they proceed to some form. But not all forms are created equal: one might have reason to think that biological organisms are those entities paradigmatically possessed of forms and most of all substances. In that case it would be permissible to say teleology belongs to such things most of all (cf. fn. 71 above). Those entities lower on Aristotle's *scala naturae* (on which, cf. Morrison (1987)) could be said to imitate or approximate the higher things, and only be and be known to the extent that they do. Thus, the schema would still apply, but it would be less perfectly instantiated or met by, e.g., the elements. One need not therefore be worried about the apparent permissiveness of the account given, for it can be said to apply most perfectly to animal motion, while nonetheless extending to those things below the level of the living.

that the primary meaning of *telos* must be ‘end’ in the sense of ‘limit,’ and *not* ‘goal’ or ‘aim.’ If it meant ‘goal,’ we might expect Aristotle to gloss it as *skopos*, but in his scientific works he never does—not once. Instead, he repeatedly says that it is a *peras* or limit. This contrast between *telos* and *apeiron* or *peras* and *apeiron* is of course no part of contemporary concerns with teleology, and indeed has been noticeably absent even from contemporary accounts of Aristotle’s teleology, save for the occasional note made only in passing. This is by no means to deprive the *telos* of its philosophic importance, because the concept of limit was a central philosophic concept both for Aristotle himself and his predecessors, not least of all because the *apeiron* or unlimited was as such unknowable. Some scholars have therefore seen in some of those predecessors an approach to metaphysics that proceeds by way of epistemology: what must things be like if they are to be knowable? The simplest answer is that they must have limits, and the three traditionally recognized limits appear to have been the *archē*, *meson*, and *telos/teleutē*. Aristotle belongs to this tradition. It is through these that the world receives articulation in a quite robust sense, for these are the limits that cut nature at the joints and define that way or method by which nature becomes available to thought and speech. On this understanding, if things are to be known, we must search after their *archai*, *mesa*, and *telē/teleutai*. These are the points at which mind and world are in contact.

Limits have an essential role to play natural inquiry because nature is characterized by motion, a continuous magnitude, and it is principally in this context, Aristotle says, that we run into the problem of the *apeiron*. The first step in the delimitation of, and so the understanding of, motion is to be found in the recognition that every motion is *ek tinos eis ti*—from something to something. These somethings constitute the limits of motion, and it is to the second something in

particular that a motion owes its generic and specific identity. Speaking at the highest level of generality, these limits are given by privation and form, and Aristotle repeatedly identifies the form with the *telos*. Because a motion takes its identity from the latter of the two somethings, any given motion is only as intelligible as its end-state. As a result, primacy is naturally accorded to those motions proceeding to some positive end-state, some form and *telos*. Motions ending in privation—degenerative motions—will be known only derivatively, standing to generative motions as knowledge of privation in art stands to knowledge of form. And because Aristotle thinks ‘being is better than non-being,’ on the account offered, the primary and paradigmatic cases of motion are also all motions towards the better and thus the good: motion in the direction of the good is accorded ontological and epistemic primacy.

Finally, I have suggested that the teleological principle in *GA* is the natural philosophic correlate of the analogy adduced elsewhere between pursuit/avoidance and affirmation/denial. The resulting unity across the domains of action, nature, and thought is one of the virtues of the above account, and might help explain at least in part why Aristotle moves so comfortably between the different domains when he thinks it helpful. Limits are found in all three, and in each there is a corresponding contrast. Affirmation and denial are contradictories in assertoric speech, coming to be and passing away in motion, and pursuit and avoidance in action. Acts of combination and separation underlie all three, and the specific acts are defined by reference to their objects: the *telos* of coming-to-be, the *agathon* of pursuit, and the *eidos* of affirmation. For each contrary object, there is a contrary act. But it is the *telos* which ultimately accounts for the possibility of motion and thus a science of nature: ‘if generation and motion are to be, there must

also be a limit (*peras*); for no motion is unlimited (*apeiros*), but every motion has an end (*telos*)' (*Meta.* B.4; 999b10-11).

3.0 FUNCTIONS AND EFFICIENT CAUSES

In the previous chapter, I argued for a novel interpretation of Aristotle's conception of the *telos*, its meaning and philosophical importance. '*Telos*,' I argued, means primarily 'end' in the sense of 'limit,' and that it was of the profoundest philosophical significance for precisely that reason. Together with the *archē* and *meson*, it constituted one of three standardly recognized limits, the possession of which made something whole and complete. To lack limits meant to be *unlimited* and therefore unknowable. Consequently, identifying a thing's limits constituted an essential philosophical task. Motion, in particular, was thought by some to be unlimited, and Aristotle defines nature in terms of motion. If nature is to be knowable, then, motion must have limits. The *telos*, I argued, was one such limit and that in virtue of which motion could be said to have form: the *telos* of any given motion grounds its generic and specific identity. I argued that for this reason only generative motions have ends. Because any given motion is only as intelligible as its end-state, only motions towards form will themselves have form. Those motions progressing toward privation will be and be known only accidentally or derivatively. And because privative states are as such unlimited, they cannot serve as limits of motion. Only form is a *telos*.

I argued further that the teleological principle in the *Generation of Animals*, according to which nature flees the unlimited and seeks an end, should ultimately be understood in light of Aristotle's claim that pursuit and avoidance are to action what affirmation and denial are to speech: teleological motion is essentially generative, consisting in the combination of some form with matter, and it stands in opposition to decay, consisting in the separation of the same. That is

to say, like affirmation and denial, generation and decay consist in the combination or separation of a subject with some form, and on the basis of Aristotle's explicit remarks, I suggested the same was true of action. Indeed, in accord with the practice of the tradition Aristotle was drawing upon, the aforementioned acts and their corresponding objects could be placed in parallel tables of opposites.¹ In the object table, one column consisted of terms designating a limit—*telos/agathon/eidos*—the other of terms designating some way of non-being or unlimitedness—*apeiron/kakon/sterēsis*. They are to that extent marked by logical opposition, i.e. between some way of being and its corresponding non-being. It is for this reason that the principle in *GA* can be understood as a 'logical' principle. The priority of ends in nature is understood on strict analogy with the priority of affirmation over denial, being over non-being, limit over unlimited. Furthermore, because on Aristotle's view 'being is better than non-being,' it was a consequence of the account articulated that all those motions deemed teleological, namely generative ones, count as motions in the direction of the good, with the consequence that nature has a primary orientation towards the same.

Nonetheless, one might worry that teleology as such has gone missing, for in the discussion of limits and their philosophic importance, nothing has been said about 'purposiveness,' i.e. about the for-the-sake-of relation, and any alleged account of Aristotle's teleology certainly needs to say something not only about the *telos*, but also about *to hou heneka*. Surely, one might think, there is a richer sense of *telos* to be had than that delineated in the previous chapter: there is, on the one hand, *telos* understood as *peras*, and *telos* understood as that-for-the-sake-of-which. It is in the latter, one might think, that we are principally interested

¹ In some places, Aristotle himself seems to employ just such tables, e.g. *Met.* Λ.7; 1072a35-36.

and that it is the latter which is most appropriately called a *cause*. No one disputed in the late scholastic period, for example, that natural motions proceeded toward natural *termini*. That was not the question. The difficulty was rather how the *termini* towards which they proceeded were causes of their so proceeding, how non-rational efficient causes might be ‘directed’ on ends, and precisely *as* ends. Without such an account, genuine purposiveness can seem to go missing. More is needed, therefore, to make sense of Aristotle’s teleology than the account of the *telos* already given

It is the aim of this chapter to remedy these deficiencies, and to understand efficient causation and the for-the-sake-of relation against the background already given. In §§1-3 I describe an interminable oscillation in the literature on Aristotle’s teleology, indeed an oscillation in discussions of teleology quite generally. In particular, without postulating efficient and material causal ‘gaps,’ it is hard to see what role final causes might play. That is to say, because it seems that there needs to be something for the final cause to ‘do’ or explain which cannot be done or explained by efficient and material causes, there must be efficient causal gaps of some sort or other. But if there are such gaps, it seems they must be filled by (allegedly) non-empirical entities like powers, the evidence for which is only the phenomena to be explained. Efforts to resolve the difficulty have generated a curious spectacle in the literature, namely the proliferation of accusations that one commentator or another is not in fact offering an account of *final* causation, but is in fact ‘reducing’ it to a special kind of *efficient* causation. The sheer number of accusations, I suggest, calls for diagnosis rather than adjudication.

In §§4-6, I turn to that diagnosis. I argue that for Aristotle efficient and final causes are essentially correlative, i.e. that one could no more have the one without the other than one could

have an up without a down, or a left without a right. This fact only comes to light, however, if we attend to the concrete meanings of the terms that Aristotle uses for each. In particular, commentators have not paid sufficient attention to Aristotle's favored way of picking out the 'efficient' cause, namely as the *archē* of motion. If we understand *archē* in the concrete sense of 'beginning,' in much the same way that I suggested in the previous chapter that we understand *telos* in the concrete sense of 'end,' we can begin to see why Aristotle should think that *archai* are essentially related to *telē*. I argue for this not only on the basis of the semantic arguments in the previous chapter, but (i) on the basis of a novel understanding of chance and (ii) Aristotle's account of analogy.

Discussions of Aristotle's account of chance in *Physics* II have generally failed to take account of Aristotle's use of 'chance' or *to tuchon* in other contexts. I argue in §5 that in each case, 'chance' designates a mismatch between two terms or things, e.g. form and matter, or the opposites between which change occurs. Not any chance form belongs to any chance body, and not any chance thing comes to be from any chance opposite. Similarly, I argue in §6 that when Aristotle is denying that nature is governed principally by chance in *Physics* II.8, he is arguing for an essential connection between two terms or things, and those are *archē* and *telos*. Like form and matter, or the contraries of change, these are *antikeimena* standing one to another like pale to dark. I then argue in §7 that this view is confirmed by a brief examination of Aristotle's understanding of analogical terms. Terms such as 'form' or 'potency' cannot be defined, Aristotle thinks, but can only be explicated by analogies or proportions: A:B::C:D. To construct a proportion is, however, to exhibit the sense not only of one term, e.g. potency, but also its opposite, actuality. That is, constructing the analogy exhibiting the meaning of 'potency' is to

construct at the same time the analogy exhibiting the meaning of ‘actuality.’ ‘Cause’ is one of those terms Aristotle says is to be explicated by analogy, and I suggest that by looking at Aristotle’s examples, it is clear that to construct the analogy exhibiting the meaning of ‘efficient cause’ just is to construct the analogy exhibiting the meaning of ‘final cause.’ But this fact should be quite unsurprising if we understand those causes as I suggest we should, namely as the beginning and end of motion, respectively.

In §8, I then turn my attention to *to hou heneka*. As mentioned, I have until now said precious little about *to hou heneka*, focusing instead on the meaning of *telos*, and one might argue that it is the former notion which is truly essential to Aristotle’s teleology. I argue, however, that on the basis of what we have seen, the notion of *telos* as a limit can capture much of what is commonly thought essential to teleology and, further, that Aristotle in a number of places seems to understand the *heneka* relationship in terms of the *telos*, and the *telos* understood precisely and explicitly as limit. Finally, in §§9-11, I turn to functions. Hitherto, I have been concerned with *telos*-directed processes, rather than the functions of particular items, e.g. the liver. But that one thing should *be* for the sake of another is just as essential to teleology as the idea that one thing should *happen* for the sake of another. I argue that we can make sense of function ascriptions on the basis of the larger account so far developed. In particular, parts are for the sake of some activity insofar as they typically or customarily mediate between an agent and that activity. In that sense, parts constitute the *mesa* by which some *archē* achieves some *telos*. And not only is this consistent with the philosophic history and import of our trio of terms, *archē*, *meson*, and *telos*, but there is in addition textual evidence to support it. And *that* the tools are *mesa* explains their twofold relation, one to the *archē* and user and one to the *telos*, i.e. that

activity which it allows the user to perform.² Given the analytic or conceptual connection between *meson* and *telos*, and given the nature of motion as a continuous magnitude, it will be an analytic or conceptual truth that nature is characterized by purposive relations.³ In the most concrete of senses, nature, according to Aristotle, consists of relations between means and ends.

3.1 THE PROBLEM

One of the defining questions of teleology as a philosophical problem is how to understand its relation to efficient causation. This question is itself related to, but distinct from, the question of the causal contribution of the final cause, i.e. what the final cause ‘does’ or how it ‘works.’ How exactly to answer the latter question has confounded many, even Aristotelians. Suárez, for example, thought its mode of action ‘obscure’ and Ockham, after describing the *communis opinio* of the other three causes, says of the final cause that ‘there is greater doubt.’⁴ One source of obscurity is the common thought that final causation is ‘backwards’ causation, for it can seem that in order for an end to be a *cause*, what comes to be must be responsible for the very process bringing it into existence. A natural solution is to suppose that the end is causal only

² It is, again, important to remember, for reasons given in the last chapter, that only positive end-states, actualities, are genuine *telē*. Thus, the *mesa* in question will be the *mesa* on the way to some actuality and, since being is better than non-being, some good. This should, I hope, mitigate at least some of the incredulity to be had at the thought that purposiveness should come so cheaply.

³ There is no need to put much weight on the descriptors ‘analytic’ and ‘conceptual,’ and I will surely not try to define them. As far as I am concerned, their senses can simply be elucidated by examples, like those mentioned previously, i.e. up and down, left and right, etc.. Similarly, when I deny, as I have, that Aristotle’s teleology is ‘empirical,’ I mean the same as I would were I to deny that the relation between left and right is an empirical matter. Of course, *what* is to the left or right of *what is* an empirical matter.

⁴ Cf. Schmaltz (2014) and Pasnau (2001) in Perler (ed.).

insofar as it is incorporated into the thought or intention of the efficient cause. Thus, Thomas says in response to the objection that the end is not a cause precisely because it comes last, that although it is ‘last in execution, it is nonetheless first in the intention of the agent; and it is considered a cause in this way.’⁵ Thus, one way of making the end ‘effective,’ as it were, is to suppose that it has intentional existence in the agent. Of course, one might deny that a cause must ‘do’ something in order to be a cause, and so deny that there is any more to be said on the matter than that the end is a cause in the sense of ‘that for the sake of which.’⁶ That is to say, there is no ‘mode of action,’ no account of ‘how it works,’ because it need not *do* anything at all. But without an account of what the final cause ‘does’ or what difference it makes to the being of things, broadly speaking, we can be tempted to think of it as a merely explanatory principle at

⁵ *ST I-II.1.1. Ad primum ergo dicendum quod finis, etsi sit postremus in executione, est tamen primus in intentione agentis. Et hoc modo habet rationem causae.* The same phrase, *in intentione agentis*, is also used by Scotus to explain how the final cause is a cause. cf. Pasnau (2001). Pasnau suggests that Avicenna’s conception, to which the above are related, became something like the standard conception by the end of the 13th century. Interestingly, though Ockham thinks his own understanding of final causality, which can in relevant respects be grouped with the standard conception, was held by Aristotle himself, he also finds in Aristotle another sense of ‘end’: “In another way, the end or the final cause is taken as that which follows from the operation of another according to the common course of nature, if not impeded—following just as if it were foreknown or desired by an agent. It is in this way that an end is found in things without souls, even supposing that they were directed or moved by no cognitive being. This is how the Philosopher speaks about final causality, toward the end of *Physics II*” (*Summula II.6*), ed. Brown, quoted in Pasnau. Ockham takes this to be an improper way to think about ends, but as we will see, I actually take this thought to be much closer to Aristotle’s own than the the view of final causality Ockham actually endorses and also attributes to Aristotle. It is also interesting in its own right that this, thinner conception of final causality is the one Ockham finds in II.8, of all places.

⁶ Frede (1987) suggests that there is little to be gained from thinking of Aristotle’s causes in terms of what they ‘do,’ but he also notes that the problem is an ancient one. I am quite sympathetic with Frede on this point, and given the fluctuations in the meanings and accounts of ‘cause,’ it’s not clear how to answer the question, ‘how is the end a cause?’ until one settles on some definite meaning of the latter term. If the *telos* is the source of a motion’s specific identity, i.e. its form, this should be enough on Aristotelian grounds to consider it a cause.

best, leaving all the genuinely *causal* work to the efficient cause.⁷ If we accept this suggestion, however, we run the risk of ultimately reducing the final cause to a heuristic principle because if one thinks all explanation is causal explanation, then while we may perhaps find it useful or perhaps even necessary to treat things as if they were or acted for the sake of something, genuine explanation would come only with an efficient causal account of its being or behavior.⁸ We can seem therefore to be trapped between ‘the Scylla of denying the existence of teleological explanation, and the Charybdis of claiming that there are causal gaps’ to be filled by some kind of irreducibly teleological stuff.⁹ In other words, if we can tell an adequate material and efficient causal story, then there is nothing lacking for which we might need the final cause to ‘make the difference,’ even if it serves as a valuable heuristic. Purposiveness becomes superfluous, the ladder one throws away. But if something more is needed to fill out the causal story, then we need an account of the difference it makes, and this account has often involved the invocation of powers, which have long seemed unintelligible to many.¹⁰

⁷ In the scholarship on Aristotle’s literature, Wieland (1970), Nussbaum (1982), and Sorabji (1980) are said to hold this view in one way or another. The view is also prevalent in the literature on Kant, which will be discussed in the next two chapters. Freeland (1991), 50, suggests that part of the motivation for understanding Aristotle’s *aitiai* as ‘explanatory factors’ is precisely the difficulty of making sense of matter, form, and end as ‘causes,’ as a consequence of which they are ‘interpreted as explanatory factors relative to this one ‘real’ (i.e. efficient) sort of causal relation that seems most to resemble our own.’

⁸ One might resist the suggestion that all explanation is causal, and so insist that the end is a necessary explanatory principle, but not a causal one. For my purposes, the primary reason to reject such a claim is that it introduces a distinction between causal and explanatory principles for which there is little evidence in Aristotle, at least when it comes to the final and efficient *aitia*.

⁹ Berryman (2007).

¹⁰ The literature on this topic is vast. For a recent example, cf. Psillos (2006), but also a(n Aristotelian) reply by Marmorodoro (2009). Fara (2005) provides what I take to be an account very amenable to Aristotelians, but I shall say very little about powers in what follows.

3.2 REDUCTIONISM

This dialectic, which has characterized the problem of teleology generally, has naturally found strong representation in the scholarship on Aristotle's teleology as well. I quoted Berryman above, who comments not only on Aristotle but on ancient debates more generally. Though Aristotle can seem at times to think a complete material explanation is available, at others his invocation of teleology can, Berryman says, seem to pre-empt just such an explanation. In the end, she thinks that though he wished to find a middle position, he ultimately fell prey to Charybdis.¹¹ The pull is strong, however, because the problem of explaining how blind or chance processes might regularly produce complex beings with functional attributes is difficult indeed. For this reason, Aristotle very understandably felt the need to postulate 'irreducibly' teleological powers.¹² In countenancing such powers, however, one risks 'deny[ing] that natural processes are susceptible of meaningful investigation, or that we can understand how functions and goals are realized by material processes,' for one is stuck with causes—certain powers—whose only evidence is the very phenomena they purport to explain.¹³ Such a move can be tempting, even persuasive, she says, given the inadequacies of materialist accounts of generation at the time. The

¹¹ Berryman (2007), 360; 364. Berryman thinks ultimately that the question is not the material sufficiency of individual outcomes, but the sufficiency of material interactions to explain the *regularity* or reliability of the processes in question. As we shall see, I do not think either is the correct way of framing the issue with which Aristotle is concerned.

¹² Berryman thinks Aristotle's introduction of *pneuma* in the explanation of generation essentially fore-closes the possibility of a complete material explanation, because 'the prospects for a non-teleological account of *pneuma*'s capacities look bleak,' 363. But *pneuma* is only a distinct kind of heat, and indeed a 'tool' of the soul, just as the other elements in the process of generation. Cf. *GA* V. 8; 789b8-12. As such, it cannot be the inexplicable stuff governing the teleological process of generation, for it is rather one of the many things which is governed by another, namely soul. There is no indication that *pneuma* is endowed with any characteristics that would make it any more problematic than anything else. I am indebted to Jessica Gelber for drawing my attention to Aristotle's extensive talk of 'tools' and its importance.

¹³ Berryman (2007), 353.

postulation of powers in response to such inadequacies might still make good scientific sense, but it is a move of last resort, to be made only when the investigation into material-efficient causes peters out.

Naturally, not everyone agrees with the characterization of the problem Berryman gives, at least not as it confronted Aristotle. Gotthelf, for example, explicitly rejects Berryman's characterization, insisting that Aristotle was attempting to navigate between Platonic 'immaterial agency' views of teleology and the reductionist views of his materialist predecessors.¹⁴ Berryman, he charges, papers over the difference between Aristotle's view and Platonic views. Aristotle did in fact successfully chart a middle ground, but it was a middle ground between a different set of alternatives. Organic development, Gotthelf says, is 'actually directive without implying (as the 'immaterial agency' interpretation does) that it is directed.' His protestations notwithstanding, however, his account follows fairly well the dialectic Berryman lays out. The directiveness of organic development depends on the presence of an 'irreducible potential for form,' which means that the generation of an organism and its parts cannot be understood as a 'sum' of elemental interactions.¹⁵ The brutally teleological potential stands 'over and above' the elemental powers operative in animal generation. A reductive account given simply in terms of those elemental interactions is unavailable because of the relative simplicity of Aristotle's chemistry and the complexity of organic development.¹⁶ In this way, the arguments for teleology that Gotthelf ultimately attributes to Aristotle—and the kinds of arguments Berryman largely considers—are quite analogous to 'God-of-the-gaps' arguments in which the existence of God is

¹⁴ Gotthelf (1997; 2012), 82.

¹⁵ Gotthelf (1976/77; 2012), 82.

¹⁶ Gotthelf (1976/77; 2012), 24.

adduced on the basis of the explanatory short-comings of the sciences. In this case, when things cannot be explained on the basis of the interactions between material elements, we postulate an ‘irreducible potential for form,’ which is to say a non-empirical efficient-causal power which is different in kind from those powers with which we are otherwise familiar.¹⁷

Any account of Aristotle’s teleology that follows the pattern just described cannot, however, be the right one because it makes teleological explanation not the default, but the last resort, and this seems to run contrary to Aristotle’s general habit of thought.¹⁸ In other words, Gotthelf’s account has it the wrong way around because any adequate account of Aristotle’s teleology must explain why we are licensed, indeed enjoined, to look for final causal explanations *first*.¹⁹ What is more, the potential postulated to make an otherwise merely material process purposive will seem to some positively occult, for it has the end as ‘a sort of intentional object.’²⁰ It is not enough simply to *assert* that generative processes are ‘directive’ rather than ‘directed’ because intentionality has long been thought to be the ‘mark of the mental,’ and so what is wanted is an account of how unintelligent subjects or processes can have intentional

¹⁷ Scaltsas (1989) objects to Gotthelf’s account on the grounds that, if teleology is understood in terms of potentials for form, then teleology should be found throughout nature, and not just in that class of things to which Gotthelf wants to restrict it, namely organisms. This seems right, and so the restriction, perhaps to provide a more charitable interpretation of Aristotle’s teleology by contemporary lights, can seem somewhat *ad hoc*.

¹⁸ Cf. Gotthelf (1997; 2012), 71: ‘the use of teleological explanation is sanctioned by the *absence* [emphasis added]...of such a material level account.’ Cf. also Gotthelf (1988; 2012), 61: ‘explanation must start from there [the existence of element potentials], in the sense that in trying to determine what *dunameis* there are in the world, one must ask if there is anything one knows exists that cannot be explained by...elemental *dunameis*. If there is...that then establishes the existence of a *dunamis*—for just those features of organisms which cannot be explained by the organism’s constituent materials alone.’ The same objection would apply to one of the lines of argument for teleology that Cooper (1987) attributes to Aristotle.

¹⁹ Cf. also the objections made by Charles in his (1988). Of course, if things are knowable in virtue of their limits, and the *telos* is a standard limit, one will for that reason be on the lookout for *telē*.

²⁰ Gotthelf (1976; 2012), 32.

objects.²¹ Gotthelf's account can seem for that reason to fall prey to Charybdis, as Berryman understands it. Those who, for reasons good or ill, are reluctant to attribute intentional objects to non-intelligent beings will find Gotthelf's account to be of little help in making good, 'naturalistic' sense of teleology. Indeed, it has been claimed that Gotthelf's view succumbs to vitalism.²² Gotthelf expressly denies that Aristotle's teleology is vitalist, and so of course would deny that his account attributes such a view to Aristotle. If it does not, however, then more is needed to say precisely why not.²³

Not everyone, of course, is as troubled by the prospect that a 'sum' of material interactions might be sufficient for natural generation, whether of whole organisms or their parts.

²¹ There has, however, been a great deal on so-called 'physical intentionality' more recently, e.g. Molnar (1999), Mumford (1999) and Place (1996). It is also worth recalling the objection raised by Cameron (2003), discussed in ch. 1, fn. 80.

²² Pavlopoulos (2003), 148. Technically, Pavlopoulos says that 'it is hard to see how his account does not lead to vitalism.' He attributes the problem to Gotthelf's concern to show that Aristotle's teleology is 'factual or empirical in character.' I am inclined to agree. As I noted in the previous chapter, I share the concerns Broadie (1982), 91, articulates about Gotthelf's excessively 'empiric Aristotle.'

²³ Gotthelf (1976/77; 2012), 28. Matters are hardly helped by Gotthelf's claim that 'it would have taken something like modern biochemistry and evolutionary theory to dislodge Aristotle' from his conception of teleology. It is hard to see what difference biochemistry could make, unless one were conceiving of the potential in something approaching vitalistic terms, i.e. as some kind of para-empirical stuff—teleoplasm. Cf. Gotthelf (1997; 2012), 83. With the advent of modern science, Gotthelf thinks Aristotle would likely have retreated to a view of the kind developed by Larry Wright, which I shall discuss below.

Cooper (1987) makes an argument that is similar in many ways to Gotthelf's, and Gotthelf thought so as well. Although we with hindsight might think that the atomists and materialists were closer to the truth, their positions lacked real empirical support. The matter theories then in existence could not plausibly be said to explain the order, precision, and regularity of organic development and so the invocation of teleological powers made good scientific sense. For Cooper, however, Aristotle's account depends on the further fact of the eternity of the species. Cf. his (1987), 271-2. Whether the eternity of the species is in fact essential has been disputed, e.g. Gotthelf (1997; 2012), 71n14, and Code (1997). Gotthelf thinks the eternity of the species is not a premise but a consequence of the brute natural fact that organisms produce other beings like themselves.

Bradie and Miller (1984), by contrast, argue that Aristotle's basic understanding is *not* imperiled by advances in biochemistry. The nature of the potential is simply left undetermined by Aristotle. It is still conceived empirically, for they suggest that the type of movement required by the potential for form is plausibly embodied in the DNA molecule. Thus, Aristotle's account is not refuted, but indeed supported by modern biochemistry. I agree with the criticism of Bradie and Miller made by Bolton (2015), on which more below. At best, DNA would be but a 'tool' of the efficient cause.

I mentioned Charles above, who argues that even if there is a set of sufficient conditions necessitating a given outcome—and he thinks there is—that still does not account for the essence and goodness of the outcome in question.²⁴ Charles argues that Aristotle was never in the business of trying to show a complete physical account of generation in material terms could not be given. He argues instead that what such an account fails to give is the *ti esti* and the good for each of the things generated, e.g. blood, and that this is what constitutes the irreducibility of teleological explanation. The conditions sufficient for the presence of blood do not explain what it is to be blood because the answer to this is given only by a teleological account, i.e. what blood is for.²⁵ Perhaps material-efficient causes can explain why things come to be, but they cannot explain why this organism comes to have just those parts that are good for it. If not *because* of the good, then the connection between the good they clearly serve and the story of their coming to be will inevitably seem fortuitous or marvelous.²⁶ Reductionism is still the point at issue, but Charles and Cooper disagree with Gotthelf about what it is that can or cannot be reduced. It is, in particular, the normative or evaluative aspect of teleology that is necessarily lost from any

²⁴ Charles (1988).

²⁵ Charles (1988). Cooper in one of his other lines of argument makes a similar point. Cf. his (1987), 249. I mention blood, but the point applies to whole organisms and indeed any process of at least organic generation. One might perhaps be able to give a material account of the generation of a beagle, but such an account would fail to account for what it is to be a beagle, and the proper *ergon* of the beagle, namely hunting.

²⁶ *Ibid*, 251. As I mentioned, Charles thinks material-efficient causes cannot explain what blood is, even though they can explain how it comes to be. This presupposes that the *ti esti* is to be answered functionally, and not in terms of material composition. But given the way in which the issue is framed, presumably some justification needs to be given for precisely this. Otherwise, it seems as though Charles' account merely begs the question. Aristotle's opponents would deny just this fact.

account of generation or motion couched simply in terms of material interactions.²⁷ Because Gotthelf understands goodness in Aristotle in terms of *telos* and *energeia*, the same move is not available to him: goodness will not escape reduction if those features or concepts which explicate it do not.²⁸

The thought expressed by Charles and Cooper, according to which it is precisely the *normative* element that escapes material-efficient accounts, has a palpable similarity to what is by now a very common and natural thought, namely that the normative and the merely descriptive come apart. That is to say, one can worry that the suggestion is really an expression of the fact/value distinction, for the suggestion is just that one could give a complete description of the elemental transformations leading to the presence of an organism and its parts—a complete material-efficient causal story—but nonetheless fail to account for why such processes or what they bring about are good, or why things can be said to have turned out badly when the process goes awry. For those wishing to avoid attributing to Aristotle a conception of teleology that does not involve efficient-causal gaps, this can be an intuitive way of preserving the importance and necessity of teleological explanation, one to which contemporary debates and distinctions have made us particularly receptive. But because ‘good’ is not a univocal term or *sui generis* property, but a homonymous term explicated in each case by reference to an individual’s

²⁷ Code and Moravscik (1992) deny that reduction is at issue in *any* sense, arguing that Charles’ framing of the problem is only possible on the basis of a number of anachronisms, e.g. the notions of ‘matter,’ ‘the physical,’ and ‘efficient causation’ employed. Matter itself, they argue, is understood teleologically or functionally, and so the conceptual space necessary in order to question whether or not ‘material’ explanation is sufficient is a non-starter. Though I will not undertake to criticize Charles on this score, I largely agree with their criticism, which could very well be said to apply to all those authors who take Aristotle to be concerned with reductionism, e.g. Gotthelf, Cooper, Charles, Berryman, etc..

²⁸ Naturally, given my agreement with Gotthelf about how goodness is to be understood, namely in terms of the *telos* and form and actuality, another account of the relation between final cause and material-efficient causes will need to be given.

kind, the possibility of a 'reductive' explanation is much nearer to hand: a feature is good just insofar as it standardly belongs to the organism's kind and is employed in the exercise of its specific life-capacities, generally in relation to nutrition and reproduction. It is hard to see why, on this understanding, the goodness of features or the processes leading to them could not be explained in material-efficient terms, or at least non-teleological ones.²⁹ The immediate plausibility that it is specifically the *good* that is irreducible is, I fear, a function of the hold that the fact/value distinction continues to have, even on those who are otherwise by general inclination and habit of mind opposed to it. To the extent that one finds it unAristotelian, one is to that extent less likely to find the suggestion a persuasive one. But if one rejects that suggestion, one will need another account of just why material-efficient causes will not suffice for all of one's explanatory projects.

3.3 ELIMINATIVISM

There are, however, views which fit much less easily into the dialectic that Berryman describes and which can seem inescapable. In a very influential paper, Susan Meyer has argued that Aristotle opposes not the existence of sufficient material conditions necessitating a given outcome, but the thought that those natural things we call sheep or oxen lack intrinsic efficient

²⁹ As we will see, Meyer (1992) also rejects the suggestion made by Cooper and Charles, for she does think that, for Aristotle, certain efficient causal claims *are* sufficient to account for the goodness of an outcome. She asserts that the claim that an animal develops those parts that are good for it just is the claim that it develops its characteristic parts characteristically (805).

causes.³⁰ In other words, Aristotle is concerned not with reductionism, but eliminativism.³¹ Because natural things have in themselves a cause or source of motion and rest, the denial of such sources to, e.g., sheep is just to say that sheep do not have natures. Aristotle thus opposes the thought that the things we agree are natural come about accidentally, and the rejection of this thought, she argues, is sufficient for the truth of natural teleology.³² Aristotle does or can accept that the natural activities of the elements are ‘causally sufficient’ for the development of the parts of animals and plants, or to account for generative processes, and so he need not admit of an ‘irreducible potential for form;’ rather, all Aristotle needs for final causal claims is that the end in question have a *kath’ auto* efficient cause, which amounts to an efficient cause exhibiting a certain degree of counter-factual robustness.³³ There must only be a ‘reliable mechanism’ for the generation of natural ends. Given Aristotle's requirements on explanation, Meyer argues, no set of merely causally sufficient elements will enable us to explain a given phenomenon, even

³⁰ It is interesting that Meyer is nowhere mentioned in Berryman’s article, perhaps because the account given by the former does not fit easily into frame furnished by the latter.

³¹ There is, it should be noted, a way of appreciating much of what Gotthelf has to say that minimizes the difference thought to exist between his own account and Meyer’s. Whether organic generation can be reduced to a ‘sum’ of elemental interactions can be understood as the question of whether organisms and their parts issue from *a* motion, on the one hand, or from a mere aggregate or heap of many motions, on the other. One might, that is, characterize the problem roughly in terms of the one and many, mere heaps and true unities. If an animal is the result of a mere heap or aggregate of motions, then it is much less obvious that there could *be* any science of animal generation, for what is most knowable is most unified or unitary, and aggregates have only accidental unity. That is, given the intimate connection between being and unity in Aristotle, the supposition that animal generation consists of a mere heap or aggregate plausibly amounts to the denial that there is any such thing as *the* generation of a given animal, or generation *per se*. But if this is how one understands Gotthelf’s talk of a ‘sum’ of element interactions, the problem now becomes much more similar the problem as Meyer understands it, for this would mean that the animal that results is the accidental consequence of a mere aggregate of efficient causes (perhaps each teleologically directed toward another end), as opposed to a consequence essentially connected to some one efficient cause or efficient causal power. One might then wonder what confers unity on the causal actions which would otherwise constitute a mere heap. Part of the answer might be an intrinsic efficient cause, possessing a distinctive causal power. Of course, this does not yet explain why relation to an intrinsic efficient cause should, in Aristotle’s eyes, suffice for the truth of natural teleology.

³² Depew (2008) argues for something very similar.

³³ A similar claim was also made by Scaltsas (1989), also *contra* Gotthelf.

though on other views of explanation, it would. It is the reliability or counter-factual robustness of the intrinsic cause or mechanism in bringing about its effect (by purely material means) which permits it to serve in explanations.³⁴

Even if one accepts Meyer's account of the nature of the dispute, the nature of final causality is unfortunately no clearer than it was before. To be fair, elucidating the latter was not her aim. She asserts only that intrinsic efficient causal claims are (at least sometimes) sufficient for the truth of final causal claims. On her view, Aristotle denies there can be a good outcome with an intrinsic efficient cause that did *not* come about because it was good, but says little about why that should be the case. The truth of the claim is adduced primarily on the basis of an argument by contrast, according to which, she thinks, it is clear that chance or accidental outcomes are good outcomes that do *not* happen because they are good. What makes something happen *because* it is good is something about its antecedent efficient cause.³⁵ Only in the case of an intrinsic efficient cause does the cause do what it does for the sake of the end. She thinks, therefore, that Cooper's (and Charles') claim that an efficient causal story will not account for the goodness of the outcome is in error. But saying *why* it is that an intrinsic efficient causal claim suffices is difficult because, she says, Aristotle nowhere gives an account of what it is for something to happen because it is good.³⁶ She does, however, offer a possible explanation—a very brief one—and that explanation is strikingly similar to contemporary 'etiological' accounts of purpose or function, though she does not mention them. If the parts of an organism, for

³⁴ Meyer (2002), 800. Code and Moravcsik (1992) argue that Aristotle's dispute with his predecessors hangs in part on 'the need to introduce strongly modal notions of potentiality and actuality to account for self-initiating processes.'

³⁵ Meyer (1992), 810.

³⁶ *Ibidem*.

example, were not good for it, it would not have survived and reproduced offspring like itself. The goodness of the parts in the offspring is a function of their past contribution to reproductive success: x is for the sake of some good, y , because x has the consequence y and y is precisely that consequence of x which in the past led to reproductive success.³⁷

It is unclear that this will do, however, for others have argued that the standard etiological account gives us not a true final causal story, but an historical, efficient causal one about the *explanandum*. The heart, for example, is said to be for pumping blood because (i) pumping blood is a consequence of having a heart, and (ii) the heart is present because of what it does, i.e. pump blood. As Bolton (2015) notes, however, so much depends on the sense given ‘because’ in the second condition.³⁸ ‘Because’ cannot here mean ‘for the sake of,’ because that would make the analysis vacuous. Instead, the ‘because’ is generally spelled out in terms of past reproductive or selective success, in which case the feature in question is present in us because of that for which it was causally responsible in the past, namely the survival of our ancestors.³⁹ To say that x is present because of the end it serves, y , means in this context only that x is present because it *was*

³⁷ The view offered is in many ways similar to remarks made by Furley (1996), 73, who explicitly acknowledges the work of Larry Wright. Charles (2012) calls Meyer’s suggestion ‘adaptationist’ and charges that there is no direct textual evidence for the suggestion. Meyer agrees, offering it only as a *possible* explanation. Importantly (and as is often done in the literature) I am for the moment eliding whatever differences there might be between purposive happenings or events, and purposive parts or items, i.e. functions. The accounts to be given of each are, I think, ultimately the same, though of course there are some differences. On this, Cf. Wright (1976), ch 3, who quite consciously gives quite parallel treatments. My principal concern here, however, is with events or happenings, i.e. purposive motions.

³⁸ Cf. Bolton (2015), 137. He calls the approach in question ‘reductive.’ Cameron (2003) says the same. He argues that Furley (1996) and Irwin (1988) both make this mistake precisely because they follow Wright.

³⁹ The notion of ‘selective success’ even seems to enter into Meyer’s proposal: ‘if such parts were not good for a member of the species, they would not have been reproduced in the offsprings,’ 811. Wright’s original account is actually more subtle, for he explicitly denies that ‘ X is there because in the past X s have done Z ,’ in part because this would fail to distinguish between functional and vestigial organs (89). Even so, he insists on the importance of natural selection to make sense of natural functions (84), on which, more below.

the cause of *y* in the past, thanks to which progeny of the same kind now exist. The explanatory work is thus done by a back-reference to the efficient cause, not by a forward reference to the final cause. So when Meyer tries to explain why the parts of an animal come to be, the explanation is in terms of the good they did for the efficient cause (the parent) which produced that animal and its parts.

3.4 AN IMPASSE AND A WAY THROUGH

The difficulty Meyer encounters when attempting to articulate just how the end might be a cause is but a single instance of a general problem afflicting the literature on Aristotle's teleology, albeit an understandable one given the terms in which his teleology is frequently discussed. I claimed in the previous chapter that the language of limits provided Aristotle the vocabulary in terms of which the problem of teleology was both formulated and solved. I also claimed that once we come to understand this vocabulary, we will understand why the difficulties afflicting later attempts to account for final causation can seem so irresolvable: the terms in which it is generally discussed simply do not permit the kinds of inferences which were available to Aristotle. It is the failure to attend with adequate care to Aristotle's language and its history that explains the problem of which the above is an instance: the literature is simply awash in accusations that someone has collapsed the distinction between final and efficient causes, or reduced the former to the latter. And even when no accusation has been made, there is often a pre-emptive disavowal of the charge. Gotthelf (1976) and Meyer (1992) both insist that they are

not collapsing the two.⁴⁰ Gotthelf (2012) accuses Lennox (1982) of doing so, noting that Lennox would surely deny it, and Charles (2012) accuses Gotthelf of doing so.⁴¹ But of course, Gotthelf denies it. Cameron (2002) accuses Furley (1996) and Irwin (1988) of the mistake, and says that Meyer ‘stops short’ of it.⁴² Most recently, Robert Bolton (2015) has accused a number of commentators of the error: Sedley (2007; 2010), Cherniss (1944), Gotthelf (2012), Bradie and Miller (1984), and Johnson (2005).⁴³ The difficulty of keeping efficient and final causes separate and the temptation to collapse them runs quite deep, and this fact is, I take it, one of the most salient features of the contemporary literature on Aristotle’s teleology, one demanding diagnosis rather than adjudication. The accusation is not simply that a given account is subject to difficulties, but that its author is mistaken about the *kind* of account he or she is offering. There

⁴⁰ Gotthelf (1976/77; 2012), 32: ‘This is not a demand to collapse the final into the efficient cause. It is the potential which is the efficient cause, while the final cause is the object of the potential.’ Of course, what the final cause ‘does’ is still a question, for if final causality is secured by an ‘irreducible potential for form’, and that potential is the efficient cause, it is not yet clear that we have an account of final causality. Meyer (1992), 810-11: ‘It is important to recognize that this result does not conflict with Aristotle’s very clear intention to distinguish between efficient and final causation...My conclusion is not that something’s efficient cause is its final cause...This conclusion does not violate Aristotle’s distinction between efficient and final causation.’

⁴¹ Gotthelf, describing Lennox’ (1982) view: ‘the form at the end is responsible for the process which leads to it because it is the form which initiates the process. But this, notwithstanding Lennox’ protestation, is to confuse efficient and final cause...What one needs to explain is not how the form at the end might serve to initiate the process...but how it is responsible *as end*,’ 144, n.5. Charles, describing Gotthelf’s view of a teleological cause: ‘it is a distinctive type of efficient cause, one which is, in its nature, goal-directed...[then objecting] but teleological causation cannot itself be a species of efficient causation.’

⁴² Cameron (2003), 165: Furley and Irwin ‘read Aristotle’s teleology as an aspect of his commitment to efficient causality...efficient causality is ontologically basic on this view.’ Cameron says Meyer ‘stops short’ because although she gives the same basic explanation that Furley does, she does not actually attribute it to Aristotle, offering it instead as a possible reason for thinking why things come to be because they are good.

⁴³ Leunissen (2010) is unmentioned, but insofar as she accepts Gotthelf’s account of the metaphysical basis of teleology in Aristotle, she too will be subject to the same accusation; and while Bolton does not single out Meyer, he does think the etiological approach described above is also guilty of the charge. Thus, Depew (2008), who also ascribes a standard etiological model to Aristotle, would similarly be found guilty. On Bolton’s account, anyone who attributes to Aristotle that account of purpose most prominent in the contemporary literature is guilty of providing an efficient causal account, not a final causal one. I dare say he is correct.

seems to be no clear notion of what an account of final causation would even look like. But the difficulty is a natural one, given the interminable oscillation between Scylla and Charybdis, outlined above. Commentators very generally and very naturally want to avoid the mysteriousness of causal ‘gaps’, and it is hard to avoid claiming that there *are* gaps if one denies the adequacy of an efficient-causal account. But if one in turn insists on the adequacy of efficient causal accounts, as Meyer does, the role or necessity of final causation seems difficult to maintain. How can both modes of causal explanation obtain without the one, somehow, doing the duty of the other, i.e. taking up some of the slack left by the other?⁴⁴ And if no slack is left to be taken, why should we need both?

We can arrive at a happy resolution of the difficulty discussed above, a difficulty which has proven intractable in the literature on Aristotle’s teleology, only by appreciating again the philosophic and semantic background of Aristotle’s teleological vocabulary, articulated in the previous chapter. Meyer is correct that the truth of intrinsic efficient-causal claims are sufficient

⁴⁴ On the apparent tension between and incompatibility of these explanations, cf. von Staden (1997), and Barnes (1993).

to guarantee the truth of final-causal claims.⁴⁵ Following Meyer, then, I think that at issue between Aristotle and his predecessors is not the question of the ‘sufficiency’ of material-element potentials in accounting for the generation of animals or their parts, but the distinction between accidental and intrinsic efficient causation.⁴⁶ Though Aristotle begins in II.8 by speaking of those who refer all things to necessity, most of the discussion centers around the opposition between

⁴⁵ Gotthelf has responded to Meyer’s paper in print, but it would take us too far afield to consider that response in detail. Briefly, Gotthelf argues that if Aristotle’s predecessors are eliminativist, it is *because* they are reductionist. He concedes that *on Aristotle’s view*, they may very well be described as eliminativist, but on their own terms, they were reductionist. Aristotle’s defenses of teleology are aimed at their own self-understanding, and so at specifically reductionist theses. But on many views (including my own), teleology is simply writ into the nature of motion, and so there will be no non-teleological reductive base. In other words, reduction could only ever be local, specific to this or that phenomenon, never a reduction of teleology to something else absolutely speaking. More importantly, however, it is difficult to make sense of the reductionist views that Gotthelf describes, which, he says, are a matter of *Aristotle’s* understanding of the *self*-conception of his opponents. That is, what we are being asked to parse are two aspects of Aristotle’s own understanding: (i) his understanding of his opponents and (ii) his understanding of their *self*-understanding. Articulating the latter is a difficult project Gotthelf *himself* does not actually undertake in his original paper. There he describes the reductive base in terms of the ‘actualization of element-potentials,’ which is surely not a description of things that could be attributed to Aristotle’s opponents *as they understood themselves*, for it employs distinctly Aristotelian ideas. Gotthelf seems therefore not to respect in his own account the very distinction he invokes in order to criticize Meyer’s. The reductionist view presented by Gotthelf is thus the view of a distinctly *Aristotelian* reductionist. It is indeed difficult enough to explain why on Aristotle’s *own* understanding there could not be an adequate efficient-causal story of generation that would make teleology obsolete, without trying to distinguish the many different kinds of understanding Aristotle might have had of his opponents. One might even think that if the defense of teleology is built on the poverty of material-level accounts, it would be *all the more necessary* for Aristotle’s opponents than for Aristotle himself, because their accounts of the elements and motion quite generally are plausibly more impoverished than his. As a consequence, it would, again, be more difficult to explain why *Aristotle* needed teleology than why his opponents might have.

