Chapter 1
Natural Norms: Organic Life Forms and Functions

"Biology cannot, or at least in practice does not, eliminate functions and purposes." – Mark Perlman, "The Modern Resurrection of Teleology in Biology", 6.

I. Introduction

This chapter argues that there are such things as natural norms; at least *some* normativity is discoverable in natural life forms and functions themselves, and is not projected or invented in human evaluators. These natural formal and teleological facts are just as real as other familiar, scientific facts.

The major alternatives to naturalistic normative realism are normative anti-realism or reductionism. Although I shall here exclude non-naturalisic normative realism ex hypothesi, both normative non-naturalism and normative anti-realism are motivated by *the is-ought gap*. The is-ought gap begins with the belief that nature consists only of descriptive facts.[1] It follows that normative facts must either be real (but non-natural) or else not real at all. If putative natural norms are not real, anti-realists argue they are either reducible to non-normative facts or else simply projected onto nature by humans – be they scientists or philosophers or regular folk. The controversy over normativity is an old one and is not likely to be settled here. My goal, instead, is to present a plausible case that is both intelligible to normative anti-realists and normative non-naturalists and that is persuasive to the undecided.

1. The a picture of nature as a manifold of purely descriptive and non-normative facts, entities, properties, and laws is what McDowell calls "bald nature". A better term would be "Laplacian nature," since the notion that the cosmos is coldly factual, bald of values, and disenchanted from any supernatural esoterica, aligns more closely with Pierre-Simon Laplace's mathematical picture of nature. Laplace pictured nature as a set of cold, abstract, and necessary relations. Realism about natural normativity is incompatible with the Laplacian picture. But his picture is, I would dare to say, unscientific. At the very least, it is not *the only* scientific picture. Regardless, Laplacian nature emphatically does not include natural norms.

There are three sections in this chapter that build to my conclusion that there are real, natural, irreducible norms. The first section distinguishes the two kinds of is-ought gap that philosophers have taken to render ethical naturalism impossible. It explains how some notion of natural normativity makes ethical naturalism at least possible. The second section begins with a summary of Philippa Foot and Michael Thomspon's case for natural norms of two types: formal and functional norms. This section also includes a novel case for what I call "organic normativity", on the basis of generic propositions, that organisms have a real life form and a natural teleological process. The third section considers and rebuts anti-realist or reductionist interpretations of these natural phenomena. Admittedly, these phenomena can be acknowledged by both the realist and anti-realist. The anti-realist would want to offer a roundabout explanation of them, while the realist accepts the straightforward explanation.

The upshot of these considerations is this: if there are some natural norms governing organisms, then there might be natural *human* norms governing humans. The neo-Aristotelian might be able to explain ethical norms as extensions of, or tokens of, natural norms, which are both binding on human beings as practical rational animals and not merely invented by human individuals or human cultures. These norms would be natural without being crassly biological; they would be both biological and practical. Or so I shall argue.

II. The Is-Ought Gap Challenge

Rosalind Hursthouse says that ethical evaluations of humans and non-ethical evaluations of plants and animals "both depend upon our identifying what is characteristic of the species in question."[2] In other words, the normative evaluation depends on the descriptive facts of the species: its activities, its life form, and so on. Evaluating things on the basis of what they are is central to the kind of neo-Aristotelian naturalism.

For example, consider a few pretty uncontroversial normative propositions: '*you ought to be wise*' or *'It is good to be tolerant of people with different views'* or *'It is bad to bring a gun to school and start shooting people'*. Supposing these are true, *why* are they true? The non-naturalist has a good explanation (they pick out fundamental, non-natural, moral facts) and the naturalist anti-realist also has a good explanation (express the speaker's individual and cultural norms). The ethical naturalist's explanation is a bit trickier. He or she must show how such statements relate to the *natural* facts. The most straightforward path would be to argue that "you ought to be wise" is a normative truth derivable from some other fact that is natural. In general, ethical naturalism states that some ethical facts are grounded in natural facts or are identifiable with natural facts.

Insofar as neo-Aristotelians like Hursthouse and Foot proffer a form of ethical naturalism, a challenge must be stated. Philosophers have challenged to the very possibility of such ethical naturalism in this form:

1. If ethical naturalism is possibly true, then descriptive statements can serve as premises in arguments with normative conclusions.