⁴⁶ Another way to articulate the point at issue is to say that Aristotle’s question is not ‘what is needed, in addition to the physical, in order to generate biological and psychological phenomena?’ This is how Code and Moravcsik (1995) formulate Charles’ approach, and it often seems an apt characterization of Gotthelf’s approach as well. I hasten to add that my agreement with Meyer should not be taken to mean that I believe teleological claims in Aristotle are or could be accounted for by a reliable, material mechanism. Meyer has been construed this way, but as we will see, I simply do not think that the presence or absence of a ‘mechanism’ was Aristotle’s concern or formed any part of his defense of teleology. The presence of an intrinsic efficient causes *is* essential, but this should in no way be taken to mean that there is or needs to be a ‘reliable mechanism.’

chance and purposiveness.⁴⁷ He says, for example, that ‘if then it seems that these things are either by accident or for the sake of something, given that they are neither from chance or the automatic, they must be for the sake of something’ (199a3-6) This remark will seem odd to many because we are accustomed to thinking that there can be non-teleological or non-purposive changes brought about by regular but nonetheless blind efficient causes.⁴⁸ Aristotle’s discussion of chance in the preceding chapters does little to resolve the oddity. Of the different kinds of cause, he says that chance and the spontaneous belong to the efficient cause (198a2-3), and are defined specifically as accidental efficient causes. Thus, in chapter 5, he says that the intrinsic

⁴⁷ More detailed discussion of chance would take me too far afield, but for further discussion, cf. Lennox (1984), Judson (1991), and Allen (2015). I am quite sympathetic to Allen’s account, and nothing he says conflicts with what I shall go on to say. Just as I did in the previous chapter, Allen calls attention to certain features of verbal predication and verbal aspect, and uses these features to make sense of the idea that chance happenings can come to be for the sake of something. In particular, he discusses what linguists call generic propositions, which highlight characteristics of a kind. Allen uses as an example ‘trees burn’ as opposed to ‘trees are burning.’ The same aspectual sense can be given in relative clauses: ‘things that fly’ or ‘things that burn,’ and so also ‘things that come to be for the sake of something’. On his account, then, certain things are customarily done for the sake of certain results, but they can be done without being done for the sake of that for the sake of which they are customarily done. He draws a parallel with Aristotle’s discussion of the voluntary. Throwing goods overboard is not the sort of thing one does voluntarily, but it might be done voluntarily *in a way* in certain circumstances. Similarly, something done with a result other than that for which it is customarily done is done by chance (relative to the result) and the chance cause of what results. The emphasis on generics makes sense of Aristotle’s claim in II.8 that as things are done (*prattetai*), so are they by nature, for one of the uses of present aspect is in generics highlighting characteristics of a kind, i.e. what is essential. Cf. Prasada (2005).

Lennox (1984) distinguishes between causal and descriptive senses of ‘for the sake of,’ adverting to the work of Larry Wright and contemporary evolutionary biologists who are said to make a similar distinction between adaptations and merely useful features. I myself do not find such a distinction in Aristotle, though I can agree that Aristotle’s distinction ‘resembles’ it. The ‘causal sense,’ or the one which does the philosophical heavy lifting, is that one which occurs in the true generic describing for the sake of what that action is done, i.e. the universal, while the merely ‘descriptive sense’ is that one which used with an eye to the particular circumstances in which a thing was done. I take it that generics do describe, but they also give the universal and the form, and explain as a consequence of that fact.

⁴⁸ Gotthelf argues that this is not in fact odd. ‘Given the simplicity of Aristotle’s chemistry’—an interesting phrase, since presumably if Aristotle’s arguments here are pitched at his opponents’ self-understanding, then the point should be predicated on the simplicity of what he takes to be his *opponents’* chemistry—it would be miraculous that the same things should be regularly produced. The neglected alternative is no alternative at all because the materials happened to be inadequate, and so incapable of plausibly providing a genuine alternative. On this view, it is in fact a trichotomy, but one of the possibilities can safely be ignored. But as we will see, I take it the point has nothing to do with the complexity or simplicity of the efficient causal processes. We can make sense of Aristotle’s point as a genuine disjunction, having nothing to do with the quality of his chemistry.

cause of a house is house-building ability, but the accidental cause might be the educated or the pale. And later he says again of the house that the cause is the builder, but the accidental cause the flute-player. Accidentalness is in these chapters always attributed not to the outcome relative to the efficient cause, but to the efficient cause relative to the outcome.⁴⁹ The opposition in II.8 would therefore appear to be an opposition between accidental efficient causation and purposiveness, and because efficient causation *kath' auto* is the contradictory of efficient causation *kata sumbebēkos*, whether or not a given process is purposive will be a matter of whether or not it has an intrinsic efficient cause. When in *Phys.* II.8, then, Aristotle considers the question of whether things come to be by chance or for something, the answer is decided simply by the existence of intrinsic efficient causes of the substances in question. This is, in turn, a function of the regularity of the course of nature, i.e. how things customarily proceed. Consequently, the truth of claims describing the regular or customary course of nature, e.g., 'man begets man,' seem like they *do* suffice for the truth of teleology, as Aristotle understands it. The difficulty, of course, is understanding why.

The difficulty is partly a result of thinking that Aristotle simply adds final causality to a more or less adequate understanding of efficient causality, i.e. that the problems encountered by his predecessors were not, in general, due to failures in their understanding of the efficient cause, but their refusal to recognize or inability to understand final causes.⁵⁰ But Aristotle also says that

⁴⁹ Cf. *Meta.* E.2, however, for cases in which it seems the *end*, rather than the efficient cause, is said to be accidental. Cf. Freeland (1991), 56. As we shall see, this is perfectly compatible with the view I go on to give.

⁵⁰ This appears to be Meyer's claim. It is, in a way, true, but as I go on to say, somewhat oversimplified. But it should be remembered that a genuine understanding of efficient causation is hardly easier to come by than an understanding of final causation, and seems to have been subject to an equal amount of dispute throughout the ages. Cf. Schmaltz (2014). Even so, efficient causation is generally treated as though it were perfectly intelligible.

his predecessors spoke of efficient causes ‘not at all clearly, but like those untrained in fights’ (*Meta.* A.4), that they grasped it ‘in a dreamlike way’ (*GC* II.9), or even that they ignored it altogether (said of Democritus and Leucippus) (*Meta.* A.4). One of *our* impediments to understanding the efficient cause (or at least Aristotle’s efficient cause), is precisely the tendency to describe it as the ‘efficient’ cause. On this understanding, it is quite natural to think that what corresponds to the *causa efficiens* is the *effectum*, not the end or aim of the process. But ‘efficient cause’ is not the preferred nomenclature. Although it certainly captures an important feature of the cause in question—that it is in some sense ‘productive’ of the motion—Aristotle generally describes the efficient cause either as that ‘from which’ motion comes (*hothen*) (e.g. *DA* 415b22-23; *Phys.* 195a8), or as the source or origin of motion (*archē tēs kinēseōs* or *metabolēs*) (e.g. *Phys.* 195a10), or some combination of the two (e.g. 194b29-30; 243a33-34). And this might suggest that one of the more salient features of the efficient cause, in Aristotle’s eyes, is not that it is ‘productive’—though he does, to be sure, talk this way—but that it is the *archē* and origin of motion or change. As Tuozzo has noted, those features that seem particularly salient to Aristotle are the directional character of the cause: it is where the motion comes *from*, and it is first—motion *begins* with it.⁵¹ Thus, in *Meta.* A.3, the description of the cause he uses, before he sets out to determine the number and kinds of cause touched upon by his predecessors, is ‘the origin of motion from which’ (*hothen hē archē tēs kinēseōs*).

If Aristotle denies that his predecessors adequately understood either the efficient or the final cause, we might suspect that their failure to understand the one has something to do with their failure to understand the other. But if Aristotle thinks his opponents lacked an adequate

⁵¹ Tuozzo (2014).

grasp of the efficient cause, which seemingly depends on the distinction between intrinsic and accidental efficient causation, then it would seem that by Aristotle's lights, at least, they thought nature governed by chance. Consequently, it seems anything and everything could be considered a cause of anything and everything: the cause of the house could be the pale, the 5 feet tall, the Welshman, etc.. The number of causes simply explodes. For this reason, Aristotle says that accidents and accidental causes are indefinite (*aoriston*), while intrinsic efficient causes are, by contrast, well-defined (*hōrismenon*) (*Phys.* II.5). More important still, the reason why coincidental causes are indefinite or undefined is that for any single event, the causes would be unlimited or *apeira* (*Phys.* II. 5; 196b29). This is a feature of accidents generally. In *Meta.* E. 2, Aristotle considers some of the senses of 'being,' one of which is accidental being. There is, he says, no science of accidental being because accidents are *apeira*. The example he gives is again that between a builder and a house built, but the point is supposed to be a perfectly general one about the nature of accidents: because accidents are *apeira*, and what is *apeiron* is as such unknowable, there can be no science of accidents as such. Trafficking in accidents as the sophists do is akin to trafficking in non-being (*Met.* E.2; 1026b16).⁵² Having explained the unknowability of accidental being in terms of the *apeiron*, the question of limits arises once again.

⁵² I presume accidents are close to non-being precisely because they are *apeira*. Given the tradition of regarding *peras* and *apeiron* as the fundamental principles of all things, one of which is the negation or privation of the other, it would be natural to assimilate these principles to being and non-being, or to think that the former principles in some way approximate the latter.

3.5 NOT ANY CHANCE THING

Aristotle's language in *Phys.* II.8 bears this out in a way that has been insufficiently appreciated. In particular, it has not been noticed that Aristotle's discussion of chance bears interesting similarities to remarks on chance in other places, in particular in places having little to do with final causality. The strict opposition between purposiveness and chance has, as I mentioned above, seemed perplexing to commentators because it seems clear to us, they think, that there can be perfectly blind efficient causal relations having nothing to do with purposiveness. The problem then is to understand why Aristotle thought this opposition compelling, since to us it seems so very objectionable, and his remarks in other places shed some light on the issue. He concedes in *Phys.* II.8 that different ends do sometimes result from the same cause, but denies that it is just any chance end (199b15-17). He had earlier attributed to his opponents the view that 'any chance thing comes to be from each seed' (*Phys.* II.4; 196a31-32), and the same claim is made in *De Partibus* I.1: 'a given seed does not give rise to any chance living being, nor spring from any chance one; but each with a definite parent.'⁵³ On its face, the point would seem to be simply that seeds are seeds of definite things, and not just anything will come from a given seed.

How such remarks might contribute to defending or understanding natural teleology, as we are inclined to understand it, is far from obvious. One can oppose the thought Aristotle attributes to his predecessors without endorsing purposiveness, for the objection only demands that seeds be relatively well-defined in terms of what they are seeds of. This is not a matter of

⁵³ *Phys.* II.4: οὐ γὰρ ὃ τι ἔτυχεν ἐκ τοῦ σπέρματος ἐκάστου γίγνεται; *PA* I.1: οὐ γὰρ δὴ ὃ τι ἔτυχεν ἐξ ἐκάστου γίγνεται σπέρματος, ἀλλὰ τόδε ἐκ τοῦδε, οὐδὲ σπέρμα τὸ τυχόν ἐκ τοῦ τυχόντος σώματος.

teleology, but definition: there are seeds of certain kinds, understood in terms of what they customarily produce, never-mind how. The most hard-headed materialist need not give up on talk of sunflower seeds, and such talk certainly does not make one a teleologist, by contemporary lights. In other words, the disagreement between the mechanist and teleologist, as we might understand them, is one about that in virtue of which seeds produce what they do. They disagree, that is, on whether a reliable mechanism, like a genetic program, or something like an ‘irreducible potential for form’ explains how it is that sunflowers come from sunflower seeds and oaks from acorns. They do not disagree over *whether* sunflower seeds produce sunflowers or acorns oaks, for no one in the contemporary debate thinks any chance thing comes from just any chance thing. For that reason, the insistence that *not* any chance thing comes from any chance seed should seem a positively strange claim to make if one’s goal is to defend the place of teleology in nature. Disagreement over how x gives rise to y depends on agreement about the fact to be explained, i.e. that x gives rise to y , and both parties to the dispute can (though perhaps they need not) continue see the other as genuinely engaged in natural investigation. Someone would, however, be undermining natural investigation as such if there were no constraints on what generated or gave rise to what, for it is incumbent upon anyone possessed of the science or knowledge of nature to be able to say what follows from what, to know how natural motions progress. Consequently, if we are to possess a *logos* of nature worthy of the name, there need to be some constraints on what follows from what—some rules or laws, as it were—for if there were no such constraints, one would not be able to come to or infer any definite conclusions about the natural things at all—any chance thing would follow from any chance thing. But if Aristotle’s opponents lack any real understanding of the efficient cause (by his lights), which

again depends on the distinction between intrinsic and accidental efficient causal relations, then it would seem that in fact this just is the view Aristotle thinks his opponents hold. This view *does* strike at the root of natural philosophy, for which reason Aristotle says that it is ‘impossible that this should be the true view’ (*Phys.* II.8).

But now let us turn to those other, neglected passages in which Aristotle also speaks of chance. In *Phys* I.5, when in the course of discussing the opposites and their nature, Aristotle says it is necessary to assume that not any chance thing is affected by or becomes just any chance thing (188a31ff).⁵⁴ He gives as an example the relationship between the pale and the educated, wondering how anything could come to be pale from being educated unless it were an attribute of what was not pale. It is, he insists, from the not-pale that someone comes to be pale, strictly speaking, and the same goes for everything else as well. Even houses, he says, come to be in this way, for they come from some particular state of separation and end in some particular state of combination. In each case, there are well-defined opposites (*enantia/antikeimena*) for coming to be and passing away.⁵⁵ This stipulation introduces a certain kind of order into the possibilities of motion, of generation and decay, for those possibilities are now severely constrained or delimited in a certain way. In *De Anima* II. 2, we see something similar. There Aristotle addresses among other things the separability of the soul from the body, whether in place or only in thought. Mind seems in this regard different from the other faculties of soul, e.g. sensation, but whatever we might say about that, Aristotle says it is clear that the non-noetic parts of soul are inseparable from the body, though they are different in account. The soul is, in fact, the form and actuality of

⁵⁴ ληπτέον δὴ πρῶτον ὅτι πάντων τῶν ὄντων οὐθὲν οὔτε ποιεῖν πέφυκεν οὔτε πάσχειν τὸ τυχόν ὑπὸ τοῦ τυχόντος.

⁵⁵ He here uses both *enantia* and *antikeimena*, apparently interchangeably.

the body. This is not enough though, for his predecessors seemed to think that there were no constraints on what soul could be fitted with what body. Aristotle, however, says that it does not seem that any chance thing can receive any chance thing (*tou tuchontos dechesthai to tuchon*). He then claims that his own view explains this fact, because the relation between soul and body is the relation of act to potency (*DA II.2*; 414a26-28). These terms are, of course, correlative, for any concrete potency is defined in terms of some definite actuality. As a result, a given body, understood as matter and therefore potency, cannot be the subject of just any form or actuality, for the potency in question is defined in terms of some specific actuality.

More examples from the corpus could be adduced, but on the basis of the above, we can see that Aristotle is concerned in each case to define a relationship between certain terms or things, i.e. to establish that they stand in essential relationships to each other.⁵⁶ While it is true that the educated may come to be from the pale, such a claim traffics in accidental being, and so it is true only in a way. Strictly speaking, the educated comes to be from the uneducated, i.e. not from just anything, but from some definite opposite or *antikeimenon*. Similarly, it is not the case that a horse soul can belong to a human body, or a human soul to a squirrel body. Instead, kinds of body and kinds of soul have an intrinsic or essential relation to each other. Because, then, chance is at the most general level a way of speaking about the accidental, whether we are talking of motion between contraries, as in *Phys. I.5*, or the relation between form and matter, as in *DA II.2*, it is opposed, at the most general level, to the essential, intrinsic, or *kath' auto*. We might then understand the discussion in *II.8* simply as another expression of this contrast. This is, in effect, Meyer's claim, for as we have seen she insists that the disagreement between Aristotle

⁵⁶ Cf. also *Meta. A. 8* and Aristotle's criticism of Anaxagoras, or *A.9* and his criticism of Plato.

and his predecessors is to be understood, at least in part, as a disagreement about intrinsic as opposed to accidental efficient causation. Unfortunately, she offered no explanation as to why intrinsic efficient causal claims should be sufficient for the truth of final causal ones, or why the slogan ‘man begets man’ should suffice for the truth of teleology. We need then to ask about the terms or things which Aristotle thinks are supposed to stand in essential connection with one another.

3.6 ARCHĒ KAI TELOS

Those terms are of course *archē* and *telos*. The difficulty highlighted, but not resolved, by Meyer only really becomes amenable to solution once the terms in which Aristotle himself understands these causes are made explicit and understood concretely. If, that is, we refuse to understand these terms as they so often are, e.g. as ‘principle’ or ‘efficient cause’ and ‘goal,’ then the uses to which they are put and the relations thought to obtain between them become far more transparent. In the previous chapter, we saw that when understood concretely as ‘beginning’ and ‘end,’ the terms are two of a natural trio of terms designating limits, the absence of which was sufficient to make something *apeiron*. It is only when they are understood concretely in this sense that they come to have a conceptual connection one to the other, a connection the excessively abstract renderings only obscure, if not eliminate. It is only when they are understood in this sense that they can do the double duty of standing in an essential, correlative relationship with one another and ward off the specter of the *apeiron* that lurks in accidental

causation. A fragment of Democritus asserts that although the origin of action is courage, chance nonetheless has rule over the end: τόλμα πρήξιος ἀρχή, τύχη δὲ τέλεος κυρία (DK 133). It is precisely the natural philosophic parallel to this remark that Aristotle is concerned to deny: the *archē* of generation is *sperma*, but it is certainly not the case that *tuchē* determines the *telos*, i.e. what the *sperma* becomes. Given Aristotle's understanding of *tuchē* in terms of the accidental, and the accidental in terms of the *apeiron*, his concern to deny any role to *tuchē* to determine the outcome is only to be expected, for admitting such a role is as much as to judge that a science of nature is impossible. The problem lurking here is perfectly analogous to the problem one would confront if the educated *could* come to be from just anything. In the present case, intrinsic *archai* help to delimit the otherwise unlimited causes, i.e. the accidental causes. But just as Aristotle denies that any chance soul can belong to any chance body, or that just anything can be the contrary (*antikeimenon*) of just anything, we need another term which will be said to stand in essential connection with the first. That term, in accordance with the tradition which precedes him, is *to telos*, and Aristotle is concerned to deny that any chance *telos* can belong to any chance *archē*. The delimiting function of the *archē* is coordinate with the delimiting function of the *telos*. Thus, in *Meta.* A.3, when he begins to consider whether and what kinds of causes his predecessors touched on, after describing the efficient cause as the 'ὄθεν ἡ ἀρχὴ τῆς κινήσεως', he expressly says of the final cause that it is the contrary of (*antikeimenon*) the former. There is a complementarity between the two analogous to the pale and the dark, and the left and the right. So understood, motion from the *archē* is by that very fact motion toward the *telos*, just as motion from the left is by that very fact motion toward the right.

We can articulate the difficulty in another way, one which brings out in particular the connection to the *apeiron*: if the sorts of things we would normally call ends or *telē* have not, really, any corresponding *archai*, then it becomes difficult to say in what sense they can be called *telē*, strictly speaking. They are, that is, *telē* of nothing in particular, for the coincidental causes are unlimited. Similarly with the *archē* of motion: any given *archē* will be the *archē* of nothing in particular, or of an unlimited number of things. But those things will in turn have an unlimited number of *archai*, and that is just to do away with *archai* in all but name. In the same way, saying that the educated can come from the pale, or just any chance thing, i.e. anything at all, is as much as to say that ‘educated’ does not really *have* a contrary (*antikeimenon*). What one may call the purely dialectical concession that an opposite is always opposite to its opposite is of little natural philosophic interest unless one can say concretely that *this* is opposite to *that*. In the same way, if one cannot say determinately that *this* is the *archē* or *telos* of *that*, the *apeiron* characteristic of accidental relations still threatens to undermine natural science. The merely dialectical point without concrete application is empty, but empirical investigation without the dialectical point is blind. If we are to speak of *archai* concretely at all, we need to fix *their* contraries as well, which, on the evidence of *Met. A.3*, just are their corresponding *telē*. This will be part of what is involved in the investigation of nature, and this is why questions about the *archē* and *telos* cannot come apart. As Aristotle says, those things are natural which, being moved continuously from some origin in themselves (*apo tinos...archēs*), arrive at some end (*eis ti telos*)’ (*Phys. II. 8*), or in *PA I.1*, in a discussion in which he calls the seed an *archē* and the resulting nature the *telos*, that it is not any chance thing that comes to be from any chance seed, but *this* from *that* (*tode ek toude*). It is one of Aristotle’s constant tasks is to delineate what

follows essentially from what, and to deny that there are real or essential *telē* in nature amounts to the denial that there are natural *archai* from which they could be said to follow, which is as much as to deny that there are natures at all. There would be, then, no natural inquiry and no natural science, for there would be no objects belonging to them. It is, indeed, impossible that this should be the true view of nature, and it is for the above reasons that Aristotle's claim that 'man begets man' should be sufficient for the truth of his teleology, which he clearly takes it to be.

The efficient cause, i.e. the *archē* of motion, will for this reason be 'directed upon' some *telos*, and aimed at it precisely *qua telos*. This thought should be no more problematic than the relation between *causa efficiens* and *effectum* or our 'cause and effect' (which, of course, is not to say that *telos* just means 'effect'). Gavrilo Princip, for example, is related to World War I as cause to effect, but this is just a joint way of saying that Princip, *qua causa efficiens*, is related to World War I, *qua effectum*. Similarly, the action of Aristotle's efficient cause is directed upon the end *as an end* because it is only in relation to the end *as an end* that the efficient cause can itself be properly designated *as* an efficient cause, i.e. an *archē*. This has been one of the primary sticking points in understanding how the end could be a cause, for as I mentioned in the beginning, it was common for scholastics to admit that all natural motions tended toward termini or ends, but to deny the causality of the end, at least in its full sense, to the motions of non-rational beings. Thus Suárez, in *DM XXIII.10*, says that non-rational animals have only an imperfect cognition of the end, and are moved by the end only 'materially,' not 'formally,' by which he means that they do not move to and are not moved by an end *as an end*.⁵⁷ On

⁵⁷ Suárez explicitly cites St. Thomas in defense of his account. Cf. *ST I-II* 1.2, 6.2.

Aristotle's view, however, this issue simply does not arise, because something *is* an efficient cause only insofar as it is an *archē*, and precisely as such is it related to its *antikeimenon*, its opposite, the *telos*, *qua telos*.⁵⁸ A beaver, for example, builds a dam, and the dam is the beaver's end, though the beaver does not recognize the dam *as* an end. How could it? Insofar as the beaver is the *archē* of the dam, however, to just that extent is it related to the dam precisely *as* a *telos*. But again, this conceptual possibility will go missing if one understands the corresponding terms in excessively abstract ways, where the connections between them go missing.⁵⁹

3.7 CAUSES AND ANALOGICAL TERMS

Before moving on to *to hou heneka*, and the distinctive relations involved in that understanding of the *telos*, I want to offer just one final reason for thinking that the *archē kai telos tēs kinēseōs* are co-constitutive, quite apart from Aristotle's statement that they are, mentioned above. In *Meta.* Θ, when discussing the nature of 'potency' (*dunamis*), Aristotle expressly counsels us not to look for a definition and says we should sometimes be content to

⁵⁸ It is worth repeating the claim made by Ockham and which we saw earlier: "In another way, the end or the final cause is taken as that which follows from the operation of another according to the common course of nature, if not impeded—following just as if it were foreknown or desired by an agent. It is in this way that an end is found in things without souls, even supposing that they were directed or moved by no cognitive being. This is how the Philosopher speaks about final causality, toward the end of *Physics II*" (*Summula* II.6), ed. Brown. I think Ockham is quite correct in this, especially if we take the 'common course' of nature to be articulated in terms of generics. But I deny that this is an 'improper' way to think about final causes, for this *can* be a very important point to make, depending on one's opponents, and Aristotle was in fact concerned to make it.

⁵⁹ It is worth noting that the expression '*telos hē telos*' or '*qua telos*' never seems to occur in Aristotle, and so one might wonder to what extent the insistence on this locution, which perhaps captures the distinction between mere terminus and genuine final cause, is an artifact of other assumptions and problems not shared by Aristotle.

grasp things by analogy (*Meta.* Θ. 6; 1048a36-1048b1). He then proceeds to give such an analogy:

as that which is building to that which is capable of building, so is that which is the waking to the sleeping, and that which is seeing to that which has its eyes shut but has sight....Let the term 'actuality' be defined by one member of this antithesis, and 'potency' by the other (1048b1-7).

The content of the term 'potency' is thus given by this proportion and, indeed, seems to name one of the positions in the proportion: "let 'potency' be defined by one member...." That is, the term is grasped by constructing a proportion of the kind, 'as A is to B, so C is to D,' where each of the terms in the proportion is not itself grasped by proportion. The content of an analogical term is given by an analogy whose places are filled in by non-analogical terms, and in that sense one can say that the notion is essentially a comparative one, without any content of its own. Indeed, as the example makes clear, the terms supplied need not have any real relation with one another—that which is capable of seeing and that which is capable of building do not fall under any common genus, so described. To be sure, the things so compared *really are* analogous, but there is nothing that they actually have in common, and in that sense, the term 'potency' refers to nothing in particular save the relation or position in a certain relation which widely disparate or, more precisely, incommensurable things can occupy.

Other terms which Aristotle expressly describes as analogical are 'form' and 'source of motion.' In *Meta.* Λ, he says the causes and principles of different things are different, in a sense, but in another sense the same (1070a32-33). In particular, they are the same if one speaks 'universally and analogically.' The reason he gives, couched in an example, is precisely the reason just mentioned: the elements of, e.g., substances and relations can only be the same

analogically because ‘there is nothing common’ between them. Aristotle will also speak of the ‘elements’ of things, and this term too has rather broad application, used to refer not just to concrete things like air, but also ‘form’:

all things have not the same elements, but analogically they have; i.e. one might say that there are three principles—form, privation, and matter. But each of these is different for each class [*genus*] (1070b17-20).

In one sense, then, we can say that all things have the same elements—form, privation, and matter—but in so doing, we are again not referring to anything in particular or even to any particular sort of thing. We are perhaps at best saying that the elements of all things can be fitted into a certain schema, since, if what was said about ‘potency’ is right, the content of the terms in question will be derived entirely from the construction of a proportion, where the terms name different places in that proportion and the values supplied for them have no real or independent connection with one other. Like ‘potency,’ the contents of the terms are largely derived from the contents of other, non-analogical terms and arise from a comparison of the latter.

What then of the *telos*? The discussion of analogical terms in Λ.4 is peculiar because it does not specifically mention the *telos* or final cause, but only the efficient cause and the three elements named above—form, matter, and privation. He says, e.g. ‘health, disease, body [are the elements], the moving cause is the medical art; form, disorder of some particular kind, bricks [are the elements], the moving cause is the building art’ (1070b29-28). There is, however, every reason to suppose that the *telos* is to be included among the analogical terms as well. First, Aristotle very frequently identifies the *telos* and the form, which is, as we saw in the previous chapter, that towards which (*eis ti*) a motion proceeds. Second, we might surmise that it would require an analogical sense on the same grounds that the other terms do: ‘*telos*’ has such wide

application that nothing common will be shared by all the things to which it is applied, and so there will be no genus to cover them all—no definition will be possible. Third, Aristotle does say quite explicitly that the *causes* are spoken of analogically, and so because the *telos* is a cause, the *telos* will be spoken of analogically. But if that is true, we need then to know what that analogy would look like. If you'll recall, 'potency' designated one place in the proportion giving it its sense, 'actuality' the other. One cannot construct the proportion elucidating the meaning of potency without simultaneously doing so for actuality, for constructing the proportion giving sense to the one term is at the same time to construct the proportion giving sense to the other. As a result, if *telos* is an analogical term whose content is given by an analogy, like potency, where '*telos*' designates one of the positions in that analogy, we can ask, 'what designates the other position?' In the case of potency, the answer is actuality, and in the case of form, matter. In the case of the *telos*, it seems that the answer is the efficient cause: the *archē*. If we look at the examples given above, we can see that the forms specified are precisely the *telē* of their respective moving causes, i.e. medicine and the art of building. That is, the proportion one constructs in order to exhibit the *telos* is the following: as health is to the doctor, so the house is to the builder. The other term in the proportion is the efficient cause. They name complementary positions in the proportion that gives each its sense. If that is true, then in explaining the concept of the efficient cause, one will necessarily employ the concept of the final cause (and *vice versa*), at least for Aristotle. This may be surprising if, again, one understands *telos* primarily as 'goal,' or the efficient cause as that which is primarily 'productive' in some sense, but it is only to be expected if one understands the efficient and final causes as, again, the *archai* and *telē* of motion, in the most concrete senses of those terms. That 'beginning' and 'end' should be co-dependent in

sense is no surprise, but all of this will be simply mysterious if one insists on talking about efficient causes and goals, neglecting the concrete terms in which Aristotle generally describes them.⁶⁰

3.8 TO HOU HENEKA

On the view articulated, what makes the difference between whether or not something happens for an end depends on whether or not it comes from a non-accidental efficient cause or *archē* of motion. This much has been articulated elsewhere. ‘Chance’ in Aristotle is understood in terms of the accidental and the *apeiron*, and so has no necessary connection to motion. At issue generally is the intrinsic or essential relation between things or terms, e.g. that from which and to which motion occurs in *Phys.* I.5, or the relation between form and matter in *DA* II.2. In opposing chance in *Phys.* II.8, then, our question should be about the things or terms which Aristotle takes to stand in essential relation to each other. Those things are the *archai* and *telē* of motion. At the conceptual level, they are intrinsically related as opposites (*antikeimena*). But thinking of nature concretely and scientifically in terms of them means that not just any *telos* can belong to just any *archē*, just as thinking about nature in terms of *enantia* concretely and scientifically means not just any opposite can come from just any opposite, e.g. the pale from the

⁶⁰ One might think that the allegedly co-constitutive character of the two concepts is merely an artifice of the way the proportions have been set up. Surely something other than the efficient cause could occupy the corresponding place in the proportion. Filling the corresponding place with anything else, however, would mean that the place we are trying to fix with the *telos* becomes something else. Health/doctor is final/efficient, but health/sickness is form/privation. It is not unlike the fact that the quarter/quadruple is exhibited by 2:8::3:12, but the half/double is 4:8::6:12. Keeping the values fixed for one place but changing the others is to change *both* concepts exhibited.

ignorant. Even if we appreciate the general conceptual point, failing to apply it in the concrete case threatens to undermine natural inquiry, for one then risks drowning in the *apeiron*. Thus, the interminable oscillation so often present in discussions of final causality and its relation to efficient causality simply does not exist for Aristotle.

Nonetheless, we might *still* wonder how ‘purposiveness’ gets into the picture. One might concede a thin or deflationary notion of the *telos* according to which (i) it is the limit of motion and the form towards which motion proceeds; (ii) it is that in virtue of which a motion has its formal unity or specific identity; (iii) it figures only in coming-to-be, not passing-away; (iv) it is that to which the efficient cause is essentially related, and then precisely *as a telos*; one might concede all the above and yet insist that this constitutes an essentially different notion than that notion truly animating Aristotle’s ‘teleology,’ namely *to hou heneka*, ‘the that for the sake of which.’ It is the *telos* in this latter sense which approximates ‘goal,’ and is essentially distinct from that which has been discussed hitherto.⁶¹ It is this latter notion that still needs to be accounted for, since for all that has been said, one might still think that the relations between the *archē* and *telos*, how we get from here to there, are to be accounted for merely in terms of a series of blind material interactions or some sort of ‘mechanism.’⁶² That is to say, one can still ask about the possibility of a ‘chain’ of material necessity beginning with the *arche* and ending with the *telos*.

⁶¹ Though it is worth noting that if Aristotle never uses *skopos* in the natural philosophical works or (in any relevant discussion) in the *Metaphysics*, then *a fortiori* he never glosses *to hou heneka* with *skopos* in those works either.

⁶² On the basis of the foregoing, however, even this possibility should be seriously in doubt. If the series of interactions is not essentially related to some *archē*, then it will be a matter of chance that the *telos* results. But if so related, the series will to that extent be intrinsically related to the *telos* as such.

Though the above question is perhaps legitimate, there is nonetheless good reason to think, on the basis of what has been said, that purposiveness or *telos* in the sense of *to hou heneka* now comes rather cheaply, since Aristotle very often seems simply to understand *to hou heneka* in terms of the *telos*. Thus, in *Phys.* II.2, he says that ‘in any case of continuous change which comes to a *telos*, this concluding point is also *to hou heneka*’ (194a28-29).⁶³ In *Phys.* II.8 he says that ‘whenever there is a *telos*, the earlier sequence of things is done for the sake of this’ (199a9-9), and in *De Partibus* I.1, he says that ‘we say “this is for the sake of that” whenever there appears to be some *telos* towards which the change proceeds if nothing impedes it’ (641b24-25). As a simple matter of fact, then, I think that the above does license us to suppose that purposiveness enters the picture automatically once we have secured the place of the *telos*, for all three remarks give us a sufficient condition for inferring purposive relations: in any motion proceeding to a *telos* (no doubt from an intrinsic *archē*), what comes before is for the sake of the the *telos*. One might still object, however, that the sense of *telos* deployed here is not that of limit, but that of ‘goal’ or ‘aim,’ and thus that it is wrong to assimilate the *telos* here to all those other instances of *telos* which we have seen thus far, instances in which it means primarily ‘limit’. Making this distinction between *telos* as *peras* and *telos* as goal or *skopos* (which, again, occurs exactly nowhere in any of Aristotle’s natural philosophic works) will be a tempting one, perhaps because of a lingering sense that the notion of limit could hardly do all theoretical work necessary, to say nothing of the habit of understanding *telos* as ‘goal.’ It is, however, difficult to maintain in light of the texts, for Aristotle in a number of places assimilates the *telos* as limit and *telos* as that-for-the-sake-of-which. In *De Motu*, for example, he says that ‘all animals both

⁶³ Of course, death is not a *telos*, for reasons given in the previous chapter. Only good things will be *telē*, i.e. only actualities and forms.

impart movement and are moved for the sake of something, so that this is the limit (*peras*) of their movement, the thing for the sake of which' (*to hou heneka*) (*DM* 6).⁶⁴ More compelling still, however, is a lengthy remark in *Meta.* α.2:

Moreover, that for the sake of which (*to hou heneka*) is an end (*telos*), and as such it does not exist for the sake of something else but others exist for its sake. Thus, if there is to be such one which is last (*eschaton*), the process will not be infinite (*apeiron*); but if there is no such [i.e. no last—*eschaton*], there will be no that for the sake of which (*to hou heneka*). But those who introduce the unlimited (*apeiron*) are unaware of the fact that they are eliminating the nature of the good, although no one would try to do anything if he did not intend to come to a limit (*peras*). Nor would there be intellect in the world; for, at any rate, he who has an intellect always acts for the sake of something, and this is a limit (*peras*), for the end (*telos*) is a limit (994b9-16).

Aristotle here seems to have in mind principally action, but even in this case he is quite clear that *to hou heneka* of which he speaks is a *peras* and *telos*, which terms are adduced, as they so often are, both in Aristotle and in philosophic tradition prior to him, to ward off the specter of the *apeiron*, quite independently of any connection to 'purposiveness.' They should, for that reason, be taken in the very concrete senses to which I should hope we are by now becoming accustomed. But it should be clear that it is this very sense that is also *to hou heneka*.

3.9 FUNCTIONS AND GENERICS

It was customary among the scholastics to distinguish between the *finis generationis* and the *finis rei genitae*, i.e. the end of generation and the end of the thing generated.⁶⁵ The account

⁶⁴ Cf. also *Meta.* Δ. 17.

⁶⁵ Cf. Des Chenes (2000), ch. 6; Thomas, *Comm. Physica. Liber II, lectio* 11.

offered thus far plausibly makes most sense of, and perhaps only applies to, the end of generation or motion: *telos* as the limit of coming to be. Nothing has been said of the end of the thing generated, and it is this sense of end that best captures the idea of a thing's function.⁶⁶ One could perhaps claim that the parts of a process are for the sake of the end of that process, without supposing that the parts of the final product were themselves for the sake of anything. One might think, in other words, that some further story needs to be told about the parts of the product of the process, since making sense of functions, the idea goes, is importantly different from making sense of the *telos*-directedness of actions or behaviors. This would still be the case even if, as Wright has argued, the accounts of functions and *telos*-directed motions are nonetheless quite similar.⁶⁷ Thus, even if we can understand (i) how the liver is the end of a particular process of generation, we need to know more about (ii) the liver itself and the role it performs in the life of the organism, and (iii) the relation between the first and the second, for part of the dispute between Aristotle and his predecessors touched on precisely this. The view Aristotle ascribes to his opponents in II.8 can look like a proto-evolutionary view, according to which parts or features and conglomerations of them come to be and, *mirabile visu*, turn out to be useful for their possessors: 'every part turned out to be just as it would have been if it had had some purpose [and] the creatures survived because, spontaneously, they happened to be put together in

⁶⁶ Indeed, Gotthelf (2012), 43, even says that 'Aristotle's notion of what something is for the sake of is pretty much equivalent to our notion of the function of something.'

⁶⁷ Wright (1976) speaks of the 'enormous parallel that obtains between goals and functions' (81), and naturally his account of the two reflects this. Wright says of 'goal' directed behavior that 'S does B for the sake of G iff (i) B tends to bring about G; (ii) B occurs because (i.e. is brought about by the fact that) it tends to bring about G.' Of functions, he says 'the function of X is Z iff: (i) Z is a consequence (result) of X's being there; (ii) X is there because it does (results in) Z.'

a useful way' (*Phys.* II.8; 198b26-30).⁶⁸ Those creatures not fortunate enough to develop useful parts or harmonious collections of them perished. A similar thought is expressed in *De Partibus*, for there Aristotle describes a view of Empedocles according to which the spine is as it is because in the process of generation it happens to break as a result of twisting. It is a distinct fact, unrelated to the one just described, that the spine, now 'broken,' is actually quite beneficial to its possessor, for it can consequently bend and move in ways it would not have been able to otherwise. The difficulty then is one of explaining in what sense the parts of animals can be said to have functions, and what role those functions have in the generation of said parts. We need, in other words, to know why the items that come to be do not merely happen to be useful for various purposes, but that the purposes they serve are in fact their functions, and that they come to be for the sake of these.

Now, it has been argued by Allan Gotthelf that a thing only has a function or purpose if it came to be for that function. In other words, being-for-the-sake-of is dependent on coming-to-be-for-the-sake-of. A spine, for example, is only for the sake of bending and compressing if it resulted from an irreducible potential directed on it. If, by contrast, something comes to be by a sum of material interactions, then whatever function the thing serves is not actually its function in the strict sense, for a thing's function or purpose is supposed to explain its presence, and *ex hypothesi*, the presence of the thing in question is explained by the sum of material or elemental interactions, indifferent to the utility of what is produced. This has struck others as getting things

⁶⁸ This is more or less Kant's view: 'So far as experience is concerned, there is no further knowledge than what Epicurus granted it, namely that after Nature had formed eyes and ears, we use them for seeing and hearing, though that does not prove that the cause producing them must itself have had the intention of forming this structure in accordance with the purpose in question; for this we cannot perceive, but can only introduce by reasoning, in order merely to recognize a purposiveness in such objects' (*P* 20: 293-4). This will be discussed in chapter 5.

the wrong way around, for they take it to be characteristic of Aristotle that being, whether for-the-sake-of or otherwise, is always prior to coming-to-be, and so we should understand a thing's coming to be for the sake of something in terms of its being for the sake of that something.⁶⁹ But for Gotthelf, the claim that something has a function only if it came to be for that function is intended to capture the distinction between genuine function and merely fortuitous utility. That is, of all the things that a given part might do, like make thumping noises in the chest, the genuine function of pumping blood is grounded in the fact that the heart came to be for that reason, and not to make thumping noises. This thought corresponds to the second clause in Wright's account of functions, discussed above, and Gotthelf himself says as much.⁷⁰ Knowledge to the effect that a thing in fact has a function depends on knowledge of its causal history, and if that causal history makes no reference to the product's function, then it cannot be said that that product came to be because of what it does. The thing's function will not, in that case, be causal or explanatory. An irreducible potential for form having the end as its intentional object is therefore necessary if the thing is to have a function.

Gotthelf's account will be problematic for anyone who finds the potential for form mysterious, as was discussed above. But more importantly, because he is generally concerned with the conditions under which a function might be attributed to an individual, his account is also unacceptably nominalist, and this is a feature it shares with some portion of the contemporary literature on teleology. At the end of a postscript to his original essay, and after

⁶⁹ Cf. e.g. Charles (2012).

⁷⁰ Gotthelf (2012), 43. Cf. also Wright (1976), ch 3: 'The etiological condition is what distinguishes consequences that are functions from those that are not. The function of X is that particular consequence of its being where it is which explains why it is there.'

drawing a parallel to the standard etiological account of function, Gotthelf says that ‘Since only individuals can come to be, the thesis defended in this section [‘a part, A, is for the sake of doing something, B, if, and only if, A in fact does B, *and has come to be* for the sake of doing B’] makes the individual prior to the species for purposes of explanation.’⁷¹ Gotthelf’s remark suggests that claims about the species kind are true in virtue of prior claims about individuals, which alone come to be. Indeed, the conditions he gives cannot be applied to anything taken generically, e.g., the liver, because the liver taken generically, as Gotthelf notes, does not come to be, and so the conditions pertain only to whether or not *this* liver might be said to have a function.⁷² Indeed, note the tense of the second condition Gotthelf gives: ‘*has* come to be.’ It must therefore be individuals to which it applies, since only individuals can be said to *have* come to be, except perhaps in the context of evolution.⁷³ Consequently, one could only ground a general claim, e.g. ‘the liver is for processing blood’ on the fact that the criteria for the attribution of a function to an individual are met by the instances of that kind, at least in Aristotle’s world. But if one thinks that, for Aristotle, explanation always proceeds through the universal or essence, then while it may very well be the case that we apprehend the universal only through rigorous studies of individuals, in which case the individuals can be said to have a certain epistemic priority, it is nonetheless *also* the case that the general form and essence of the thing

⁷¹ Gotthelf (2012), 44.

⁷² Of course, there is *a* sense in which the liver, taken generically, comes to be, for it belongs to the class of things that are generated, as opposed to, say, the heavenly bodies.

⁷³ This qualification is important, but again is only supposed to flag the fact that, plausibly, on an evolutionary view, the *kinds* come to be. The *form* of purposive explanation would still remain the same.

has a metaphysical priority in virtue of which the individual is said to possess the features that it does.⁷⁴

It is in this sense that Gotthelf's account may be called nominalist, and it is this focus on the conditions for attributing functions to individuals that distinguishes a great deal of the contemporary literature on teleology, for contemporary accounts of purpose or function are frequently tested against intuitions about whether, e.g., Davidson's Swampman or some variant thereof would possess biological functions.⁷⁵ Some will take it as a feature, others a bug, that the standard etiological account of function entails that Swampman has no functional parts or organs, because he/it simply hasn't the right etiological story to have functions. Similarly, others have imagined a scenario in which a stick, floating down a river, gets caught among some rocks and creates a backwash keeping the stick in place. In this scenario, it is thought, the stick should have the function of creating a backwash, because it meets the conditions set out by the standard etiological account, and yet most of us, it is thought, would not be willing to ascribe the stick a function. Aristotle's concern, however, is not whether or not Swampman would have functions and why (or why not), for this is just an instance of that concern which Code and Moravcsik (1992) have rightly denied was Aristotle's: 'what is needed, in addition to the physical, in order to generate biological and psychological phenomena?' The answer, it is said, is a certain kind of efficient causal history, but whatever the extra condition might be, the preoccupation with such cases indicates that the criterion of adequacy for an account of function is how well they do or do

⁷⁴ *APo.* I.24; 86a4-10; *Meta.* Γ. 5; Z.10

⁷⁵ E.g. Perlman (2004), Lewens (2007), Cameron (2003), Millikan (1984). Cf. Davidson (1987) for the original example, though something like it is presented by Boorse (1976) as a criticism of Wright's account of functions.

not conform to what we might say about individual cases, and this is tested by imagining scenarios that could hardly be said to occur customarily, or to describe how things happen by and large. On Gotthelf's account, supposing a token spine came to be by a sum of elemental interactions, its function would not explain why, in this case, it was there and so it would not actually have the function of bending and compressing. It would at best function *as* a spine and its possession of the features necessary for doing what a spine does would be merely fortuitous. In the absence of the appropriate history, any given item is merely 'good for' x but not simply 'for the sake of x .'

Wright says that this distinction, i.e. between being 'for' and merely 'good for' is 'often ingeniously marked by 'function as,' and the second condition in the standard account—the etiological condition—is supposed to distinguish between these, as we noted above.⁷⁶ But lurking in the distinction itself is an important conceptual truth, not unlike that noticed by Sellars between 'is' and 'looks' talk. Sellars suggested in *Empiricism and the Philosophy of Mind* that the language of 'looks ϕ ' is derivative of 'is ϕ ', in the sense that one cannot engage in the former unless one has already grasped how to use the latter.⁷⁷ Similarly, 'function as' is derivative of straightforward function talk. One can certainly talk of something functioning *as* a bookshelf or paperweight, but this depends on the prior understanding of what it is to be a bookshelf and so for something to do what it is that bookshelves characteristically do. More generally, such talk depends on a background of things unproblematically taken to function in certain ways, and so in a world without functions, nothing even functions *as* anything else. In other words, 'function as

⁷⁶ Wright (1976), 78-79.