2. Rosalind Hursthouse, *On Virtue Ethics* (Oxford University Press, 1998), chap. 10, abstract.

2. But descriptive statements cannot serve as premises in arguments with normative conclusions.
3. Therefore, ethical naturalism is not possibly true.

If this challenge cannot be met, then ethical naturalism is futile. And it is difficult to imagine how the challenge could be met. Consider, for example, a candidate natural fact, such as the apparent goodness of pleasure. Perhaps, if pleasure *is* universally pursued, pleasure *ought* to be pursued. Hume is often credited with (or blamed for) insisting that an 'ought' can never be derived from an 'is.'[3] He says:

> In every system of morality, which I have hitherto met with, I have always remarked, that the author proceeds for some time in the ordinary ways of reasoning, and establishes the being of a God, or makes observations concerning human affairs; when all of a sudden I am surprised to find, that instead of the usual copulations of propositions, is, and is not, I meet with no proposition that is not connected with an ought, or an ought not. This change is imperceptible; but is however, of the last consequence."[4]

The point is that when it comes to human evaluations, 'is' statements may be interesting but they seem useless for practical purposes. A few simple examples: Just because "most men wear tuxedos to the Oscars" does not necessitate that, undecided men automatically know they ought to to wear a tux to the Oscars – (not without a prior normative premise that "One ought to do whatever most others do.") Just because all cultures have farmers or hunters does not mean that any one person ought to become a farmer or hunt. Likewise, even if all human beings and cultures exemplify a range of common facts or express range of common evaluative attitudes, the result would not necessarily be a normative ethics as much as a "descriptive ethics." (Descriptive ethics builds on and adds to evolutionary biology, psychology, sociology, human ethology, and anthropology by empirically studying what such-and-such a person or culture deems worthwhile or worthless and compares it to other persons or cultures or to other generations of the same culture.) The results of descriptive ethics might be a detailed and scientific description of human behaviors in their consistency and variation. It would not be a plan for how to live one's life. At least, it would not be a plan *without supplementary interpretation from normative ethics* prescribing that one should comply with the norms one's own culture, or prescribing that one should criticize the norms of one's culture, or prescribing some other response.

We should not overestimate the cultural variance. Even though habits and attitudes toward drinking alcohol vary dramatically from culture to culture and generation to generation, there seems to be a cross-cultural disapprobation for continual drunkenness, in even cultures (like the Boli-

3. Arnhart and MacIntyre argue that Hume himself allows for a kind of inference from "is" to "ought" in other places. (Cf. Larry Arnhart, "The New Darwinian Naturalism in Political Theory," *American Political Science Review* 89, no. 02 (1995): 389–400; Alasdair MacIntyre, "Hume on Is and Ought," *The Philosophical Review*, 1959, 451–68) I think Moore is the one to blame (or to give the credit).

4. *A Treatise of Human Nature* book III, part I, section I.

vian Camba) that drink regularly and drink heavily. Thus, anthropologist Dwight Heath says: "It is important to realize that drinking problems are virtually unknown in most of the world's cultures, including many where drinking is commonplace and occasional drunkenness is accepted."[5] Insights about universal norms might be quite interesting. Nevertheless, their practical significance is not given; they can be put to use in more than one way.

So the first premise of the is-ought challenge sets out a criterion for ethical naturalism: the normative propositions that features as conclusions of ethical arguments must be derived from descriptive premises. The second premise seems to render hopeless the thought that we can evaluate things on the basis of what they are. Is neo-Aristotelian ethical naturalism a non-starter?

The is-ought gap is fatal to *some* forms of ethical naturalism. Namely, those that assume the bald picture of nature as purely descriptive. There is, however a second path.

The is-ought gap can be undercut in a different way by neo-Aristotelians. We can deny the assumption that nature is purely descriptive. (I shall consider the assumption in more detail in a later chapter.) For example, it might be that some normative propositions such as "you ought to be wise" are brutely normative *natural* facts. This might sound rather odd. The point is that to understand how one might undercut the is-ought gap: start with basic, scientifically respectable natural norms. From these, derive further ethical norms. If these were possible, the result would be both ethical and naturalistic.