⁷⁷ Sellars (1956), §3.

x' depends upon a prior stock of 'whats' and what they usually do, i.e. the roles they typically serve or their characteristic activities, and these can be articulated in terms of generics. In fact, it has been insufficiently appreciated that the progenitor of the standard etiological account makes just this point.⁷⁸ Wright counsels 'grammatical caution' in understanding the account he offers, for that account possesses a 'misleading grammatical feature.'⁷⁹ In particular, Wright thinks one will go wrong in supposing that the account of function he gives applies in the first instance to individuals. Thus, he says:

when we say 'the spider (or, a spider) possesses the ability to spin a web because that allows it to catch food,' 'the' and 'a' are seldom used to refer to a specific individual, and 'that' never does. 'The spider' is usually equivalent to 'spiders' (like, 'the American farmer') and 'that' invariably refers to a property (e.g., an ability or propensity) of a certain *type* of thing, and logically cannot be limited to a specific instance of the type...So in the standard formulation, 'X is there because it does Z,' it is important to recognize that there is a sense in which X *may* refer to a specific instance, but Z may not.⁸⁰

The use of the definite or indefinite article is not generally intended to refer to an individual (though it may), but to a kind, for at least in the case of natural things, functions are generally ascribed to kinds, and to individuals in virtue of the kinds to which they belong.⁸¹ This, it seems, is what in part distinguishes natural from artificial functions, for Wright asserts that the conscious choice of an individual can 'baptize' a thing with a function, as it were.⁸² In such a

⁷⁸ If teleological and functional claims in Aristotle are understood as generics, as I think they should be, then the account will be quite harmonious with the account Allen gives of chance, discussed above (fn. 47).

⁷⁹ Wright (1976), 87.

⁸⁰ *Ibid*, 88.

⁸¹ There may, in certain strange cases, be some difficulty in determining whether or not a individual belongs to a certain kind, but that is another matter.

⁸² Wright (1976): 'I think this is the major structural difference between conscious and natural functions, and it is on this consideration that any talk of a difference in kind between the two must rest' (89).

case, an agent chooses one consequence of a thing among others as the essential one, whereas in the natural case if some consequence is to be responsible for a thing's presence, that fact is determined by natural selection, which takes generations.⁸³

This distinction between natural and artificial functions will go unnoticed if one focuses only on Wright's schematic account of functions, common to both, according to which, as we have seen, 'the function of X is Z iff: (i) Z is a consequence (result) of X's being there; (ii) X is there because it does (results in) Z.'⁸⁴ And, indeed, the 'grammatical' distinction that Wright called attention to *has* gone unnoticed, and so the primacy of the generic claim in function ascriptions has been neglected. But it is in precisely these terms, I propose, that we are to understand Aristotle's teleology. To the extent that Aristotle is concerned to defend the place of teleology in nature, he is not concerned with the necessary and sufficient conditions for attributing a function to an individual, but the necessity of such generic functional descriptions in understanding natural phenomena quite generally. This necessity will become clear only when we understand the 'form' of such descriptions, and attempting to articulate that form is a quite different project from articulating necessary and sufficient conditions for ascribing a function to an individual. One might of course think that an account of function will involve criteria by which to distinguish between what things are for, as opposed to what they are merely 'good for,' and this is the role of natural selection in the standard account. But as Bolton argues, Aristotle very often (which is not to say always) takes the functions as given and attempts to explain why we are, in general, licensed to understand nature in terms of them, not to give a rule or rules for

⁸³ Wright (1976), 89.

⁸⁴ Note that, unlike Gotthelf's, Wright's second condition uses the present.

determining which if any among the given consequences of a thing is its function.⁸⁵ In other words, Aristotle is not concerned to give us a criterion which might tell us which are the true generics, or how to *apply* the distinction, but to insist on the indispensability of the distinction itself and its use in natural philosophy.

3.10 ‘WHY IS IT THERE?’

On the standard account, y is the function of x only if x is there because it does y . At least in its original formulation by Wright, the possessor of the function is most often (at least in the case of natural functions) a generic subject, and the claim itself a generic in the linguistic sense. Wright, however, thinks that ‘establishing a functional explanation...indicates the presence of a selection background of some kind,’ and natural selection is to play just such a role in the case of natural functions.⁸⁶ So even if Wright thinks the natural function ascriptions in which we are principally interested are generic claims, he thinks that they are underwritten by natural selection because functions themselves depend on some background of selection. That the heart is for pumping blood and not making thumping noises in the chest is something ‘decided’ by evolution. On the standard account, then, selection, whether natural or conscious, is supposed to explain why a given feature ‘is there,’ for selection determines which among the many consequences of a thing is its function, and it is, on the standard account, part of the nature of a

⁸⁵ Bolton (2015), 142.

⁸⁶ Wright (1976), 91. Cf. also his claim that ‘just as conscious functions provide a consequence-etiology by virtue of conscious selection, natural functions provide the very same sort of etiology as a result of natural selection’ (84).

function that it explain a thing's presence, i.e. why it is there. Selection, in other words, determines what is a genuine as opposed to accidental function. As we have seen, however, this means that functions are explained by antecedent causal factors, most importantly past reproductive success in the natural case. That is, that consequence for the sake of which a feature is present is only explanatory because there are antecedent causes bringing about just this feature and selecting for just this consequence of that feature. For this reason, the account has often been thought to be reductionist. Gotthelf escapes this objection, if he does, only by endowing the efficient causal potential with a certain intentional object, namely the end. This will be satisfactory only for those who think good sense can be made of intentionality in non-sentient things, and indeed one of the principal critics of the standard etiological account has argued that the consequence of a feature can only be explanatory for things that come to be by art, i.e. in just those things that are products of forethought or design. In all other cases, the explanation of a thing's presence or why it is there is due to antecedent, i.e. efficient, causes.⁸⁷

It has, however, been denied that an account of function even needs to capture what the second clause in the standard etiological account attempts to capture, namely an explanation of why a certain part or feature is present. Robert Cummins, most notably, has denied the need for such an account and, as I noted, has suggested that an account insisting on the point will apply only to cases of intentional design. He argues that we should instead understand a thing's function merely in terms of its causal contribution to the exercise of a certain capacity. Most often, this is understood mereologically, where the function of a part in a system is the causal

⁸⁷ Cummins (1975). Cummins argues that natural selection cannot do the work that Wright wants it to do, because it depends on a misunderstanding of evolutionary theory. In any case, selection is no part of Aristotle's theory, and so the account of 'why something is there' must be explained in other ways, if it needs to be explained at all.

contribution to the exercise of the capacity of the containing system. Commentators have tended to attribute to Aristotle some form of the standard etiological account, and this is unsurprising, at least insofar as many have charged that Cummins' account is in fact an eliminativist view of functions.⁸⁸ Buller (1999), for example, says that 'Cummin's analysis of the concept of function makes the function of an item merely its causal contribution to a complex analysis. While this certainly succeeds in avoiding appeals to anything other than efficient causation, it does so at the cost of emptying the concept of function of all its teleological content.' Walsh (2008) describes Cummins' as the 'anti-teleological' approach to functions and Pavlopoulos thinks Aristotle's approach exactly the opposite of Cummins', because, he says, Cummins 'reduces functional explanations to part whole relations, whereas in his scientific practice, Aristotle very frequently explains the constitution of living beings by what we would call their function.'⁸⁹

Commentators have therefore generally avoided Cummins' account of functions because they think it eliminates functions in all but name, and that is surely a weighty objection. A given whole and its activity are explained in terms of the contribution of its parts, and this seems like the wrong way around, at least as far as Aristotle is concerned. We want rather for the parts and

⁸⁸ Cf. e.g. Cameron (2004), Bigelow and Pargetter (1987), Buller (1999). Nussbaum (1978) is, as far as I know, the only one to think Aristotle's account of function is most similar to Cummins'. She thinks Aristotle's question was something more like 'How does *x* work?' rather than 'How did *x* get there?'

⁸⁹ Pavlopoulos (2003). The truth of the claim that Cummins' account is 'anti-teleological' depends of course a great deal on the definition of 'teleological,' for it has been argued that, in the 18th century, 'teleology' was concerned precisely with the interrelationship among parts in an organic whole, i.e. the interdependence exhibited by parts in certain organic systems and their contributions to the maintenance of the whole. On this, cf. Toepfer (2011), who briefly distinguishes the mereological concerns of Kant and his contemporaries from Aristotle's concern with the dispositions of things to achieve certain goals. Aristotle's teleology, he says, centers around the model of an agent who uses tools. This is true, in a way, but the mereological aspect is, as we shall see, essential. In addition, Kant himself describes the parts of a natural end as tools, and so his account is not *merely* mereological. Kreines (2007) argues that Kant's account of teleology, though couched largely in the language of wholes and parts, is not Cummins' because Cummins' is 'non-teleological' in the sense that a thing's function does not explain its presence. This will be addressed in the following chapters.

their presence to be explained by their contribution to the whole and its activity, or for that for the sake of which a part is present to explain its presence. Livers and teeth there are, to be sure, but on Cummins' view they have no 'functions' in the sense that most seem to demand because their presence is not explained by their consequences. Perhaps they play certain characteristic roles in the lives of their possessors, even customarily or by and large, but these roles are not their 'functions' in the traditional sense, i.e. that for the sake of which they are there. Even so, and if we continue to speak in terms of generics, we can say that these parts have or perform certain characteristic activities, or have roles in a complex activity characteristic or typical of them. Such a suggestion would go beyond Cummins' account only insofar as it claims that certain activities belong essentially to certain parts on the basis of the ordinary course of nature. But again, this need not mean anything more than that there are true generics to the effect of, e.g. 'the liver filters toxins from the blood.' Claims about purpose have still been studiously avoided. The point is just that not any chance part plays any chance role. But if we can admit this we might then consider the roles or activities of these parts their *erga*, their proper work. As I noted above, Gotthelf claimed that 'being for the sake of' is 'pretty much' equivalent to the modern notion of function, which he then subtly distinguished from *ergon*, for he immediately follows the remark by saying "'is for the sake of' does more theoretical work in the biology than *ergon* does, though the latter is certainly present.'⁹⁰ In asserting that not just any chance part performs any chance role, then, and indeed in saying that the relationship between part and *ergon* can be an essential one, e.g. between the eye and seeing, nothing has yet been said about the sense in which the eye can be said to be 'for' seeing. At best, we are permitted only the thought that, e.g.,

⁹⁰ Gotthelf (2012), 43.

it is with its eyes that the beagle (taken generically) spies a fox, or that the porcupine fends off potential predators with its quills.

3.11 PARTS, TOOLS, AND *TAMETAXU*

In the previous sections, I have been discussing some of the common ways of understanding functions and how those ways of understanding have been thought to be present or absent in Aristotle. I suggested that Aristotle's account of functions should not be construed as an effort to determine when a token of a type has a function, e.g. whether Swampman's 'liver' in fact has any function at all. Rather, I suggested that Aristotle was concerned to defend the importance of generic function ascriptions in one's account of nature and natural things. I then suggested that there were different ways of understanding precisely what a function was supposed to explain, e.g. the role of some part in a larger containing system, or the existence of whatever performs that function. But if I am right that Aristotle is interested primarily in *generic* function ascriptions, and only secondarily in individual ascriptions, then it cannot be the point of functions to explain why some token came to exist. And neither can it be the point of functions to explain why or how a kind came to possess some part, because kinds are neither generated nor destroyed. For these reasons, I do not think that Aristotelian functions explain why something 'is

there.’⁹¹ This leaves unexplained, however, the way in which or the reason why a part or tool can be said to be ‘for the sake of’ whatever it does, and what exactly the function explains. And to that I now turn.

In *De Partibus* I.5, Aristotle ascribes to the animal body as a whole a complex or many-parted activity (*polumeros praxis*). On this basis, one might provide a Cummins-style account of that activity by delineating the different bodily parts which contribute to it. Belonging to each of the parts there will be some *ergon*, i.e. some proper work, and the work it performs will belong as a part to the larger, complex activity of the animal or animal body as a whole, very plausibly its *bios* or way of life.⁹² The parts in question are ‘tools’ to the extent that it is with these that the animal does its work, as a bee stings with its abdomen.⁹³ And indeed Aristotle is clear that ‘there is need of tools (*organōn*) for every work (*ergasia*), and the tools for physical capacities are the parts of the body’ (*GA* I.2; 716a23-25, *PA* I.5; 645b15-20). These parts are presumably one and the same as the parts which he had described earlier in *GA* as the matter of the animal body (*GA* I.1; 715a9-10). And in *GA* I.2, just after the remarks quoted above, Aristotle says that because animals engage in copulation and reproduction, there must be parts of the body in virtue of which they do these things, and that these parts are likely different in the male and female. From

⁹¹ To that extent, then, I agree with Nussbaum (1978) that the point is not to explain of a part ‘how it got there.’ It is in *that* sense that I would deny that Aristotle is interested in the question, ‘why is it there?’ There is, however, a way of understanding that question which I think does speak to Aristotle’s interest, namely ‘what does it do?’ It seems that often the question ‘why is x there,’ asked of some part of a larger system, is looking for no more than ‘what does x do?’ Thus, looking at a particular animal, such as an eagle, someone might point to its beak and ask ‘why does it have a sharp beak?,’ by which they mean ‘why do eagles have sharp beaks?’ And this is just to ask what they typically use them for, or do with them.

⁹² Cf. Lennox (2010).

⁹³ Of course, in Greek *organon* and *ergon* have a clear etymological connection. English ‘tool’ is related to a verb, *taw*, meaning to do, make, or cultivate.

the particular activity, in other words, he supposes there to be a particular part responsible for it, and it is in virtue of this part that the animal is said to be possessed of the corresponding capacity. Thus, he says, ‘male’ and ‘female’ do not apply to an animal in respect of the whole, ‘but only in respect of a particular capacity and part, just as with the visual and ambulatory capacities’ (*GA* I.2; 716a27-32). If from certain fundamental activities it follows that there are parts in virtue of which the organism performs its activities, then the activities would explain the presence of the parts. Thus, we might plausibly suppose that from a complex or many-parted activity it will generally follow that there are a variety of parts each of which contributes to that activity. To that extent, the complex activity of an animal explains the character of the body of that organism. Parts of a certain sort will be present in an animal because the activities corresponding to those parts or tools will belong to whole activity of the animal in question—they are the parts of its mode or form of life.

In the above, ‘for the sake of’ has again been studiously avoided, the point being only that quite generally organisms perform certain actions or activities with certain parts of their bodies, and that from the performance of an action or activity of a certain type it generally follows that there is a part of a certain sort which performs it. Activities must inhere in a subject, and not just any thing can do just anything. We might then on this basis attribute Cummins-functions to a given part according to its role or contribution to the larger activity of the whole, to the *polumeros praxis*. An immediate problem, however, is that the language of tools so frequently employed makes a Cummins’ style account of function impossible, for tools require a user, and no such agent is to be found in Cummins’ account. More troubling is that the demand for a tool-user can seem unpromising for a ‘naturalistic’ account of teleology. Tim Lewens, for

example, has said that ‘it is plausible to think that...the external facts which fix the functions of tools ultimately depend on intentions, which in turn depend on the goals of agents.’⁹⁴ Aristotle, in his discussion of seed in *GA*, adverts as he so often does to the example of craft, saying of the carpenter that his ‘hands move his tools and his tools move the material; in a similar way to this, nature acting in the male of seed-emitting animals uses the seed as a tool’ (*GA* 730b). Aristotle’s discussions are in fact replete with the language of tools, and so some way of understanding such language is necessary if we are not to accuse Aristotle of an illicit analogy between craft and nature.

The solution is implicit in talk of that by which or with which an animal performs a given work, for it is easy enough to understand the ‘tools’ and parts as the means by which or with which some activity is performed. And this is precisely what Aristotle says. In a passage occurring both in the *Physics* and *Metaphysics*, Aristotle says that

as many thing as come to be between (*metaxu*) some mover and the end (*kinēsantos allou...tou telous*), as, e.g. fat-reducing, purging, drugs and instruments are causes of health...all these are for the sake of the end (*tou telous heneka esti*), differing in this, that some are tools (*organa*) and some are activities (*erga*) (*Meta.* Δ.2, 1013a36-1013b3; *Phys.* II.3, 194b34-195a3).

Tools, it would seem, are for the sake of a *telos* because they stand between (*metaxu*) the mover or *archē* and the *telos*. This is then yet another characterization of the ‘for the sake of’ relation, in addition to those mentioned at the very beginning of §8. Here it would seem that being ‘between’ the beginning and end is enough for something to be ‘for the sake of’ the *telos*. Of course, it is not just any chance thing between the mover and the end that will be for the sake of the end, for each of the different crafts employs its particular tools in the service of its particular ends. In

⁹⁴ Lewens (2007), 527.

other words, not just any chance craft can use just any chance tool, not just any chance tool does any chance thing, and not any chance craft produces any chance thing. All three—movers, tools, and products—depend on each other, and these mutual dependencies are ultimately understood in terms of the mutual dependencies between *archē*, *meson*, and *telos*. On the occasion that a tool or *meson* does give rise to some end or *telos* to which it is not generically or characteristically related, then the relation is an accidental one. As we saw above, Aristotle is insistent that not just any *archē* can belong to just any *telos* (and vice versa), just as he is in *Phys.* I.5 that not any *antikeimenon* can arise from any *antikeimenon*, just as he is in *DA* II.2 that not any form can belong to any body. Similarly, certain *mesa* belong to certain *archai* and *telē*, and the parts and tools employed are considered the *mesa* because a tool typically or customarily mediates between an agent and its agent's activity. A hammer mediates between the hammerer and the hammering, and a sauté pan mediates between the chef and the sautéing. To use Aristotle's oft-used example, the saw is for the sake of sawing (*prisis*) and not vice versa, for it could hardly be said that the sawing mediates between the user and the saw. Speaking very generally, then, we can say that to some agent A there belongs some activity C in virtue of some tool, B. The tool will be the *meson* between the *archē* and *telos*, and these, the extreme terms, will belong to or hold one of the other in virtue of the *meson* that connects them. In a very concrete sense, we can say that nature for Aristotle consists of means-end relations, for which reason it can be said to consist of purposive relations.

In the passage quoted above, Aristotle says that as many things as are 'between' the mover and the end are for the sake of the end. This claim, he suggests, applies equally to tools and activities, and it is worth remarking on this equality. A similar thought is articulated in *PA* I.

5, for there Aristotle says that ‘if some actions are in fact prior to, and the end of, others, it will be the same way with each of the parts whose actions are of this sort’ (645b30-32). The suggestion would seem to be that the purposive relations obtaining between parts and the activities belonging to them run parallel, for if we see that some activities are for the sake of others, we can say as well that the parts performing the former are for the sake of the parts performing the latter. Aristotle is quite clear elsewhere that motions have parts. In NE X.4, e.g., he talks of the parts of the building of a temple, among which he mentions the fluting of the columns, the fitting of the stones together, the fitting of the triglyphs, etc.. Each of these parts, he says, is specifically different from the others and incomplete because each is only a part of the whole process. Like animals, then, motions are *anhomoimerous*. And animal bodies, we might say, are *anhomoimerous* because their motions are. It is in this sense that the presence of parts of the body are necessarily explained by what they are for.

If the above is right, then there is no need for an agent with intentions or goals to fix the functions of the things employed, as Lewens suggests. A function is ascribed to a sort of thing on the basis of how that sort of thing is generally ‘used’ by some *archē* in relation to some *telos*, i.e. how things go usually or for the most part. In this, the ascription of function goes beyond the account articulated by Cummins, because here the primary object of thought and knowledge is not the individual, but the form, essence, and universal. But if the function of a certain sort of thing, e.g. the liver, just is the role that it characteristically plays in the activity of those organisms possessing it, and if it plays that characteristic role—performs that activity—in virtue of certain of its characteristic features or parts, it can be no accident that it comes to have in generation just the features that it does. That is, if what it is to be a liver is to play a certain role

in the life of an organism, and it plays that role in virtue of certain of its features or parts, it can be no accident that it should have such parts. The generation of liver just is the generation of something with certain characteristic features by which it plays some characteristic role. Without them, it could not play the role it customarily does, and so would not be the thing that it is. Its coming to be is for the sake of what it does, then, insofar as what comes to be has certain characteristic parts in virtue of which it does what it does, which is that in virtue of which it is what it is.

Furthermore, a thing's function is not *merely* the role played by a part in the exercise of a systemic capacity, e.g. the life-activity of an animal, as Cummins would have it, for it does depend on the *archē* of motion, the activity of which in turn depends on the activity of its tools. For that reason, function ascription *does* depend on a reference to the efficient cause, as the standard etiological account would have it, but the nature of that reference or dependence is very different, for the relevant efficient-causal reference in Aristotle's account of functions does not come in reference to the question 'how did it get there?', as Nussbaum puts it. Rather, the efficient causal dependency is just that of the *meson* on its *archē*, for if these terms have the concrete meanings which I have argued that they do, then quite naturally the former is defined by its reference to the *archē* as well as the *telos*. For this reason, what a part is for, that for the sake of which it is, explains why it 'is there' or 'present' just to the extent that any *meson* is determined by those things between which (*metaxu*) it stands. In other words, just as the 'efficient cause' was intrinsically related to or directed upon the *telos* insofar as it is the *archē*, so also any given any part, to the extent that it is some *meson*, will necessarily be and be understood in relation to the *telos*.

On the view articulated, then, teleological explanation simply cannot collapse into an efficient-causal story, because although functions do depend on efficient causes, the terms in which Aristotle understands these—the *archē* and *meson*—have an ineliminable dependence on the *telos*. Indeed, in this respect Aristotle’s teleology is mereological from beginning to end, as it were, for as we have seen, the *archē*, *meson*, and *telos* were traditionally the parts and limits without which nothing could be whole or complete. These latter, as we also saw, come to much the same thing, for Aristotle says in the *Physics* that ““whole” and “complete” are either utterly identical or very similar in nature, and nothing is complete unless it has an end (*telos*), and an end is a limit (*peras*)” (*Phys.* III.6; 207a12-14). But the presence of an end as limit would not have been intelligible without its corresponding *archē* and *meson*. These relations are only available if, again, one insists on understanding the terms concretely, in accordance with the tradition of which Aristotle was a part. The end is not the ‘intentional object’ or ‘goal’ of the efficient cause or its tools, but is essentially related to them on the basis of the well-attested conceptual connections between *archē*, *meson*, and *telos*. These connections should be no more mysterious than that between up and down. If, however, we understand *telos* as goal and speak of the *archē* simply as the efficient cause, these connections simply vanish, and in their place emerge a whole host of problems which would not have otherwise existed.

I want to end this section by remarking on a certain consequence of the line of thought suggested. The purely conceptual point about the relations between *archē*, *meson*, and *telos* is an empty one unless it is made concrete through empirical investigation. I asserted as much when considering the *archē* and *telos* above, but it remains just as true when we consider the *meson*. The logical point is not meant to supplant the need for empirical investigation, but to give it a

certain form, as it were, just as house-builder, doctor, health, and house are given a certain form and order in certain proportions, in the sense described in §7 above and by Aristotle in *Meta. Λ.* 4-5. But it is because of the logical point that one can say that, if one is to know the end (as such) then one must also know what is for the end, i.e. the *archē* and *meson*, because these three terms form a unity or whole. In other words, if motion proceeds continuously towards an end or *telos*, it belongs to that science which studies the *telos* to know what comes before it, namely the *archē* and *meson*, for without these, proper knowledge of the *telos* will go missing. Consequently, a ‘teleological’ investigation of nature will very simply *require* an investigation into material and efficient causes. Final causes do not take the place of or foreclose the possibility of efficient causal investigation, but absolutely demand it. Furthermore, if the parts of the body are taken to be the *meson*, or the body itself the *meson*, and soul the *archē*, and these are non-accidentally related to each other, then precisely as such physical or natural things will be ‘teleologically’ organized. Natural things and the science which studies them will for that reason exhibit a unity not found in, for example, the mixed sciences, because the explanatory principles in question exhibit a distinctive co-dependence. Mathematical features can be realized in all different kinds of materials, and consequently exhibit an indifference to that in which they are instantiated. The relation, that is, between mathematical shape and the matter in which it inheres is an accidental one, for which reason the mathematician can safely ignore the qualities and capacities of the physical object taking the shape in which he is interested. This is not so for the natural scientist, for the natural scientist studies just this form as embodied in just this body capable of motion.

3.12 CONCLUSION

In the foregoing, I have argued that Aristotle understands efficient causation to be essentially correlated with final causation, and that this fact becomes quite apparent if one appreciates the terms in which Aristotle understands both concretely, i.e. as the beginning and end of motion. This claim was grounded not only on the semantic work of the previous chapter, according to which *telos* meant in the first instance ‘end’ in the sense of ‘limit’ or ‘terminus’, and which was just one of a trio of limits with *archē* and *meson*, together constituting the necessary parts of anything complete and whole, but on Aristotle’s understanding of chance as well. Given Aristotle’s other uses of the language of chance, it is clear that in each case he understands chance to be an accidental relationship between two terms. Thus, it is by chance that the educated comes to be from the pale, as opposed to the uneducated. In the same way, Aristotle’s argument in the latter half of *Physics* II is intended to show that not just any *telos* can belong to just any *archē*. Rather, they stand in an essential or intrinsic relationship to one another.

I argued further that the account on offer can make sense of functional ascriptions to organs. Those ascriptions are grounded in what those organs typically do, in ways described by generics akin to the claim that ‘hammers hammer nails.’ In this way, they mediate between the user and the activity. For that reason, an organ is a *meson*, and the body itself and its activity is the *meson* between the *archē* and *telos* of natural motion, starting from and returning to the same in the process of nutrition and generation. For Aristotle, these ascriptions always begin and end at the level of generics, and so Aristotle is no way concerned to provide criteria by which to determine, for any given token of some type, whether or not it has some function. In that

respect, Aristotle's concerns are quite different from those occupying most contemporary philosophers working on teleology.

APPENDIX: TELOS AND PERAS, CAUSE AND EFFECT AFTER ARISTOTLE

The account of Aristotle's teleology that I have offered differs quite profoundly in many respects from those that have traditionally been on offer. The problems I have taken Aristotle to be addressing, and the meaning of the terms in which he addresses those problems, differ from what most commentators have taken them to be. As we have seen, this account is centered on the notion of 'limit' and the understanding of *telos* first and foremost as a limit, as an end in a very concrete sense. So understood, remarks and associations that had before seemed peripheral, and perhaps even at times awkward, to any understanding of Aristotle's teleology become central, e.g. its connection to the unlimited and to the *archē*, now also understood concretely as 'beginning.' I have steadfastly refused to understand *telos* to mean anything like 'goal' or 'aim,' and so I do not take Aristotle generally to be concerned to defend the importance of goals or aims in natural philosophy. What I have offered, one might say, is a teleology without purposiveness, for I have tried to suggest that there is no more interesting or illuminating an account to be offered about how the efficient cause is related to the end than there is about how a cause is related to its effect. Cause and effect are just a co-dependent pair, as are the *archē* and *telos* of motion. It makes just as little sense to wonder how *telē* fit into a world of 'efficient' causes—*archai*—as it does to wonder how effects fit into a world of causes. But if what I say is true, and if Aristotle never actually faces or tries to resolve what we might now consider the standard difficulties besetting 'final causation,' one might wonder how this was missed for so long. In this appendix, I want just to sketch a possible genealogy, as it were, of a specific case of

philosophical forgetting: the route by which Aristotle's conception of teleology was lost and, indeed, became almost impossible to see.

There are, it seems, three distinct changes that fundamentally altered the problem of teleology, giving it a shape much nearer to our own than to Aristotle's. Two are more nearly semantic, constituting either a subtle shift in the meaning of a word, or a simple change in preferred vocabulary, while the third consists in a fundamental change in the ordering or relations among certain concepts essential to the account of Aristotle's teleology. In some sense, semantic evolution can also amount to such a change in ordering. That said, how best to characterize the nature of these changes is less important than the changes themselves, which can be designated as follows:

(i) from *telos* to *skopos*

(ii) from *archē kai telos* to *causa efficiens et effectum*

(iii) from form as *limit* to form as *limited*

As I noted in the last chapter, the literary and philosophical tradition prior to Aristotle attests to an intimate connection between *telos* and *peras* from its earliest beginnings and, quite naturally, Aristotle's use of the term was shaped by that association, even if it differed in certain important ways. That traditional sense would likely have impressed itself all the more upon someone as attuned to common ways of speaking as Aristotle. What we do not see prior to Aristotle, however, is any essential relation between *telos* and *skopos*. As we have seen, perhaps more than any other term, it most nearly approximates our 'goal' and therefore designates better than any other that concept or phenomenon with which teleology is thought to be concerned. Though evidently absent prior to Aristotle, the association between *telos* and *skopos* is certainly

present after him. It exists in the texts of Aristotle's later commentators, who all speak at some point or other—and often frequently—of the *telos* as a *skopos*, appearing at times to use them interchangeably, even when commenting on Aristotle's scientific works. As I noted in the previous chapter, Aristotle does occasionally bring these terms into close proximity in the *Eudemian* and *Nicomachean Ethics*, not to mention the *Politics*, but *skopos* is simply absent in his natural philosophic writings, which are, again, much more voluminous than those others, which fact makes said absence all the more striking. It would seem then, that later commentators came to understand *telos* to be far more synonymous with *skopos* than Aristotle himself ever did. It is worth considering in this context Thomas' remark at the beginning of his own commentary on *Physics* II.8:

[Aristotle] says, therefore, first that it must be pointed out that nature is among the number of causes which act for the sake of something. And this is important with reference to the problem of providence. For things which do not know the end do not tend toward the end unless they are directed by one who does know, as the arrow is directed by the archer. Hence if nature acts for an end, it is necessary that it be ordered by someone who is intelligent. This is the work of providence.

The reference to the archer would seem to reveal the by then sedimented understanding of the *telos* as something like a goal or target.

Though the above is not, I don't think, representative of the way in which Aristotle thinks about the issue, the thought that 'end' should mean something like 'aim' is hardly an aberration or a peculiarity of the development of a certain line of philosophical thought. As I noted in the last chapter, our own English 'goal' appears to derive from an original **gol*, meaning 'limit' or 'boundary.' Certain words for 'limit' in English and Greek seem, therefore, to have undergone

parallel developments. The conceptual connection is also evident in the German *Ziel*.¹ That a goal should be a limit or boundary of a certain sort makes intuitive sense—when I reach my goal, my efforts come to an end. Nonetheless, this development seems not to have taken place by Aristotle’s time, and Aristotle’s own glosses on *telos* with the more ancient and traditional *peras*, as opposed to *skopos*, suggests as much. But once the meaning of *telos* shifted to something more like ‘aim,’ ‘target,’ or ‘goal,’ then its semantic relations to other terms, like ‘*apeiron*’ or unlimited, necessarily shifted as well. If that is right, then the problem of the unlimited and the problem of natural ends or *telē* would become two distinct problems, for ‘goal’ has only a tenuous connection, if any, to notions of the unlimited. One could then treat of Aristotle’s ‘teleology’ without paying much attention to his remarks on the *apeiron* and its history, and relegate his remarks about limit to something of a tangential curiosity.

A second important shift in the history of the problem of teleology is naturally the language in which the efficient cause is described. As we have seen, the preferred language for Aristotle is that of *archē* of motion, i.e. the beginning or that from which motion proceeds. Corresponding to the *archē* is, as I have argued, the *telos*. But at some point, this stops being the preferred nomenclature and instead we get, at least in the Latin tradition, the language of the *causa efficiens* and its *effectum*. Thus, when paraphrasing an example found in the text of *Physics* II.2, Thomas says that the sculptor is the *causa efficiens* of the statue, where Aristotle had used *archē* or ‘beginning’ of motion. Ockham too understood the ‘efficient’ cause in productive or effective terms, characterizing it as that which ‘brings something about or does

¹ Kluge (2011). This appears not to be the case, however, with *Zweck*, which of course Kant uses when speaking of ‘ends’ or ‘purposes.’

something.’² What it brings about is quite naturally the *effectum*, i.e. ‘the thing done.’ This constitutes an alternative pair of terms or concepts by which to designate or understand the ‘efficient’ cause and what corresponds to it. To be sure, this pair is not foreign to Aristotle, approximating his own *to poioun* and *to poioumenon*, the maker and made. But though Aristotle is quite familiar with this conceptual pairing, and indeed makes no small use of it, it is not, as we noted, his preferred way of understanding the ‘efficient’ cause. Once the favored pair becomes *causa efficiens* and *effectum* rather than *archē* and *telos*, however, the existence of ends or *telē* in nature becomes that much more obscure, for the first pair just is conceptually independent of the second. If one also believes that *telos* means ‘goal’ or ‘aim’, then, if one is an Aristotelian, one now has the task of understanding the place of goals or aims in nature, despite having the conceptually self-sufficient pair of *causa efficiens* and *effectum* ready to hand. One needs, in other words, to understand how a *causa efficiens* could be related to, directed on, or aimed at, a *telos*. And here we have the emergence of one of the characteristic problems of teleology: how is a cause related to or directed on something as an end, rather than a mere *effectum*. That is, even if we allow ourselves to consider a given *effectum* an ‘end’ in some exalted philosophical sense, we need now to understand how its cause is related to that *effectum* as an end. If, however, that problem proves insoluble because the conceptual connections that once existed are now lost or forgotten, then, rather than persist with the problem, it might be easier to give up on ends in nature altogether, making do simply with the *causa efficiens* and *effectum*.

² Cf. also Aquinas’ commentary on *Meta.* Δ.5, or John Milton’s *Ad Petri Rami Methodum Cincinnata*, c. 4, or his *Artis Logicae Plenior Institutio*, c. 5. The Greek equivalent of *causa efficiens* and *effectum*, *aition poiētikon* and *aitiaton*, can be found in the ancient commentators. Alexander of Aphrodisias, for example, uses *aition poiētikon* in his commentary on Book I of the *Metaphysics* when Aristotle begins his consideration of which and how many of the causes his predecessors had.

Finally, and just as importantly, the whole cluster of concepts of form, matter, limit, act, and potency, becomes transformed. I have argued that limit was for Aristotle and for his Platonic and Pythagorean predecessors a principle of the being and intelligibility of things, set over and against the *apeiron* as a principle of non-being and unintelligibility. Form and *telos* are both limits, and as we now know, Aristotle is quite explicit about this on a variety of occasions. Form limits matter, which is in itself unshaped or lacks boundary and limit. Aristotle never wavers from these associations. If one reads Thomas, however, one gets a very different idea. In particular, one gets the opposite idea, for it becomes an axiom among Thomists, not that form is a limit, and that what it limits is matter, but just the opposite: *matter* or *potency* limits *form* or *act*: ‘every act that is finite is limited by a potency receiving it.’³ Scotus and Suárez, it seems, deny that form or act is limited by *matter*, instead attributing such limitation to the efficient cause. But whatever the source of its limitation, form is now something requiring limitation, rather than something that itself limits. The basic thought seems to have its origin in disputes about the principle(s) of individuation, for the problem of individuation was conceived of as the problem of the ‘limitation,’ partitioning, or contraction, of the common form.⁴ In other words, the ‘limitation’ of form is just a way of talking about the multiplication of form, which becomes something like a mass which is carved up into various individuals. So construed, however, the relations between form and limit become just the opposite of what they were in Aristotle. Furthermore, while it became a generally accepted metaphysical axiom that act or form is limited by potency, or requires some principle of limitation, this very axiom comes to be *attributed* to

³ Wuellner (1956). Cf. also Feser (2014).

⁴ Cf. Pickavé (2007), 61.

Aristotle. In other words, an axiom which actually inverted Aristotle's own ordering of these concepts—got them, we might say, *exactly* wrong—was nonetheless thought to be Aristotle's own, and so scholars would remark on or deploy the principle, crediting it to Aristotle, without actually citing any passage in his work where such a principle might be thought to be enunciated.⁵ So obviously Aristotelian was the principle that no citation need ever be given!

The inversion of these concepts did not come from nowhere and, as it turns out, was not itself of scholastic origin. W. Norris Clarke has argued that it originates with certain mystery religions in the eastern part of the Roman Empire, and entered philosophy through Plotinus in the third century AD. Plotinus' aim was to incorporate or at the very least accommodate what was good or appealing about these religions within the rationalist framework of Platonic metaphysics. Plotinus, Clarke argues, had aimed to preserve classical philosophy and Hellenic values from the encroachment of strange, new, and foreign religious cults. What this means, however, is that in Plotinus' thought, the *apeiron* becomes the fecund first principle, the One, which contains all perfections in itself and of which everything is but a partial representation. Each 'finite' being derives its character through a limitation of the unlimited One, the plenitudinous principle which is carved up or limited in so many ways, giving us thereby the variety and kinds of beings we see around us:

Forced to invent a new terminology, Plotinus for the first time in western thought uses the old Greek word for the infinite, *apeiron*, to express this radically new

⁵ Cf. Clarke (1995), ch. 4. Clarke notes that Thomas himself seems nowhere to attribute the principle to Aristotle, and says that the principle appears to be absent from the ancient commentators. Clarke takes the limitation of act by potency to be a central Thomistic metaphysical principle, and so focuses principally on its history among Thomists, noting nonetheless that it finds acceptance among followers of Suarez as well. More important than this particular principle, however, is the felt need among scholastics of all stripes to find a limit or principle of limitation for form, in order to resolve the riddle of individuation. Regardless of what that principle is, the very formulation of the problem signals a profound transformation in some of those concepts that give shape to Aristotle's teleology.

content of indetermination as identified with the plenitude of perfection of an unparticipated source compared to the limited participations below it.⁶

Thus, while the *apeiron* had before signified precisely what was incomplete or imperfect (*ateles*), it comes to signify just the opposite, that which possesses everything and lacks for nothing. Finitude is no longer a source of goodness, proportion, order, and form, but of lack, privation, short-coming, and even evil.⁷

Each of the three above mentioned changes would, on their own, make the account of Aristotle's teleology that I have given more difficult to see, and one or the other of them may have exercised greater influence at different times, but taken together they have the effect of making the nature of Aristotle's teleology almost impossible to see. Whatever their precise origins, the effects of of these changes have been operative for the greater part of the philosophical tradition, the transformations in vocabulary and conceptual scheme having receded into the background long ago.

⁶ Clarke (1995), 77.

⁷ Interestingly, Clarke notes that the first school of Christian philosophers—Clement and Origen in Alexandria—remained true to the Platonic tradition, insisting that 'God's will and power should not be called infinite because they would then be unintelligible even to himself.' He reports that, to his knowledge, the earliest Christian text to consider God infinite dates to approximately 300 AD: 'Lord of all power...who alone without limit puts limits to all.'

4.0 TELEOLOGY, COMMUNITY, AND NATURAL FORM IN KANT

Kant mentions Aristotle in a number of places throughout his corpus, but never when discussing teleology. In his discussion of the antinomy of teleological judgment in the third *Critique*, he mentions Democritus and Epicurus, but not Aristotle. The closest we come is a reference to ‘the Aristotelian school’ in the unpublished *First Introduction* to that same work. Kant had been discussing the need for a principle of the power of judgment, given the possibility of a simply dizzying array of natural forms. The needed principle dictates that nature be thought to take the form of a system of laws, of genera and species. This is said to be a logical principle for the power of judgment because it makes possible ‘the application of logic to nature’ (*EE* 20:212).¹ But the apparently static, merely logical point about relations between genera and species is articulated in dynamic terms: ‘the genus (considered logically) is as it were the matter, or the raw substratum, which nature works up into particular species and subspecies’ (*EE* 20:215). Nature, he then says, ‘specifies itself’ into a system, which is as much as to say that nature is self-specifying. And it is here that he registers his agreement with the Aristotelian school: it too understood the genus to be the matter, the specific difference the form.

The dynamic language with which Kant describes the necessity (for us) of a certain logical feature of nature—that it take the form of a system of genera and species—anticipates his description of natural ends in the latter half of the *Critique of Judgment*, the Critique of the

¹ In one sense, the applicability of logic to nature was secured in the first *Critique*, which argued that the possibility of experience was underwritten by the role of the logical functions of judgment in structuring experience. In the *First Introduction*, however, the question about the applicability of logic to nature pertains to the stability, regularity, and affinity between the individuals that we find there, and therewith their susceptibility to be classified into kinds. In a word, though the first *Critique* argued that our understanding structures our experience in ways demanded by its essentially discursive character, it is nonetheless the case that nature must do us some favors. The logical principle of the power of judgment in the third *Critique* is just the necessary supposition that nature will in fact do us those favors.

Teleological Power of Judgment. Natural ends are also described as systems and they too exhibit self-activity. They could very well have been called ‘self-systematizing.’ Even though both the problem of logical systematicity and teleological judgment have been considered independently, few have treated the problems as running parallel to one another, and no one has identified what exactly the two problems have in common.² Because, however, the road to metaphysics in Kant’s thought always runs through logic, greater attention to the logical background of his treatment of natural ends together with its Aristotelian provenance promises a better understanding of the precise nature of the metaphysical problem of natural teleology as Kant understood it.³

² Notable, recent efforts to treat the *Critique of Judgment* as a whole are Zammito (1992) and Zuckert (2007), though the two approach the work quite differently. On natural ends and natural systematicity, cf. Guyer (2007) and Watkins (2014), though their immediate interests and thus their approaches to the connections between them differ from mine.

³ And there has, indeed, been disagreement about exactly what problem Kant was even addressing, let alone his solution to it. McFarland (1970) thinks Kant was simply in the grips of an outmoded conception of design; McLaughlin (1990) takes the problem to be whole-to-part causality, and says in his later book on contemporary functions (2001) that ‘the problem has always been holism’; in a series of influential papers, Ginsborg identifies the problem with natural normativity; Teufel (2011) thinks the problem lies in the (efficient) causality of concepts; Kreines (2006) in backwards causation; and Zuckert (2007) identifies the problem as that of the ‘unity of the diverse.’ Each in their own way hits on something important (though I should be least likely to endorse MacFarland’s account), and I believe that what is important about each account can be accommodated by the view I lay out. Teufel (2011), it should be noted, denies that Kant’s account of purposiveness is teleological at all. Kant, he says, is concerned not with the way in which an event or process might be ‘directed on’ some future event or effect, e.g. by being for the sake of it, but with the causal lineage something must have if it is to be called an end or purpose. A similar view has been attributed to McLaughlin by Zammito (2006) for the reason that, for the former, the problem is at root a mereological one, having nothing to do with ‘intentionality’ or ‘directedness’ on something. Given the vagaries of the notion, I abstain from judgments about whether or not it is in fact ‘teleological.’ I am concerned only with determining what Kant takes natural teleology to be.

Progress can be made if we focus on the concept of community (*Gemeinschaft*), and it is this concept which has suffered neglect in the literature on Kant's natural teleology.⁴ I argue that the structure of something like an oak, which Kant calls a natural end (*Naturzweck*), can only be understood with reference to its common or communal ground (*gemeinschaftliche Grund*). That ground is the activity of nutrition and reproduction, for it is just this activity which is common to or shared by all the parts of a natural end. The parts are purposive because they each exercise some distinct portion of their otherwise common or communal activity and owe their existence to it. What is more, the concept of community on which Kant relies belongs essentially to scholastic Aristotelianism. In particular, it belongs to the logical tradition according to which a genus was said to be divided into its species, which species were then said to stand 'in community' with one another under their genus, being common to them all. Kant himself was writing within a broadly scholastic tradition, and though his connection to it is frequently neglected, attending to that tradition can help to illuminate the terms in which he was thinking

⁴ Watkins (2011) suggests that Kant's concept of community has suffered neglect quite generally. His is a contribution to a volume attempting to correct for that neglect, Payne and Thorpe (2011). In the first pages of their introduction, the editors identify many of the places in which the concept of community is found in Kant's work, but—tellingly—natural purposiveness goes unmentioned, and no paper in the volume addresses it: 'There are many communities in Kant: the category of community introduced in the table of categories of the *Critique of Pure Reason*, the community of substances in the Third Analogy, the realm of ends as an ethical community, the state and the public sphere as political communities, the *sensus communis* of the *Critique of Judgment*, and the idea of the church as a religious community introduced in *Religion within the Boundaries of Mere Reason*.'

and the problems he was addressing.⁵ Thus, while Kant's actual references to community in his discussion of natural ends are rare indeed, if we examine more closely some of the other language he uses to describe natural ends—in particular, the language of 'system'—and look to a wider historical context, we can see that community is often just below the surface.⁶ By looking to the concept of community in Kant's discussions of natural ends, we can also better incorporate and better appreciate many of the views which have been offered of Kant's teleology, for they often capture a part of what is at stake in the category of community. We can, in other words, achieve something of an ecumenical way of understanding Kant's teleology which not only accommodates a number of recent interpretations but also situates it within a broader historical context.

In the following chapter, therefore, I argue for a unique account of the nature of the problem Kant took himself to be addressing in his discussions of natural teleology, deferring to the next chapter Kant's reasons for thinking that teleological judgments can never be made strictly scientific, i.e. for thinking, as he says, that 'we are far from being satisfied with an explanation of the products of nature by means of causality in accordance with ends' (*KU* 5:408).