In order to explicate this option, begin with Philippa Foot's notion of "natural normativity". Some features of nature are properties, she says, are instances of 'natural goodness' or 'natural defect.' About such qualities, she says:

> ...we might equally have been thinking in terms of, say, strength and weakness or health and disease, or again about an individual plant or animal being or not being as it should be, or ought to be, in this respect or that. Let us call the conceptual patterns found there, patterns of natural normativity.[6]

Natural normativity is an indeterminate concept. It might include a variety of different kinds of normativity that are not obviously moral normativity, such as the proper, the healthy, the advantageous, the adaptive, the mature, and so on. This indeterminacy is a strength rather than a weakness. When Foot uses the term 'natural normativity' she means that normativity exists wherever organic life is found. Wherever evaluative properties like health and disease appear, there are real instances of natural goodness and natural defect, then some evaluative properties are *primary qualities of nature* just like weight, color, size, relations of time and space, and so on.

There is another sense in which 'natural normativity' is used by neo-Aristotelians like John McDowell. The neo-Aristotelians are of two minds

5. Dwight B Heath, "Sociocultural Variants in Alcoholism," *Encyclopedic Handbook of Alcoholism*, 1982, 426–40.

6. Philippa Foot, *Natural Goodness* (Oxford University Press, 2001), 38.

about which sense is a more promising foundation for ethics. Where they agree, though, is in thinking that natural norms overcome or rather undercut the is-ought gap. Call this the **Bald Nature Challenge**:

1. If ethical naturalism is possibly true, then some natural facts are genuinely both normative and natural – there are natural norms.
2. But there are no facts that are genuinely both normative and natural – there are no natural norms.
3. Therefore, ethical naturalism is not possibly true.

This argument like the first one sets out a criterion that ethical naturalism must satisfy. Namely, ethical naturalism must offer an account of some natural norms that are both real and brutely natural, not derived from other (descriptive) facts. The second premise says that all norms are non-natural and all nature is non-normative. So it seems to be impossible to be an ethical naturalist.

Everything depends on whether or not nature consists of merely non-normative facts. I will grant that nature consists of merely *natural* facts. That nature consists of no non-natural facts is, of course, a tautology. I grant the tautology. I do not grant, without argument, that all such facts are descriptive and not normative; that would be to allow my opponent to beg the question. My opponent might likewise complain that if he or she allows me to stipulate that there *are* natural norms, this stipulation would beg the question in my favor. The only thing for it is for me to *argue* from agreed upon premises that there are such things as natural norms. Having done so, it is fair of me to request an argument to the contrary. If the critic merely insists on reaffirming that all nature is non-normative, that would be mere question-begging.

So our first task is to supply an adequate defense of the existence of natural norms. Even if such a notion can be defended philosophically and scientifically, we should remember that all that logically follows is that ethical naturalism is possibly true. What we need, beyond mere possibility, is to defend in general natural normativity and then to apply patterns of natural normativity and how these form binding ethical normative structures.

III. The Case for Natural, Organic Norms

The burden of proof is on the neo-Aristotelian to furnish examples of natural norms that would undercut the is-ought gap. As it turns out, there are several plausible ones. The two candidates for natural normative facts I shall defend are life forms or natural kinds, and teleological facts or natural function. Although these two kinds of facts are related, it is helpful to distinguish between formal and teleological normativity, between morphology and physiology, between structures and their functions – between what things *are* and what they *do*.

Nature is full of kinds; sunflowers are not oxygen; stars are not organisms; lead is not gold; water is not soil; and so on. Kind concepts allow us to both distinguish x from y and to gather together all the x's. Zebras and horses are both Equidae; lead and gold are both elements; ice and the sea and steam are all water. Thinking in kind categories is intuitive

and natural.[7] Thinking in categories is probably a constitutive feature of thought.

Nature is also full of end-directed activity. Each thing does its own thing: sunflowers grow toward the sun, wolves hunt deer and deer flee wolves; hearts pump blood and eyes see; the sun warms the planet; phytoplankton oxygenates the atmosphere. Such processes are non-intentional end-directed processes. Non-intentional processes are sometimes called 'teleonomic.'[8] Teleonomic phenomena do not have a *director* but they do have a *direction.*

Kinds and their ends can be conceptually distinguished but not very far. Forms and functions, structures and activities, are two aspects of one thing. Is the hip bone shape adaptive for a purpose or is the purpose conducive to the development of such-and-such shape? It is better to allow that the structure and function of natural organisms and at least some of their parts are an inseparable whole. Indeed, Lewens summarizes the folk biological conception of a "kind" by mashing together the concept of a life form or "essence" with the concept of a function or "telos": a kind is a "teleo-essence", a thing with an end.