⁵ Of Kant's influences, Leibniz' debt to the scholastics is clear, having written a dissertation on the principle of individuation in his youth in which he discusses the positions of various scholastic authors and ultimately defends a Suárezian position. He also returns to the scholastics time and again, insisting on their value and importance. But the German philosophy which formed the basis of Kant's education in Königsberg was also heavily influenced by scholasticism. Cf. Mora (1953), Kuehn (2001), and Beck (1996). Watkins (2004) argues in essence that Kant's response to Hume's skeptical doubts about causality consists in offering a more or less scholastic alternative—Kant offers not a direct refutation of Hume's doubts, but a different model of causality altogether, one which consists not in relations between events, but substances and the exercise of their powers. Finally, and perhaps somewhat amusingly, Schopenhauer says of the chapter on the Transcendental Ideal in the first *Critique* that it 'takes us back to the rigid scholasticism of the Middle Ages. We think we are listening to Anselm himself.'

⁶ That the category of community should have been ignored in the third *Critique* is less surprising if one keeps in mind the rather sparse treatment it has received even in discussions of the first, noted above (fn. 4).

I begin in §1 and §2 with Kant's favored ways of describing natural ends—as systems and in terms of part/whole relations—arguing that in fact they often come to much the same thing. In the second section I turn to Kant's account of division, which he says gives the logical form of a system. His account follows the scholastic tradition in all its essentials and reveals deep and unappreciated parallels with his description of natural ends. Not only do both natural ends and logical divisions exhibit the same directions of mereological dependence but, like the parts of a natural end, the parts of a division also 'produce one another reciprocally' and constitute a self-sufficient whole. Furthermore, those parts are said to stand 'in community' under their genus, and so we have good reason to suppose that what is at issue in a natural end is the ground of the community of its parts, i.e. the principle of the whole.⁷

I then argue in section §3 that this understanding situates Kant's concerns within a much larger tradition.⁸ As it was for Kant, 'community' was among the scholastics a standard way of describing the logical relations between a genus and its species as well as between a species and its individuals. But its metaphysical status was hotly contested. There were a variety of opinions about the extent to which, or the way in which, the community among things was real, rather than a 'mere' consequence of the operation of the intellect. These opinions were intimately related to, or aspects of, the dispute about the reality of universals, for the latter was often conceived as a problem about the way in which a form could be divided or shared in common

⁷ This is not to say, however, that the community exhibited by natural ends will be explicable on the basis of the schematized category of community, i.e. the category enriched with its spatio-temporal significance. As I argue in the next chapter, the ground of that community is a supersensible principle not to be met with in intuition.

⁸ While it is immediately apparent that there is a long history to the other two categories of relation with which most possess some kind of passing familiarity—substance and accident, and cause and effect—the history of community is, I suspect, a great deal less familiar.

among many individuals while remaining nonetheless whole in each of its parts. And while this dispute and the language in which it was conducted can be seen from Boethius to Suárez, it continues in Locke and Leibniz, who provide the more immediate background for Kant's own consideration of the logical purposiveness of nature and, indeed, of the harmony between sensibility and understanding.⁹ Even though both Locke and Leibniz accept broadly nominalist ontologies, questions about the grounds, epistemic and metaphysical, for our classifications of things into genera and species, i.e. into communities of kinds, persist.

In §4-6, I then pursue the character of natural systematicity in three descending steps: first, the empirical systematicity of nature quite generally, followed by the systematicity of the human races more specifically, and finally natural ends, in light of what has come before.¹⁰ The systematicity of nature is a necessary 'projection' of the power of judgment, but because systematicity essentially involves community, it is just as true to say that the community of things in nature is, at least, a projection of the power of judgment. This transcendental presupposition, however, gives little guidance concerning *how* we are to discern the branches of nature's system, i.e. how we are to mark out real genera and real species. It says little, in other words, about how to establish what (if anything) is in community with what. Locke had been

⁹ Cf. Allison (2003), reprinted in his (2012).

¹⁰ One could have chosen different levels or even kinds of generality than those that I will discuss, and space constraints prevent discussion of them all. When I speak of the empirical systematicity of nature quite generally, though, I mean to refer to the notion that nature's individuals are amenable to classification into genera and species, without yet talking about any particular genus or species. I elucidate the discussion of systematicity in the *KU* with some remarks from Kant's logic lectures on merely logical systematicity and community. But I shall not discuss below the schematized category of community in part because doing so would, I fear, ultimately involve us in a discussion which goes beyond the scope of this chapter, namely the problems to be encountered in our efforts to understand natural ends, together with their mechanical irreducibility. Such issues will be discussed in chapter 4. My aim in what follows is principally to understand the structure of natural ends, quite independently of those problems, and so again focuses principally on (but is not limited to) remarks in *Analytic of Teleological Judgment* and the introductions to the *KU* as a whole.

generally pessimistic about our capacity to do so, noting nonetheless the distinctive stability and similitude among ‘the Races of Animals, and all Things propagated by Seed’ (III.vi.30). Though more optimistic, Leibniz too considered chiefly living things when treating of our capacity to make divisions between species. In this context, Kant takes up a suggestion made by the naturalist George Louis-Leclerc, whom Kant studied closely, according to which species membership is determined not by merely external similarities, but by the capacity to produce fertile offspring. In other words, a set of living things together constitute a single species in virtue of their shared generative power. In generation, the ‘communicability’ of form—the power or ability of form to become common—is most in evidence. It is consequently the presence of a real, generative power that marks the difference between merely logical or possible divisions among species and real divisions. And this is the same as to say that the difference is decided by the presence of a real *causal* power. This, I argue, is borne out by Kant’s own biological writings on the human races and neglected passages in the *Critique of Judgment*. The complementary capacities among various organisms to produce fertile offspring provide the criterion for dividing species, and this generative faculty is the sought after communal cause which ‘divides itself’ amongst many individuals.¹¹ And as the generative power is the same, Kant thinks, as the nutritive power, I suggest that the nutritive power is the ‘communal cause’ of the parts of a natural end, of which they are but limited or partial expressions.

¹¹ As we shall see in the next chapter, there is a problem in describing the causal activity of natural ends, one which is closely connected to certain problems in the conception of substantial form, where accidents were said to ‘flow’ from them. Such language creates problems not present, or not palpably felt, in what might be considered the more straightforward ‘logical’ case. There is, in other words, an important discontinuity in the parallels drawn, for the one involves a *causal* relationship not present in the other, and this discontinuity exists in Kant’s case as well. But the particular difficulties involved in that relationship can only be delineated precisely once the general or common parallels are articulated.

In §7, I argue that as a consequence of the foregoing, we should expand our expectations of what exactly might count as a natural end. Kant says the concept of a natural end may very well be an empty one, which is to say that we do not know what, if anything, answers to it and so what, if anything, actually counts as a natural end. ‘Natural end’ is not, therefore, simply co-extensive with ‘organism,’ as we ordinarily understand that term. Consequently, although Kant uses the example of a tree to illustrate it, more could conceivably fall under the concept than we might at first be inclined to suppose. Whole species, for example, could conceivably count as natural ends, and in fact, the features characteristic of natural ends and by which an oak might count as one would seem to belong to species as well. Indeed, Kant’s claim that the distinction between generation and nutrition is a merely nominal one suggests that the distinction between the community of parts in a natural end and the community of individuals in single species might be—at the very least—a fine one. And Kant *does* say (in non-moral contexts) that the human species, at least, constitutes a whole, indeed a system as opposed to an aggregate of individuals. I conclude with a suggestion which lays the ground for the next chapter: knowledge of the true natural ends rests on a capacity to identify and distinguish individuals, and there are indeed serious questions in the philosophy of biology about the individuation of organisms.¹² But so understood, Kant’s concerns are quite intimately related to questions of identity, individuation, and diversity which show up in Locke and Leibniz, and which are also essential to understanding why Kant thinks we cannot cognize things-in-themselves. Because we are incapable of cognizing the identity and diversity of noumenal grounds, we cannot say, for any given set of things,

¹² Cf. Lidgard and Nyhart (eds.) (2017).

whether they all together issue from some one and therefore common noumenal ground, or from different ones.

I then end with some remarks on Kant's use of the term *Zweck*. On the basis of the above, one might worry that purposiveness (*Zweckmäßigkeit*) has gone missing because much of the traditional language in which purposiveness is often discussed has gone missing. I argue, however, that Kant very often understands by *Zweck* a particular determination of a more general principle, and this understanding is evident in his usage of the term throughout his works. Consequently, when Kant defines purposiveness as the causality of a concept with respect to its object, the salient feature of the concept is not, as has often been thought, its 'intentionality' but its generality.¹³ A concept just is a general or common representation, and any object to which it might be applied is but one, more particular determination of the same. Whenever a concept is a cause of one of its instances, it realizes itself in what are, as we will have seen, its parts, where those parts simultaneously constitute the concept. In its causality, the concept is self-constituting or self-creating.

4.1 PARTS AND WHOLE, AGGREGATES AND SYSTEMS

Kant characterizes natural ends in a variety of ways. Very often, these characterizations are couched in non-teleological language. Indeed, most often he seems to characterize them in

¹³ That said, as we shall see, there is an important sense in which the genus was said to 'contain' its subordinate species (its parts) 'indeterminately,' perhaps as a seed was said to contain (*in potentia*) what it would become.

terms of the relation between parts and wholes.¹⁴ After Kant elucidates the concept of a natural end in §64 of the third *Critique*—describing the life processes of a tree—he identifies two conditions something must meet if it is to be a natural end (*Naturzweck*).¹⁵ It is necessary, first, that the parts of such a being be ‘possible only through their relation to the whole’ (*KU* 5:373). Since a part of an organism is possible only in relation to the whole, a part of this kind when abstracted from its whole is the same part in name only.¹⁶ The unity of an organism is in this respect similar to the unity of space or the unity of an inference, in which ‘no part can be

¹⁴ That purposiveness should be understood in mereological terms was hardly new to Kant, belonging to early modern natural philosophy more generally. The Dutch botanist, Herman Boerhaave, for example, with whom Kant would have been familiar, conceived of organisms in terms of causal reciprocity and, indeed, cyclicity. On this, cf. Toepfer (2011). As we shall see, however, the mereological aspect of organisms comes to have a distinctive significance in the context of Kant’s system. It is also this particular aspect of Kant’s description of natural ends which has come to dominate much of the literature on Kant’s teleology, owing largely to McLaughlin (1990). Naturally, if one emphasizes this aspect, it will color how one understands the contrast between purposiveness and mechanism, as is evident in those who have largely followed McLaughlin—cf. e.g. Allison (2003), Guyer (2005), Zammito (2006), who also calls it the ‘reigning wisdom’, and Zuckert (2007). I postpone until the next chapter the mechanical inexplicability of natural ends.

¹⁵ As I noted, however, the concept of a natural end is not technically the same as that of an organism, or indeed of a living thing. Natural ends require teleological explanation simply as a matter of definition. The same cannot be said for organisms, which might, for all we know, be mechanically explicable. Cf. McLaughlin (1990), 46 and Kreines (2005).

¹⁶ Ginsborg (2004) rightly draws attention in this context to Aristotle’s claims about hands, only homonymously so-called when severed from the body. Ginsborg argues that the difference between Kant and Aristotle is that Kant ‘rejects the notion of an “inner principle” of change and staying the same, as do many other philosophers influenced by “the new science” of the seventeenth century.’ As I hope to show in the next chapter, Kant recognizes, the *need* for an inner principle, but thinks no such principle could be an object of scientific knowledge. Indeed, other philosophers influenced by ‘the new science’ recognized just such a need, but refused to countenance reference to it in scientific explanations, most notably Leibniz. Indeed, I shall suggest in the next chapter that the principle of community in Kant is, in essence, a substantial form, and that the causality of a natural end is its fundamental activity (which we know through its effects), apportioned to its organs as instruments. Indeed, one of the issues clouding discussions of Kant’s teleology has been a distinction between kinds of causality in Kant, on the assumption (first defended by McLaughlin (1990)) that ‘mechanism’ in the third *Critique* is different in essential respects from the notion of causality articulated and defended in the first. I follow Watkins (2004) and (2014) in thinking that causality is not a relation between events, but substances.

determined in it except in relation to the whole' (*EE* 5:409; A24/B39).¹⁷ Such wholes Kant characterizes elsewhere as 'ideal' wholes or 'formal composites,' and these are to be contrasted with 'real' composites, for which the parts are given prior to their composition (*ML*₂ 28: 565).¹⁸ These latter admit of mechanical explanation, and indeed this is the way that mechanical explanation proceeds, i.e. from part to whole (*EE* 20:236). Natural ends are problematic in part for this reason: they are real, material wholes which nonetheless exhibit the mereological structure of ideal wholes. They are, as it were, the ideal made real. But not only must the whole be prior to the parts, it also is necessary that, second, the parts of a natural end be 'combined into

¹⁷ Naturally, all of these things will have very important differences. What is important here are just their mereological similarities. Particularly interesting is a description of the unity of thought given by Engstrom (2009), 99:

So far as [self-consciousness] contains distinguishable components within it, they are originally related as components belonging to a single whole. We may call this unity the unity of thought...The consciousness of the whole must accordingly precede the specific consciousness of the components, as the consciousness of the form of relation in which the latter stand to one another in the whole; and this consciousness in the form of relation, or form of the whole, must be in each of the conscious thinkings that make up the components, as what enables the latter to be conscious of themselves as component of the whole and indeed as components of the same whole.

The unity of a thought thus exhibits the kind of composition characteristic of natural ends. It is noteworthy that those who emphasize the distinctive part-whole relations possessed by natural ends rarely identify anything *else* in Kant's thought which has those same relations, tending instead to treat natural ends as *sui generis* in this regard. But those relations, in the case of thought, are grounded in the necessary features of discursive thought.

¹⁸ One might say that with ideal wholes, the relations are prior to the relata, with real ones, the relata to the relations. The relation between 'form' and whole is an important one, and it will be discussed in greater detail in the next chapter. Suffice it to say that Kant understands form as a ground of unity, and that in virtue of which something is made intelligible to us. Insofar as it grounds unity, it makes something whole. On this, Cf. Boyle (mss.), 16-19. The 'to us' bit is of course essential, and Boyle suggests that we might understand Kant's claim that we are ignorant of things in themselves as, in part, a claim that we are ignorant of what on the Aristotelian view are the primary objects of natural science, namely the forms or structuring principles of matter. We are thus ignorant of things as they are *kath' auto*, knowing them only as they appear to us. But appearances have their own kind of form, such as space, which grounds community in its own distinctive way. As I argue in the following chapter and the conclusion, I think there is a great deal to this.

a whole by being reciprocally (*wechselseitig*) the cause and effect of the form' (*KU* 5:373).¹⁹ The form causes its parts, and the parts cause the form. This second condition is a causal condition, requiring that the organization described in the first condition have its source in the whole itself, which is to say, not in an external artisan (*KU* 5:373). Put very simply, all the parts have their ground in the very whole they compose.²⁰

As I noted above, in addition to the language of parts and wholes, Kant also describes organisms as systems. Thus, in section §65 just discussed, Kant speaks of the 'systematic unity

¹⁹ Thus, adopting scholastic terminology, McLaughlin argues that Kant's concern is not with the *causa finalis* or final cause, by which he means that for the sake of which something comes to be, e.g. a house in securing rent from future tenants, but with the *causa formalis*, e.g. the causal ground of the house considered in itself and independently of its possible uses. Cf. his (1990), 40, 49-51, and his (2001), 27; 211. There is some truth to this claim, but to explain the problem of understanding natural ends McLaughlin never sees fit to draw on the growing criticism of the explanatory adequacy of formal explanations in early modern philosophy. Cf. also Teufel (2009), who suggests that the composition of parts into a whole is, in the first *Critique*, a matter of *formal* relations, not a causal one. It is only in the latter half of the third *Critique*, he thinks, that Kant opens up the possibility that composition might be subject to causal analysis. Cf. also Teufel (2011), 253. This again raises some question about the nature of form, on which cf. again Boyle (mss.), 18. Boyle there concedes that that form does not, on Kant's view, make an object exist, even if it does actualize the objects in another way, namely as objects of cognition. This, I take it, points to the problem that natural ends really pose and which I mentioned above: they exhibit 'real form,' which in Kant is something of a *contradictio in terminis*.

²⁰ One might wonder just how distinct are these two essential characteristics of natural ends, i.e. the mereological and the causal characteristics. One might think that to be a genuine whole just is to have an internal ground. But while it is not necessary for my purposes to insist on any real line between them, Kant himself enumerates them ('*erstlich*' and then '*zweitens*'). Locke makes similar distinctions in his chapter on identity and diversity (II.xvii), which I mention below and discuss in the next chapter. Merely material substances, unlike plants, depend for their identity on the 'parcels of matter' of which it is composed; the parts are wholly determinative of what they compose and a change in parts makes for a difference in individuals. The identity of an oak, on the other hand, is grounded in the 'common life' shared by all the parts, which belong to that whole only insofar as they share in that life. This life is 'communicated' to new bits of matter which then shares in the organization proper to that type of plant. And the same is true of animals, which differ, he says, from machines in this: 'in an animal the fitness of the organization, and the motion wherein life consists, begin together, the motion coming from within; but in machines the force, coming sensibly from without, is often away, when the organ is in order, and well fitted to receive it.' The structure of his exposition suggests that he thinks the causal condition only really applies to animals, or perhaps chiefly and more apparently, for he introduces that characteristic only after quite explicitly transitioning to animals or 'brutes' at the beginning of §5. If that is right, Kant's use of a plant as an example to illustrate natural ends should not be overlooked. It is perhaps why he says in §65 that natural ends might best be understood on *analogy* with life. The latter Kant elsewhere (*KpV* 5:10) defines partially in terms of a capacity for representing, for which there is perhaps greater evidence in animals than there is in plants. A plant might be the nearest thing which seems clearly alive while also holding out the greatest hope for mechanical reducibility.

of the form' of a natural end, and in the *First Introduction* he says that soils and stones, unlike organisms, fail to display 'the form of a system in themselves,' and he glosses the idea that nature might possess a 'real purposiveness in its products' in terms of the idea that nature might be capable of 'producing individual things in the form of systems' (*EE* 20:217). Soils, stones, and minerals, lacking the form of a system, are mere aggregates, and indeed Kant frequently opposes systematicity or the unity of a system to mere aggregation.²¹ In the production of the latter, nature proceeds mechanically. The natural production of systems requires something more, namely a concept as the causal ground. Thus, Kant says that the mechanics of nature 'consists in its causality through the combination of the manifold *without* a concept lying at the ground of its manner of unification' [emphasis added] (*EE* 20:217). Causality in accordance with a concept, precisely because of the nature of its ground, seems then to confer a distinctive kind of unity on its product because of the 'manner of unification' by which it proceeds. Because mechanical causality is aggregative and aggregation is opposed to systematicity, the unity conferred by the concept is systematic unity.

Natural ends, then, are said to exhibit quite definite part-whole dependencies and to possess the form of a system. As it turns out, however, possessing systematicity is to possess the mereological properties discussed above, for Kant understands the former in terms of the latter. Thus, in the Transcendental Doctrine of Method in the first *Critique*, he says that by 'system' he understands 'the unity of the manifold of cognitions under one idea,' and that this is 'the rational

²¹ Leibniz makes a similar point when discussing the unity of animals as opposed to machines or minerals: 'there appear to be species which are not really *unum per se* (i.e. bodies endowed with genuine unity, or with an indivisible being which makes up their whole active principle) any more than a mill or a watch could be. Salts, minerals and metals could be of this nature' (*NE* III.vi.318). He soon after describes salts, metals, and craft products as aggregates, considering only animate bodies to be true unities (328).

concept of the form of the whole,' through which 'the position of the parts with respect to each other is determined a priori' (A832/B860). And in the *First Introduction* to the third, he says of cognitions possessing the form of a system that the whole is prior to the parts, whereas in an aggregate 'the parts for such a possible whole' are 'already completely given' (KU 20:247). Consequently, the consideration of natural ends as systems seems not to take us any further. To say that something has the form of a system is just to say something about the direction of mereological dependence between the parts and the whole.

4.2 SYSTEMATICITY, LOGICAL DIVISION, AND DISJUNCTION

In the above, I suggested that two of Kant's favored ways of characterizing natural ends come to much the same thing: they have the form of a system and they exhibit certain directions of mereological dependence. These two characterizations come to much the same thing because the notion of 'system' is itself often understood mereologically and in terms of the very same directions of dependence. In my discussion, I largely abstracted from any difference between real as opposed to merely logical systems, i.e. ordered unities of things as opposed to concepts or cognitions. These are, of course, very different things, and Kant quite stresses that nature might

exhibit logical but not real purposiveness.²² We are not, in other words, compelled to think that there are real things possessed of systematic form, i.e. natural ends, but we are compelled to approach nature as if its laws were possessed of systematic form, i.e. to suppose that it specifies its laws into the form of a system. All the world might be just salts and soils, metals and minerals. But regardless of the kind of purposiveness we consider, whether real or logical, systematicity is common to both and, as a consequence, systematicity would seem to belong to purposiveness as such. If that is right, and because Kant's road to metaphysics always runs through logic, looking at systematicity in the domain of logic might reveal certain features common to systems as such. It is, moreover, quite plausible that logical systematicity is, within the broad confines of Kant's philosophy, more intelligible to us. But it is at the very least less obviously beset with the same kinds of obscurities that beset teleology in general and Kant's teleology in particular. And so by looking at logical systematicity we stand to learn something about purposiveness quite generally, for if we can better understand what belongs to systems as such, what they have in common and what distinguishes them from aggregates, we will likely be in a better position to understand what differentiates real, natural systems from natural aggregates, i.e. to know what makes the difference and the difference that it makes. For that reason, I now turn to logical systematicity.

²² By 'logical purposiveness,' Kant means the 'fitness' of things in experience 'even in their great multiplicity, for a logical system of empirical concepts' (*EE* 20:216) and the 'conformity [of nature] to the subjective conditions of the power of judgment with regard to the possible interconnection of empirical concepts in the whole of an experience' (*EE* 20:217). Cf. also (*EE* 20:253). It is important to note that the purposiveness belonging to natural ends is a real, *causal* purposiveness, while the 'logical' purposiveness of nature—what Kant elsewhere calls 'formal purposiveness'—is a subjective condition on the possibility of the coherent use of our understanding. As I go on to say, one could have logical purposiveness without real purposiveness because the world might be ordered into genera and species of salts, metals, and minerals, but completely devoid of living things. Only the latter are, presumably, possessed of real purposiveness.

The logical form of a system, Kant says, is ‘merely the division of given general concepts...by means of which one thinks the particular (here the empirical) with its variety as contained under the general’ (*EE* 20:214). Indeed, the first sections of both the published and unpublished introductions to the third *Critique*, which cover the same ground, are titled ‘On the Division of Philosophy’ and ‘On Philosophy as a System,’ respectively. This method—division (*diairesis/divisio*)—is of course an ancient one, developed at least by Plato in a number of dialogues and intended to help one understand the relations between the one and the many and to aid in formulating definitions.²³ Given its history, different authors naturally give slightly different accounts of it, and indeed a number of different kinds of division were recognized by different authors. In his *Outlines of Pyrrhonism*, for example, just after discussing definitions, Sextus identifies four forms of division—word/significations, whole/part, genus/species, species/individuals—and undertakes to criticize the dogmatists’ use of each of them (II.213-227). Others give other lists, but that given by Boethius in his *De Divisione* seems to have been particularly influential in the Latin West.²⁴ Like Sextus, he distinguishes between genus/species and whole/part division, among others, giving as an example of the latter the division of a species into its individuals: the parts of ‘man’ are Cato, Vergil, Cicero, etc., and the whole, ‘man,’ is said to be composed of those individuals. And although he distinguishes between the division of a genus into its species and a whole into its parts, Boethius nonetheless discusses the former in the language of the latter, i.e. in terms of part and whole. To that extent, at least by the time of

²³ Cf. e.g. *Phaedrus* 265e-266c and throughout the *Sophist* and *Statesmen*; cf. also Aristotle, e.g. *De Partibus*, I.2-3, as well as the beginning of Porphyry’s *Isagogē*, or Buridan’s *Summulae de Dialectica*. The latter says that ‘the investigation of definitions benefits from the art of division,’ which is ‘a very important and ultimate part of logic’ (*pars logicae magis notabilis et finalis*).

²⁴ Magee (1998).

Boethius, division is frequently discussed in mereological terms, and this practice appears to continue long after him.²⁵ Buridan, for example, defines division quite generally in the language of parts and wholes, and the the division of a genus into its species is just a special case (*SD* 8.1.2).

This mereological understanding of conceptual relations pervades Kant's treatment of them. Thus, in the *Jäsche Logic* Kant says that all concepts are marks, and that a mark is 'that in a thing which makes up part of its cognition, or—which is the same—a partial representation so far as it is considered as cognitive ground of the whole representation' (*JL*: 58).²⁶ There are, however, different ways in which something can be a part—either as an intensional or an extensional part. The former are more general, the latter more specific (*JL*: 91).²⁷ 'Metal' is common to 'gold' and 'silver,' belonging to each as a part, and the latter are in turn parts of the former. And 'metal' itself is both a (subordinate) part of and has as a (more general) part the concept 'material.' Thus, two concepts can be parts of one another, though to be sure in different respects.²⁸ The higher concepts are as such genera, the lower ones species, but no concept is 'in itself' either a genus or a species because these terms are strictly comparative (*JL*: 97). The more general a concept, the fewer its intensional parts, which means that genera are, in one sense,

²⁵ Cf. Magee (1998) on the differences between, e.g., Galen and Clement of Alexandria on this.

²⁶ The same thought can be found throughout Kant's logic lectures. He says in the Vienna Logic, for example, that a concept is contained in things and 'constitutes a part of their representation' (*VL*: 910). Cf. also *R* 2282; 2286. In the former, Kant distinguishes marks as concepts from marks as things. Both are, nonetheless, parts. The hand, for example, is a mark of the human, having hands a mark of the concept of human.

²⁷ Elsewhere, he will say that, strictly speaking, it is the *use* of the concept that is common. I pass over these nuances here.

²⁸ In *Meta.* Δ.25, Aristotle himself had said that in one sense, the species are parts of the genus, but that, in another, the genus is a part of the species. Both are consequently wholes and parts, but in different respects.

simple in comparison with their species. Furthermore, because there are no lowest species, and there are no next species, if we begin with any predicate in logical space, we can subdivide the space between the predicate and the subject to which it might be applied to infinity. For that reason, everything to be met with in logical space is a composite, and so we never meet with the truly simple, conceptually speaking. At the same time, because the higher stands to the lower as ground to consequence, we never meet with ultimate grounds or final consequences.

Like other conceptual relations, then, division too is understood mereologically. It is that process by which we move downward in logical space, from a (comparatively) simple genus to its species or from a ground to its consequences, and Kant's account of it is true to the tradition in all its essentials.²⁹ Together, the subordinate species-parts of a division 'form a complete whole,' i.e. the whole sphere of the divided concept, and they complement one another in the constitution of that whole (*DW*: 761). Because all of the subordinate parts, the species, have a share in one and the same divided concept, the genus, they do not constitute a mere heap or aggregate of random concepts, as would sock, star, and butterfly, for example, but rather stand 'in community' (*in Gemeinschaft*) with one another (*JL*: 107). Furthermore, the parts of the division constitute genuinely exclusive disjunctions, *either/or* (*VL*: 926). In that sense, the subordinate parts of the whole are all 'external' to one another because no more than one of the species can be predicated of a given substance—nothing can occupy more than one position in the logical space given by the division. And finally, Kant distinguishes between logical and non-logical division. The former is founded solely on the principle of non-contradiction, e.g. learned or unlearned, while the latter depends on a real difference among its members, and so no member

²⁹ Kant's account is actually somewhat simpler, omitting discussion of several of the kinds of division found elsewhere.

can be simply the negation of one of the others.³⁰ For this reason, non-logical division depends essentially on intuition, which means that more than merely logical communities need to be grounded in experience.

Insofar as a division consists of the disjunction of the species of some genus (and subspecies, since we can divide to infinity), it has the form of a disjunctive judgment. Indeed, disjunctive judgment is ‘nothing other than a logical division’ (*VL*: 935). Importantly, in disjunctive judgments—and so in logical division—one goes ‘from the whole to all parts taken together.’ All the parts of the judgment constitute the ‘matter’ of the judgment, the disjunction its form (*JL*: 106, §28). Indeed, the matter of the disjunction, its members or parts, are even said to ‘produce’ or ‘generate’ one another (*hervorbringen*) since they each define the boundaries of the other, as putting up fences in the division of land defines not only the enclosed space but that outside of it as well (*JL*: 107).³¹ The judgment is, furthermore, self-contained because there is nothing outside of the division which ‘can be thought in a definite relation’ (*JL*: 107; cf. A74/B99). Because all the members of the disjunctive judgment together exhaust the possibilities of the genus concept, there is nothing beyond its members of which it can be predicated. If something is to be an animal, it must be *either* a horse *or* a dog *or* a man, etc.. The division is to that extent a self-contained or self-containing whole in which the principle and common ground

³⁰ In what is, as we shall see, an important nod to his own biological thinking, Kant gives the following (quite unfortunate) example of an empirical division of the human races: red-brown, yellows, etc., but not ‘white or non-white.’ (*DW*: 761).

³¹ Cf. also the *Port-Royal Logic*, II.9: ‘The truth of these propositions [i.e. disjunctive judgments] depends on the necessary opposition between the parts, which must not permit a middle term.’ In another edition, the sentence continues, ‘but each part taken separately need not be true.’ In chapter 15 of the same Part, Arnauld and Nicole say of classification that it divides a whole into what it contains. It consists of a common term and its ‘subjective parts,’ i.e. its extension. There are in turn four different kinds of classification, the first of which is the division of a genus into its species. The examples given for each classification are disjunctive judgments, save for the last, which gives a conjunction (II.15).

of the parts of the division is both contained in all its subordinate members and is itself constituted by those members—it is a part of all its parts. And Kant expresses the same thought in his remarks on disjunctive judgment in the first *Critique*: ‘in a disjunctive judgment there is therefore a certain community of cognitions (*Gemeinschaft der Erkenntnisse*)’ in which those cognitions ‘reciprocally exclude one another (*wechselseitig einander*), [and] yet determine the true cognition in its entirety, since taken together they constitute the entire content of a particular given cognition’ (A74/B99).³²

To conclude, I have been trying to articulate Kant’s account of division because division was said to constitute the logical form of systematicity. Because systematicity is common to both logical and real purposiveness, it would appear to belong to purposiveness as such. Consequently, understanding more about systems or systematicity promised to shed more light on the nature of purposiveness quite generally, and to that extent also of natural ends. The underlying thought was that studying the species of a genus can throw light on that genus, which can in turn illuminate one’s study of its other species. And we are now in a position to see that the structure of a logical division *does* run quite parallel to that of a natural end. Natural ends are systems, and division is the logical form of a system. As in a natural end, so too in a logical system or division the whole is prior to the parts. As in a natural end, so too in a logical division do the parts reciprocally generate one another and the whole. And finally, as in a natural end, so too in a logical system do the parts (species) stand ‘in community’ (*in Gemeinschaft*) with one

³² He had said just earlier that ‘disjunctive judgment contains the relations of two or more propositions to one another, though not the relation of sequence, but rather that of logical opposition, insofar as the sphere of one judgment excludes that of the other, yet at the time the relation of community (*Gemeinschaft*), insofar as the the judgments together exhaust the sphere of cognition proper.’ Cf. also B112-113.

another. Because the genus under which they stand in community is their ground, the (comparatively simple) genus is rightly considered the communal ground (*gemeinschaftliche Grund*) of its species.³³ There are, then, strong parallels between logical systems and natural ends, and so we have good reason to suppose that the metaphysical problem posed by a natural end is the nature of its communal ground, i.e. that in virtue of which its parts stand together in community and form a complete whole.

4.3 AN HISTORICAL INTERLUDE IN TWO PARTS

4.3.1 UNITY AND COMMUNITY IN SOME SCHOLASTICS

I noted in the introduction that Kant was writing in a broadly scholastic tradition and that attending to that tradition can help to illuminate the terms in which Kant was thinking and the problems he was concerned to address. He could presume on the part of his audience a certain prior familiarity with some of the basic concepts belonging to the tradition of which he was a part, but which have long since become foreign to us. Community is one such concept. As a category, Kant's account of it has not generally worn well. Watkins laments that many have taken it to be a rather optional or indeed even 'downright unfortunate' element in Kant's philosophy.³⁴

³³ As we shall see in the next chapter, Kant thinks the communal ground of natural ends is simple as well.

³⁴ Watkins (2011). When discussing the Third Analogy, Strawson (1966) accuses Kant of equivocating. Among other colorful remarks, Schopenhauer (1818; 1966) had said that 'the deduction of the category of community or reciprocal effect...is a really glaring example of the acts of violence on truth which Kant ventures to commit, merely in order to satisfy his love for architectonic symmetry,' 459. Cf. also Longuenesse (2005) ch.7, who says that 'the general view of Kant commentators...is that his defense [of the relation between the logical function of disjunctive judgment and the category of community] remains utterly unconvincing.'

But community had played an important metaphysical role in the scholastic tradition, one corresponding to its logical role in division. Because the individuals of a species (oak) or the species of a genus (tree) were said to stand in community with one another by participating in something common, i.e. some shared form, community appeared in disputes about universals. The dispute about the reality of universals was thus also a dispute about the existence of real communities in nature and what accounted for them.³⁵ And so I want in what follows to recapitulate, even if only briefly, some of the stages of that dispute in order to make more intelligible the problems with which Kant was ultimately concerned.

We can begin that recapitulation with Porphyry, who had used *koinōnia* in his *Isagōgē* to describe genus/species relations, among others. In his translation of that work, Boethius used *commune*.³⁶ And while the former raised the issue of the existence or subsistence of genera and species only to set it aside, the latter addresses it at some length in his commentary. Boethius attempts there to explain why the community of things is not simply illusory, i.e. why the apprehension of things through universals or common concepts involves no falsification of reality. A moderate realist, he thinks genera and species have no independent existence: what grounds the community among things is not independent of the very things whose community it

³⁵ I note that this dispute generally pertained only to ‘empirical’ universals, rather than ‘logical’ universals, such as ‘species.’ The latter was considered an *intentio secunda*, which is to say a concept of concepts or a sign of signs. ‘Horse,’ however, was an *intentio prima*, and so picked out real things, i.e. things which are not in turn signs or concepts of something else. Interestingly, one might take much of what goes on in the first *Critique* to be an argument about the role of certain *intentiones secundae*—e.g. causality, substance, community—in shaping our experience, together with the conditions of their use or application. The argument of the third *Critique* would then be something to effect that nature must provide relatively stable and recurring objects to ground *intentiones primae*, to which the *intentiones secundae* would then be applied and only in relation to which they would have significance.

³⁶ The precise character of the views held by the different thinkers discussed below is much less important than the fact of dispute about the issue, couched in the same language and in relation to the same logical issues addressed by Kant, as we saw above.

grounds. Just as a line only really exists in a body, so a species only really exists in the very particulars falling under it, but in each case we can conceive separately what does not in fact exist separately. Species, he says, are ‘nothing else than the thought gathered from the substantial likeness of individuals that are unlike in number.’³⁷ But this should in no way be thought to mean that species are not really real: a species can be ‘real’ in the sense that particularity and universality can both belong to some form, relating to each other as the convex and the concave.³⁸ One and the same thing, Boethius says, can be particular in relation to sense, and universal in relation to thought. And this accounts for a kind of unity or harmony between sense and understanding, for both sense and thought are related to the same thing—the nature or form—though in different ways. Otherwise put, things similar in sense become the same in thought.

A similar line of thought is to be found in St. Thomas. Speaking of a genus, he says that it is one through the community (*communitas*) of the form it designates (*De Ente* §10).³⁹ A genus is also said to ‘contain’ those species whose form it designates ‘indeterminately’ or ‘indistinctly.’ Indeed, it is precisely the indeterminate character of the genus which accounts for the aforementioned unity and community. The introduction of difference into the genus removes that indetermination, yielding the distinct species into which it is divided—where there was one, there is now many. But as in Boethius, the community conferred on the species in virtue of the genus, or on the individuals in virtue of the species, is brought about by the intellect, for in the *De Ente*, Thomas registers his agreement with Avicenna and Averroes that ‘it is the intellect which brings about universality in things,’ and elsewhere that ‘the unity or community of human

³⁷ Cf. *Second Commentary on Porphyry*, in Spade (1994), 25

³⁸ *Ibidem*.

³⁹ Cf. also *STI*.30.4; 1 *Sent.* 25. 1. 3 c..

nature [for example] is not real, but only according to consideration [of the intellect]' (*De Ente* §60).⁴⁰ Indeed, *neither* community *nor* particularity belong to a nature in its own right, acquiring one or the other only insofar as it is contracted in individuals or made universal in the intellect. Understood universally in the intellect, the form of some man, Socrates, becomes a *commune repraesentivum* or common representation under which many men then stand *in communitate* (*De Ente* §2).

This language could be traced in detail, but I want to say something now only about Scotus and Suárez, for the former is often taken to have been a rather more committed realist, while the latter was both his critic and an important influence on other early modern thinkers, not least of all Leibniz.⁴¹ Scotus had argued that community belongs to natures independently of the operation of the intellect: 'community belongs to the nature apart from the intellect...[and] in its own right.'⁴² If all unity were numerical unity (i.e. the unity of Socrates, the unity of Plato, etc.), then the unity of a genus or species would have no foundation in reality—because being and unity are convertible, as one goes, so goes the other—and so our general and specific concepts would derive entirely from the mind alone, being mere figments (*figmenta*) or fictions (*fictiones*).⁴³ Prior to the operation of the intellect, then, a plurality of things can have a real but non-numerical unity, and that unity is the unity of the community of their (common) form.

⁴⁰ '*Intellectus est qui agit universalitatem in rebus*'; '*Unitas autem sive communitas humanae naturae non est secundum rem, sed solum secundum considerationem*' ST. I.39.4. Cf. Edwards (1985), reprinted in Davies (2002).

⁴¹ On Leibniz' nominalism cf. Ariew (2012), Cover and O'Leary-Hawthorne (2008), Rutherford (1998), Barber and Gracia (1994), and McCullough (1996). The first and the last focus on Leibniz' early thoughts on individuation in his *Disputatio metaphysica de principio individui* of 1663. There Leibniz argues against Scotistic realism and embraces Suarezian nominalism.

⁴² *Ord.* 2, d. 3, pars I, q. 1, n. 42. Quoted in Noone (2003) and Ross (1965).

⁴³ Noone (2003), 108.

Suárez, on the other hand, opposes this thought, insisting that all that is real independently of the mind is singular and individual, and that there are in truth as many forms as there are individuals, the former being multiplied along with the latter. Consequently, real forms are not strictly common or communicable to anything else:

It is one thing to speak of formal unity and another to speak of the community of that unity; for the unity is in the things, as has been said, however the community, properly and strictly speaking, is not in the things, since no unity found in reality is common...but there is in things a certain similarity in their formal unities, on which the community which the intellect can attribute to such as conceived by it, is based (*DM VI, S1, N12*).

The community, then, that might be thought to exist among things of the same species is not in fact a real unity, since all real unity is numerical unity. Community is only a function of the similarities exhibited by different individuals on the basis of which the mind effects a common nature or community of form. But again, similarity is not true unity, and when we say two things are ‘of the same nature,’ this would be best understood as saying merely that they are alike.

The medievals, then, were quite exercised by the question of the community of form. This was, indeed, a metaphysical question interwoven with certain logical doctrines related to division. That individuals stood in community under a common form—whether a species or a genus—and that the latter was in each case divided into the former, seems to have been clear. Much less clear was the extent to which, or the way in which, those different communities might be real, and so too that form which was or was not thought to be common. What is more, because it was customary to understand division in the language of parts and wholes, where the individuals were said to be parts of the species, and the species parts of the genus, this question can be understood as a question about whether or not the inferiors in each case genuinely or really constitute a whole, or if such wholes are simply effected by the operation of the intellect and so mere fictions (*fictiones*). Consequently, even if community was not elevated to the level of a category by the scholastics, as it would later be by Kant, the connection between division and the metaphysical problem of

community was well attested. In the first *Critique*, the *a priori* community of things is grounded in a form, a form of intuition, namely space. What all real things available to us to know have in common is that they appear in (different parts of) one and the same space. It remains to be seen whether there are other forms grounding other kinds of community (and, indeed, whether they might be known by us).⁴⁴

4.3.2 LOCKE, LEIBNIZ, AND THE QUEST FOR COMMUNITY

The above debate persists into the early modern period, and in particular in Locke and Leibniz, who belong to the more immediate background of Kant's third *Critique*. Indeed, Henry Allison has argued that Kant is there attempting to navigate between the two positions staked out in their respective *Essays*, i.e. between the view that all general ideas are the 'workmanship of the understanding,' on the one hand, and Leibniz's realism about universals on the other.⁴⁵ But of course, the notion that generality or universality is effected by the understanding rather than following upon a nature in its own right was hardly original, and hardly nominalist. Thus, when Locke says that '*General and Universal* belong not to the real existence of Things; but are the

⁴⁴ It is worth noting again that it is not my intention in this chapter to explain why the community among bodies in space is insufficient to explain the community of the parts of natural ends. It is, rather, to argue for the unnoticed importance of the concept of community in understanding them, and the way in which this thought coheres with some of the larger themes of the third *Critique*.

⁴⁵ The literature on Locke's account of kinds, and real and nominal essences, is—like so many other topics—vast indeed, and of course I have no intention of surveying it here. Pasnau (2004) and (2011) discusses Locke's account in relation to the scholastics. cf. also Stuart (2011), Look (2009), Chappell (1989) and (1990), McCann (2008). While Allison considers Leibniz a realist about universals, others take him to be a nominalist (cf. Cover and O'Leary-Hawthorne (2008), mentioned above). Indeed, in his 'Preface to an Edition of Nizolius,' Leibniz even claims that the 'nominalist sect' was 'the most profound of all the scholastics, and the most consistent with the spirit of our modern philosophy', quoted in McCullough (1996). This would seem to speak quite against Allison's claim that Leibniz was a realist about universals.

Inventions and Creatures of the Understanding...*Ideas* are general, when they are set up, as the Representatives of many particular Things,' he does not yet go beyond what some of those traditionally regarded as realists had said (III.iii.11). The difficulty emerges rather with Locke's claim that 'all things, that exist, [are] particular' and that 'universality belongs not to things themselves, which are all of them particular in their Existence,' for here Locke not only denies that there is anything *in itself* general, but positively asserts that everything *is* particular.⁴⁶ Despite the particularity of all things, however, people need general terms and general ideas for, among other things, communication and the 'improvement of knowledge: which though founded in particular things, enlarges it self by general views' (III.iii.4).⁴⁷ But those ideas are general only through the role they play of signifying or representing many particulars, where that signification 'is nothing but a relation, that by the mind of Man is added to them' (III.iii.11). These general ideas are 'the medium that unites' particular beings, and so furnish the unifying conceptual space which relates individuals to one another (III.iii.13). We are given the *relata*, but we make the

⁴⁶ Recall, for example, that Aquinas denies that either community or particularity belong to a nature in its own right, but possesses one or the other only insofar as it is contracted by matter or made universal in the intellect. That is, Aquinas could agree with Locke that 'general and universal belong not to the real existence of things,' but would deny the further claim, namely that all that is, is particular. As we have seen, Suárez asserts the latter claim as well.

⁴⁷ McCann cites a passage from Mill which effectively credits Locke with convincing philosophers that there are no general entities corresponding to general terms, thereby freeing us of the scholastic doctrine of substantial forms or essences. Naturally, this is something of a misrepresentation of the scholastics, as even the cursory survey above should reveal. Pasnau (2004) and (2011) argues that Locke was more indebted to scholastic philosophy than he would have liked us to believe. It is by now a familiar thought that philosophical revolutionaries always owe a great deal to their predecessors.

relations, and it is only through or by means of these relations that we can enlarge our knowledge or understanding of things.⁴⁸

From the general ideas produced by the understanding we get ‘artificial’ genus/species divisions. Those divisions are artificial because of the artificiality of the genera and species which make them up.⁴⁹ To be sure, the things we encounter, ‘especially in the Races of animals, and all Things propagated by Seed,’ exhibit similarities to one another, and to that extent, our general ideas do have a foundation in the similitude of things (III.iii.14).⁵⁰ But as a metaphysical matter, this is to be attributed either to chance or the artifice of mind, for nothing is either itself common or communicable. If there were substantial forms grounding the distinctions between genera and species in the way the scholastics had thought, we would not see the kind of variation that we do. Some human beings wholly lack reason, some brutes possess it. The species shade into one another, and any feature someone might choose to mark a species will belong to other organisms which could just as reasonably be classified on the basis of other features. There is

⁴⁸ Complicating Locke’s views is, to be sure, his (apparent) adherence to a mechanistic understanding of nature, but the reality of genera and species and, with them, substantial forms or essences is impugned by Locke on grounds which can reasonably be dissociated from questions about the corpuscularian hypothesis. I say ‘apparent’ because there is some dispute about the way or extent to which Locke was committed to the corpuscularian hypothesis. Cf. Downing (1998), who suggests that Locke considers the aforementioned hypothesis merely one way of giving more robust sense to the notion of a substantial form or essence, more intelligible than anything offered by the scholastics. McCann (2008), by contrast, thinks Locke a much more committed mechanist.

⁴⁹ I pass over here Locke’s account of essences, which is intimately wrapped up in some of the issues discussed. At III.iii.15, Locke distinguishes between two senses of ‘essence,’ the first of which he says constitutes the original meaning of the word, and refers to the real, internal, but unknown inner constitutions of particular things which makes them what they are. In this they play the role of something very like substantial forms, but they do not ground distinctions between genera and species. Real essences are then contrasted with nominal essences, which apply to ‘the artificial constitution of genus and species.’ It would seem then, that real essences belong to individuals and are independent of our classificatory schemes. Vienne (1993) makes a strong distinction between inner constitutions and real essences, however, thinking, like others (e.g. McCann (1987) and Ayers (1991)), that even real essences necessarily involve references to sorts, i.e. general species cooked up by the understanding. Cf. III.vi.6.

⁵⁰ Cf. Suárez again: ‘there is in things a certain similarity in their formal unities, on which the community which the intellect can attribute to such as conceived by it, is based’.

never a feature which all and only the members of a species possess, and it seems almost any set of features can end up together. Consequently, there are no general or specific forms which account for the properties of things. Locke contrasts the natural variety in nature's particulars with the identity among the properties had by two circles or two equilateral triangles. Real divisions among species would require the kind of stability exhibited by geometric figures, which all exhibit all the properties proper to their kind; all right triangles have an angle of 90 degrees, all squares have four equal sides, etc. (III.vi.8). Given constraints of time and energy, we simply content ourselves with some acquaintance of enough features to carry on and communicate (III.vi.30). And in this, Locke is much more pessimistic than the scholastics, impressed by the sheer variety of nature in a way that they seem not to have been.⁵¹ It is almost rather an accident that things agree when they do.

Characteristically, Leibniz is a great deal more optimistic about our capacity to delineate kinds, even while admitting many of Locke's premises. In the *New Essays*, Leibniz grants Locke's nominalist thesis that nothing exists but particular things and that general ideas are the result of the 'workmanship of the understanding,' i.e. that *intellectum esse qui agat universalitatem in rebus*, as Thomas had said. He also grants that many of our classifications are, to be sure, provisional or even at times conjectural. Empirical work is difficult, time-consuming,

⁵¹ He also, quite arguably, held to definitional or essential standards that they never thought necessary. One might think that all one needs is to grasp what holds usually or for the most part, rather than always. Pasnau (2004) argues that Locke's pessimism is one of the things that fundamentally distinguishes him from the scholastics. Though seemingly true, it need not be because the scholastics themselves were particularly optimistic. Pasnau himself registers a number of passages in a variety of leading scholastics which register a certain despair of our knowledge of substantial forms, e.g. Thomas' remark that 'in the case of sensible things, the essential differences themselves are not known; whence they are signified through accidental differences which rise out of the essential ones' (*De Ente* 4.94). Oddly, however, Pasnau takes this and other passages to be referring to the obscurity of the metaphysical concept, 'substantial form,' rather than particular substantial forms (cf. p.68). A more plausible suggestion seems to be that whereas the scholastics might have explained the obscurity of substantial forms by reference to our fallen state, Locke seems to think the problem rests not primarily with us, but with nature.

and unpredictable, but 'whatever we truthfully distinguish or compare is also distinguished or made alike by nature' (*NE* 309). The phenomena can be taken to be rooted in the inner principles of things, i.e. individual essences, even if they are known only as an observer knows the essence of the Strasbourg clock (*NE* 304). Not being the makers of natural things, we must proceed through an investigation of external marks. And two otherwise quite different things can of course resemble each other, e.g. gold and pyrite, but, Leibniz suggests, if they are different, then further investigation will reveal their differences, for 'every outer appearance is grounded in the inner constitution' (*NE* 309).

But Leibniz also thinks that, despite his empiricism, Locke has a fairly impoverished conception of how empirical investigation in the life sciences actually proceeds and the kinds of considerations that can enter into the classification of different plants and animals. Even if someone should show no evidence of reason, that can likely be explained by other factors. Just because the kinds cannot simply be read off the surfaces of things, that need not mean that we cannot approximate or have quite good theoretical reasons for sorting things as we do: 'a great deal of care and experience is needed if one is to mark out genera and species in a manner which comes fairly close to nature' (*NE* 309). Referring to the work of modern botanists, Leibniz says that certain parts appear to be better for classificatory purposes than others—e.g. the forms of flowers—but that 'it would be wise not to rest one's comparisons and rankings entirely on a single foundation' even if a system constructed only according to flower-form, say, is most suitable for memory (*NE* 310). Thus, the mere fact that there can be features that are missing here but present there need not spell doom for our capacity to classify things appropriately. Genera and species are admittedly partial representations of things, as Locke had said, but one

must then examine all the ways in a which a thing can be divided up, looking to a variety of parts and features. And while it is also true that no particular part, considered in itself, is definitive of something, e.g. yellow of gold, all the parts together are.

Even after the acceptance of broadly nominalist ontologies, then, questions about the reality of our classifications of things persist, i.e. our ordering of things into the higher and the lower, into genera and species. On a traditional understanding, this is the same as to ask questions about whether the community among things is real or artificial, for division and classification, genera and species, were, as we have seen, understood in terms of community. And the question of the logical purposiveness of nature in the third *Critique* is precisely one that concerns the natural community of things. Shortly we will see the same issues emerge, now transposed into the larger edifice of Kant's critical philosophy. Rather than a direct engagement with 'the problem of universals,' Kant addresses the conditions necessary for those with discursive intellects such as ours to have empirical knowledge of nature. Making judgments about the things we experience requires subsuming them under common kinds or classifying them in some way or other. It is this aspect of our engagement with the world that Kant takes up in the *Critique of Judgment*, for there he considers nature's empirical systematicity, i.e. its ordering into genera and species and thus into relations of community.

4.4 LOGICAL PURPOSIVENESS AND PROJECTED COMMUNITIES

It is possible to bracket the metaphysical issues involved in the above and take Locke and Leibniz to represent two quite different casts of mind. Where the former is preoccupied by difference, the other gravitates towards unity. So understood, one need not take sides, for they might quite reasonably be thought to constitute two complementary ways of approaching nature. Indeed, George Louis-Leclerc, the Comte de Buffon, whom Kant studied quite closely, had said in the Initial Discourse to his *Natural History* that the love of the study of nature requires two seemingly opposed qualities: one eye for the grand or general view, the other for the details.⁵² One ought not miss the forest for the trees, the genus for the species, or vice versa. In that sense, the study of nature requires one to appreciate both sameness and difference, to search out more and more common classifications while also recognizing subtler and subtler distinctions among the sorts of things one investigates. Buffon had also suggested that the ‘great multiplicity’ and variety of objects encountered in nature constitutes an ‘apparently insurmountable obstacle to the advancement of our understanding.’⁵³ The variety and multiplicity of things puts us in awe of nature, and indeed inspires respect for its Author. But regardless of the extent of that variety, we are naturally inclined to suppose that there is a certain ‘order and uniformity’ to be found, a

⁵² Translated and printed in Lyon and Sloan (1981), 98. The Initial Discourse reads in many places like Kant’s Appendix to the Transcendental Dialectic, though in much less scholastic prose. It is worth noting that Buffon has been recorded as saying the following: ‘One day, when I had worked long and had discovered a very ingenious system to explain generation, I opened Aristotle and what do you think? I found all my ideas in that rascal Aristotle! Indeed, by God, that was Aristotle at his best,’ in Sloan (1981), 368. Unfortunately, the remark is given in Hérault’s *Voyage to Montbard*, the veracity of which is evidently a matter of some controversy. Regardless, Buffon does sing Aristotle’s praises in the *Initial Discourse* of his *Natural History*.

⁵³ Sloan (1981), 98.

consequence of nature's presumed tendency to work always with the same plan.⁵⁴ Human beings, he says, have a *penchant* for wishing to find regularity and resemblance among natural things, and even if it should prove impossible to arrive at one general system, one perfect method for dividing genera into species and subspecies, naturalists nonetheless need 'an imaginary goal in order to sustain them in their work.'⁵⁵ The idea of a single system of natural history serves for us as a *focus imaginarius*, as it were, i.e. that point on which all our researches converge.

These thoughts will be familiar to any reader of the third *Critique* and indeed the Appendix to the Transcendental Dialectic of the first. In the latter, Kant says that an interest in manifoldness might be found more in this reasoner, an interest in unity more in that one. Ideally, they would be united, for an excessive emphasis on either proves an obstacle and delay to the discovery of truth. Two investigators who give opposite emphases will find themselves in conflict over whether various characteristics of human beings, for example, are based on 'decisive and hereditary distinctions between families, races, etc.' or are due merely to 'external contingency' (A667/B695; cf. also A655/683). Despite the conflict, however, these interests of reason are but two sides of the same logical coin, two aspects of reason's singular activity, and it is here that Buffon's thought take on a characteristically Kantian shape. A discursive intellect is one which cognizes through concepts, i.e. through general or common representations—*repraesentationes communes*. If those are to be of any use, there need to be less general representations to which they apply:

we have an understanding only under the presupposition of varieties in nature,
just as we have one only under the condition that nature's objects have in

⁵⁴ Sloan (1981), 100.

⁵⁵ *Ibid.*, 103.

themselves a sameness of kind, because it is just the manifoldness of what can be grasped together under a concept that constitutes use of this concept and the business of the understanding (A657/B685).

There is, in other words, need of a higher and a lower, genera and species, and one's understanding (in a non-technical sense) improves both as one moves upward in logical space and as one moves downward. A genus and its species, as was said above, are parts of one another, and so regardless of the direction in which one moves, one is thereby resolving a representation into its parts. And because a representation is indistinct when we are conscious of the whole but not the manifold belonging to it, a representation is made more distinct or known by resolving it into those parts. Consequently, a representation can be made more distinct both by subsuming it under more general classes and by specifying it into subordinate kinds (*JL* 8: 62).⁵⁶ The understandings achieved are complementary: division brings to fruition, as it were, what is contained only implicitly or potentially within the genus, and we better understand an individual, e.g. Bucephalus, by classifying it under 'horse.' There is, in other words, one sense in which the

⁵⁶ Cf. also 8: 38-40, and 7:138 in Kant's *Anthropology*. In the latter work, Kant says that distinctness in cognition is achieved through division of representations. Recall also that Thomas had said the genus contains and signifies its species only indistinctly and indeterminately. Abelard before him, when commenting on Porphyry's *Isagogē*, had said that 'the understanding that goes with a universal name conceives a common and confused image of many things' and further that 'with the word "man," the understanding of which depends on the common form of all men, that very community produces a "confusion" so that we do not understand any one form from among them all' in Spade (2004), 102-3. And indeed Aristotle himself had said that we progress from the general, which is less clear in itself, to the particulars, which are clearer by nature, and that the former is a kind of whole which contains (*periechon*) the latter as its parts (*merē*) (*Phys.* I.1).

universal is less known by nature, another more so, and one sense in which the particular is less known by nature, another more so.⁵⁷

In this way, the two moods which one might take Locke and Leibniz to represent can be understood as reciprocally necessary features of inquiry, given the nature of our understanding. But if the upward and downward ascent have a certain complementarity, at least in the abstract, differing only as the road from Thebes to Athens and that from Athens to Thebes, there is nonetheless a certain asymmetry owing to the fact that we begin at the bottom, as it were, for it is our empirical predicament that we, who begin more or less in ignorance, must fill in the idea of a system of nature in general by means of experience of particulars in time and space. The systematic unity demanded by the nature of our intellects is thus what Kant calls in the Appendix ‘only a projected unity’ (*projectirte Einheit*) for though we investigate nature on the supposition that it will take the form of a division into genera and species, we do not yet know how it will actually be divided, i.e. what the actual forms will be that we encounter in nature (A648/B676). Thus, we posit at the end of our investigation an outline of what it will look like from the top down, but filling it in requires that we go from the bottom up on the basis of experience. But this projected systematic unity *also* means projected communities (*Gemeinschaften*) of things under

⁵⁷ As Guyer (1990) notes, these upward and downward movements can occur simultaneously. A toddler may have acquired—or be acquiring—the concept ‘bird’ by frequent acquaintance with some of its instances. Upon seeing one such instance, he may ask ‘what is that?’, to which his father might reply ‘a pelican,’ only to hear it said, ‘no, that’s a bird.’ If the father then responds by saying, ‘but a pelican is a bird,’ he is both making space for the intermediate universal by indicating that this is an instance of ‘pelican’ and enriching the concept of ‘bird’ by dividing it into one of its subordinate parts. As it happens, exchanges of this sort are quite common.

species and genera, i.e. common forms: mallards with pelicans under ‘bird,’ and birds with canines under ‘animal.’⁵⁸

Insofar as reason and experience require systematicity and therefore community, the systematicity of nature is a transcendental presupposition. To that extent, it does not belong to the very possibility of nature that it should be ordered into common kinds, relations of genera and species amenable to our understanding. Nature could, conceivably, be characterized by such overwhelming diversity that ‘no coherent use of the understanding’ of it would be possible because it would ‘surpass all our power of comprehension’ (A651/B680; *KU* 5:187).⁵⁹ Kant asks in a marginal note whether

Linnaeus [could] have hoped to outline a system of nature if he had had to worry that if he found a stone that he called granite, this might differ in its internal constitution from every other stone which nevertheless looked just like it, and all he could hope to find were always individual things, as it were isolated for the understanding, and never a class of them that could be brought under concepts of genus and species.

⁵⁸ Corresponding to the two directions in logical space are of course two modes of judgment: determining and reflective. Because the latter ‘is under the obligation of ascending from the particular in nature to the universal,’ it belongs to reflective judgment to find or discover whatever communities of things there might be. Indeed, insofar as the kind, whether species or genus, is the principle of the community of whatever stands underneath it, it would be truer to say that what reflective judgment seeks is the ground of the community of things, i.e. that in virtue of which the things stand in community in the way that they do. If I am right that we should understand natural ends in terms of a communal ground, then it will belong properly to reflective judgment to think that ground. But, as I argue in the next chapter, because that ground is simple, and so never to be met with in space, it is incapable of figuring in a determining judgment.

⁵⁹ If among the appearances offering themselves to us there were such a great variety...that even the most acute human understanding, through comparison of one with another, could not detect the least similarity...then the logical law of genera would not obtain at all, no concept of a genus, nor any other universal concept, indeed no understanding at all would obtain, since it is the understanding that has to do with such concepts. The logical principle of genera therefore presupposes a transcendental one if it is to be applied to nature...According to that principle, sameness of kind is necessarily presupposed in the manifold of possible experience (even though cannot determine its degree a priori) because without it no empirical concepts and hence no experience would be possible’ (A653/B681-A654/B682).

We must suppose, then, that nature does not consist simply of ‘isolated individuals.’ Any nature which we would understand must exhibit some amount of homogeneity through relations of logical subordination, and indeed be bound by affinity or ‘kinship’ in a hierarchy under a ‘communal principle’ (*gemeinschaftliche Princip*) (EE 20:209). And so chemists, for example, in their investigations of the variety of earths, e.g. salts and metals, are led to conjecture that underlying the different varieties or species of earths there is perhaps a single genus or common principle (*gemeinschaftliche Princip*) (A653/B681). But this is, again, a supposition we must make, not something we can in fact dictate to nature. We must imagine that what we meet with in experience admits of enough sameness or similarity to allow for (inductive) generalizations and to classify individuals under common kinds. This is the logical purposiveness of nature for our understanding: we presume nature is determined quite specifically in a manner which is amenable to beings with a reason like ours.

4.5 THE GENERATIVE CRITERION FOR SPECIES AND THE COMMUNAL CAUSE

If it is a transcendental presumption of the power of judgment that nature takes the form of a system, that presumption still leaves quite unsettled *how* we are to go about determining what kinds and communities, if any, actually populate nature. Locke had suggested that kinds are founded merely on the similarities of things, ‘especially in the Races of animals, and all Things propagated by Seed,’ and Leibniz had seemed to suggest likewise, though not taking from the fact the same lesson that Locke did. But Leibniz does indicate a further ground for delineating

species, not yet mentioned, and that is the shared generative capacity among things, the successful exercise of which results in fertile offspring.⁶⁰ Leibniz says that ‘in the case organic bodies, i.e. the species of plants and animals, we define species by generation, so that two similar individuals belong to the same species if they did or could have come from the same origin or seed’ (*NE* 309).⁶¹ Though he does admit that even assessments of pedigree are merely provisional, rather than strictly criterial, he strongly suggests that further investigation will throw light on the matter: ‘the more deeply we study how species are generated, and the more thoroughly our rankings follow the necessary conditions of generation, the nearer we shall come to the natural order’ (*NE* 310).⁶²

Kant follows suit, having written a course prospectus in 1777 which began with the claim that ‘the unity of the species is nothing other than the unity of the generative power that is

⁶⁰ Naturally, this further criterion would seem to apply only to organisms, but it was chiefly among organisms that Locke had thought similarities among individuals were to be found. Nonetheless, one might wonder how such divisions would proceed in the case of inorganic things. It would take me too far afield to discuss in detail here, and so I will only remark that it should not be presumed that the explanation of *organisms* is essentially different and so requires a different principle of categorization. Strictly speaking, it is rather only *natural ends* that do, and we cannot say that *only* organisms would be natural ends. To know whether any given thing is a natural end would require noumenal insight, which we do not have, though the idea of a natural end is surely suggested by some things rather than others. Regardless, I take it that in the absence of the noumenal causal ground which some natural beings *might* have, all divisions would proceed merely along the lines of ‘school species’ (discussed below), mere resemblances between one another, but that their causal relations would still be explained mechanically. There would be only natural description, and never natural history. And there is some reason to suppose that natural ends symbolize, as it were, the problem of empirical inquiry quite generally. The notion of ‘affinity’ which Kant uses to describe the relations between the human races is said by him to pertain to chemistry (*A* 8:178), and the description he gives of chemical affinity is notably similar to reproduction. He uses the same term to describe genus/species relations more broadly.

⁶¹ In other places, the claim is slightly weaker, with Leibniz saying only that generation creates a ‘strong presumption (i.e. a provisional proof),’ and that our assessments of species membership are ‘very often conjectural’ (*NE* 315). Leibniz’ view, as I said, seems to concede in various places the difficulty and problems associated with taxonomy, but to deny that these entail the kind of conventionalist attitude that Locke can often seem to possess (but which is in some places more muted).

⁶² He says shortly thereafter, of plants in particular, that ‘if we learned more about how plants are generated, I have no doubt that the differences we observed amongst them would provide a foundation for very natural divisions.’

universally valid for a certain manifoldness of animals' (*RM* 2:429). This is, Kant says, 'Buffon's rule,' for Buffon had insisted on the same, criticizing the construction of artificial systems. Systems of this sort exhibit only 'arbitrary connections and differing points of view under which the objects of nature have been considered' and they 'judge a whole...on the basis of a single part, and by comparing the differences of such single parts.'⁶³ Such systems do, to be sure, have a certain utility—e.g. for memory or mutual understanding—but they are no less artificial for all that. In this, artificial systems very much resemble the general and specific essences Locke thinks we construct. But Kant uses the generative criterion to make the same point Buffon had:

The division of schools proceeds by classes according to likenesses; natural division proceeds by lineages and divides animals by affinities with reference to reproduction. The former produces a scholastic system for memory, the latter a natural system for the understanding: the former intends to bring created beings under labels, the latter under laws (*RM* 2:429).

A real species is thus determined by a shared generative capacity, and the problem to which this is the solution is the problem of differentiating between merely artificial but useful divisions from natural and scientific ones. In other words, at issue is the ground of the true divisions among things, whether external similarities or something a bit more profound, and the same point is made again in 'On the Use of Teleological Principles in Philosophy,' published just two years prior the third *Critique*. Kant again distinguishes between natural and artificial species, saying that those falling under the former 'stand in connection through their generative faculty' while those falling under the latter (which he again calls 'school' species) stand together only in virtue of shared marks or characteristics. A system of school species gives us only the discipline of

⁶³ Sloan (1981), 108.

‘natural description,’ natural species the science of ‘natural history.’ Only the latter can rightly aspire to explanation through causes.

Kant’s language in the quote above makes explicit the logical issues discussed in §2. The generative criterion provides the basis for determining the true kinds or species, i.e. for distinguishing between real and artificial divisions. We might now expect that where division is found, community will not be far behind, and indeed it is not. Shortly after citing Buffon’s rule and distinguishing between natural and school divisions, Kant says of the human races that

One can adduce only a single natural cause for this unity of the natural species, which unity is tantamount to the unity of the generative power that they have in common (*gemeinschaftlich*); namely, that they all belong to a single phylum, from which, notwithstanding, they originated’ (*RM* 2:430)

The unity of the species is the unity and community of the generative power from which its subordinate kinds issue, which is the same as the phylum to which they belong. And this thought persists in the essay written shortly before the third *Critique*. All the human races possess the ability to produce fertile offspring with one another, and this very evident ability to unite to produce fertile offspring containing marks from both parents suggests, to Kant, the possibility of an original division from a single phylum (*TP* 8:165):

[the concept of race] is well grounded in the reason of each observer of nature who infers, from a hereditary particularity of different interbreeding animals that does not at all lie in the concept of their species, a common cause (*Gemeinschaft der Ursache*), namely a cause that lies originally in the phylum of the species.⁶⁴

The general concept of ‘human’ or ‘human being in general’ cannot be divided up *a priori*, because apart from experience, one is acquainted with no determinate races of of humans that

⁶⁴ Cf. also a few lines earlier: ‘Just as they can still unite through generation into a product that contains characters of both, despite their diversity, so they were able to divide through generation out of one phylum.’

would be contained under that concept. That human beings are divided into different races, i.e. the contingent fact of human biodiversity, can only be grounded in experience. But that those different races can produce fertile offspring with each other suggests to the observer the basis for an inference to the effect that they originate in a communal cause, which grounds the reality of the division. We, as observers of nature, are confronted only with the fact of the diversity of the species, not with their original, undifferentiated unity in an original phylum.

In natural (biological) investigation, then, we are inquiring after that *cause* which stands at the head of a *real* division having as its consequences more determinate, subordinate kinds—kinds which stand in community in virtue of that communal cause. Real natural history is thus the search for communal causality, and it is because of this causality that the races do indeed stand in a natural ‘system of generation’ (*Zeugungssystem*) under a common species (*TP* 8:165). In the *Dohna-Wundlacken Logik*, Kant had even given as an example of division that of the human species into different races (*DW*: 761). In his race essays, however, what might otherwise have been considered a merely logical division is suggested to be a real or natural division. It is not because many individuals possess the marks ‘rational animal’ that they stand in community under a kind, but because they issue one and all from the same generative power, a single phylum. Quite naturally, then, in the absence of the communal cause evident in productive inter-racial unions, Kant seems to think the different races would constitute different kinds (*TP* 8:165). As it stands, however, the subdivisions are but limitations of the manifold possibilities contained within a single, unified phylum, i.e. the communal cause of them all containing their manifoldness not just under itself, but in itself.

One's ambitions might, however, extend beyond the unity of the races. When speaking of the generative criterion, Leibniz had in the *New Essays* discussed the possibility of tracing dog breeds back to a common ancestor, saying that

there are such great differences amongst dogs that mastiffs and lap-dogs can very well be said to be of different species; yet it is not impossible that they are remote descendants of the same or similar breeds, which we would find if we could go back a long way, and that their ancestors were similar or the same, but that after much change some of their descendants became very large and others very small (*NE* 325).

As one moves upward in logical space to more and more general classes, and so to the heads of larger and more encompassing divisions, so also one might move back in time to more original breeds of dog from which more recent ones, e.g. the Beagle or the English Bulldog, issue. Though willing to entertain conjectures about the underlying unity of dog breeds, Leibniz seems quite unwilling to entertain the possibility of any such unity underlying dogs and elephants, and so is quite confident in rejecting the absurd suggestion that they might belong to the same species.

A similar idea can be found in the Appendix to the Critique of Teleological Judgment, this time expanded to all of animate nature. There Kant briefly entertains what he calls a 'daring adventure of reason' according to which the 'manifold of species' share a common schema, a basic design from which the others are derived, e.g. 'by the shortening of one part and the elongation of another' (*KU* 5:418). All animals can seem to have been 'generated in accordance with a common prototype' (*gemeinschaftlichen Urbilde*) (*KU* 5:418). The different animals are then just so many determinations or specifications of this common prototype, just as the different races are so many determinations or (sub)specifications of their original phylum. In each case,

the different determinations stand in community with one another in virtue of that from which they are derived. To that extent, the two cases run parallel. One case, however, has greater scientific merit: a genuinely *causal* community is plausibly thought to exist among the races because the different races produce fertile offspring, but nothing analogous is forthcoming once the question of community is expanded to all of animate nature.⁶⁵ This would seem, at least in part, to be why Kant calls the suggestion a ‘daring adventure of reason.’⁶⁶ Though we should like to ascend to higher and higher empirical genera, e.g. from the races to the human being, and from there perhaps to primates, etc., the more distant the goal, the more tenuous the hope. Nonetheless, the interest of reason in systematic unity remains, and so too therefore a certain temptation to a particular direction of inquiry: that even more diverse kinds will ultimately be grounded in some communal cause, however lost in time.

To conclude then, Kant asserts that fertile interbreeding is the defining criterion for species identification. He attributes this criterion to Buffon, though Leibniz had called attention to its importance as well. The shared generative power evident in fertile interbreeding is also, Kant says, the communal principle and cause of the racial subdivisions in the species, ‘human being,’ subdivisions which cannot be known *a priori*. The model Kant puts forward seems almost designed to account for the kind of variety Locke was worried about, for it purports to make sense of features of among individuals of a kind, no one of which any human being has to

⁶⁵ It should be noted, however, that even with the races, the original, undifferentiated phylum is never simply given, but is only supposed through a reflective judgment on its presumed effects in experience.

⁶⁶ McLaughlin (2010) argues that Kant rejects this ‘adventure’ on other grounds as well. In particular, he argues that Kant thought the enterprise could not ultimately settle the question it had set for itself, namely the origin of purposiveness of things. The project simply places purposiveness in a fecund mother nature, without explaining the spontaneous generation of organic form. I discuss this in greater detail in the next chapter.

have, but some one of which every human being must have. The contingency of race is to that extent still governed by a certain kind of necessity, and the method, at least in idea, can accommodate variety while nonetheless accounting for unity.

We have, therefore, descended from a general, logical purposiveness of nature and the community of all things in it to the smaller, subordinate community of the human races in a single species. But I have yet to say anything about those particular beings which would seem to exhibit systematicity most concretely, namely living things like trees, and the problem here might be thought to be different from the relations that obtain between higher and lower orders of concepts or kinds. In other words, one might think the relation that obtains between genera and species is altogether different from the relations among the parts in a natural end, e.g. a tree. We must, then, descend again and show how even at the lower level of individual natural ends, the problem of community arises, and that that problem shares the same form as that discussed above.

4.6 NATURAL ENDS: NUTRITION, GENERATION, AND SUBSTANTIAL FORM

I mentioned above (fn. 21) that Locke had noted the two essential characteristics Kant ascribes to natural ends—they are organized and they contain the principle of organization within themselves. Locke makes these points not when talking about teleology or purposiveness, however, but in a chapter devoted to personal identity (II.xxvii). If one takes a look at the life of a tree or a horse, he says, one sees an amazing diversity in their features. The horse is at first a

colt, but grows and matures, being variously fat and lean but all the while remaining the same horse. Similarly, an oak is at first a sapling, but grows and matures, now flowering, now not, but all the while remaining the same oak. The matter and qualities of each change, even constantly, and so considered simply materially, there is a succession of different individuals—at least according to Locke. But, he says, they are one and the same insofar as all the parts, both at any moment and through time, participate in ‘one Common Life,’ which is ‘communicated to new Particles of Matter,’ which it takes in as nourishment. That in virtue of which the organism ultimately communicates its life and organization to new matter is the inner power or force which distinguishes natural organisms from machines. And Leibniz, commenting on the same passage, insists on the importance of an ‘enduring principle of life’ (which, he says, he calls a monad) to account for the real unity of an organic body. Without that monad, without a ‘genuine, real, substantial unity,’ their identity is only apparent.

Now, we have been talking about the community of individuals under a kind. But there is a way in which we might understand the parts of a single substance as standing in community in virtue of their relation to one and the same subject. Thus, in the Appendix to the Transcendental Dialectic, after discussing the projected systematic unity of cognitions under common principles (*gemeinschaftlichen Principien*), Kant discusses the causality of a substance, which, he says, is called ‘power’ (A648/B676). He says that one and the same substance can appear to exhibit ‘such diversity that one must assume almost as many powers as there are effects.’ What might otherwise be considered single substance, in other words, exhibits such diversity that one might almost imagine it to be a mere aggregate of diverse powers. One might, in other words, regard it simply as collection of causal powers, each belonging to different substances. Nonetheless,

reason bids us to try to reduce that diversity by discovering a ‘hidden identity’ between them or which they can be said to share—to treat the diverse powers as standing in a system. In particular, reason bids us to seek after a *fundamental* power uniting them all, for this is the problem ‘set by a systematic representation of the manifoldness of powers’ (A649/B677). In our case, that unity of the powers is the unity of reason itself, and Kant will elsewhere speak of the ‘organic combination of all powers of knowledge under the supreme government of reason’ (*P* 20:345). But quite generally, we can no more determine *a priori* that there *is* a fundamental power uniting these various effects any more than we can determine *a priori* that nature *does* fall into a recognizable order of genera and species. It is nonetheless reason’s task to act as if there *were* such a fundamental power belonging to the substance in question, which power systematically unites all others. And this is as much as to say that reason’s task is to act *as if* there were some common or communal power underlying the apparently diverse powers exhibited.

If the fundamental causal power of an individual substance grounds its systematic unity, then that same causal power should provide for the community of its diverse effects, just as the diverse races stood in a causal community in virtue of their common generative capacity or power. Kant’s description of natural ends bears this out. In the *First Introduction*, Kant says that we cannot judge the form of a natural end as possible strictly in accordance with mechanical laws, because the very concept of a natural end requires that we move from an ‘inner disposition’ as from a cause to its effects, and that we think all its parts have not each a separate ground, but that they all together have a ‘communal ground’ (*gemeinschaftlichen Grund*) (*EE* 20:235). And so it would seem that the parts of a natural end, like a tree, also stand in a real, as opposed to

merely logical or possible, community, much as the races did. The community in the latter case was grounded in the generative capacity. In what is the community of an individual natural end grounded? The nutritive capacity. For Kant, as for Buffon (and, indeed, for Aristotle) generation and nutrition are but different manifestations of one and the same power.⁶⁷ Kant says of a natural end's capacity to grow and nourish itself that it is 'to be regarded as equivalent, although under another name, with generation' (*KU* 5:371). The unity of the powers is simply a function of the unity of what they do: both are in the business of bringing about more of the same. The nutritive and generative capacities can, therefore, be said to be grounds of community for two reasons. First, both 'communicate' or make common a certain form or organization to matter, whether to matter taken in as nourishment or to offspring.⁶⁸ The generative and nutritive powers, in other words, provide for the identity and continuity of form. And just as the races stand in a 'system of generation' (*Zeugungssystem*), the parts of an individual tree can be said to stand in a 'system of nutrition.' But second, all the parts of a natural end are related to the nutritive power as ways of carrying it out, their own activities being but parts of the exercise of this fundamental power. The causal unity of a natural end is thus grounded in the relation of its parts to the common, fundamental power of which they are each but a partial expression. Each part stands in the service of the whole insofar as each exercises some distinct portion of the whole's activity, and what each has in common is the activity of the whole itself: bringing about more of the same. Natural ends, then, are substances exhibiting a fundamental causal power which is, as it were,

⁶⁷ *DA* II.4; 416b23-25.

⁶⁸ Of course, *how* they do so is still a question.

refracted into a spectrum of diverse powers nonetheless standing in community together under their common cause.

I want now to end this section by drawing a final connection to the scholastics. If for the scholastics community played an important role in the context of logical division, so too did it play a role in accounts of natural causality. When commenting on Book II of Aristotle's *Physics*, Thomas distinguishes between proper and universal causes. And, speaking 'in the species of efficient cause,' he says that the doctor is the proper and posterior cause of health, but that the artisan is the more common and prior cause. Thomas accords thereby a certain efficient causal priority to the common cause, and after giving another example, says quite generally that 'a cause which contains any cause in the community (*communitate*) of its extension is a prior cause.'⁶⁹ He then explains that

any power extends to certain things insofar as they share in one form, and the farther that that power extends, the more common that form must be. And since a power is proportioned to its object according to its form, it follows that a higher cause acts according to a form which is more universal and less contracted [modified].

A causal power can thus radiate, as it were, downwards to things standing under it and which are limitations or contractions of that original power. The more universal the power, the more it radiates that power to those things below it. And this seems to be a participation relation, for elsewhere Thomas says that to participate is to receive in a partial way what belongs to another in a universal way. And he gives the following examples:

man is said to participate animal, because he does not possess the intelligible *ratio* of animal according to the latter's total community (*totam communitatem*); and

⁶⁹ *Comm. Phys.* Book II, *lectio* 6.

for the same reason Socrates participates man...and matter form...and similarly the effect is said to participate its cause.⁷⁰

What is partial or less common participates in what is more common or whole, the *tota communitas*. This applies not just to instances of division like those we have already seen, e.g. Socrates in relationship to ‘man’, but to the relation between matter and form and, indeed, cause and effect. And we see this thought in his commentary on the *De Anima*, for he says that living things have a material aspect and (predictably) an immaterial one. In virtue of the latter they are akin to ‘higher substances,’ and that ‘everything pre-exists, somehow, in the higher immaterial substances, as in universal causes.’⁷¹ Matter participates in its form, and an effect in its cause as man in animal. All are, as it were, contained (somehow) in that in which they participate. Consequently, the thought that things otherwise diverse might stand in a causal community in virtue of whatever it is that they ‘participate’ in and from which they derive their causality, was hardly new with Kant.⁷²

⁷⁰ *De Hebd.*, quoted in Clarke (1952).

⁷¹ *Comm. De Anima*. lectio 5. The higher causes contain the lower ones ‘virtually’, and one finds in neo-scholastic textbooks claims of the following sort: ‘In material and living bodies we find an ascending order of perfections in which the higher beings have their own perfections as well as those of the lower level of being. In the unity of the higher being the multiplicity of the lower beings is virtually present,’ in Wuellner (1956). Thomas himself says, e.g. at *ST* I.76.4, that the intellective soul contains the sensitive and nutritive souls ‘virtually’ (*virtute*), and the sensitive the nutritive in the same way. It should be noted that the cause of the diversity of things, seemingly in much the same way that the common ground of a natural end is the cause of its parts, or the original phylum the cause of the different human races, was a topic in medieval philosophy. Thus, in *Summa Contra Gentiles* II.45, Thomas discusses whether the cause of the distinction among things is to be found in the order of ‘secondary agents.’ Ultimately—and as one might expect—he argues that the distinction among natural things is to be due to God. Some had thought that the unity and simplicity of God made it impossible for him to be the source of the differences among things, but Thomas argues that because the cause exceeds the effect, what is in the cause simply and unitedly (*simpliciter et unite*) exists in the effect in a multiple and composite way.

⁷² Similar thoughts can also be found in Leibniz, who seems to have been quite influenced by Neoplatonism. Cf. Mercer (2012) and Rutherford (1998).

4.7 BIOLOGICAL INDIVIDUALITY

I have been arguing that according to Kant, the parts of a natural end are grounded in a common cause and that that cause is the power of nutrition. The parts stand in the service of the complete activity of their ground in the sense that they are but partial expressions of it. That activity is responsible for the continued existence of those self-same parts. I further suggested that those parts constituted a whole in a ‘system of nutrition’ in much the same way that the individuals of the human species constituted a ‘system of generation’ or *Zeugungssystem*. The presence of a common cause uniting the different human races suggested that they together constituted one real species, as opposed to a mere aggregate of distinct species possessed only of similar marks or characteristics. But although I adduced a number of parallels between them, one might think that there is an essential dissimilarity between the unity of an individual organism and the unity of a species because, presumably, species are not themselves living things. I have, in other words, been treating as essentially parallel the system constituted by a species and the system constituted a living thing. But one might worry that the question of the reality of universals or the grounds for making real divisions among species belongs (at least) to a different order or level of abstraction than the question of the explicability of certain concrete things, such as oak trees, by final causes. If that is right, then any account which makes them run essentially parallel will miss what is distinctive to the latter, the essential difference between them. In this section and the next, then, I want to address these worries. I first suggest, with a nod to the next chapter, that the very parallel between these two problems contains the seed or germ of an explanation as to why we cannot, in fact, cognize natural ends as such. And I do this by

suggesting that Kant's conception of a natural end should not be artificially limited in its application to what we should like to call 'individual' organisms. We should instead broaden the class of things to which the concept 'natural end' might be said to apply. In the following section, I suggest that many of Kant's uses of *Zweck* are consistent with, and suggested by, the picture that I have painted in the preceding sections.

Though we distinguish between individual living things and species as a matter of course, it should not for that reason be supposed that the notion of biological individuality is simply transparent from a philosophical perspective, any more than individuality itself is. Thus, the transition from prokaryote to eukaryote was a consequence of symbiotic relationships between prokaryotes.⁷³ Two formerly distinct living things came to possess such a unity that we consider them now one. At the same time, some species of starfish can regenerate an entire body from a severed arm—the whole from a part—and so what was formerly one becomes two. There is also a species of aspen instances of which can look to the casual observer like a forest of individual trees, each with its own main trunk. Those trees are, however, united in a common root system, and on some criteria count together as just the parts of a single, massive individual.⁷⁴ In light of facts like these, there has arisen a significant literature on the criteria by which we do or should demarcate one living thing from another.⁷⁵ And while it is generally presumed that Kant's account of natural ends applies only to what we would pre-reflectively understand by 'individual' organisms, it is open to question whether or not the criteria he lays out might apply to other things as well, such as whole species. Kant himself says that the concept of a natural end is not a

⁷³ Sterner (2017), 84.

⁷⁴ Bouchard (2008), 562-563.

⁷⁵ Cf. e.g. Lidgard and Nyhart (eds.) (2017), Clarke (2010), Leuken (1951)

concept that can be abstracted from experience, and suggests that it might for all we know be empty—it might be the case that there are no natural ends (*KU* 5:396). But if a species *is* a natural end, one might wonder how an individual can be both an integral, autonomous whole in its own right while also being essentially a part of something else, namely of its species, now conceived as real whole in its own right. If to be a part just is as such to depend in some way on the whole and, therefore, to be incomplete of itself, then it will be hard to see how something could be both an integral whole in its own right while also belonging non-accidentally to a larger one. The thought might perhaps be most familiar in its social or political form: how can an individual person be both independent and autonomous while also belonging essentially to a community? And in the natural case, we might feel forced to suppose that to treat an ‘individual’ organism as essentially a part of something else is thereby to demote or qualify its unity and integrity.

There is, however, a way in which the seemingly interminable oscillation between ‘individualism’ and ‘collectivism,’ broadly speaking, might be brought to an end. In particular, something could be both a part of some whole and itself a true, autonomous whole if it contains in itself the principle of the whole to which it belongs. Thus, while the arm of a given starfish is in one sense the means by which that starfish carries out its life activities, it is not merely a means, but possesses the principle of the whole in itself. And in some places, Kant seems to have just this in mind, for in §64 of the *KU*, after describing generation, nutrition, and the relationship between them, Kant refers to the practice of grafting one plant onto another, from which he takes the lesson that ‘one can regard every twig or leaf of one tree...as a tree existing in itself which only depends on the other and nourishes itself parasitically’ (*KU* 5:371-2). Each part of a tree not

only serves the tree, but is a tree unto itself, one which the other parts serve. It is a tree unto itself because the practice of grafting suggests that the nutritive or generative capacity is to be found in each and every part. Each part would then use the rest of the tree ('parasitically') to nourish itself while being used in turn by every other. And in §65, he says of a natural end that it is not sufficient that each part exist 'for the sake of the others and on account of the whole;' rather, each part 'must be thought of as an organ that produces the other parts' (*KU* 5:374).⁷⁶ This thought was influenced in no small measure by experiments on polyps or hydra, known for their incredible regenerative capacities, and it was, in fact, the study of these which led the naturalist Hans Blumenbach to postulate his famous *Bildungstrieb* or formative force, which Kant refers to quite positively (*KU* 5:424). On the basis of his study, Blumenbach argued that one and the same power is responsible not only for nutrition and generation, but also for the restoration of parts, i.e. *regeneration*.⁷⁷ And this is to say that he identifies as belonging to organisms just those three characteristics which Kant attributes to natural ends in §64.

⁷⁶ Cf. also *Groundwork* 4:433. There Kant defines a 'kingdom' as a 'systematic union of different rational beings under common laws.' Each person is simultaneously subject to common laws and the source of them. Each, he says, is simultaneously end and means, sovereign and subject. In that respect, the community of persons in a moral kingdom is quite analogous to the relations between the parts of a natural end. Just as each person is the source of law governing the whole, so each part has the generative faculty of the whole in itself, and just as each person is subject to the law, so also each part is a means which exists in the service of the whole. But it is precisely because each contains the source or generative principle of the whole that it is not *merely* a means, a mere thing, in Kant's technical sense.

⁷⁷ Richards (2002), 18. But cf. also Buffon's remarks on the generation of animals in Lyon and Sloan (eds.) (1981). After discussing nutrition, he asks 'is it not by a similar power [that] the internal mould itself is reproduced? It appears, that it is not only a similar but the same power which causes [development] and reproduction, for in an organized body which [develops], if there is some particle like the whole, it is sufficient for that particle to become one day an organized body itself, perfectly similar to that of which it made a part. This particle will not at first present a figure striking enough for us to compare with the whole body; but when separated from that body, and receiving proper nourishment, it will begin to expand, and in a short time present a similar being, both externally and internally, as the body from which it had been separated: thus a willow or polyp, which contain more organic particles similar to the whole than most other substances, if cut into ever such a number of pieces, from each piece will spring a body similar to that from whence it was divided' (183).

If thought about in this way, then although Kant illustrates the concept of a natural end with a tree, it could perhaps be extended to the human species, e.g., or humanity itself. Humanity, in other words, might itself be a natural end or end of nature. If so, each individual would have to possess the principle of the species in itself, and indeed it does, for each possesses the generative power.⁷⁸ We have already seen Kant say that the human species constitutes a *Zeugungssystem*, and that systematicity was characteristic of natural ends. Because of the generative power, they constitute not just a ‘logical’ system, but a real, causal one. To that extent, it does constitute a genuine whole, as opposed to a mere aggregate, and Kant says as much in his review of Herder’s *Ideas*. Herder had ridiculed the notion that the human race *itself* might be educated, since ‘kind and species are only general concepts, except insofar as they exist in individual beings’ (*RH* 8:65). It is, in other words, nonsense to speak of the education of the human race or species because that is not a real, educable thing. And Kant concedes that some such uses of species concepts are absurd, e.g. if one were to say that no individual horse is horned, but the species is. Nonetheless, he argues that there is a sense in which “‘the human species’” signifies the *whole* of a series of generations going (indeterminably) into the infinite’ and that such a meaning is ‘entirely customary’ (*RH* 8:65). In this customary sense, Kant thinks, we can indeed speak of the educability of humanity, and so he will speak in the *Anthropology* of ‘the education of the human race, taking its species as a *whole*, that is, collectively (*universorum*), not all of the individuals (*singulorum*), where the multitude does not yield a

⁷⁸ There is of course a question about the self-sufficiency of each individual human being since human reproduction requires male and female participants. Perhaps it would be better to say that each of the races contains the principle of the whole, since each race includes both males and females, which contain in themselves the original, undifferentiated phylum from which each of the races sprung, the possession of which makes it possible for interracial unions to produce fertile offspring. As we shall see shortly, there is reason to think that Kant *did* consider the human species to constitute a genuine whole.

system but only an aggregate' (*A* 7:328). To that extent, then, we can say that the human species does come into possession of attributes we would ordinarily speak of only individually, e.g. education. And indeed, in his *Idea for Universal History with a Cosmopolitan Intent*, he argues that humanity has a plan and unfolding, i.e. that 'those predispositions whose goal is the use of his reason were to develop completely only in the species, but not in individual' (*I* 8:18). The human species itself, therefore, is to be understood teleologically, and the lives of individuals and individual peoples all subserve its end, even though unaware of it (*I* 8:17). It is only in the life, as it were, of the species that humanity realizes its full potential.

Kant's remarks about the unity of the human species and their progression could plausibly be said to apply to other species as well. If something can be both a part and an integral whole in its own right if it contains the principle of the larger whole to which it belongs, and if species membership is defined by the possession of a common or shared generative capacity, then any given species would likewise constitute a genuine whole. The species would nourish/generate itself in virtue of its parts, i.e. its members, which would together exhaustively express all the manifoldness that lies in the original phylum of that species. In that sense, each individual would stand in the service of the common phylum as but a partial expression of it or way of carrying it out. And Kant does ascribe to nature the aim of developing all the manifoldness that lies in the phylum of a given species, which suggests that we should understand natural *species* teleologically as well. But if we are to understand species as themselves natural ends, and if in a natural end the whole or the ground of a whole is prior to any of its parts, then knowledge of a species would be prior to knowledge of any of its instances, in the same way that knowledge of the whole life activity of an organism would be prior to knowledge of the role of any of its

parts.⁷⁹ Only on the basis of such knowledge could we identify what truly belonged to an individual as an instance of a particular sort, and which of its features were merely accidents of circumstance. And this would further connect one of the central themes of the third *Critique* with the discussion of real purposiveness in the latter half of the same. Because the common causal principle at the root of a natural end such as a tree is one and the same as a capacity to generate more instances of itself, knowledge of that principle would amount to knowledge of real kinds, since it was just this principle that was supposed to make the difference between artificial or school divisions and real, causal divisions among things. In that sense, knowledge of natural ends amounts to knowledge of real divisions among kinds.