My initial hypothesis, which will be explicated further, is that formal facts (natural kinds and their natural properties) and teleological facts (natural functions) are both instances of natural norms. We have not yet said anything about human ethical norms, which is our ultimate aim. Human ethical norms, if they can be said to be natural, will turn out to be formal and teleological facts about our life form identifiable as instances of a broader pattern of natural normativity. But the argument must proceed in stages; the goal for now is simply to defend natural normativity.

What are we to make of kinds and their teleonomic behaviors? The explanations may be either realist, reductionist, or anti-realist. Realist explanations argue that kinds and their ends are what they seem to be: fundamental facts of nature. Reductionist or anti-realist explanations argue that kinds and their ends are not what they seem. The nihilist argues that kinds don't exist, there is only one thing; ends don't exist, there is only one mechanical kind of process. The reductionist argues that *some* kinds exist, but they do not correspond to our initial scientific categorization; and *some* end-directed teleonomic processes are real but it is reducible to non-end-directed processes. Before discussing these options in full, let's explore the neo-Aristotelian treatment of natural normativity in more detail.

Foot's Case for Natural Normativity

Philippa Foot argues that human virtues are instances of a broader class of natural properties: 'natural goodness.'[9] Foot is well aware that her offering

7. Susan A Gelman and Lawrence A Hirschfeld, "How Biological Is Essentialism," *Folkbiology* 9 (1999): 403–46; Stefan Linquist et al., "Exploring the Folkbiological Conception of Human Nature," *Philosophical Transactions of the Royal Society of London B: Biological Sciences* 366, no. 1563 (2011): 444–53.

8. Ernst Mayr, "The Idea of Teleology," *Journal of the History of Ideas* 53, no. 1 (1992): pp. 117–35.

9. Foot, *Natural Goodness*; cf. Sanford S Levy, "Philippa Foot's Theory of Natural Goodness," in *Forum Philosophicum*, vol. 14, 1, 2009, 1–15.

is likely to offend the ears of some listeners. Her defense is the thought (drawn from Wittgenstein) that crude beginnings are often a necessary first step on the way to something refined. To earn an audience for her argument, her first chapter (which she call a "fresh start") clears away some shaky assumptions inherited from Hume and Moore. Many modern ethicists treat human valuations as unprecedented, almost miraculous, new appearance in the cosmos. Instead, we should expand the scope of our inquiry to examine the status of humans as natural entities.

Moore assumed that, in philosophical ethics, 'good' is the ultimate predicate under review. This is one of the "shaky assumptions" Foot wishes to clear. She argues that statements like "pleasure is good" are not good paradigms for philosophical reflection. Evaluation of human creatures and evaluation of plants and animals follow *the same logical pattern.* In such evaluations, good is good *for.* Contrast 'good' with other predicates like 'red' or 'beautiful.' In a statement such as 'the house is beautiful', the predicate 'beautiful' doesn't need a complement. The house is *beautiful* – full stop. But 'good' has a different logical function. 'Good' is more like 'useful.' The phrase 'The house is useful' *does* need a complement. When we say 'the house is useful' we must specify what it is useful for – *for a mom of six, or useful for an artist,* or what have you. Likewise, 'good' always means *good for someone* or *for something.* 'Good' always needs a complement. If this crude beginning is anywhere near to correct, we can distance ourselves from Moore's starting point and build on another starting point: the life-form of human beings.

In this Foot agrees with Thompson's groundbreaking work.[10] Thompson argues that the concept of "life" is not, as it may seem to some, a property of some beings where *being* is the fundamental concept; rather "life" is a fundamental concept.[11] He says, "Vital description of individual organisms is itself the primitive expression of a conception of things in terms of 'life-form' or 'species', and if we want to understand these categories in philosophy we must bring them back to that form of description."[12] When we observe and examine living things we rightly employ some shared categories and our conclusions rightly share a logical structure.