If that is right, we can perhaps make sense of Kant's remark that the concept of a natural end 'necessarily leads to the idea of the whole of nature as a system in accordance with the rule of ends' and that 'by means of the example that nature gives in its organic products, one is justified, indeed called upon to expect nothing in nature and its laws but what is purposive in the whole' (*KU* 5:379).⁸⁰ That the presumed existence of natural ends might suggest that nature more broadly is purposive seems reasonable enough, but that it would *necessarily* lead to such an idea and that we should be *called upon* to expect more extensive natural purposiveness can seem to

⁷⁹ Cf. Thompson (2008), 59: 'We are wrong to think of the concepts of the various life-forms [species] as reached through abstraction from features of their particular bearers. *That* notion takes for granted a picture of the terrestrial biosphere as offering us a magazine of living individuals, which we then carve up in accordance with certain principles. The error is not overcome, but only complicated, by the Realist notion that, after all, we "carve at the joints." What is wrongly called *carving* is already a part of thinking of individual things as alive, as organisms available for classification.' Thompson is arguing against an unacceptably nominalist construal of living things, according to which it would make sense to say, of an isolated individual, that it was alive. Rather, the identification of something *as* alive—or, indeed, as a natural end—depends on a reference to a 'wider context,' its life-form or species.

⁸⁰ On claims such as these, cf. Watkins (2014a), who thinks they have been quite generally neglected. Watkins asks (rhetorically) 'Why not be a biologist who is committed to understanding (the functioning of) organisms and leave it at that?'

overshoot what the evidence really allows. But if individual natural ends, such as trees, are intrinsically related to some common kind, then the strength of Kant's claim becomes more intelligible. If a tree is a natural end, then any adequate idea of it necessarily involves the idea of a system of other things quite like it, some species. If that species is itself a systematic whole which produces itself—if it is a natural end in turn—then it would stand in community with other species wholes under some genus.⁸¹ But what is more, the very same cognitive act which makes available the presumed causal unity of a natural end makes available the causal unity of the species, namely reflective judgment. It belongs to judgment of this kind to ascend 'from the particular in nature to the universal,' which is to say that it belongs to reflective judgment to find or discover the distinctly common ground—if any there be—of any given set of parts, whether a set of parts of a body in some one space or a set of individuals in different geographic locations (*KU* 5:180-1). And just as we do not *know* whether or not there are any natural ends, i.e. whether the concept of a natural end has objective reality, so neither can we *know* that nature is ordered into empirical kinds, and these two facts would seem now to be quite intimately related. As we will see in the next chapter, to have such knowledge would require knowledge of their noumenal grounds, which we lack. Our ignorance of noumena is at least in part an ignorance of their numerical identity and diversity—we cannot know whether the noumenal ground of my experiences of Mittens and the noumenal ground of my experiences of Whiskers are in fact the same.⁸² We cannot know, in other words, whether they share a common or communal ground.

⁸¹ And Kant entertains something like this thought in the chapter on the Methodology of the Teleological Power of Judgment (§80), but calls it a 'daring adventure of reason.' I discussed it above, 40-1, and as I noted there, the actual evidence for any such unity is sparse indeed, for the generative criterion of species has no clear analogue at the level of genera or between species.

⁸² Cf. Schafer (forthcoming) in Schafer and Stang (eds.).

Similarly, we cannot know that the noumenal ground of cats more broadly (if there is one such ground) is the same as the noumenal ground of dogs (if there is one such ground).

4.8 KANT'S USE OF *ZWECK*

In the foregoing, I have tried to give an account of the structure of natural ends (*Naturzwecke*) and to identify the metaphysical principles at work in Kant's account of them. That effort consisted largely in exploring Kant's two favored ways of describing natural ends, i.e. mereologically and as systems. But although I have tried to articulate what I take to be the primary metaphysical principle at work in Kant's understanding of natural ends, namely community, one might still wonder how the above pertains to teleology, for I have said nothing about goal-directedness, functions, or the like, and these would seem to be the bread and butter of any discussion of teleology or final causality. The above account can, I believe, capture some of the essential features of teleology, as it is often understood, even if many of the problems to which that account addressed itself were not obviously or straightforwardly 'teleological' problems. For this reason, I want to say something about Kant's use of *Zweck*, for it exhibits a certain peculiarity which makes it, as a philosophical concept, somewhat distinct from the notion of 'end' or 'goal' as it occurs in much of the literature on teleology. I will then say why I think the above account can capture Kant's explicit definitions of ends in the third *Critique*.

It would be too much to undertake here a complete investigation of Kant's use of *Zweck*, but we can notice certain relevant features from a quick glance at just some of the passages in

which he uses it. In the introduction to the doctrine of virtue in the *Metaphysics of Morals*, for example, Kant says of an end that it is an object of the choice of rational being, and that while others can make me perform particular *actions* in the service of something, I can only be said *to have an end* to the extent to which I have determined for myself—rationally—to pursue a particular course of action (*MS* 6: 381; 6:385). That is, for any particular course of action to count as an end for me, it must be something my reason determines itself to do. Coercing someone to adopt an end would be like coercing someone to be free (*MS* 6:381). In his *Lectures on the Philosophical Doctrine of Religion*, Kant distinguishes between skill, prudence, and wisdom, saying of the latter that it constitutes the perfection of cognition (*LR* 28:1057). A wise human being is one whose ends all together stand in harmony with the general dictates of morality, for ‘morals has as its object precisely to consider how each end can stand together with the idea of a whole of all ends.’ Indeed, Kant says that we have from morality an example of a highest understanding which can proceed from the whole to the particular, because in morality one can determine the worth of any given end on the basis of an idea of a whole of all ends. On the basis of such remarks, it would seem that some ends, at least, are particular determinations of a more general capacity, namely reason or the capacity for choice, where these more particular determinations would, ideally, stand together in a system. As parts of a system, ends count as the *matter* of that system, and indeed in the *Metaphysics of Morals* Kant glosses ends as matter. Distinguishing between duties of virtue and duties of right, he says of the former that they have to do with what is formal in the moral determination of the will, not ‘with a certain end (matter, object of choice)’ (*MS* 6: 383).

In those places in which Kant most clearly explicates the concept of *Zweck* in the third *Critique*, its relation to choice is suppressed, as is its material role with respect to a more general principle. An end, he says, is ‘the object of a concept insofar as the latter is regarded as the cause of the former,’ where the existence of the object, as an effect, is possible only through a concept of it. The same chord is struck in other places (*KU* 5:220; *EE* 20: 232; *KU* 5:408), and so just as the parts of a tree are possible only in relation to their common cause, so an end is possible only through a concept of it. But if a concept is, as Kant thinks, a *repraesentatio communis*, then an end or *Zweck* would again seem to be a more particular determination of a something general or common. That is to say, in the case of an end, a concept or *repraesentatio communis* is the causal ground of the existence of an object falling under the self-same concept. And in virtue its connection to that ground—the common representation—the object brought into being (the end) stands in community with other ends, possible or real. That is, ends by their very nature stand in a system with each other under a common principle or idea in the same way that diverse individuals stand under a common species. All manifoldness of ends is then only so many different ways of limiting the concept or idea, which is, as a general representation, their common substratum and in virtue of which they stand in a system. In this way, each end gives the concept from which it issues more determinate form, but necessarily excludes other possible ways of embodying that same concept. At the same time, a concept is also only a partial representation of each of the things to which it applies for the simple reason that there is always more contained in the individual than is contained in the species (or in a species than is in its genus). That it is a castle is only one of many things to be said about Hearst Castle. Consequently, though an end is said to be caused by a general representation, it is also true that

the individual which issues from the concept issues from or is generated by some part of itself. Just as nature in general is thought to ‘specify’ itself, so also a concept as a general representation ‘particularizes itself’ in its products, which are its ends, the totality of which in turn constitute the concept. The principle of unity ‘diversifies’ itself into many particulars each of which partially mirrors or represents that original unity in its own way.

4.9 CONCLUSION

I want now to return to Kant’s only reference to Aristotle or Aristotelianism in any of his discussions of teleology, that reference with which we began. Just after saying that ‘the genus (considered logically) is as it were the matter, or the raw substratum, which nature works up into particular species and subspecies,’ he refers to the Aristotelian principle that the genus is the matter, the species the form. It is not just the principle that is Aristotelian, however; so too is Kant’s articulation of the point in dynamic terms, for Boethius had said that ‘the genus is broken up...in a kind of creation, as it were, from itself (*in quadam a se quodammodo creatione*), and a genus is always a whole in relation to its proper species’ (878d). To that extent, the ‘self-creation’ of a common principle by means of its own division or even refraction into a multitude of diverse but nonetheless unified parts belonged to the Aristotelian tradition to which Kant refers. Whether the above is thought to be merely a colorful way of describing the logical relation between a common principle and its parts or a description of a causal relation between them

naturally depends on the extent to which, or the way in which, the community in which those parts stand is real or merely ideal, i.e. something the intellect brings about.

Against this background, I have argued that the problem of teleology which Kant took himself to be addressing should be understood in relation to community. Kant describes natural ends as systems the parts of which reciprocally produce one another and the whole. The parts of a logical system, the form of which is division, stand in the same relations. In both cases, the parts stand in community with each other under a common principle. Because ours is a discursive intellect, i.e. an intellect which cognizes through concepts, it requires as material conditions for its activity, as it were, both diversity and unity in its representations. It requires, in other words, the possibility of ordering its representations into a system of the higher and the lower, genera and species. But, given the connection, both historically and in Kant's own texts, between genera and species and the concept of community, this just means that the intellect requires for its exercise relations of community among things. The task of discovering those genera and species and, therefore, those communities, belongs to reflective judgment. And though the intellect cannot *dictate* to nature that in fact there be such communities of things, it will have a coherent use only if there are.

But if it belongs to the discursive intellect to divide nature into genera and species and so into different communities, this is not yet to saying anything about how best to do it, and there was disagreement among both among philosophers (e.g. Locke and Leibniz) and natural historians (Linnaeus and Leclerc) about what the proper criteria should be for the construction of classes of things, even barring disputes about the metaphysical reality of the communities posited. And here Kant follows Leibniz and Buffon in insisting on the importance of generation,

for it is generation which differentiates between a division based merely on morphological affinities and one based on causal affinity. Generation, in other words, would seem to reveal a real causal ground of the community of things: those things that can produce fertile offspring with one another stand together in a causal community under one and the same generative power, i.e. in a *Zeugungssystem*.

Finally, I argued that natural ends, which exhibit the kind of unity which Leibniz had thought required a monad or substantial form, should also be understood in terms of community, for Kant says that a natural end not only has the form of a system but also that all the parts have a communal ground. It is this communal ground which accounts for the systematic unity of the end. And if the generative power is the communal principle of the unity of the human species, I argued that the nutritive power is the communal principle of the unity of a natural end. This power is the causality of a substance and that in virtue of which all the other parts of the substance stand in community with one another. The causality manifested by those parts are but partial expressions of the single but nonetheless common nutritive power. In that sense, the causal power of a natural end is common to its parts while also communicating itself to new matter by means of those very same parts. And this is the sense in which natural ends are self-generating. None of the above, however, explains why we can understand natural ends only by analogy, and why, as Kant says, ‘a real whole of nature is to be regarded only as the effect of the concurrent moving forces of the parts’ (*KU* 5:407). It is to this problem that I now turn.

*If we are to judge at least in accordance
with what it is granted to us to understand
through our own nature...we absolutely cannot
base the possibility of natural ends on anything
except an intelligent being.*

—*KU* 5:400.

*Just as each nation judges coinage against
that which it knows best, so we must do in
other things; and of all the animals, the human
being is by necessity best known to us.*

—*HA* I.6; 491a20-23.

5.0 PERSONS, PURPOSES, AND PARALOGISMS

In the previous chapter, I argued that central to Kant's understanding of a natural end or purpose, such as an oak, is the concept of community. The parts of a natural end stand in community with one another under their common or communal ground. That ground is the power of a natural substance for the activities of nutrition and reproduction, for it is just these activities (which are in fact one and the same activity under different names (*KU* 5:371)) which are common to or shared by all the parts of a natural end.¹ The parts are purposive because they each exercise some distinct portion of their otherwise common or communal activity and owe their existence to it. That is to say, the activity of each part is a limited or partial expression of the complete activity of the substance and in that sense stands in service to it. But because Kant only rarely mentions a *gemeinschaftliche Grund* when discussing natural ends, this claim was grounded largely (but by no means completely) on an analogy between the parts of a logical system and those of a natural end, which Kant describes as a system. The logical form of a

¹ I use 'substance' here in the traditional (Aristotelian) sense, and not simply as 'stuff' (as Locke sometimes uses it). More will be said to justify this sense in what follows, but it is also connected with Kant's remarks in the Appendix to the Transcendental Dialectic.

system consisted in the division of a general or common concept into its subordinate species. As in a logical system, so too in a natural end is the whole prior to its parts. As in a logical system, so too in natural end do the parts reciprocally ‘generate’ one another and the whole. As in a logical system, so too in a natural end do the parts stand ‘in community’ (*in Gemeinschaft*) with one another.

Understood in this way, the latter half of the third *Critique* is notably continuous with one of the primary themes of the introductions to that work, namely ‘the possibility of the application of logic to nature’ (*EE* 20:212).² Kant argues that the unity of experience requires more than what is provided by the transcendental laws outlined in the first *Critique*, which leave quite open what the empirical world actually looks like. Indeed, nature might have been characterized by such overwhelming diversity that ‘no coherent use of the understanding’ would have been possible (A651/B680; *KU* 5:187). Consequently, we must at least suppose that nature is amenable to beings with intellects like ours, which means we must suppose it takes the form of a system, i.e. a division into genera and species. We must, in other words, treat nature *as if* it were divided into different species standing together in community under genera, even if we can never know that in fact it is. In this way, Kant side-steps the traditional debate about universals, which itself arose out of metaphysical questions quite intimately connected to the practice of dividing genera into species. And ‘community’ often played a central role in the formulation of those questions: do the individuals standing under a species or the species under a genus constitute a *real* community, or is the thought that they do merely something effected by the intellect?

² Of course, in one sense the first *Critique* already secured the applicability of logic to nature insofar as the manifold of intuition is synthesized through the different forms of judgment, but there is a further problem about the regularity and order of distinctly empirical kinds. Cf. *EE* 20: 216; chapter 1, fn.1.

The essential question about natural ends and their characteristic unity was then argued to run parallel to the question about the unity of experience: do the parts of something like an oak constitute a *real* community, or is the thought that they do merely something effected by the intellect? But if Kant side-steps the question about the reality of universals, insisting only that we must approach nature *as if* it were grouped hierarchically into kinds, he similarly side-steps the question about the reality of purposiveness in living things, insisting only that we must approach them *as if* they were purposive. Our task now is to understand more precisely why, for (at first glance) this constitutes precisely the difference between Aristotle and Kant on the question of natural teleology: for the former, living things are in fact purposive, both in respect of their parts and their activities, but for the latter, although they might indeed appear that way, we can never know that in fact they are. Whatever we might ultimately think of this way of stating the difference between Aristotle and Kant, however, it remains to be seen both (i) *why* the communal ground of natural organisms remains, in Kant's eyes, essentially unavailable to us, and so why, as a consequence, mechanism remains the scientifically preferred method of explanation, as well as (ii) *why* organisms can only be explained by reference to or on analogy with rational action.

My aim in what follows is to answer both questions. I argue that according to Kant we cannot cognize the communal ground of a natural end because we cannot cognize simples, and we cannot cognize simples because everything to be met with in outer intuition is extended. The closest we come to any such grasp, I argue, is the grasp we have of ourselves in self-consciousness. Consequently, we understand the ground of the vital unity of a natural end only on analogy with the different modes of self-consciousness. Finding the principle of teleological analogy in self-consciousness comports well with its centrality in Kant's thought quite generally.

But what is more, the parallel between organic unity and the unity of (self-)consciousness can be seen in some of Kant's most influential predecessors, including Locke and Leibniz. For both, what makes the difference between a mere aggregate of things and genuine unity is something akin to a substantial form, a soul, or the *I* present in self-consciousness.³ This same thought is central to Kant's account of teleology, though shaped in distinctive ways by its transposition into the broader context of the critical philosophy.

The plan then is this. I begin in §1 by recapitulating a problem discussed towards the end of the previous chapter, namely the identification and individuation of living things. That problem arises because although Kant elucidates the concept of a natural end with the example of a single oak, its characteristic features might plausibly be said to belong to whole species as well. Like a natural end, the members of a species share in a common causal ground and stand in a system. They are, to that extent, no mere aggregate. And Kant quite explicitly considers humanity, at least, to constitute a genuine whole. The problem is also made more pressing by Kant's claim that we do not know whether or not there in fact are any natural ends at all—for any given thing, we cannot know whether or not it is a natural end. But what is more, it would also be consistent with the suggestion made by some that part of what we do not know about *noumena* is how to individuate them. Consequently, to the extent that natural ends depend on a

³ To be sure, this claim requires some nuance, particularly in Locke's case, but the general point remains. Guyer (2001a) argues that the kind of thought I am attributing to Kant in the third *Critique* does not appear until the *Opus Postumum*. That is, only in the latter work does Kant argue organic beings must be understood as designed because they have a distinctive unity which the infinitely composite and divisible nature of matter never has: only the indivisible unity of thought could explain the unity of such a material being. As we have seen, however, and indeed as we shall continue to see, the real unity of a natural end arises time and again in the third *Critique* and is consistent with traditional questions about the role and nature of the form or soul of natural substances. Thus, to say of natural ends that they have the form of a system and are therefore to be distinguished from mere aggregates just is to say that they possess a distinctive kind of unity. Such language is pervasive.

noumenal ground, it simply will not be available to us to distinguish one from another. We do not know whether Mittens' noumenal causal ground is the same as Whiskers'—they might both share in a common ground, together with others of their putative kind, but they might not.

On this basis, I then turn in §2 to Locke's treatment of identity and diversity in *Essay* II.xxvii, as well as Leibniz' reaction to it, both of which were mentioned very briefly in the previous chapter. There Locke gives an account of persons and their persistence conditions which builds off of and is continuous with his account of the identity and continuity of (i) material wholes or aggregates and (ii) plants and animals. That account is often couched in mereological terms, such that the continuity and identity of matter and living things are defined by different part-whole priority relations, together with what accounts for those differences. Locke attempts to articulate, in other words, in virtue of what all the changing parts and properties of a putatively single thing in fact constitute a genuine unity. As we saw in the previous chapter, this is precisely what is so often at stake in Kant's discussions in the CTJ. These same issues are naturally at work in Leibniz' response to Locke, but are now couched more explicitly and indeed more favorably in the Aristotelian language of soul and substance. But the relation between person, natural substance, and substantial unity was an old one. Though in a sense just one kind of substance among others, persons were regarded as substances in the highest and most paradigmatic sense. And so as in the previous chapter, and using St. Thomas as an exemplar, I suggest that the epistemic and metaphysical priority of persons over natural, non-rational substances can be found in scholastic Aristotelianism, to which Locke, Leibniz, and Kant were each in their own ways indebted. According to that tradition, the notion of a person served as a model for understanding individual substance quite generally. At the same time, the form of

an individual substance could be and was conceived as the efficient cause of many of its accidents, accidents which could not be said to belong to its species. Thus, an individual substance was thought to determine itself in ways left undetermined by the species to which it belonged. Otherwise put, the individual form was the efficient causal ground of what was not analytically contained in the concept of its species or genus.

Given the close, traditional connection between persons and natural substances, I turn then in §3 to Kant's understanding of persons and what we know of them. In particular, I argue that we can have no theoretical knowledge of persons. I briefly discuss Kant's critique of rational psychology in the Paralogisms chapter of the first *Critique*, in which Kant denies some of the traditional claims made about the rational soul, e.g. that it is imperishable and immortal. Because those features have an essentially temporal significance, they could be ascribed to the soul only if it appeared in intuition. But, Kant argues, because the soul is simple, it cannot so appear, and so we cannot know that it has the features traditionally said to belong to it. Indeed, Kant argues that thinking beings *as such* never appear in intuition, given the essential unity and simplicity of thought. Consequently, the representation of anything outside ourselves *as* a thinking being—and so, therefore, as a person—requires a 'transference' of our own consciousness to it. In that sense, we can have no theoretical knowledge of persons.

But if persons are as such unavailable to theoretical reason, they figure centrally in practical reason, and so I turn in §4 to three important features of persons or rational substances made available from the practical standpoint, namely their persistence, freedom, and community. In virtue of our consciousness of the moral law, we are conscious of ourselves as (or necessarily take ourselves to be) free agents, i.e. beings possessed of a kind of causality which is

independent of nature. But what is more, the moral law on the basis of which we conceive of ourselves as free *also* requires us to suppose that we exist and persist as numerically one and the same rational being through all sensible and material changes, including death. That is to say, practical reason postulates the immortality of our souls as a necessary condition for the satisfaction of the moral law. And third, the moral law grounds a noumenal community of individuals which cannot be secured through theoretical reason. That is, the theoretical category of community only has significance for objects in space, and so the only way the thought of a noumenal community becomes available to us is through practical reason's understanding of a moral community of persons.

I then turn in §5 to our consciousness of ourselves in aesthetic experience or the experience of beauty. I do so because in §6 I shall argue that what we are conscious of in aesthetic experience is precisely what we 'transfer' to natural ends in our consideration of them. That is, just as the consideration of anything as a rational being or person required a 'transference' of our own thinking to it, so the consideration of anything as a natural end will require the 'transference' of what we are conscious of in aesthetic experience. Because natural ends are not persons, they are not objects of practical reason. As natural, they are instead objects of theoretical reason. But natural ends are remarkable precisely because they are theoretical objects which nonetheless evince some of the features thought to belong to persons and so familiar only from self-consciousness. In particular, they exhibit a degree of unity and persistence which would seem to outstrip what belongs to any merely material aggregate, as (apparently) *self*-organizing beings they would also seem to initiate action under their own power, and they would seem to stand together in a more than merely spatial community. As

theoretical objects which would seem nonetheless to be quite similar to persons, then, they stand uncomfortably between theoretical and practical reason.

Our consciousness of ourselves in the experience of beauty fills this gap because essential to that experience is what Kant calls the ‘feeling of life.’ What we ‘transfer’ to natural ends becomes available to us in the conscious exercise of that power which Kant says ‘mediates’ between theoretical and practical reason: the power of judgment. The feeling of life which belongs to our judgments of beauty arises out of the free and spontaneous activity of our powers and is characterized by a unity and reciprocity among them. It is a felt unity of our subject, and indeed that in virtue of which we are conscious of our animality, i.e. the unity of our rational and sensible faculties. At the same time, the experience of beauty depends on what Kant calls a common sense (*Gemeinsinn*), by means of which we put ourselves ‘into the position of everyone else’ (*KU* 5:294). And that is just to say that the feeling of life to be had in aesthetic experience constitutively involves reference to others with that same feeling, i.e. a community of others animated by the same feeling of life. While not yet the moral community of persons which is the object of practical reason, neither is it merely the community of bodies in one and the same space.

As noted then, I argue in §6 that this feeling of life is precisely what we ‘transfer’ to natural ends and that at issue for Kant in the explicability of natural ends is the presence or absence of an ‘inner’ principle of change—a principle of life. This inner principle grounds the unity, community, and causality of the parts of a natural end, at least if we take what we understand of ourselves in self-consciousness as the model. And so, in the *Analytic of Teleological Judgment*, Kant says that we should understand natural ends on analogy with life,

which he elsewhere defines as the faculty of a substance to determine itself to act from an internal principle. But, he says, the only internal principle we know of is desire, and the only internal activity, thinking. Natural ends, then, are not mechanically explicable because the cause of their changes is not external to them, and so not to be met with in intuition. This fact becomes explicit in one of Kant's rare references to Hume in the third *Critique*, which touches on a point the latter makes in his *Dialogues Concerning Natural Religion*, and which touches on precisely the (alleged) difference between the systematicity of thought and the systematicity of a material being. If they are to be genuine systems, natural ends must therefore depend on a noumenal ground, the model for which can only be given by features available to us in our consciousness of ourselves. If in fact they lacked a noumenal ground, they would be mere aggregates, beings whose unity was merely a function of the collocation of their parts in space. They would have something like the status of rainbows—merely apparent unities.

The simple principle of life, then, plays the role of form or soul on the traditional Aristotelian model of composite substances. As we have seen, this was essential to Leibniz' conception of living things, and it was no less true for Kant. Given some of the commitments of the critical philosophy, that principle is unavailable to us. But by understanding Kant's concerns in relation to traditional doctrines about the role and function of soul or form in natural composites, we can see how the simple principle of a natural end can underwrite a variety of its features. On this basis, we can then reconcile number of different proposals concerning how to understand the contrast between mechanism and purposiveness.

5.1 INDIVIDUUM EST INEFFABILE

Towards the end of the previous chapter, I discussed the possibility that on Kant's view whole species might constitute natural ends. This is not of course to say that they do, but that they might—Kant does not say one way or the other. The suggestion was premised on the thought that the characteristics Kant ascribes to something like an oak belong just as well to species.⁴ A natural end has the form of a system and so is no mere aggregate. Its unity—its community—is grounded in its nutritive causal power, which unites the parts into a whole. That causal power is (somehow) found whole and entire in each of its parts, and so Kant says that 'one can regard every twig or leaf of one tree... as a tree existing in itself which only depends on the other and nourishes itself parasitically' (*KU* 5:371-2). In the same way, the different human races stand in a system and so are no mere aggregate. The unity of the races—their community—is grounded in a common cause, the generative power, which Kant says is in fact one and the same as the nutritive power, albeit under a different name (*KU* 5:371). And the generative power is found whole and entire in each of its parts in much the same way that the nutritive power is found in each of the parts of an oak. That is, each contains the original human phylum in itself, for even if no race expresses everything contained in that phylum, the different races can produce fertile offspring with one another, and so they are not in virtue of their diversity closed off from the original unity of that phylum. But if there is reason to suppose that the human species itself is a natural end, and reason to suppose that each of its members is as well, we might wonder how one natural end can be a part of another and yet distinct from it.

⁴ I am here ignoring the subtlety that Kant does not in fact say that an oak is a natural end, but merely illuminates the concept with the oak as an example. Again, Kant insists that we cannot in fact know whether there are any natural ends.

I will not undertake to address that question now. I suggested a possible answer in the previous chapter. But for the above reasons, there is quite generally a puzzle about just what is to count as an ‘individual’ organism or, in Kant’s case, a natural end. Thus, I also mentioned in the last chapter a species of aspen instances of which look to the casual observer like a whole forest, but share a common root system and so by one criterion count as a single individual. Similarly, some starfish can regenerate an entire body from a single arm. It was precisely phenomena of this sort which led Blumenbach to postulate his famous ‘formative force’ or *Bildungstrieb*, which Kant refers to positively in the CTJ (*KU* 5:424). In this case, the questions that arise are not unlike those that arise from considering, e.g., the famous Ship of Theseus puzzle. Take a starfish, cut it in half, and watch each half grow anew—which if either is the original starfish? And while the body of the original was split in two, was the regenerative power residing in it divided as well? Or are the regenerative powers now residing in the two, spatially distinct halves still one and the same regenerative power? They are at least the same in kind, if not in number. But *given* the capacity of an individual starfish to divide in this way, the regenerative power of an individual would seem not to be distinct from—and so identical with—the power which unites many different starfish into some one kind, at least potentially. The animating principle of this individual could not then be grasped by itself alone, itself by itself, but only by means of a common representation, or a representation which contains *in potentia* other individuals which might fall under it. The living is, as it were, made for concepts: essentially communicable, if not in fact communicated, further division is always possible, and we never arrive at truly isolated individuals.

In light of these questions, I want now to turn to considerations of the unity and identity of living things in some of Kant's predecessors, for as we shall see, those considerations were often intimately interwoven with a certain conception of persons. Indeed, our model for the unity and identity of non-rational living things was often taken from the conception we have of ourselves as persons and, as a consequence, what we take ourselves to know (or not) about ourselves promises to shed light on what we can (or cannot) know about the unity and identity of living things.

5.2 SAMENESS, SELF, AND SUBSTANCE

The notion of identity, Locke says, is borne of the comparison of a thing at a given time and place with itself at another (II.xxvii.1). The attempt to come to an adequate account of identity, he thinks, has been frustrated by an insufficient appreciation of the different sorts of things to which the notion of identity is applied, and identity is always applied to some sort. Thus, what it is for a mass of matter at different times and places to be the same mass, and what it is for an organism at different times and places to be the same organism, are quite different because masses of matter and organisms are quite different things. And so when discussing their identity conditions, Locke sees fit to single out two characteristic features of living things: they are organized and they contain the principle of organization within themselves. The organization among the parts of an oak, for example, is responsible for its own continuance or persistence, and the parts of the oak are said to constitute a living whole only insofar as they share in a

common life—the life of the oak. In that sense, what is whole or shared among the parts is prior to them, for nothing gets to count as a part of the whole unless it shares in the life of that to which it belongs, i.e. the life of the oak.

Merely material substances, by contrast, constitute some one thing or whole not in virtue of a common life but the ‘parcels of matter’ which make them up; their parts are wholly determinative of what they compose and a change in parts makes for a difference in individuals. Speaking of a mass of atoms, Locke says that ‘if one of these atoms be taken away, or one new one added, it is no longer the same mass, or the same body’ (II.xxvii.3). A living thing can lose or gain matter while remaining one and the same living thing, for as we saw, it was precisely the common life which grounds continuity and identity, binding the many parts into one. Thus, the horse is at first a colt, but grows and matures, being variously fat and lean but all the while remaining the same horse. Similarly, an oak is at first a sapling, but grows and matures, now flowering, now not, but all the while remaining the same oak. The matter and qualities of each change, even constantly, and so considered simply materially, there is a succession of different individuals:

truly they are not either of them the same masses of matter, though they truly be one of them the same oak, and the other the same horse. The reason whereof is that in these two cases of a Mass of Matter, and a living Body, *Identity* is not applied to the same thing (II.xxvii.3).

‘Identity’ in a living thing is applied to something common, namely its life. ‘Identity’ in a mass of matter designates only some quite definite aggregate of parts in some definite time and space. And while the material passes away, the living persists.⁵

Though Locke and Kant are ostensibly concerned with two quite different topics—identity and diversity on the one hand, and mechanism and purposiveness, on the other—Kant’s own discussion tracks many of Locke’s distinctions. We saw many of the details in the last chapter, but it will be helpful to recapitulate some of them here. Kant’s discussion of natural ends or purposes is intended to identify and to understand what sets them apart from other products of nature. Like Locke’s merely material substances, Kant’s non-purposive products of nature are mere material aggregates or assemblages of pre-existing parts. Indeed, Kant often understands the essential character of mechanism in just this way. When speaking of a logical division, for example, he says that ‘if one regards the parts for such a possible whole as already completely given, then the division proceeds mechanically...and the whole becomes an aggregate’ (*EE* 20:247). Similarly, he says that ‘with regard to its products as aggregates, nature proceeds mechanically, as mere nature’ (*EE* 20:217). And because they are no more than aggregates, mechanically generated composites are simply products of their parts (*KU* 5:408). Otherwise put, it is the whole that it is simply because of its parts, and so a different set of parts will mean a

⁵ Cf. Chappell (1989) and (1990). Locke seems to think that the life of an oak consists of a succession of different masses of matter possessing the same organization. They are, in other words, coincident objects. An oak therefore consists of a series of otherwise merely material individuals said on the basis of comparison or on reflection to be the same in virtue of their organization. In that sense, what persists through change is precisely *not* the matter, and what grounds the identity of a single oak over time is quite analogous to the identity shared by different individuals of a species. Yaffe (2007) argues that for Locke, the difference in identity conditions for masses or aggregates of matter and organisms should not be taken to reflect a real difference in their ‘mind-independent natures’ but only a difference in our ideas of them (205). But since Locke thinks ‘General and Universal belong not to the real existence of Things; but are the Inventions and Creatures of the Understanding,’ he would seem to think that organisms are in fact nothing but aggregates or assemblages of matter.

different whole. By contrast, natural ends have the unity of a system; they are ‘organized and self-organizing’ (*KU* 5:374). Their parts share in a common ground and exhibit as a consequence a more profound unity—systematic unity. They compose, in other words, a genuine whole in which each part is possible only in relation to that whole. And the whole itself, rather than something outside or external to it, is responsible for the organization of its parts (*KU* 5:373). Consequently, if some natural (and thus also material) whole is thought to be a product of the whole itself and thus the cause of its parts, then according to Kant we represent a purposive kind of generation.⁶ Much of the content of the notions of mechanism and purposiveness would seem therefore to be captured by the contrast between an aggregate and genuine unity, where the latter is for both Kant and Locke secured by the participation of parts in something common.⁷

But famously, Locke is concerned not simply with the identity of masses of matter and organisms, but with persons, and so to determine in what personal identity consists, Locke judges it necessary to determine what a person is, or at least what idea the term stands for.⁸ A person, Locke says, is a ‘thinking intelligent being’ able to consider ‘it self as it self’ (III.xxvii.9).

⁶ This suggests that mechanical and purposive causality are not in fact equally capable of producing one and the same product, the one by necessity, the other intentionally. Rather, what each produces is categorically different from what the other produces, i.e. aggregates and real wholes, respectively.

⁷ McLaughlin (1991) focuses simply on the different directions of mereological dependence between mechanical and purposive products of nature, making little of the difference between aggregates and true unities. As we saw in the last chapter, Teufel (2011) argues that a difference merely in the direction of mereological dependence should not amount to a different kind of causality, and understood abstractly and simply as a difference in dependence of this kind, the criticism has some merit. In part for this reason, McLaughlin himself is at a loss to explain why whole-to-part causality should be problematic. If however we allow ourselves the language of aggregates and true unities, and understand what it was that traditionally made the difference between them to be something like a soul or form, then an explanation starts to come into view. As we shall see, because soul or form is an unextended simple, it cannot be given in intuition, and that makes all the difference in the world.

⁸ Cf. Chappell (1990), who says that ‘Locke’s treatment of persons is parallel, in many respects, to his treatment of organisms.’ And just as Locke took organisms to be compounded of both atoms and masses of matter, so too will he take persons to be compounded of things which are not persons (27). It is noteworthy that Chappell goes on to *argue* that Locke thinks of persons as substances, even though Locke never says that they are. As we shall see, traditionally persons just were substances.

It is able to do so in virtue of that consciousness which is inseparable from thinking and which ‘makes every one to be, what he calls *self*; and thereby distinguishes himself from all other thinking things’ (III.xxvii.9). Personal identity is then a function of the extent of that consciousness: as far as a person’s consciousness reaches, whether spatially in sensation or temporally in memory, so too its identity. Perhaps most importantly for our purposes, Locke says in particular that the self is sensible, i.e. conscious of pleasure and pain.⁹ As a consequence, *my* body only extends as far as I am conscious of pleasure and pain:

thus the Limbs of his Body is to every one a part of *himself*: He sympathizes and is concerned for them. Cut off an hand, and thereby separate it from that consciousness, we had of its Heat, Cold, and other Affections; and it is then no longer a part of that which is *himself*, any more than the remotest part of Matter. Thus we see the *Substance*, whereof *personal self* consisted at one time, may be varied at another, without the change of personal *Identity* (III.xxvii.11).

The unity of the physical self is therefore rooted in the consciousness of sensation, for which reason a severed finger is no longer a part one’s self. If I were to be conscious of sensation in my desk, the desk would then be part of myself, together with my arms and legs. In this respect, Locke’s treatment of persons runs parallel to his treatment of masses of matter and organisms: as different atoms constitute a single body by being collocated in space, and different material bodies constitute a single organism by their participation in a common life, so also are different material bodies united into the same person if they participate in a common consciousness.¹⁰ And

⁹ Cf. Yaffe (2007), 24. Susceptibility to pleasure and pain was an essential part of consciousness for Locke, and the extension of personality forwards and backwards in time is founded in a concern for happiness (xxvii.26). That is to say, the unity of a person, as a composite substance, is grounded in its concern for well-being and its consciousness of pleasure and pain.

¹⁰ Cf. Chappell (1990). He argues that Locke’s opinion appears to be that ‘the self is not identical with, but is in part constituted by, a single immaterial substance, which has as its fellow constituents various parts of a living animal body’ (29). Citing II.xxvii.10, Chappell suggests that it is *consciousness* which confers unity on all of its other parts: ‘whenever two or more entities do share in the same consciousness...these entities are united by that consciousness, and so united go to make up the person whose consciousness it is’ (30).

like an organism, someone might undergo any number of variations in their material composition while nonetheless remaining one and the same person. The consciousness characteristic of persons is the source of a ‘vital union’:

the same continued consciousness, in which several substances may have been united, and again separated from it, which, whilst they continued in a vital union with that, wherein this consciousness then resided, made a part of that same *self*. Thus any part of our Bodies vitally united to that, which is conscious in us, makes a part of our *selves*: But upon separation from the vital union, by which that consciousness is communicated, that, which a moment since was part of our *selves*, is no more so, than a part of another Man’s *self* is a part of me (III.xxvii. 25).

Quite naturally, Locke had also spoken of a ‘vital union’ of the parts of an oak, and so a common consciousness plays the same role played by a ‘common life’ in the unity and identity of non-rational living things.

In his detailed response to Locke, however, Leibniz denies that the organization of an otherwise merely material being is sufficient to ground genuine unity. Rather, what is needed is an ‘enduring principle of life,’ which, he says, he calls a ‘monad’ (NE 231). Because organic bodies, like all other material bodies, are changing as swiftly as the waters of a river (Leibniz’ example), one needs such a principle if one is to make sense of individual and not just specific identity. Leibniz is, in other words, arguing that despite his intention to capture what makes for *individual* identity, Locke can only capture the continuity of kind: many individual masses are called the same because they have specifically identical forms of organization. And this, Leibniz thinks, is a far cry from what makes for a *numerically* single organism. For this, one needs a soul or spirit, and so Leibniz says that

as for substances which possess in themselves a genuine, real, substantial unity, and which are capable of actions which can properly be called ‘vital’; and as for

substantial beings...one can rightly say that they remain perfectly 'the same individual' in virtue of this soul or spirit which makes the *I* in substances which think (*NE* 232).

There cannot in fact be an *individual* life or vital unity without a soul, and Leibniz cites again and again the fact that material bodies are constantly changing. One needs therefore a numerically identical individual persisting through the successive, otherwise merely material individuals sharing specifically the same organization. And an analogous criticism is made of Locke's account of personal identity. Just as the continuity of organization will not suffice for the numerical continuity of an organism, so neither does Leibniz think mere continuity of memory will secure real, individual continuity. This is, in fact, only apparent identity, and any apparent identity 'presupposes a real identity...accompanied by reflection, or by the sense of *I*' (*NE* 236). This 'self' which makes for real identity and which is known with certainty by 'present and immediate reflection' serves the same function in grounding personal identity that the soul or substantial form does in grounding real physical identity in other, non-rational beings.

Leibniz' appeal to soul or substantial form is of course one of the most enduring features of his thought. He exhibits his appreciation for Aristotelianism and scholasticism very nearly throughout his works, and this is well known. But just as constant is the connection or conceptual proximity he sees between the notion of substantial form and the self-awareness belonging to persons. Thus, in a letter to Arnauld from the 1680s, Leibniz remarks that

a substantial unity requires a thoroughly indivisible and naturally indestructible being, since its notion includes everything that will happen to it, something which

can be found neither in shape nor in motion...but which can be found in a soul or substantial form, *on the model of what is called 'me.'*¹¹ [emphasis added]

Without the indivisible being grounding substantial unity, Leibniz thinks organisms would be only aggregates, and so would be called 'substances' only in an improper sense.¹² And as the passage indicates, our conception of that indivisible being grounding substantial unity is taken from the *I* or the *me* which is present on reflection or in self-consciousness. For that reason, Leibniz will sometimes treat the *I* almost generically, i.e. as the ground of the unity of substances without differentiation. Introducing a thought a few lines later, he says 'the aforementioned *I*, or that which corresponds to it in each individual substance, can neither be made nor destroyed by the bringing together or separation of parts, which is a thing entirely external to what constitutes a substance.'¹³ Thus, what corresponds in non-rational beings to the *I* present upon reflection or in self-consciousness for rational beings makes them to be more than a mere aggregate or

¹¹ *PE*, 79. In this regard, it is worth recalling the passage from the *Historia Animalium*, quoted at the head of this chapter. Though a medievalist and Thomist, Etienne Gilson appears to have given a a curiously Leibnizian reading of that passage, one which comports well with what we have just seen:

'the knowledge which man has of himself, imperfect as it may be, is by nature privileged. In knowing himself man knows nature in a unique way, because in this unique case the nature that he knows, he is. In and through the knowledge which man has of himself nature knows herself directly; she becomes conscious of herself in him, self-conscious one might say, and there is strictly nothing else that man can hope to know in this way...Since then there is no other knowledge for each of us other than our own knowledge, things known exist for us only in relation to ourselves, and among these things there is only one that we can apprehend directly in itself, and that is what we are and what each calls "I", "me,"' in Gilson (1984), 7.

Gilson then suggests that for Aristotle, 'the problem of the "end" in nature is for him only one more occasion for applying this method, which he holds to be universally valid.' I do not mean here to endorse Gilson's reading of the passage in question, but only note it as a possible reading. As we have seen in the previous chapters, I do not think there is any interesting sense in which Aristotle's teleology is modeled on our conception of ourselves in any way.

¹² *Ibidem*, 78: 'Our body in itself or the cadaver, setting the soul apart, can be called a substance only in an improper sense, just as in the case of a machine or a pile of stones, which are only being by aggregation.'

¹³ Cf. also *New System*, 'By means of soul or form there is a true unity corresponding to what is called the *self* in us,' (*PE*, 142).

collection of parts, i.e. real substances. It also grounds individual persistence through time and indeed through all its myriad changes. Thus, even if a caterpillar loses every one of its properties after it has transformed into a butterfly, it remains one and the same individual throughout—the two stages are united in the common life of one and the same *lepidopteron*. From this, Leibniz takes the lesson that complete qualitative and quantitative difference from one moment to the next is not any indication that the same individual no longer persists. But what grounds that persistence is the same as what grounds the unity of the individual at each moment—the simple, indestructible soul or form modeled on the *I*, which cannot be obtained simply by the aggregation or decomposition of material parts.

But not only does the soul or form ground the unity of a substance, it is also in every case a ‘first subject of activity,’ or ‘a certain urge [*nisus*] or primitive force of acting.’¹⁴ Because ‘actions pertain to *supposita*’ or individuals, the force or entelechy said to be a substantial form is precisely the form or force of an individual.¹⁵ But, Leibniz says, ‘the clearest idea of active power comes to us from the mind. So active power occurs only in things which are analogous to minds, that is, in entelechies’ (*NE* 172).¹⁶ Consequently, the paradigm for activity quite generally is our conception of ourselves in thinking. And in this, Leibniz is in express agreement with Locke: ‘if we will consider attentively, Bodies, by our Senses, do not afford us so clear and distinct an *Idea* of *active power*, as we have from reflection on the Operations of our Minds’ (II.xxi.4). Collisions between bodies really only involve the passive loss or acquisition of motion. By contrast, ‘to be able to bring into view *Ideas* out of sight, at one’s own choice, and to

¹⁴ *PE*, 159.

¹⁵ *PE*, 160.

¹⁶ Cf. also *NE* 210; *PE*, 161.

compare which of them one thinks fit, this is an *Active Power*' (II.xxi.72). And choice is here essential, for he emphasizes the point again just a few lines later: 'because of my own choice, by a power within myself, I put myself into that motion. Such an *Action* is the product of *Active Power*.' The power within myself and which grounds my choice is nothing other than the will and that in virtue of which we are free (II.xxi.5). Consequently, our notion of an active power is, for Locke, ultimately a function of the sense we have of our own freedom. But this means that when Locke contrasts machines with organisms, saying of the latter that their motion originates from a force within, the clearest idea we have of such a force ultimately originates in the idea we have of our own freedom.

The connections we have just seen between persons, substantial unity, and self-activity were not, however, new ones. They belonged to the long tradition of scholastic reflection on some central metaphysical issues. Being Latin, the word itself, '*persona*' is not to be found in Plato or Aristotle, and indeed has an uncertain etymological history, but it later played a central role in discussions of substance and, of course, the Trinity.¹⁷ Boethius had defined it as 'an individual substance of a rational nature,' and in his discussion of the Trinity in the *Summa*, Thomas begins the first objection with that definition. That objection contends that there can in fact be no definition of 'person' because it signifies a *singularis*, and there can be no definition of singulars.¹⁸ Thomas' reply, predictably, is that while no person can be given a definition, the general term 'person' can be, and in his *respondeo*, he elaborates on that definition. He says that while universal and particular (*particulare*) belong to every genus, the individual (*individuum*)

¹⁷ Its Greek counterpart, *prosopon*, does occur in Aristotle, but with the meaning of 'face.' Cf. *PA* III.1. It is worth noting that 'person' and *persona* are absent from Long and Sedley's collections of texts from the Hellenistic schools, both from the glossary and indices.

¹⁸ *ST* I.29.1

belongs to substance in a special way because substance is individuated through itself (*per seipsam*). For that reason, he says, it is fitting that individuals belonging to the genus substance should have a special name: hypostases. But, he continues, in a *still more* special and complete way, the particular and individual are found in *rational* substances, which have dominion over their action, and can act of themselves (*per se agunt*). Consequently, it is fitting that individual substances of a *rational* nature should have a special name to set them apart from individual substances more generally, and that name is ‘person.’ This species of substance is, Thomas says, ‘the most perfect in all of nature,’ and precisely because personality is a perfection, it is rightly said to belong to God, who contains all perfections.¹⁹ For that reason, we might expect persons to be uniquely intelligible, being that which other, non-rational substances only approximate. Indeed, we might expect persons to exhibit the essential features of substance—e.g. unity, persistence, and self-motion—in an especially robust way. And in fact, Thomas does suggest that in the strictest sense, only persons are efficient causes at all. He says in particular that those things possessing the faculty of will and reason determine their own actions and move themselves (*seipsa movent*), while everything else is moved by another or something external to it (*ab alio mota*).²⁰

I want now to end this section by drawing attention to a final feature in the accounts of Thomas, Locke, and Leibniz, namely the unknowability of individuals. In the *Prima Pars*, Thomas asks whether God has ‘proper’ knowledge of things other than himself, where proper knowledge is knowledge of things not in general or insofar as they share some common feature,

¹⁹ *ST* I.29.3.

²⁰ *ST* I-II.1.2

but in their distinctness from other things. A merely general knowledge, he says, is imperfect, and so it follows that God, who has every perfection, must have proper knowledge. We, on the other hand, are not so fortunate, for ‘directly and primarily, our intellect cannot know individuals among material things.’²¹ Only ‘indirectly,’ and ‘as it were by a kind of reflection’ is knowledge of the singular given to us.²² Leibniz too denies us knowledge of individuals on the grounds that ‘individuality involves infinity.’²³ Complete knowledge of an individual substance requires grasping its complete concept or notion, but this belongs only to God. And finally, Locke too would seem to deny any real knowledge of individuals. Though everything that is, is particular, people need general terms and general ideas not only for the sake of communication but for the ‘improvement of knowledge: which though founded in particular things, enlarges it self by general views’ (III.iii.4). But insofar as they involve essential reference to kinds or sorts, which are nothing but the workmanship of the understanding, the individual, real essences of things escape us.

²¹ Cf. Pasnau (2004), 36-37; *ST* I.14.6; I.86.1

²² Cf. also *De Veritate* q.10a.5: ‘From this it is clear that our mind is not able directly to know singulars, for we know singulars directly through our sensitive powers which receive forms from things into a bodily organ... Thus, the mind knows singulars through a certain kind of reflection, as when the mind, in knowing its object, which is some universal nature, returns to knowledge of its own act, then to the species which is the principle of its act, and, finally, to the phantasm from which it has abstracted the species. In this way, it attains to some knowledge about singulars.’

²³ *NE* 290; *PE*, 100.

5.3 PERSONS AND PARALOGISMS

In the previous section, I tried to suggest that prior to Kant individual, non-rational substances could be considered together with persons because persons just were substances of a specifically rational nature. For that reason, persons and organisms were of a kind, even if persons were thought to be individual substances *par excellence*—the most perfect and complete substances. As a consequence, individual, non-rational substances could be viewed as but partial or incomplete approximations of persons. Indeed, despite their differences, ‘person’ could even on occasion be used to signify individual substance quite generally, whether rational or not.²⁴ But regardless, because persons were thought to be substances in the primary or paradigmatic sense, what was thought to be characteristic of substances belonged to persons in the primary and paradigmatic sense. Consequently, an individual, rational substance could be said to exhibit unity, persistence through change, and self-motion in a distinctively robust way. Indeed, for both Locke and Leibniz, the idea of active power which we might attribute to various things outside of us comes from our awareness of ourselves in thinking, and for Aquinas only rational beings are self-movers in the strictest sense.²⁵ But if our knowledge of rational substances or persons should turn out to be hampered in one way or another, then we might expect our knowledge of natural, non-rational substances to be similarly hampered. Kant, as it happens, thinks our knowledge is so hampered. In particular, Kant thinks some of the central rationalist claims about the rational soul cannot be maintained, and so in what follows I aim to describe some of the

²⁴ Spade (1994), 233.

²⁵ I would venture that there is also a sense in which Thomas could say that activity in the highest sense is to be found in thinking, and thus that our clearest idea or example of activity is that which we find in thought.

features thought to belong to the self or soul in virtue of self-consciousness, and why Kant thinks the rationalists were led to overstep the the limits of our understanding.

For those rationalists following in Leibniz' footsteps, the soul both of persons and living things was essentially one because without parts and therefore simple.²⁶ There can be no real beings without them, Leibniz thought, because there can be no multitudes without unities, no many without a one, and so only something simple or without parts can ground the real unity of extended substances. At the same time, and precisely because it was said to be simple, the soul or form could not come to be or pass away—it could not be assembled or fall apart because it had no parts.²⁷ Indeed, Leibniz thinks a soul or form can start or cease to exist at all only through a miracle, and he criticizes the Peripatetics for holding otherwise.²⁸ Indeed, by allowing for substantial generation and corruption, he thinks the Peripatetics essentially do away with the notion of substance. But regardless, the simplicity of the soul or form was thought to ground *both* the real unity of living things *and* their persistence through time, indeed, their imperishability. And this is just as true of non-rational substances as it is of persons, and so despite however much they might change, animals are every bit as immortal as we are, persisting as one and the same individual through any and every sensible change.²⁹ The transformation of the caterpillar

²⁶ Cf. Wolff, *Rational Thoughts*, §742: 'The soul is a simple thing. Because a body cannot think according to its essence and its nature, and because neither a body nor matter can be given the power to think, the soul cannot be anything corporeal and cannot consist of matter. And since it is clear from the proofs of the stated grounds that thoughts cannot be attributed to a composite thing, the soul must be a simple thing.' Or Baumgarten, *Metaphysica*, §404: 'Every substance is a monad. Every spirit is a substance. Therefore, every monad is also a simple thing,' in Watkins (2009b).

²⁷ Cf. Knutzen, *Philosophical Treatise on the Immaterial Nature of the Soul*, §4: 'That which is completely devoid of all parts is typically called **immaterial** or a **simple thing**,' in Watkins (2009b).

²⁸ *PE* 140, 204.

²⁹ Cf. e.g. *NE* 72: 'The best possible basis for our natural immortality is the view that all souls are immortal.'

into a butterfly, in which no sensible property remains the same, was one example Leibniz used to illustrate the persistence he had in mind, and which we saw above. If it were the case that there was no such form or soul which persists through the caterpillar's transformation, then there would be no individual persistence—no identity—but only changing aggregates of matter.

Kant, however, denies that we can know these things about the soul, i.e. that they are permanent, incorruptible, etc., and argues that the rationalists try to derive too much from too little. In particular, they hope to derive all their conclusions exclusively from the *I* or *I think*, which as we saw also served as the model for non-rational substances. But for Kant, this is rather too meager to support the conclusions that they wanted to draw. He does *agree* that the self or rational soul is a simple substance; he simply denies that we can have theoretical *knowledge* of this fact.³⁰ The soul is simple because thought itself is incompatible with a composite subject: thought is 'possible only in one substance, which is not an aggregate of many' (A352).³¹ Because the soul is simple, however, it does not belong to outer intuition, and it would have to if we were to be able to know that it persists. 'Persistence' has an essentially temporal significance, and so to conclude that a substance persists one would need to go outside of one's concept to experience and so to intuition. Consequently, we can say that the soul is substance only in the sense that it is the subject in which thoughts inhere as accidents and which is not in turn a subject of anything

³⁰ Cf. Wuerth (2010), 222. Extended discussing of the paralogisms would take us too far afield, but the remarks given here are most informed by Wuerth (2010) and Allison (2004). But cf. also Longuenesse (2017).

³¹ Cf. e.g. Crusius, *Sketch of the Necessary Truths of Reason*, §473: 'Every spirit is a simple substance. For assume that it were composite. Then either thinking and willing would be something that was possible through composition, or the fundamental powers would have to lie in every particular part of the composite whole. If the former were the case, then thinking and willing would have to be a motion or an effect of it, which is contradictory. If the latter were the case, then the whole that one represented would not be a single spirit, but rather a number of spirits insofar as each one would have the essence of a spirit individually and without the help of the others. Consequently, a spirit must be a simple substance.'

else. From that fact alone, however, we cannot conclude that it persists, and so we are left only with the logical simplicity of the subject, the *I*.³² But the simplicity of the representation of the thinking subject should not be mistaken for an experience of the simplicity of the subject itself (A355).

Naturally, the limitations on our self-knowledge from a theoretical standpoint has implications for our knowledge of other thinking beings or, indeed, for anything possessed of the marks characteristic of them. In particular, the unity and simplicity of the *I* which marks thought or thinking as such means that other thinking beings are never given in experience:

I cannot have the least representation of a thinking being through external experience, but only through self-consciousness. Thus such objects are nothing further than the transference of this consciousness of mine to other things, which can be represented as thinking beings only in this way (A347).³³

A thinking subject cannot as such appear in space because everything in space is divisible and thus composed of parts, and thought is essentially one and simple. Consequently, if an object in

³² Cf. *What Real Progress* (20:273): ‘Of the self in the first sense (the subject of apperception), the logical self as *a priori* representation, it is absolutely impossible to know anything further as to what sort of thing it is, or what its natural constitution may be; it is like the substantial, which remains behind after I have taken away all the accidents that inhere in it, but absolutely cannot be known any further at all, since the accidents were precisely that whereby I was able to know its nature...the logical self does indeed point to the subject as it is in itself, in pure consciousness, not as receptivity, but as pure spontaneity, but beyond that is also is incapable of knowing anything of its nature.’

³³ Cf. Also A353: ‘Thinking beings, as such, can never come before us among outer appearances;’ and A357, ‘if one wants to represent a thinking being, one must put oneself in its place, and thus substitute one’s own subject for the object one wants to consider.’ There is therefore something of a question about our knowledge of other minds, which question seems hardly vexing to Kant. Fichte, however, would show much greater interest, and thought Kant came closest to dealing with the problem in the third *Critique*, which of course addresses itself to the question of how to ascribe purposiveness to things in experience:

‘The most striking demonstration of the incompleteness of Kant’s Critical philosophy is that Kant has never provided an explanation of this point, that is, how I come to assume that there are rational beings outside of me...He came very close to answering this question in the *Critique of Judgment*, for it would be on the basis of the principle of reflective judgment that this assumption could be explained’ *Wissenschaftslehre* §13, 142.

To that extent, Fichte too saw a connection between our theoretical knowledge of persons and of organisms. Cf. also Beiser (2002), 335.

outer intuition *is* a thinking subject, we can only represent it as such by projecting or transferring our own consciousness to it. This projection or transference is not simply a gross falsification, however, because the properties accruing to a thing in virtue of its appearance in space—its extension, impenetrability, etc.—are merely phenomenal. It remains *possible*, therefore, that the noumenal ground of some phenomenon is ‘the subject of thoughts, even though we receive no intuition of representations, volitions, etc., in the way we are affected through outer sense, but rather receive merely intuitions of space and its determinations’ (A358). Consequently, ‘the very same thing that is called a body in one relation would at the same time be a thinking being in another, whose thoughts, of course, we could not intuit, but only their signs in appearance’ (A360). If space were *not* merely a form of intuition for beings with intellects like ours, but real in itself, then the unity of a thinking subject would be quite incompatible with anything in sense experience. But as it stands, thinking beings are never as such give to us because they exhibit a distinctive unity and simplicity which is inconsistent with any appearance in space, and so the attribution of thought to phenomenal substances consists in the ‘transference’ or projection of our own. Importantly, anything else possessing such unity and simplicity would likewise be incapable of appearing in outer intuition and its representation would presumably require an analogous ‘transference’ or projection.

5.4 PERSONS AND PRACTICAL REASON

From the standpoint of the critical philosophy, then, the rationalist doctrine of soul is comprised of illicit attempts to derive metaphysical content from what is merely a formal feature of consciousness. The simplicity of the rational soul or self means that it cannot appear in intuition, and so it cannot be understood through the categories in their spatio-temporal significance. Consequently, persons cannot be objects of the understanding, i.e. objects of theoretical knowledge. Our relation to persons must therefore be otherwise than theoretical. It is, indeed, practical, and in practical reason we find another set of categories, one which runs parallel to the categories of nature (*KpV* 5:66).³⁴ Corresponding to substance in the categories of nature is the category of personality, and here we get that permanence and persistence which necessarily went missing in the theoretical consideration of soul. Understanding an appearance as an action means understanding it as issuing from a will, i.e. from a being possessed of reason and thus a person, and we understand the person as persisting through the action. But what is more, pure practical reason ultimately presumes the persistence of the soul or self not simply through the course of its actions, but, indeed, for all time. Its immortality is not, to be sure, demonstrable, but it is nonetheless presupposed in our understanding of what the moral law demands—it is a postulate of pure practical reason (*KpV* 5:122). As a postulate, it ‘give[s] objective reality to the ideas of speculative reason in general,’ even if our theoretical cognition is not extended thereby (*KpV* 5:132). Thus, when discussing the postulates of practical reason in the second *Critique*, Kant expressly refers to the paralogisms just discussed, remarking that speculative reason

³⁴ On the categories of freedom, cf. Bader (2009) and Bobzien (2013).

lacked the mark of permanence by which to supplement the psychological concept of an ultimate subject necessarily ascribed to the soul in self-consciousness, so as to make it the real representation of a substance; this mark practical reason furnishes by the postulate of a duration required for conformity with the moral law' (*KpV* 5:133).

Pure practical reason postulates the immortality of the soul because only so, Kant thinks, can the highest good be achieved. But insofar as the super-sensible persistence which we attribute to the soul or self from a practical standpoint is grounded in a certain kind of thinking, namely practical thinking, the same persistence could only be attributed to things in outer experience by a similar kind of 'transference' which allowed us to represent things as thinking at all.

In addition to the immortality of the soul, of course, pure practical reason also postulates its own freedom, another traditional characteristic of persons. Thomas, for example, had said that 'the whole root of freedom is constituted by reason' (*totius libertatis radix est ratione constituta*) and that 'free will is defined as the faculty of will and reason' (*liberum arbitrium esse dicitur facultas voluntatis et rationis*).³⁵ Freedom thus belongs characteristically to rational substances, and so to persons. But Thomas also says the free man is cause of himself (*liber est causa sui*), by which he means (among other things) what we have already seen, namely that persons are efficient causes of their own actions—they act *ex* or *a se*.³⁶ They are not, in other words, moved by another, i.e. by something outside themselves or by alien causes, because to be moved by an alien cause just is to be unfree. They are to that extent self-movers.³⁷ And Kant understands 'person' in much the same way, sometimes saying simply that persons are rational beings (e.g. *G*

³⁵ *De Veritate* 24.2; *ST* I-II.1.1

³⁶ On Thomas' understanding of the phrase, '*liber est causa sui*,' cf. Spiering (2011).

³⁷ *ST* I.83.3; *SCG* II.48. I.II.1,2; *Lectura Super Ioannem*, c. 15, l. 3.

4:428), but elsewhere that persons are beings possessed of distinctly *practical* reason.³⁸ To be bound by the laws of one's own rational nature is to be free, and so Kant glosses 'person' as 'a being endowed with practical reason and consciousness of freedom of his power of choice' (*A* 7:324). In the Transcendental Dialectic of the first *Critique*, Kant describes freedom as 'self-activity' and as the capacity to initiate causal sequences, i.e. to be the first in a causal series. But of course, free causality is not something we can understand from a theoretical perspective, and so the freedom characteristic of personality means that persons are not to be numbered among phenomena—personality is 'my invisible self' which belongs to the noumenal world (*KpV* 5:162).

In much the same way, then, that the immortality of the soul acquired 'objective reality' through pure practical reason, so too does freedom, without thereby extending theoretical reason. Indeed, to the extent that freedom even shows up as a concern for theoretical reason, it is only because practical reason poses it as a problem, 'since nothing in appearances can be explained by the concept of freedom and there the mechanism of nature must instead constitute the only guide' (*KpV* 5:30). And the contrast between freedom or persons and the mechanism of nature is something of a refrain. Thus, Kant glosses 'personality' as 'freedom and independence from the mechanism of the whole of nature' (*KpV* 5:87), and after defining 'transcendental freedom' as 'independence from everything empirical and so from nature generally,' Kant draws an immediate contrast: 'all necessity of events in time in accordance with the natural law of

³⁸ Cf. also *A* 7:127: 'The fact that the human being can have the "I" in his representation raises him infinitely above all other living beings on earth. Because of this he is a *person*, and by virtue of the unity of consciousness through all the changes that happen to him, one and the same person.'

causality can be called the *mechanism* of nature’ [emphasis original] (*KpV* 5:97).³⁹ But it means as a consequence that we cannot actually understand the free causality of a rational being, can point to no example of it anywhere in experience, and so we can only make sense of a sensible being acting freely by simultaneously regarding it ‘on the other side as a noumenon’:

in the explanation of events in the world and so too of the actions of rational beings, I grant the mechanism of natural necessity the justice of going back from the conditioned to the condition *ad infinitum*, while on the other side I keep open for speculative reason the place which for it is vacant, namely the intelligible (*KpV* 5:48).

The free causality of persons is then only a postulate of pure reason, a necessary supposition made by practical reason on its own behalf as part and parcel of its engagement in deliberation, and an idea by which I cognize nothing at all in experience.

Finally, I want to highlight one last feature of persons which I mentioned in the previous chapter and which also occurs in the categories of freedom listed in the second *Critique*: their community with one another. From the standpoint of theoretical reason, the community among things is grounded in space as the form of outer intuition which secures a causal reciprocity between the bodies occurring in it. But because persons are as such noumena, if they are to stand

³⁹ McLaughlin (1991) and (2014) argues against the relevance of the concept of freedom for understanding purposiveness in the third *Critique*, but it is difficult to see how this can be maintained. He is concerned principally with a reading of the antinomy in the Dialectic of Teleological judgment, according to which that antinomy is essentially a repetition of the third in the *Critique of Pure Reason*. Nonetheless, he denies that freedom is in any way at issue in the CTJ. But the frequency with which Kant contrasts freedom and mechanism in the *KpV*, published just two years before the *KU*, makes it difficult to believe that he would have so easily dispensed with that association. In addition, ‘end’ is *defined* in terms of freedom in the later *Metaphysics of Morals* (6:385). There Kant contrasts an effect of nature with an end, saying that the latter is a chosen effect of a freely acting subject. What is more, in the CTJ, Kant just says that to understand natural ends, there must be added to mechanism ‘the spontaneity of a cause (which thus cannot be matter) without which no ground of those forms could be given’ (5:411). McLaughlin takes it as significant that when Kant does speak of ‘mechanism’ in the *KpV*, mereological relations play no role. But if, as I should like to argue, that in virtue of which a substance is capable of initiating causal sequences (of self-motion) is also that in virtue of which something is not a mere aggregate of parts but a genuine whole—if both are grounded in one and the same thing, namely soul or form—then we need not pick and choose between these different uses of ‘mechanism.’

in community with one another, it must be in virtue of something else. That something else is the moral law. Moral-practical thinking necessarily involves considering the consistency of practical maxims with the simultaneous willing of those same maxims by everyone else. Thus the category of reciprocity is ultimately intended to secure the kingdom of ends.⁴⁰ In such a kingdom, each person is simultaneously subject to common laws and the source of them, both sovereign and subject. Together, they form a systematic whole and, in that respect, the community of persons in a moral kingdom is quite analogous to the relations between the parts of a natural end. But again, because persons are not as such objects of theoretical cognition, the only mode by which we might think such a community—a community grounded in something other than space—is practical, wherein each part or member of the community is coordinated into a whole precisely because each, as a rational being, has the principle of the self-same whole in itself.

Three features of persons, then, are given reality only through practical reason: their super-sensible duration, freedom or self-motion, and their community. These correspond practically to the theoretical categories of substance, causality, and community, which are inapplicable to noumena. They are secured only on the basis of a certain kind or mode of thought or consciousness, namely thought or consciousness of the moral law and the conditions for its fulfillment. The duration exhibited by persons is distinctive insofar as they are thought, from the practical standpoint, to persist through complete qualitative change and, therefore, to be immortal. Their causality is distinctive insofar as they are free and so act independently of the mechanism of nature. And their community is distinctive insofar as it is a causal community

⁴⁰ Bader (2009), 15.

grounded not in space but in the consideration of the universalizability of any given maxim—its coherence and consistency with the causality of each of the other parts. Because these features are secured only by self-consciousness, and because thinking beings never come before us in outer intuition, they cannot be known to belong to anything found in outer intuition. Their attribution can therefore be grounded only by a ‘transference’ of our own consciousness or an analogy with it. If I want, that is, to attribute to a phenomenon a duration and a causality which outstrips the continuity of anything that comes to be or passes away in the phenomenon itself, as I might to a *lepidopteron* as it transforms from a caterpillar into a butterfly, it can only be as a consequence of transferring to it my conception of my own duration and my own causality from a practical standpoint.

5.5 THE FEELING OF LIFE

I want to turn now to the peculiar self-consciousness that belongs to aesthetic experience or judgments of beauty. In particular, in aesthetic judgments of reflection we find what Kant calls the ‘feeling of life,’ and it is on analogy with life that Kant says we should perhaps understand natural ends (*KU* 5:376). As natural, natural ends are objects of theoretical reason. As I noted in the beginning, however, they exhibit many of the features which would seem to be peculiar to persons and so made available only by practical reason. For that reason, they stand uncomfortably between theoretical and practical reason. We might then look at judgments of beauty because the same faculty is involved in both judgments of beauty and of natural

purposiveness, and this same faculty is said to ‘mediate’ between theoretical and practical reason, i.e. between nature and freedom (*KU* 5:196).⁴¹ Thus, by looking to aesthetic judgment, we might be able to see how we are to understand natural ends in a way which is analogous to, but nonetheless different from, our own moral-practical conception of ourselves. Before turning to natural ends, then, I want to suggest that in aesthetic experience, a spontaneity and causal unity among our powers is *felt*, though to be sure not cognized. In particular, one feels the harmony and reciprocal interplay of the different faculties or powers belonging to one’s substance. Consciousness of the harmony of one’s own state and the reciprocity of one’s powers also possesses an ‘internal causality’ for the preservation of that state which mirrors the nutritive and generative activities of natural ends. And finally, judgments of beauty presuppose the communicability of that feeling, and so presuppose the existence of a common sense (*Gemeinsinn*). That is, the feeling of life found in aesthetic judgment also involves a necessary reference to others similarly constituted, i.e. to a possible community of others animated by that self-same feeling.

In the Critique of Aesthetic Judgment, Kant distinguishes between aesthetic judgments of sense and those of reflection, saying that the determining ground of each is a sensation connected with pleasure or displeasure. In the case of the former, that sensation is produced immediately by the empirical intuition of the object and is therefore merely agreeable. In the latter, that sensation is produced by the ‘harmonious play’ of imagination and understanding, in which the two are ‘reciprocally expeditious’ (*EE* 20:224). The pleasure to be had in the latter is consequent upon

⁴¹ Cf. also *EE* 20:246, where Kant says that the critique of the power of judgment effects a ‘transition’ between nature and freedom, connecting ‘the two parts [of philosophy] through its own special principle, namely from the sensible substratum of the first part of philosophy to the intelligible substratum of the second.’

the act of reflection by which one feels the harmonious play of one's faculties, which is to say that the pleasure is mediated by the activity of a cognitive faculty, the power of judgment (*EE* 20:229). And elsewhere Kant remarks that the pleasure associated with aesthetic judgments of reflection is 'a state of the mind in which a representation is in agreement with itself...for preserving this state itself (for the state of the powers of the mind reciprocally promoting each other in a representation preserves itself)' (*EE* 20:231). In such judgments, then, the different powers of mind exhibit the reciprocity characteristic of the members of a community quite generally, for as we saw, the species in community under a genus were said to produce one another 'reciprocally,' just as the parts in a natural end were said to produce one another 'reciprocally.' But if the powers of the human mind are to stand in community with one another, reciprocally promoting one another, we might suppose that in aesthetic judgments of reflection, what we *feel* is the unity of our powers in our own persons, even if we cannot cognize that unity. That is to say, in a way consistent with what we have seen, there is a mode of self-consciousness through which we apprehend what we cannot otherwise know or cognize in the strict sense that belongs to reason in its theoretical employ.

If that is right, then the pleasure one feels in labeling an object 'beautiful' is intimately bound up with the self-feeling of the unity of one's own sensory and cognitive powers.⁴² But unlike the grasp we had of ourselves in theoretical self-consciousness, which was only that of an existent *substantiale*, we have in aesthetic experience a distinctive *bodily* apprehension of ourselves by means of the feelings of pleasure and pain, which means as a consequence that we have some apprehension of our physical well-being:

⁴² Porter (2017), 7.

Apart from any feeling of the bodily organ life would be merely a consciousness of one's own existence, and could not include any feeling of well-being or the reverse, i.e. of the furtherance or hindrance of the vital forces. For of itself alone, the mind is all life (the life-principle itself), and hindrance or furtherance has to be sought outside it, and yet in the man himself, consequently in the connection with his body (*KU* 5:277-78).

The feeling of pleasure or well-being which we have in aesthetic appreciation is the feeling of the furtherance of our 'vital forces.' It is therefore a 'feeling of life,' and Kant will speak of the 'animation' (*Belebung*) of our faculties in aesthetic judgment into a unified activity (*KU* 5:204; 5:219, 5:238). And so because aesthetic appreciation is constituted by the harmonious interplay of our cognitive and sensitive faculties, we *feel* the unity of our composite, as it were, which is to say that we feel the unity of the cognitive and material aspects of our humanity.⁴³ But what is more, the pleasure one feels in an aesthetic judgment of reflection Kant elsewhere describes as a kind of consciousness, one which 'contains a determining ground of the activity of the subject with regard to the animation of its cognitive powers, thus an *internal* causality' (*KU* 5:222). This consciousness of pleasure in aesthetic reflection has the causality of 'maintaining the state of the representation of the mind and the occupation of the cognitive powers without a further aim' and so the consideration of the beautiful 'strengthens and reproduces itself.' Because consciousness of the beautiful constitutively involves the 'feeling of life,' that consciousness also constitutively involves the maintenance and reproduction of that self-same feeling. The sense we have of our organic unity in aesthetic judgment is thus also the sense of an internal causality for preserving that very unity.

⁴³ Cf. also *KU* 5:210: 'Beauty has purport and significance only for human beings, i.e. for beings at once animal and rational, but not merely for them as rational beings (e.g. as intelligent minds), but as at once animal and rational.'

It is worth noticing now some of the ways in which the experience of beauty and therewith the feeling of life approximates the standpoint of practical reason. First, like the causality which belongs to practical reason, the activity of our faculties in aesthetic judgment is free and spontaneous. At the same time, the feeling of life precedes any pleasure to be found in our subject, much like what Kant calls the moral feeling or respect (*KU* 5: 217; *KpV* 5:73). In this way, both stand opposed to and are to be distinguished from what is merely subjective, individual, or singular, and what Kant calls the pathological. They stand so opposed because both practical reason and the power of judgment in aesthetic experience put us in touch with or point towards something common. For practical reason, it is the community of persons in a moral kingdom. For the power of judgment, it is the supersensible substratum of humanity. Thus, Kant says that judgments of taste are grounded in a ‘a concept that cannot be determined by intuition, by which nothing can be cognized,’ and says that ‘a concept of this kind...is the mere pure rational concept of the supersensible’ (*KU* 5:340). And in particular, aesthetic judgments are grounded in ‘the concept of that which can be regarded as the supersensible substratum of humanity’ (*KU* 5:340). Aesthetic judgments, then, are not merely subjective, but grounded in a conception of a shared humanity. For this reason, they are said to be universally *communicable* to those similarly constituted. This communicability is essential to such judgments, and so, Kant thinks, a necessary presupposition of the possibility of aesthetic judgments is the existence of a common sense (*Gemeinsinn*) or *sensus communis* (*KU* 5:238). To judge in the light of this common sense is to hold our judgment up to ‘human reason as whole,’ and in so judging one puts oneself ‘into the position of everyone else’ (*KU* 5:294). But this means that the feeling of life we experience in aesthetic judgment constitutively or essentially involves a reference to

others with that same feeling of life, at least potentially. In this way, our feeling of life is analogous to our judgment of a living thing which, as I suggested in §1, essentially involves reference to others of its kind, at least potentially.

Aesthetic experience, then, makes possible a distinctive kind of self-consciousness, one which outstrips whatever we might know about ourselves in theoretical reason. The latter gives us only the fact that we are *substantialia*, existing substances in which thoughts inhere as accidents. Practical reason, in its consciousness of the moral law and those conditions necessary for its satisfaction, secures what theoretical reason could not, e.g. our duration through any and every phenomenal change together with a causality independent of the mechanism of nature, i.e. our freedom. Now, in aesthetic experience, we have self-consciousness of the interplay between our rational and sensitive faculties and, therewith, of ourselves as embodied minds. This consciousness of our embodiment includes as a constitutive part an implicit reference to others of the same kind. But our own embodiment is not a theoretical cognition we have of ourselves. It is rather something given in the consciousness of aesthetic pleasure and the reciprocity or community of our different faculties. The consciousness of this pleasure is itself the causal ground of the maintenance and reproduction of the same. It will be recalled that Locke had identified the self with consciousness of pleasure and pain, and the dimensions of one's body as the extent of one's sensations. Kant thinks similarly, and so there is a sense in which the real unity of my rational and animal self extends as far as my consciousness of pleasure and pain. And this can, perhaps, provide us with materials for understanding the unity of the organic body. In lectures delivered in the early 1780s, Kant says that

wherever my body is, there is my thinking I as well, for only through it can I know the position of myself. But I myself do not occupy any particular space in the body, since I cannot be intuited according to the form of space. The body determines only my relation of place with respect to other things (namely that I am in it), but not with respect to myself or where I am in it (*MMr* 29:879).

The thinking I pervades the body, furnishing as it were the space within which everything is to be counted as *my* body. The body is, as it were, the sensorium of the I, and its parts are the different places in which the I is to be found. With this account in hand, we turn now to natural ends.

5.6 FROM PERSONS TO PURPOSES

In the foregoing, I have been suggesting that persons and living things were often treated together for the simple reason that both were substances, the former rational, the latter not. Locke treats them together in his chapter on identity and diversity, and Leibniz treats them together as well, claiming even that his account of living things is modeled on his understanding of rational substances. Thomas says that persons are the most perfect and complete individual substances in all of nature; they are individual substances *par excellence*. To whatever extent, then, that persons were thought to be substances in the highest or most paradigmatic sense, and so to exhibit the features characteristic of substances in the highest or most paradigmatic way, I suggested that if our theoretical knowledge of those features should be problematic in the case of persons, then our theoretical knowledge of non-rational substances might be similarly problematic. In particular, substances were thought to be essentially one, rather than an aggregate, to persist through change rather than to change and thus to inhere in something else,

and to move themselves or to be 'free' causes. By Kant's lights, however, those features cannot be ascertained through a theoretical exercise of reason, as the rationalists prior to him had thought. The unity and simplicity of the thinking self or soul makes it incapable of appearing in intuition, and so we cannot properly apply the concepts of persistence and causality to it. We can, indeed, have no cognition of it at all. As a consequence, attributing thought to things in outer intuition is a projection or transference of our own self-consciousness to them.

In what follows, I want to argue that the same holds true of natural ends. The persistence of organisms through all qualitative change, their self-causality, and the unity or community of their parts are all understood only on the basis of a 'transference' of features of our own self-consciousness to them. Because none of these features are available in any kind of sensible intuition, they can only be attributed to natural ends on the basis of an analogy with the features we find in our own self-consciousness. Like the thinking soul or self, the principle of a natural end is simple, and so is not to be met with in space. Consequently, one and the same individual organism *may* persist through every sensible variation, as a *lepidopteron* appears to, though we cannot *know* that it does. Furthermore, an individual organism *may* exercise a causality independently of the mechanism of nature, though we cannot *know* that it does. And finally, an individual organism *may* possess a unity among its parts which outstrips the merely material reciprocity of its parts in space, but we cannot know that it does.. Insofar as a natural end possesses an 'inner' principle of motion and rest, it is to just that extent beyond the boundaries of natural science. This fact allows us to unify a number of different remarks that Kant makes about natural ends, because the soul or form of a natural substance traditionally performed a number of different theoretical functions. And the plurality of roles played by the soul or form in the

traditional doctrine of substance enables us to reconcile a number of competing interpretations of *why* exactly natural ends are beyond the reach of theoretical reason.

The notion of a person has for Kant a quite intimate relation to purposiveness for the simple reason that persons are ends in themselves (e.g. *G* 4:428; 4:43). They are distinguished in the *Groundwork* from mere things, which Kant defines as those beings whose existence depends on nature and which are only ever means. The value of things derives from what they might contribute to the existence of persons, and they can command a person's (non-theoretical) attention only thus far. Consequently, to the extent that someone makes the existence of a thing an end, it is only relative to other ends that she sets for herself. By contrast, persons command attention or consideration in a way that other beings do not because their existence has value or worth in itself, and not simply in relation to whatever my wants and needs might happen to be. Having non-relative worth, persons are non-relative ends; they are ends in themselves. But formulated in this way, Kant's distinction suggests that if there *were* to be (non-rational) natural beings which were not merely means, they would not be merely things. They would instead be something quite like persons, lacking only reason. And so the question, whether there are natural 'things' which are in fact ends-in-themselves, amounts to asking whether there might be, paradoxically, something like 'natural persons.' This concatenation of terms is, in Kant's vocabulary, about as paradoxical as 'non-rational persons' would be in scholastic vocabulary, but they point to a common question: how are to understand the continuity—if there is continuity—between ourselves and certain other natural beings we find around us, which are nonetheless quite manifestly different.

And it would seem that natural ends do stand to the rest of nature as persons stand to us in our own moral-practical deliberations. In the *Analytic of the Teleological Power of Judgment*, Kant takes note of advantageous or useful relations between certain natural beings. Thus, sand deposits are advantageous for the growth of pines and grass is advantageous to the sheep that eat it (*KU* 5:367). This is what Kant calls relative or external purposiveness, suggesting that to whatever extent nature might ‘take an interest’ in the existence of sand or grass—to whatever extent they might be called ‘ends’ of nature—it is only in relation to some other end that they subserve. They get to be called ends only insofar as they serve as means to something outside themselves, and for that reason such purposive relations are external to them. But if sand is to be an end of nature insofar as it serves the growth of pines, or the grass insofar as it serves the nourishment of sheep, Kant argues that there must ultimately be things which are ends of nature not for some further advantage, but which are ends in themselves (*KU* 5:369). In other words, relative purposiveness presupposes intrinsic purposiveness, i.e. individuals which are not (merely) means for and thus advantageous to others, but beings the existence of which is not

relative to or conditioned by anything else. And so, like persons in the practical domain, natural ends serve as a kind of limit on purposive relations in the natural domain.⁴⁴

If it is right to say that natural ends are—paradoxically—something like ‘natural persons,’ then the limitations placed on our knowledge of persons should similarly constrain our knowledge of natural ends, and indeed Kant’s reasons for thinking that natural ends are essentially inexplicable are consistent with what we have seen. In particular, Kant is clear that the ultimate ground of a natural end is simple, and so not to be met with in space. Thus, in a reflection from the 1780s, Kant says that

simple beings (as such) can never be parts of the sensible world. For in that case they would be parts of the object of outer sense, i.e. of that which is extended; but that which is extended does not consist of simple parts. Hence any principle of life must be counted among the *intelligibilia*, thus the soul as well... This is also the ground of our ignorance with regard to all organized beings and beings that organize matter, the possibility of which, since it rests on a principle of life, cannot be understood. Simple beings have no place in the world’ (R 4534).

Much like the rational soul or self, then, the principle of organized beings is simple, and so not to be met with in space. It is, for that reason, a *noumenon* of which we can have no cognition. As we have seen, Leibniz had also insisted on the simplicity of the ‘enduring principle of life,’

⁴⁴ It is noteworthy that relatively little attention is given to understanding means-ends relations in natural ends. Zuckert (2007), 112 remarks that what is essential to natural ends is that their parts are *instruments*, and so denies that the contrast between mechanical and teleological explanation are to be construed simply in terms of part/whole relations, as McLaughlin and those who follow him do. Thus, Zuckert says that despite Kant’s frequent invocation of part-whole relations, his ‘analysis of purposive relations suggests that the dependence of part upon whole, the unity of the purposive object, is instantiated in, and made possible by reciprocal relations between past causes and future effects,’ which relations she had glossed earlier as ‘means to future ends.’ The description of the parts of a living body as ‘tools’ (*organa*) is of course pervasive in Aristotle, but as we have seen, what the ‘means-ends’ relationship entails there is not exactly what is commonly meant by it. Though this issue can be handled in detail only in the next chapter, I should like to say that Kant’s understanding of means-end relations among the parts of an organism is similar to Aristotle’s, where this means that the parts and their activities are but limitations or partial expressions of single activity. Precisely as partial expressions of it, they stand in service to that activity exist for its sake. That activity just is nutrition and reproduction of the animal to which it belongs—its βίος.

which principle accounted for the real unity of an organic body, making it a real whole rather than a mere aggregate. Thomas had likewise insisted on the simplicity of the soul and of course its role in grounding the unity of an organism.⁴⁵ And so what we see Kant articulating in the reflection above is no different: a soul or something like it is the ultimate principle of a naturally organized and organizing being, and that soul is simple. Thus, Kant's understanding of *what* would have to be known in order to have knowledge of organized substances is really quite traditional. But the simplicity of the soul is also what makes a natural end quite inexplicable from the standpoint of natural philosophy, since 'simple beings have no place in the world.'⁴⁶ Because the categories have objective significance only in relation to what can be met with in intuition, and because the simple never can be, we can never be assured of the objective reality of the simple, supersensible principle (*KU* 5:396).

If the principle of life and of organized beings is simple and so beyond the reach of any knowledge we might ever come to possess, then natural philosophy proper is concerned with the lifeless, or with natural things only insofar as they are lifeless. In the *Metaphysical Foundations of Natural Science*, after articulating his second law of mechanics according to which 'every

⁴⁵ *STI*.75.1.

⁴⁶ For that reason, I think Ginsborg (2004) is importantly mistaken, for she says 'Kant rejects the Aristotelian ontology of a multiplicity of individual substances endowed with specific natures. Saying that plants and animals are natural products does not commit him to saying that they have Aristotelian inner principles of change; instead it appears to imply only that they are not brought into existence by the will of an intelligent agent.' Of course, saying that plants and animals are natural *products* does not commit him to saying that they have Aristotelian inner principles of change, but saying of them that they are natural *ends* most certainly does. And so, when Ginsborg says that Kant 'rejects the notion of an 'inner principle' of change and staying the same, as do many other philosophers influenced by 'the new science' of the seventeenth century,' she is quite right, but only in a more limited sense than she herself realizes. For while Kant rejects such principles for any proper *science*, he recognizes a metaphysical need for such principles to make sense of the peculiar features of natural ends (if any there be).

change in matter has an external cause,' Kant explains why life is beyond the scope of natural philosophy:

Life is the faculty of a substance to determine itself to act from an internal principle, of a finite substance to change, of a material substance to motion or rest, as change of its state. Now we know of no other internal principle in a substance for changing its state except *desiring*, and no other internal activity at all except *thinking*, together with that which depends on it, the *feeling of pleasure or displeasure*, and *desire* or *willing*. But these actions and grounds of determination in no way belong to representations of the outer senses, and so neither to the determinations of matter as matter. Hence all matter, as such, is *lifeless*...If we seek the cause of any change of matter in life, we will have to seek it forthwith in another substance, different from matter, yet combined with it' (*MAN* 4:544).

The introduction of inner principles of matter into the explanation of bodily motion amounts to 'hylozoism,' which Kant identifies in the Critique of Teleological Judgment as one way in which someone might be a realist about natural purposiveness. Hylozoism is, however, 'the death of all natural philosophy.' Indeed, its very concept is said to contain a contradiction since matter as such just is lifeless (*MAN* 4:544; *KU* 5:394). This means, however, that it belongs to natural philosophy to be concerned specifically with matter in space, and so with causal relations among things external to one another.⁴⁷ But for precisely that reason, natural philosophy is concerned with causal relations among aggregates, for Kant says of matter that it is constituted by 'the mere aggregate of the movable' and that it 'has no other magnitude than that consisting in the

⁴⁷ Teufel (2009), (2011) highlights the importance of the second law of mechanics for understanding the contrast between mechanism and purposiveness. As I have mentioned, he argues against McLaughlin that whole-to-part to causality fails to make for a difference between mechanism and purposiveness, and proposes looking at Kant's definitions of 'end' in the *CJ*, which invoke the causality of concepts. Because concepts are not the right sort of thing to be located in space, saying of something that it is an end, natural or otherwise, just is to say that it is mechanically inexplicable, in light of the second law of mechanics. This fails to make adequate sense, however, of the many passages in which Kant surely *seems* to think a difference in the mereological direction of causality constitutes an essential difference in kind. For a criticism of Teufel on this score, cf. McLaughlin (2014). McLaughlin also charges that it fails to make sense of the *regulative* status of mechanism in the third *Critique*, when the mechanical principle is presumably constitutive of experience. On this, cf. fn.54 below.

aggregate of manifold [elements] external to one another' (*MAN* 4:540). Thus, anything appearing in space and forming a proper object for natural philosophy is, considered as matter, a lifeless aggregate.

We find confirmation of this view in the Critique of Teleological Judgment. There Kant criticizes Hume for failing to see what, exactly, is the problem with judging organisms teleologically. Hume had suggested that the ordering of faculties and properties in a divine understanding is no more explicable than the ordering of matter and the community of its parts in a natural end, and so invoking the former to explain the latter gets us nowhere. But, Kant says, this is to misunderstand the problem, for

the whole difficulty surrounding the question about the initial generation of a thing that contains purposes in itself and is comprehensible only through them rests on the further question concerning the unity of the ground of the combination in this product of the manifold of elements **external to one another**...if the cause is sought merely in matter, as an aggregate of numerous substances external to one another, the unity of the principle of the intrinsically purposive form of its formation is entirely lacking (*KU* 5:420-1).

Thus, the problem to be encountered in understanding a natural end is again the unity of its ground, which ground cannot be found in matter because matter is as such an aggregate of things, all external to one another.⁴⁸ The unity of ground *could* be satisfied by a simple,

⁴⁸ What is more, this passage suggests that McLaughlin (1991) and (2014) is wrong to think that the second law of mechanics is not at work in Kant's understanding of mechanism in the *CJ*. McLaughlin argues that that mechanistic principle is constitutive of experience, and so one would have to explain why it becomes merely regulative in the *CJ*, since 'in the study of organisms we are dealing only with bodies.' And this has been one of the central issues governing discussion of the Dialectic of Teleological Judgment in the third Critique, on which there is no small literature. I have not made the antinomy the central piece of my approach to Kant's teleology in part because it has been so worked over that I think a better strategy is to let it lie fallow while hoping to derive fruits on other grounds. It is not unlike Aristotle's *Physics* II.8 in this regard. But I shall say, first, that Kant says of the analogies that they are 'regulative' as opposed to constitutive just prior to introducing them (A180/B222), and so extensive discussion of his uses of those two terms would be needed before one could say that the antinomy in the *CJ* 'demotes' mechanism from its prior, lofty status. And the presumed demotion of mechanism must be coupled with Kant's simultaneous insistence on the primacy of mechanism for those with intellects like ours, if we are to have any genuine explanations (e.g. *KU* 5:410).

supersensible principle, but again, to invoke such a principle as a causal ground is the ‘death of all natural science’ because it would be to invoke something to which we have no cognitive access, and for which the categories have no objective significance.⁴⁹

But *how* exactly would the supersensible principle ground a unity that extends between the collocation of material parts in space? That is impossible to say except on analogy with the unity of our own bodies. In the passage from *MAN* above, Kant says that the only inner activity we know of is thinking, and that desire and pleasure both depend on thinking. We also saw earlier that the pleasure found in judgments of beauty and characteristic of the ‘feeling of life’ was a kind of consciousness, indeed a consciousness of the reciprocity and community of powers in one’s subject, as well as an ‘inner causality’ for strengthening and maintaining that very same reciprocity and community. As a consciousness which unites both sensitive and rational faculties, judgments of beauty ‘have purport and significance only for human beings, i.e. for beings at once animal and rational’ (*KU* 5:210). They have purport, in other words, only for embodied minds, and the presence to mind of the rest of one’s body confers a kind of unity which outstrips anything found only in space. This was the lesson of Locke’s remarks about the ‘physical extension’ of the self, and it was in evidence in Kant’s remark that ‘wherever my body is, there is my thinking *I* as well.’ Our organic body is more than a mere aggregate in virtue of the *felt* (but

⁴⁹ I mentioned above (fn.3) that Guyer (2001a) had argued that in the *Opus Postumum*, Kant argues for the necessity of design because only thought has the kind of unity characteristic of organized things. Because matter as such is a mere aggregate, matter itself could never be the cause of such unity. Guyer argues that this argument runs afoul of the parameters set by the first *Critique* because it runs afoul of the paralogisms of pure reason, seen above: it confuses the logical simplicity of a thought with the real simplicity of the subject. But that would only be the case if in fact Kant were to assert that in fact there *are* natural ends which *do* have genuinely simple grounds. But he does not. Rather, the concept of a natural end is a concept constructed on the basis of our experience of certain natural products, and which has certain defining features. We do not in fact know whether or not the concept is an empty one. Just as the ideality of space and time leaves open the possibility that we ourselves are truly persistent, free beings, so does it leave open that organisms have at their ground a genuinely simple principle which is the source of their motions and alterations.

not cognized) unity and simplicity of consciousness. But without any genuine cognitive access to the simple ground of a natural end, the only way to make sense of it as a living subject of pleasures and pains would be to ‘transfer’ or project our own self-conception to it, in much the same way that we transfer our own consciousness to any phenomenon we might represent as a thinking being. And as I have noted, Kant in fact suggests that we understand natural ends on analogy with life in the CTJ, but says this would mean either subscribing to hylozoism, or postulating a soul, and neither gets us any nearer to scientific knowledge of nature.

If a simple, supersensible ground could confer the kind of unity which is necessary to purposiveness, making what is otherwise a mere aggregate into a genuine whole, Kant is nonetheless clear that such a principle is not sufficient to make sense of a natural end (*KU* 5:393). The unity of the ground is only a pre-requisite for purposiveness, satisfied even by Spinozism, and Spinozism (as Kant understands it) in fact denies all purposiveness. It is therefore necessary that in addition the simple ground be a *cause* of what it grounds, i.e. the alterations and actions or motions of the material composite. We saw that this was a feature of substantial form or soul as it was conceived prior to Kant. But if natural ends are capable of self-motion—of moving and altering themselves—in virtue of an inner principle of life, i.e. a simple supersensible ground, they are to that extent capable of *free* causality, for the causes of their motions are not external to them.⁵⁰ As we saw, Kant had said that we can only make sense of a sensible being acting freely by simultaneously regarding it ‘on the other side as a noumenon,’

⁵⁰ Cf. Zumbach (1981). Zumbach does not focus on the traditional role of soul or form natural beings and the notion of self-motion, but he does argue that Kant’s conception of teleology is essentially that of free causality. That claim, he says, is essentially negative, meaning only that mechanical causality is insufficient for characterizing living systems. Hegel had argued essentially the same, saying that ‘the natural products of organic life...make known to us the unity of the Notion, of nature and the notion of freedom.’ Cf. Lectures on Modern Philosophy, (2009).

and this seems to be precisely what natural ends demand. And so if the principle of life and of organized beings is an *intelligibile* or noumenon, the possibility that they act freely is thereby opened up. Thus, when commenting on the definition of soul attributed at the time to Pythagoras, according to which soul is a self-moving number, Kant says that it ‘can perhaps be made intelligible, and to some extent justified, if it be assumed that by this power of self-movement he wished to point out its difference from matter, as the intrinsically lifeless that is movable only through something external, and thus to allude to freedom’ (*P* 8:393).⁵¹ But as we also saw, Kant suggests that to whatever extent freedom even shows up as a concern for theoretical reason, it is only because practical reason poses it as a problem (*KpV* 5:30), and so the idea of a supersensible causality is something borrowed from practical reason. We can only make sense of the free causality natural ends by reference to our consciousness of ourselves as free.⁵²

5.7 SAMENESS, SELF, AND SUBSTANCE (RENEWED)

If the above is right, then I suggest that natural ends are only to be understood by a ‘transference’ of the feeling of life we experience in aesthetic appreciation in much the same way that phenomena can be represented as persons only by the transference of our own thinking to them. In the case of both persons and natural ends, the ultimate ground is simple and so not to be

⁵¹ This definition appears without attribution in *De Anima* I.2.

⁵² Guyer (2001) ultimately argues that Kant *should* have taken a position like the one just articulated, but never did. That is, he argues that Kant should have said that it is the consciousness of the freedom of our own purposiveness that leads us to suppose that organic life is different in kind from other products of nature, which are explicable on strictly mechanical grounds. But again, self-motion was a characteristic feature of substances, organisms chief among them. This self-activity *is* prominent in the *CJ*, as we have just seen, and Kant explicitly connects the ideas of soul, life, and freedom.

met with in space. They are for precisely that reason beyond the reach of theoretical reason. The true unity of something like an oak—or even a blade of grass—is not something that we can apprehend, given the nature of the object to be known and the constitution of our faculties. The simple principle grounds its persistence and thus identity through change, together with its free or spontaneous causality. Apart from that simple principle, all that is given to us phenomenally are aggregates of matter, every bit external to every other, and no more to be singled out as a single, discrete object than any other aggregate of things. In the absence of a grasp of its simple principle, there is a real sense in which one does not know where the oak begins and ends. Otherwise put, an apprehension of the limits of an oak’s body would require an apprehension of the simple principle which animates it, in the absence of which the oak is not to be picked out as a single entity rather than aggregate of random parcels of matter. But precisely because it is grounded in a simple principle outside of space and time, i.e. because it is nowhere in particular, it can—for all we know—be found whole and entire in each of its parts. This makes it possible to ‘regard every twig or leaf of one tree...as a tree existing in itself’ in much the same way that ‘wherever my body is, there is my thinking *I* as well’—if in fact a tree is a natural end (*KU* 5:371-2; *MMr* 29:879).

But this also makes it possible that the oak species itself constitutes a natural end, or the human species, each being united in one and the same supersensible principle. I suggested in §1 that living things can be grasped only through a common representation precisely for the reason that if it belongs to living things to reproduce, then any conception of a thing as living will involve an implicit reference to the possibility at least of a plurality of instances of its kind. Something analogous is, as we have seen, essential to the appreciation of beauty, which

presupposes a common sense (*Gemeinsinn*) and thus an implicit reference to a community of others, at least potentially. The transference of the feeling of life had in aesthetic appreciation to certain natural products—natural ends—involves the same. On the basis of this transference, the individual and the common are, in the case of the living, quite inextricably intertwined, and it is for precisely this reason that the living is, as it were, made for concepts. Indeed, the living speaks precisely to the purposiveness of nature for beings with intellects like ours, who think of individuals given in intuition only through common representations. But the unity of the individual and the common—the universal and the particular—means as a consequence that questions about individuation become irresolvable. Or rather, given Kant’s claim that the individual, itself by itself, is unknowable, an understanding of nature on the model of the living means we need not seek an understanding of isolated individuals; it quite absolves us from doing so.

5.8 CONCLUSION

I have been arguing that Kant understands the grounds of natural ends to be simple and, for that reason, to be beyond the reach of reason. In this, natural ends are like persons or rational substances. That one should look at our knowledge of persons to understand the problems and prospects for our knowledge of organisms was justified on the basis of the claim that there existed a history of treating them both together. That common treatment could itself be justified on the grounds that both organisms and persons were individual substances, and so they were

both of a kind. Though persons were distinctly rational substances, they were viewed by some, e.g. Aquinas, as substances in the most perfect and complete way. As a consequence, all other substances could be viewed as but approximations of rational ones, exhibiting only incompletely or imperfectly the characteristics belonging to persons, e.g. unity, persistence, and self-motion. And though Locke and Leibniz do not define the commonalities between them quite as explicitly as Aquinas sometimes does, both give persons and non-rational living beings parallel treatments. They both attribute to living things persistence conditions that outstrip any merely material beings, and they both attribute to living things a certain inner active force or power. And for both, the clearest idea we have of such forces or powers is the idea we have of ourselves in thinking.

I then argued that for Kant, our knowledge is constrained by the nature of our understanding. In particular, because we can cognize only what appears to us in intuition, and because the simple never does, we can never cognize or have knowledge of simple principles. Thus, although Kant agrees that the rational soul or self is a simple substance, he denies that the standard claims rationalists had wanted to draw from this fact can be maintained. Those claims can only be secured by practical reason as necessary conditions for the deployment of practical reason in the highest sense, i.e. in the service of morality. But because of the simplicity of the thinking self, Kant denies that thinking beings as such ever appear to us in outer intuition. Consequently, the representation of anything *as* thinking requires a transference or projection of our own consciousness to what we represent. Our only ground for attributing whatever is presupposed by thought or consciousness in its different modes to phenomena would then be the transference or projection of our consciousness to those phenomena, or something analogous to it.

And so, it was argued, this explains our ignorance of natural ends. Natural ends exhibit a unity which outstrips merely material unity and a causality which is independent of the mechanism of nature and therefore free. Though natural, they exhibit the features of persons and so stand uncomfortably between theoretical and practical reason. I then turned to our consciousness of ourselves in aesthetic experience or in our experience of beauty, suggesting that this might provide us with a model by which to understand natural ends. Essential to aesthetic experience is a consciousness of the unity and harmony of our powers, which reciprocally promote one another in that experience. This harmony and reciprocity constitutes the feeling of life, and the activity of our powers in which that feeling is found is free and spontaneous, exhibiting an ‘internal causality’ for preserving that very activity. The tendency or disposition towards self-maintenance in our experience of beauty is analogous to the self-maintaining character of natural ends. But the feeling of life belonging to aesthetic experience also necessarily involves a reference to others with that same feeling, and this reference is mediated by a common sense or *Gemeinsinn*. In this sense, aesthetic experience involves reference to a community of individuals animated by the same feeling of life.

Natural ends, then, are to be understood on analogy with this same feeling. Much like thinking beings, living things depend on a simple principle, which means that *as* living things, they are unavailable to theoretical reason. Only by transferring or projecting our feeling onto them can we hope to make sense of the thought that the reciprocity of their parts is more than just the reciprocity belonging to matter in space—as more than a mere aggregate of matter. There is, indeed, an inner ground of community and reciprocity and so one which is not to be found in space. Similarly, the self-motion exhibited by organisms (if they do in fact exhibit it) is made

possible only on the supposition that there is an inner causal ground which is independent of the influence of things outside of it, one which is free and spontaneous.

6.0 TO HOU HENEKA

In the beginning, I said that this study was essentially an exercise in comparative philosophical anatomy. The previous chapters, which consisted of individual examinations of Aristotle and Kant on natural teleology, were preparatory work for the sake of that exercise. The aim of those chapters was to explain why Aristotle and Kant did or did not ultimately accord teleology a genuinely scientific status. Having done that, we are now in a position to carry out the comparative exercise mentioned at the beginning and to identify those prior commitments which make them diverge as they do. We are now, in other words, prepared to isolate the relevant philosophical differences between them and to understand what differences they make.

So stated, however, it might seem as if this exercise presupposes that there is some one thing, 'teleology,' of which they might be giving different accounts. This could neither be confirmed nor denied at the outset, and so it was also an aim of this study to determine whether there was any such thing, i.e. a well-defined topic, 'teleology,' which occupied them both. As I noted in the introduction and as is by now familiar, there is no perennial mind-body problem, and so we might be skeptical of any mention of 'the problem' of teleology. Indeed, I also noted that some, at least, have denied that what counts as teleology today, particularly the work done in the spirit of Larry Wright, would have counted as such for the medievals. We might then suppose that the same will be true of 'teleology' in Aristotle and Kant. But only by reflecting on each and comparing the one with the other can this be determined, which is to say that it belongs to one and the same exercise both to assess the similarities and differences between them and to determine the extent to which they are addressing the same topic.

In what follows, then, I suggest that while in some respects Aristotle and Kant are concerned with quite different issues, there are others in which they are addressing quite similar ones. That is, if the question is ‘is there some one thing, teleology, of which Aristotle and Kant are offering different accounts,’ then the answer is, in true Aristotelian fashion, ‘in some respects yes, in others, no.’ I begin in §1 with a discussion of some of their teleological vocabulary, *telos* and *Zweck*, arguing that they do not in fact mean or pick out the same thing. They are not, in other words, inter-translatable without remainder, and so it would be misleading to say of one that he is a realist about ends in nature, the other an anti-realist, because they mean different things by ‘end.’ In particular, Aristotle means by ‘*telos*’ ‘end’ in the concrete sense of a limit, but for Kant, *Zweck* means something more like *skopos*.

I then turn in §2 to a way of understanding their accounts of teleology which suggests that they are, in fact, concerned with quite similar problems. They are, in particular, concerned with the grounds for ascribing functions to the parts of a living thing, e.g. seeing or sight to the eye, but differ on the status of such ascriptions. The differences between them on this score is largely a matter of their differing stances on our knowledge of natural kinds. Aristotle is far more confident than Kant about what belongs essentially or characteristically to a thing and in our knowledge of life forms or *bioi* more generally. Part of their difference on this score can, I argue, be traced to their differing views on induction. Kant thinks inductive generalizations are merely presumptions that we make on the basis of limited evidence which we can never know to be true. In other words, Kant seems to think that induction is beset by one of the problems traditionally thought to belong to it. Aristotle, however, shows no such concern. This is not of course to say that Aristotle was naive about induction, making inductions willy-nilly, but that a certain

problem long thought to beset inductive generalizations seems not to be a matter with which Aristotle was particularly concerned.

I turn then in §3 to suggest that abstracting out a conception of ‘teleology’ from either Aristotle or Kant does no small violence to their larger philosophical projects. The stances that they end up taking cannot, in other words, be easily divorced from the problem contexts in which they were thinking. Aristotle’s teleology is essentially connected with the possibility of motion and the relations between *to peras* and *to apeiron*. Kant’s teleology is essentially concerned with questions about the classification of natural kinds, and it is shaped by certain larger philosophical aims, e.g. the rejection of Spinozism. To treat Kant’s teleology in isolation from the prior commitments of the critical philosophy more generally is to miss why Kant ultimately thinks teleology cannot be accorded scientific status.

6.1 *TELOS AND ZWECK*

I want to begin by noting what is perhaps a telling fact but which has thus far gone unmentioned. At one point in the *Critique of Judgment*, Kant glosses ‘final purpose’ (*Endzweck*) with the Latin ‘*scopus*,’ meaning aim or target (*KU* 5:378). He says there that judging a thing to be internally purposive on account of its form is quite different from judging the existence of that thing to be a final purpose of nature, which is just to say that while the parts of a thing might play purposive roles in the life of a thing, that thing itself might not play any essential role in the course of nature more broadly. But Kant’s gloss makes clear that he understands by ‘*teleologie*’

the science of nature's aims or goals. And though *Zweck* is used to translate *telos*, this is in stark contrast to Aristotle. The Latin *scopus* is of course cousin to the Greek *skopos*, which as we now know Aristotle uses in a number of places in the ethical and political treatises, but not once in any of his natural philosophical works. Neither does he use it in the *Metaphysics* in any context touching on natural teleology. And so while a *telos* might on occasion *be* a *skopos*—namely in the human sphere—it is not explanatory or philosophically important in virtue of that fact. Rather, as we now know, Aristotle's far more common gloss on *telos* is *peras* or limit, and understood as such it constituted one of a trio of terms, together with *archē* and *meson*, each with its own distinctive significance and each understood in the concrete sense of 'beginning,' 'middle,' and 'end.' These facts would suggest that Aristotle and Kant are concerned with quite different things when they talk of *telē* and *Zwecke*, respectively. And so when it is said that Aristotle was a realist about teleology, and Kant an anti-realist, this is arguably quite misleading, for what the one affirms and the other denies are quite different.

This is not, however, the only difference between *telos* and *Zweck*. We saw in the third chapter that Kant very frequently uses *Zweck* to describe things that stand in a systematic relationship with one another. Thus, in his *Lectures on the Philosophical Doctrine of Religion*, Kant distinguishes between skill, prudence, and wisdom. He defines the latter as the 'perfection of cognition in the derivation of every end from the system of all ends' (*LR* 28:1057). Someone with wisdom is someone whose ends all stand together in harmony with the general dictates of morality, for 'morals has as its object precisely to consider how each end can stand together with the idea of a whole of all ends.' Indeed, Kant says that we have in morality an example of a highest understanding which can proceed from the whole to the particular, because in morality

one can determine the worth of any given end on the basis of an idea of a whole of all ends. In this as in a natural end, what grounds the unity of parts is some idea under which they are subsumed. But the language of a 'system of ends' recurs in other places as well (e.g. 28:1099-1103). As we have seen, as parts of a system, ends count as the *matter* of that system, and indeed in the *Metaphysics of Morals* Kant glosses ends precisely as such: distinguishing between duties of virtue and duties of right, he says of the former that they have to do with what is formal in the moral determination of the will, not 'with a certain end (matter, object of choice)' (*MS* 6:383). Thus, 'end' for Kant often picks out a particular determination of a more general principle which, together with other such determinations, counts as a part of a larger whole.

For Aristotle, by contrast, the *telos* and that of which it is the *telos* stand at the same level of generality. Thus, the slogan that Aristotle often uses to defend his teleology is just that man begets man, and horse horse. This is a feature of his understanding of teleology quite generally, for while in one sense the builder is the efficient cause of the house, in the strictest sense it is the form of the house in the mind of the builder which is to count as the efficient cause. Consequently, to speak of a 'system of ends' or of ends as the 'matter' of anything at all is really quite foreign to Aristotle's way of thinking, and indeed *telos* is never glossed in the entirety of Aristotle's works as matter, but only ever form. It is a source of form precisely because it is a limit. And the same is to be said about *to hou heneka*, which we saw in chapter 2 is often understood in terms of the *telos*. Thus in *Phys.* II.8, Aristotle says that 'whenever there is an end (*telos*) the earlier sequence of things is done for the sake of this' (199a9-9), and in *De Partibus* I. 1, that 'we say "this is for the sake of that" whenever there appears to be some end (*telos*) towards which the change proceeds if nothing impedes it' (641b24-25). And in *Meta.* *α.2*,

Aristotle is again quite explicit, glossing *to hou heneka* as a *telos kai peras*. Consequently, not just *telos*, but his teleological vocabulary quite generally would appear to function quite differently than Kant's, playing quite distinct conceptual roles.

If that is right, then perhaps we do a real disservice to our understanding of Aristotle and Kant by supposing that some of their principal terms for talking about 'purposiveness,' i.e. '*telos*' or '*to hou heneka*' and '*Zweck*' mean more or less the same thing. Nonetheless, one might object that the differences just described need not reflect any interesting philosophical differences in their underlying conceptions of what teleology is and what it is trying to explain, for although Aristotle never talks of ends as matter, and typically describes the end at the same level of generality as the efficient cause from which it issues, any number of ends I set myself, such as going to the market to collect a debt, *do* stand—at least ideally—under a larger end, namely my own flourishing, to which my other ends would be but means. The same would be just as true of non-rational living things: the construction of the damn is the end of a certain set of the beaver's actions, but this end itself stands under a more inclusive end, namely the preservation and propagation of the beaver itself. This would be the common end, i.e. that in which all its other actions share and in the service of which they stand. One could say the same about certain processes of generation. The coming to be of the liver has as its end the existence of the liver, but that process is itself embedded in a larger context, namely the coming to be of the organism of which it is a part.

But it must be said in response that to whatever extent some *telos* is pursued for the sake of some further end, then by Aristotle's lights, it is to just that extent not an end or *telos*, but a *meson*. We can only really say the same things about *telē* that Kant sometimes says of *Zwecke* by

a kind semantic slight of hand or equivocation. Aristotle does not speak of ends or *telē* in some of the ways that Kant does, e.g. as matter, because *telē* confer form on other things and do not have form conferred on them in virtue of something else. That is to say, it would be quite nonsensical for Aristotle to talk of a ‘system of ends’ because it is the *telos* that binds things together into anything like a system or whole, and ends can themselves be bound together only insofar as they are precisely *not* ends, but *mesa*. For this reason, the relations among the different concepts, *telos* and *Zweck*, remain essentially distinct, even if we can identify a certain family resemblance between them. One can only make the terms congruent by neglecting the precise meaning Aristotle gives to *telos*, or Kant to *Zweck*. And if philosophical problems cannot be understood independently of the vocabulary in which they are articulated, then Aristotle and Kant would appear to be talking about subtly different things.

6.2 FUNCTIONS AND NATURAL KINDS

If *telos* and *Zweck* cannot be said to be simply interchangeable, with the consequence perhaps that what Aristotle affirms and Kant denies of nature are subtly different things, we can nonetheless identify a common problem faced by both Aristotle and Kant: what, if anything, grounds quite ordinary claims such as ‘an eagle’s talons are for grasping its prey’ or ‘the giant panda’s thumb is for stripping bamboo.’ That Aristotle is concerned with such claims is clear. They are essential to any science of living things, and the Empedoclean view, according to which parts come to be and simply turn out to be useful, is to be rejected. We saw why in chapter 2. The

function of a thing just is the role that it characteristically plays in the life of the thing possessing it. Thus, the thumb of the giant panda is for stripping bamboo because the giant panda strips bamboo with its thumb—it is that by means of which the giant panda does what it does, the *meson* by which it typically brings about some *telos*. For that reason it is for the sake of what it does. It typically or customarily mediates between the panda and some particular activity and so it is, in the most concrete of senses, the means to some end.

Kant's view is quite otherwise. He says quite clearly in his *What Real Progress* essay that

So far as experience is concerned, there is no further knowledge than what Epicurus granted it, namely that after nature had formed eyes and ears, we use them for seeing and hearing, though that does not prove that the cause producing them must itself have had the intention of forming this structure in accordance with the purpose in question; for this we cannot perceive, but can only introduce by reasoning, in order merely to recognize a purposiveness in such objects' (*P* 20: 293-4)

Thus, Kant stakes out a position which is quite immediately contrary to the position taken by Aristotle, claiming that we cannot have any insight into the connection between some part or organ and the useful role that it eventually plays in the life of some organism. That the parts of an organism should have an essential relation to the role they come to play in its life is, as far as we can tell, entirely accidental. And though not as explicit in most of his discussion of natural purposiveness in the third *Critique*, the basic thought is at work in his brief discussion of relative purposiveness in the Analytic of the Teleological Power of Judgment in the same. As we saw in chapter 5, relative purposive relations are such as those between certain sand deposits and the pines which later come to grow in them, or the grass and the sheep which then feed on it. These are relations of purposiveness insofar as the one serves or is used by the other, but they are not purposive 'in themselves' because the existence of the grass is perfectly conceivable without the

existence of the sheep, and the sand without the pines (*KU* 5:368). If that is right, then in the the *Progress* essay Kant is simply extending that thought to the parts of a living thing. *All* relations of purposiveness which we might apprehend in the world around us are, apparently, relative or, as Aristotle might say, merely accidental relations, and that includes the benefits conferred by an animal's eyes, ears, mouth, and nose.

How then are we to explain this opposition? Why do Aristotle and Kant take such diametrically opposed positions? Kant takes the view that he does because he takes us to be ignorant of the principle of a natural end. As we have learned, the common or communal principle belonging to a natural end and of which we are ignorant is what binds into a real whole what would otherwise be a mere aggregate of parts, i.e. parcels of matter simply collocated in some shared space. It is in virtue of this principle that the parts of a natural end are possible only in relation to the whole of which they are part, and this makes them non-relatively or intrinsically purposive. That is, what distinguishes the relations between the parts of a sparrow and the relations between sand deposits and the pines that grow in them is the (supposed) presence of a noumenal principle common to the former, but not to the latter. The parts of a sparrow which (seem to) belong to it essentially are conceivable only in relation to the sparrow, but the sand deposits are perfectly conceivable quite independently of any relation to to the pines. But this difference only obtains if in fact the sparrow is a natural end, and the conjunction of sand-deposits and pines is not. And though the former certainly suggests to us the idea of natural end, whereas the latter does not, Kant thinks we cannot in fact know whether the sparrow is a natural end. To know that it was a natural end, and so to know that its parts were possible only in relation to the whole, we would have to have insight into its noumenal ground (if there is one). In

the absence of such insight, all that experience gives us is an aggregate of things exhibiting relative but not intrinsic relations of purposiveness.

But our ignorance with respect to the noumenal ground of a natural end is intimately related to our ignorance of natural kinds, and for both Aristotle and Kant, our knowledge of natural kinds is essential to our knowledge of natural teleology—if in fact we have any. Thus, a *telos* for Aristotle is typically or standardly some species form, e.g. horse. As a *telos*, it confers form on what would otherwise be regarded as a mere heap of motions or changes, and ignorance of natural forms entails ignorance of natural motions, i.e. how to demarcate one from another, or where one ends and another begins. Similarly, for Kant the nutritive power animating a natural end is the same as the generative power which unites otherwise distinct individuals into some one kind. Consequently, the noumenal ground which secures the unity of the parts of natural end also secures the unity of its kind. It is this noumenal ground which makes the difference between merely scholastic divisions, which are based on nothing more than external similarities, and real (causal) divisions among kinds. For that reason, knowledge of natural ends essentially involves knowledge of natural kinds, and our ignorance of natural ends is also ignorance of natural kinds, i.e. of the sorts of things that populate nature and their essential characteristics. And so it will be good to say something about the different stances taken by Aristotle and Kant on our knowledge of kinds.

Aristotle begins with the presumption that the world is sorted into kinds, and there is no evidence he thought a world without kinds even possible, as Kant did. Though the precise boundaries between them or how best to classify things may occasionally be in doubt, the fact that there are kinds with which we are more or less in touch is not. Confident in the truth of

certain claims about kinds, e.g. ‘man begets man,’ Aristotle could be similarly confident in the truth of teleology, since such claims are, in fact, sufficient for it.¹ As we have seen, simple facts such as these underwrite Aristotle’s analysis of natural motion and change more broadly—they provide the data on which to reflect—and so his teleology is simply writ into his account of motion and change more broadly. That is to say, the identity of kinds grounds the identity of motion, and it is the interplay of these two facts which constitutes Aristotle’s teleology. Because all motion is between some form and its corresponding privation, and because the form of a motion—the genus and species to which it belongs—is determined by *what* is coming to be, any motion with a privative end-state is and is known only accidentally, as the doctor has knowledge of sickness only virtue of her knowledge of health. And because Aristotle understands the matter-form relation in terms of potency and act, and because any given potency is only as well defined as its corresponding actuality, strictly speaking there cannot be any potencies for privations. Deprivative motions are therefore essentially derivative. But this means that the standard by which we evaluate the doings of a horse or the things that might happen to it is the role they have in propagating the horse kind itself, its perpetuation through nutrition and generation, and this is famously the way in which things partake of the eternal and divine.

Natural species forms cannot serve this same role in Kant, however, for the simple reason that Kant abjures any real knowledge of what those species forms *are*. Indeed, there is even a sense in which it would be out of place to say that there *are* species forms for Kant, insofar as they depend simply on the demands of our discursive intellects. As we saw in the fourth chapter, one of the principle themes of the third *Critique* is the ordering of nature into a system, where

¹ Cf. Meyer (1992); chapter 3.

this just means the ordering of nature into relations of genus and species. The problem arose not only out of philosophical disputes between Locke and Leibniz, but out of disputes internal to the practice of natural history at the time. Buffon had suggested that the ‘great multiplicity’ and variety of objects encountered in nature constitutes an ‘apparently insurmountable obstacle to the advancement of our understanding.’² But regardless of the extent of that variety, we are naturally inclined to suppose that there is a certain ‘order and uniformity’ to be found.³ Human beings, Buffon says, have a *penchant* for wishing to find regularity and resemblance among natural things, and even if it should prove impossible to arrive at one general system, one perfect method for dividing genera into species and subspecies, naturalists nonetheless need ‘an imaginary goal in order to sustain them in their work.’

Kant picked up on Buffon’s idea of an imaginary goal, and makes the systematicity of nature a regulative idea of reason, a *focus imaginarius*. And so while Aristotle just took it as a basic feature of the world from which to begin one’s reflections—an initial datum, as it were—Kant argues that regardless of what one might think about the ‘existence’ of kinds, they constitute a necessary part of the coherent use of our understanding. It is, he thinks, quite possible that nature should be but a dizzying array of individuals incapable of being sorted into higher kinds. Nonetheless, the discursive nature of our understanding bids us to try, at least, to classify what we see into kinds. For that reason, though, it is possible that any and every ordering of nature into genera and species reflects more about us than it does about nature. Classificatory mistakes are of course a risk that any natural investigator runs, and the disagreement between

² Sloan (1981), 98.

³ *Ibid.* 100.

Locke and Leibniz was in some measure a difference in mood between the two of them, i.e. a difference between pessimism and optimism, respectively. But Kant's insistence on the needs of our essentially discursive understanding means that any putative form to which we might advert in explaining phenomena runs the risk of not being just empirically off the mark, as though one thought that caterpillars and butterflies (or moths) constituted two quite different classes of insects, but as being from a transcendental perspective something which is, as it were, 'projected' onto the phenomena (A647/B675). At issue, in other words, is not the veracity of this or that classification, but classification itself, for an intuitive intellect would apprehend things quite independently of common kinds. *That* things are to be classified at all is, in other words, a contingent feature of our own intellects, rather than anything about the things themselves. And so the very idea that there is a 'common ground,' either of the individual or of the members of a species is something that could only arise for beings with intellects like ours.

But even without adverting to issues of the transcendental status of kinds and the peculiar demands of our discursive intellects, there would seem to be a different, but no less important, reason why Aristotle and Kant differ as they do on the epistemic status of natural kinds, and that is the nature of induction. For Kant, in our delineation of a species, we proceed part by part—individual by individual—and we can never be certain that we have all the parts that would constitute the complete whole of the species. Indeed, we have every reason to suppose we do not and this, it seems, is the problem with induction. Deductive inference yields necessity, and (deductive) logic has been, in Kant's eyes, more or less complete since the time of Aristotle. The reason for its success is that reason has to do only with itself and 'proves nothing but the formal rules of all thinking' (Bix). Induction, on the other hand, is in a slightly different position for 'no

logician has yet developed...induction properly; this field still lies open' (*DW*: 772). Unfortunately, Kant himself actually says little about induction, even in the third *Critique*, where induction and the possibility of induction comes to center stage.⁴ His most sustained remarks are found in his logic lectures and reflections. In the latter he says that inductive judgments or inferences of the power of judgment, which go from the particular to the universal, are merely 'provisional' (*vorläufigen*), being mere 'presumptions' (*praesumptionen*) (*R* 3200; *R* 3276). What we presume in induction quite generally (which he in some places calls 'a crutch for the human understanding') is that 'many things are not to be found in agreement without a common ground (*gemeinschaftlichen Grund*), thus that what pertains to them in this fashion will necessarily exist on the basis of a common ground' (*gemeinschaftlichen Grund*) (*R* 2300). As in a natural end, that common ground is never itself given, but something presumed on the basis of an acquaintance with a handful of individuals of a presumed species—some of the 'parts' of that species—which will, one hopes, go together to constitute a complete division of the species or genus concept: 'who can be acquainted with all the things that belong under a certain genus?' (*HL* 109). Never being acquainted with all the parts, I can never come to the whole: 'there cannot [in induction] be an inference from part of a whole concept to the rest' (*R* 3277). It is worth quoting Kant in full here: 'induction is the inference where I take to be true, as if it belonged to all, what belongs to many things under a universal inference and concept' (*BL* 287). In induction one presumes that what belongs to many belongs to the rest and thus to the whole. One proceeds as if all yellow

⁴ Cf. especially McFarland (1970), ch. 1; Allison (2003). Kant's discussion in the introductions is also relevant to Hume's discussions of the relations between matters of fact in the *First Enquiry*, where Hume discusses what is broadly similar to 'the problem of induction,' though he does not use that phrase. That the future will be like the past, and so that past experience of objects is any guide to future experience, is taken to be a mere unreasoned presumption grounded in habit or custom (§4-5).

bellied warblers have yellow bellies, but one cannot know this to be true in advance, and so for Kant, all inductive inferences, all empirical generalizations, are merely *als ob*, as if judgments that we must make on the basis of fragmentary, partial, or incomplete acquaintance with things in experience.

If the above is right, then ‘as if’ judgments in the conduct of natural inquiry have nothing in particular to do with organisms themselves, or with analogy, but with induction. Indeed, in the lectures just quoted, in which Kant says that all inductions are merely as if, Kant also says that analogy, i.e. that by which we are often urged to understand natural ends, ‘is nothing other than an induction’ (*BL*: 287). And so, in the shifting sands of empirical inquiry, we must take to be true what is not in fact known to be true. Unlike concepts which I make arbitrarily (e.g. mathematical concepts), empirical concepts are made gradually through experience and their synthesis can never be completed. And neither can they be defined. As a result, empirical concepts are capable only of ‘description,’ for our experience can only ever yield materials for definition, and definition remains only as ‘the idea of a logical perfection that we must seek to attain’ (*JL* §105). We are, Kant says, only ever acquainted with what is to be the matter of a definition, which is to say that we shall never be able to proceed from the whole to the parts, as we do with disjunctive judgments in a logical division, because the whole species is never

actually given to us—only a handful of instances are. Biology, like other merely empirical sciences, is capable of providing only ‘descriptions’.⁵

It is, however, quite otherwise for Aristotle, and while a full defense of the thesis is far beyond the scope of this concluding chapter, I would like to suggest that Aristotle does not consider induction to be problematic in the same way that Kant does because for Aristotle, what we know by way of induction is articulated in generic propositions, e.g. ‘the adult human being has thirty-two teeth.’ I have argued in chapter 3 that we should understand function ascriptions in Aristotle in terms of generics, i.e. what some part or organ customarily or typically does. This was, in fact, a point made by Wright in his highly influential treatment of functions, and others have called upon the peculiar features of generics in an effort to explain certain other aspects of Aristotle’s thought.⁶ They have of course been accorded a special place in recent contributions to Aristotelian ethical thought as well.⁷ But apart from whatever light they might throw on those issues, they might also help us to understand why Aristotle seems not to have thought induction quite the problem that many would later take it to be. A clear exposition of the problem can be found in Sextus’ *Outlines of Pyrrhonism*:

It is also easy, I think, to find fault with the inductive mode of inference. For when the Dogmatists attempt to lend credence to a universal by induction from

⁵ I cannot here go into the conditions Kant thinks any inquiry must be to be counted properly scientific, but the difficulties encountered by biology and organic explanation are little discussed with reference to the other sciences Kant demotes, like chemistry and psychology. Cf. McNulty (2014), Carrier (2001), and Friedman (1992). In chemistry, we do not experience substances like ‘pure earth, pure water, pure air, etc.’ but we must nonetheless make use of the idea of such substances (A646/B674). These ideas ‘are not created by nature, rather we question nature according to [them]’ (*ibid.*). Chemistry can be nothing but a ‘systematic art’ and ‘never a proper science’, because all of its principles are ‘merely empirical’, at least at the time of the writing of *MAN* (4: 471).

⁶ Cf. Wright (1976), Allen (2015). Wright received extended discussion in chapter 3, for some discussion of Allen, cf. ch.2, fn. 47.

⁷ Cf. Foot (2001), Thompson (2008).

the particulars, in doing this they will consider either all the particulars or only some of them. But if they consider only some, the induction will not be firm, since some of the particulars omitted in the induction may refute the universal; while if they consider all, they will be working at an impossible task, since the particulars are infinite in number and unbounded. So that either way, I think, the induction turns out to be shaky (*PH* II.204).

The same or similar criticisms have been made elsewhere and at different times, but such concerns are quite absent from Aristotle, who never addresses an objection to induction or *epagōgē* of this sort. And the reason, I suggest, is that Aristotle understood inductive generalizations in terms of generics. Because the truth-conditions of generic claims are thought to be non-quantifiable, then whatever problems there might be in coming to know such claims, they will be quite different from the problem of induction as normally understood, since it is no longer a numbers game.⁸ Generics are thought to be non-quantifiable because they are taken to describe what is typical or customary for some subject—what is normal—without saying that it is true in every or even most instances. And it has been suggested that this thought lies behind Aristotle’s use of the phrase, *hōs epi to polu*, i.e. as things stand usually or for the most part.⁹ Thus, ‘Helen drinks a glass of wine after work’ is not falsified simply because she is, periodically, out of wine, or even because on some days she chooses to abstain for the sake of her health. It certainly does not mean, ‘for any given day, it is the case that Helen has a glass of wine after work on that day.’ And the same is true for claims like ‘the adult human being has thirty-two teeth’ or ‘acorns become oak trees.’ This, it seems, is the standard we should adopt for accounting for sublunary causal connections. Acorns do not turn into oak trees with the same kind of necessity with which the planets move in their orbits because an acorn might fall on the

⁸ Cf. Leslie (2012), Thompson (2008), or Fara (2005).

⁹ Thompson (2008), 69. Allen (2015).

road or be eaten by a squirrel. But an acorn *will* turn into an oak tree if otherwise unimpeded, but it is simply the case that there are a lot of impediments in our sublunary realm.¹⁰

If Aristotle's and Kant's differing conceptions of the (epistemic and ontological) status of teleological explanation are then quite intimately connected to their differing conceptions of the (epistemic and ontological) status of natural kinds or forms, and if the latter are to be known by induction, then their differing conceptions of induction and the nature of what results from it will play no small role in their conceptions of teleology. As we have seen, Kant thinks every induction is merely an *as if* judgment reaching towards a common or communal ground, in much the same way that our judgments of natural ends are. For Aristotle however, the numerical whole of the species need not be given to us because the object or result of an induction is not made true or false by the agreement of every or even of the majority of instances.

6.3 PROBLEM CONTEXTS

In the above, I have tried to suggest one way in which Aristotle and Kant might be said to be addressing the same topic in their discussions of 'teleology,' though coming to quite different conclusions. In particular, both were concerned to identify what in the case of natural things makes the difference between a mere aggregate of parts and a genuine whole. For both, it is something like a kind or form, but they differ as to the epistemic and ontological status any such

¹⁰ Again, this is by no means to deny that there are serious questions about induction, or to give an account of what Aristotle is thinking in, e.g., *APo.* II.19, or *APr.* II.23. It is only to say that if Aristotle is thinking about induction or the progression from particulars to universals in these terms, then one of the common objections to the 'validity' or 'certainty' of induction will no longer have the same force, if indeed it retains any force at all, because induction is, again, simply not a numbers game.

kind or form might have. Thus, Aristotle takes it simply as a datum that the world is sorted into kinds, the rough outlines of which are more or less apparent. What is more, Aristotle thinks robust, scientific knowledge of those forms through induction or *epagōgē* is quite achievable, and I suggested that Aristotle's relative optimism on this score might be grounded in the fact that he thinks of inductive generalizations in terms of generics, i.e. claims the truth-conditions of which are non-quantifiable. Kant, however, thinks it quite possible that the world could, in theory, fail to exhibit any stable kinds at all, and he has a far less rosy picture of induction and the kind of knowledge it secures.¹¹ Induction, by which we presume that what holds for many holds for all, is always only provisional, and the adoption of that common ground in explanation is only ever a kind of presumption, never completely justified or secured. We take what we have seen in a few and extrapolate to many which we have not. Absent any knowledge of forms, we cannot ascribe real functions to things in nature because we cannot know that a part which plays some role in the life of an organism is possible only in relation to that organism.

The thought then would be that although both are concerned to address what makes a true, natural whole, as opposed to an aggregate, they differ on the epistemic and ontological status of what might play that role. But there is another way of thinking about their approach to 'teleology' which suggests that, in fact, the problems and questions they were facing possess only—and so no more than—a certain family resemblance. I have already suggested as much on the basis of the apparently different meanings of *telos* and *Zweck*. But there are further reasons for thinking so. In particular, by the time Kant comes to address the status of teleological

¹¹ In this, Kant's starting point is in many ways similar to Hume's skeptical problem, mentioned above (fn. 4), according to which nothing demands that the future be like the past. Of course, Kant ultimately answers this problem in a very different way.

explanation in the context of the critical philosophy, many claims which will later serve as constraints on the status of teleology have already been established. These claims were the consequence of Kant's engagement with other problems which have no obvious parallel in Aristotle. And the same is to be said of Aristotle: much of what he says about 'teleology' is constrained or shaped by his responses to other issues whose relation to 'teleology' is hardly clear. This is not quite to say that for both or even for either that teleology lies downstream of other issues, but that only an implausible atomism about philosophical problems could make us suppose that there is an isolable 'problem of teleology' which stands quite free of a host of other issues, especially for thinkers such as Aristotle and Kant.

We can begin by looking at some of the issues Kant was concerned to address. Famously, he says in the first *Critique* that at least part of his goal is to limit the pretensions of (theoretical) reason in order to make room for faith or belief (Bxxx). Doing so means preserving the place of God, freedom, and immortality. As I discussed in chapter 5, freedom also seemed to be a property of natural ends—they possess an apparently spontaneous or free causality, and Kant regularly contrasts freedom with mechanical causality or mechanism in the second *Critique*. The 'self-organizing' character of natural ends certainly suggests freedom—'self-activity' is glossed with 'freedom' in the Transcendental Dialectic of the first (A418/B446). But Kant thinks we can understand ourselves as free only from the standpoint of practical reason, in which we regard ourselves as *noumena* and so not constrained by what holds true of things in space and time, particularly causal determinism. And that means our freedom depends on the ideality of space and time, i.e. on the claim that space and time do not belong to things in themselves:

I do not see how those who insist on regarding time and space as determinations belonging to the existence of things in themselves would avoid fatalism of actions (*KpV* 5:101).

Kant then goes on to say that the ideality of space and time allows us to avoid Spinozism. But if the ideality of space and time, together with the limitation of theoretical reason to what appears in them makes it possible to preserve freedom and morality from the ravages of dogmatic metaphysics, it also makes it impossible for us to cognize natural ends. In particular, because the ground of a natural end is simple, and because nothing simple appears in space, we cannot cognize the ground of a natural end. The free or spontaneous causal character of natural ends was foreclosed by the developmental path Kant took in preserving moral freedom from a lens grinder. That is to say, one of the central pieces in the philosophical architecture, as it were, of Kant's teleology was originally crafted for other ends, namely the preservation of morality and religious belief. In that sense, Kant's teleological anti-realism is not simply a function of his worries about 'teleological explanation' generically construed, but of prior commitments central to his critical philosophy as a whole.

Related to this is one of Kant's central reasons for thinking a science of life impossible. We saw in the previous chapter that living things depend on inner principles of change, which is to say principles which do not appear in space and thus are not subject to the second law of mechanics, according to which everything must have a cause external to it. But there Kant also articulates the thought that we know of no other 'internal' activity than thinking, and no other internal principle for change than desiring, which depends on it. This was itself broadly in line with or in the spirit of remarks made by both Locke and Leibniz. But it meant as a consequence that living things are essentially removed from the province of genuine natural philosophy.

Aristotle, however, would seem not to hold any such thesis. He famously defines natural things in terms of their possession of an *archē* of motion and rest in themselves. They are for that reason the sources or origins of their own motions, and thus self-movers. That there are such things Aristotle thinks indisputable, and so in *Physics* II.1, after giving his definition of nature, he says that

it would be absurd to try to prove that nature exists, since it is evident that there do exist many of things of this sort. To rely on the non-obvious to establish the obvious is a sign of being incapable of distinguishing between what is and what is not intelligible in itself (193a2-6).

To demand proof of the manifest is, Aristotle thinks, to be in a poor position indeed, and even if some would not call this particular fact manifest, Aristotle clearly does. He does not, in other words, seem to think the inner activity of non-rational natural things any more opaque than our own, and so would deny that we know of no other internal activity than thinking. But what is more, Aristotle's understanding of nature and natural science does not rule out beings possessed of 'inner' activities and principles; rather, he makes them absolutely central.

By contrast, we have seen that Aristotle's concern with teleology is part and parcel of of his concern with a larger problem in Greek philosophy, namely the possibility of motion. Because motion is a continuous magnitude and thus divisible without limit, it might seem to be unlimited and therefore unknowable. Aristotle introduces his definition of motion in *Phys.* III with just this thought. And as we have seen, the importance of the *telos* is precisely that it serves as a limit of motion, thereby conferring on motion form and intelligibility: 'if generation and motion are to be, there must also be a limit (*peras*); for no motion is unlimited (*apeiros*), but every motion has an end (*telos*)' (*Meta.* B.4; 999b10-11). By itself, of course, this does not

suffice for teleology. As I noted above, it depends in addition on a certain conception of act and potency, in terms of which motion is defined, such that the subject of every motion—the matter—is primarily and in the first instance directed to some form rather than its privation. Combined with the thought that ‘being is better than non-being,’ it means that all motion is directed primarily and in the first instance towards the good of its subject. But for Kant, teleology does not simply fall out of his account of motion or change, in part for reasons already discussed—he seems to think it perfectly coherent to imagine a world without any stable kinds at all.

6.4 CONCLUSION

And so, *mirabile dictu*, this study comes to its end. It was the aim of this study to compare and contrast the views of Aristotle and Kant on the status of natural teleology, i.e. the thought that nature or natural things do what they do with an eye towards some end or goal. Aristotle was a realist about natural teleology, Kant an anti-realist, and the aim of this dissertation was to explain why each accorded it the epistemic and ontological status that he did. As I noted in the introduction, one might explain the difference between them by highlighting the role of the changing conception of nature in the 17th century, when the tide turned against Aristotelianism. That story is by now familiar and some reference to it is very nearly standard in introductions to the topic of natural teleology.

But though there is no small truth in such an explanation, I hope to have shown that the differences that exist between them are not reducible to however we might describe the

conceptual transformation(s) that occurred in the seventeenth and eighteenth centuries. Each was concerned in particular ways with quite distinct problems for which there is no obvious analogue in the other. Kant was concerned to defend the possibility of freedom, and his distinction between phenomena and noumena, together with the ideality of space and time, were part of that defense. Limiting theoretical knowledge to the objects of space and time meant as a consequence that the principle in virtue of which traditional Aristotelian substances such as plants and animals were real wholes and capable of self-motion—their soul or form—were no longer objects of such knowledge. Aristotle was, by contrast, concerned with the possibility of motion, and took from his Pythagorean and Platonic predecessors the thought that the beginning, middle, and end give the parts of the whole, and that this is, as it were, a law of nature. These are limits and it is in virtue of these that nature is knowable.

The differences in their concerns is perhaps reflected in the different uses to which their teleological vocabulary is put. Though *Zweck* often translates *telos*, the two terms as used by Kant and Aristotle respectively have subtly different conceptual roles, describing subtly different things, and so are possessed of subtly different meanings. The first means more nearly an aim or goal, the latter an ‘end’ in the concrete sense of limit, and so when one denies, and the other affirms that there are ends in nature, they must be taken to be affirming and denying different things. For Aristotle, ends do not constitute the matter of anything, but rather bind matter into some whole. For Kant, ends are not the source of form but are bound together by form, being but partial or limited expressions of that form.

Nonetheless, there is another sense in which both are concerned with the same problem, namely, the question of how we are to understand the peculiar or distinctive character of living

things. Both Aristotle and Kant appreciate this distinctive character, and both think that understanding living things essentially involves reference to the kinds to which they belong. They differ, however, on the prospects for a real knowledge of natural kinds, which difference is grounded among other things on the different ways in which they understand the nature and epistemic status of inductive generalizations. Kant thinks our knowledge of the empirical world hopelessly dependent on an impoverished and under-developed kind of logic. Whether rightly or wrongly, Aristotle exhibits no such concern, and I have tried to suggest one reason why. But in either case, it suggests that for both the status of teleology cannot be reduced to a simple, isolable, and generic question about 'teleology', but depends instead on a host of other issues, all reciprocally informing one another. The holistic character of the thought of each resists any easy reduction into independent parts.

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