What is that common structure? Thompson reviews and refutes a variety of crude definitions of life such as that anything that is alive reproduces, grows, metabolizes, etc. Such properties may be co-extensive with the property of being alive, but they are wildly insufficient for the task of *defining* life because such properties depend on a prior understanding of life. Thompson's alternative is that life is a fundamental concept. We recognize things as alive before we learn about their shared traits; indeed, we can only ascribe a set of traits *living things* share if we are already in possession (absent that set of traits) of a concept of living things under which we gather a sample.

On these considerations, it is most reasonable to hypothesize that life is

10. Michael Thompson, "The Representation of Life," in *Virtues and Reasons*, ed. Lawrence Hursthouse Rosalind and Warren Quinn (Oxford: Clarendon Press, 1995), 247–96. Thompson works out the arguments of this article more fully in his 2008 monograph.

11. Michael Thompson, *Life and Action* (Harvard University Press, 2008), chapter 1.

12. Ibid., 57.

a fundamental concept, along with 'being', 'quantity' and others. Once we accept that intuitive conclusion, then the argument gets interesting. For every individual living being is a member of a species or life-form. And living beings are not just *acted upon*; they *act*. Species have characteristic actions. Thompson says "action in this sense is a specific form of *life process*."[13]. Since each particular species engages in its own characteristic activities: beavers build dams, and robins build nests. There are, then, life-form specific *successes* and *failures* to act. Each life-form is subject to its own normative appraisals: something would be wrong with beaver that built a tiny nest or a robin that tried to build a massive dam.

By introducing the term 'natural normativity', Foot is insisting on a point that is both interesting and controversial. If evaluative properties like health and disease are really instances of natural goodness and natural defect, then some evaluative properties are *primary qualities of nature*.

McDowell and others will object to this characterization of natural normativity. They think it "queer" that nature should exhibit such properties, and they find it easier to judge that human beings are the only evaluators. It might be that terms like 'good' and 'bad' are sui generis evaluative terms, and that evaluative properties are "in people's heads" as it were. But Foot's analysis of language about plants and animals indicates that such a conclusion is not the natural presumption.

A much more natural starting point is that to assume that such terms are used relative to natural kinds – and especially life-forms and their activities or functions. The natural goodness under discussion is not just a human ascription but seems to be something humans *recognize* in all living things. Certainly, some properties are human ascriptions only. Other properties are in the world and only show up in human ascriptions insofar as we accurately reflect the facts. Foot's point is that *some* instances of natural goodness seem much more plausibly instances of this latter kind. Despite For, there is "no change in the meaning of 'good' between the word as it appears in 'good roots' and as it appears in 'good dispositions of the human will.'[14] The identification of what is *good for* a non-human organism is sometimes identical to the identification of what is *good for* a human being. Foot's theory explains this in the simplest way. Foot concludes that this point holds about"goodness and badness, and therefore about evaluation in its most general form."

By contrast, McDowell and those who would draw a sharp contrast between "moral" and "non-moral" uses of the term must give long and sophisticated explanations for why it makes sense to describe a healthy plant and a moral person both as "doing well." The plant is not just doing well *for my garden* but doing well as itself. It is doing what such plants are supposed to live. The human being is not just living well *for a westerner* or *for a Californian* but doing well as what human beings are supposed to live. Rosalind Hursthouse articulates Foot's insight in this way:

> The starting point is an idea that she has never lost sight of, and which figures in her early attack on Hare. It is the idea that 'good', like 'small', is an attributive adjective. What that entails is that, although you can evaluate and choose things according to almost

13. Ibid., 27.
14. Foot, *Natural Goodness*, 39.

> any criteria you like, you must select the noun or noun phrase you use to describe the thing you are calling good advisedly, for it determines the criteria of goodness that are appropriate. Hare can call a cactus a good one on the grounds that it is diseased and dying, and choose it for that reason, but what he must not do is describe it as a good cactus, for a cactus is a living thing. He can describe it as a good 'decorative object for my windowsill' or 'present to give my detestable mother-in-law', but not as a good cactus.[15]

There are two qualifications I should make about the scope of my thesis here. First, the 'good' in question here is a good-of-a-kind, the way that typical robins are blue-of-a-kind. The good-of-a-kind analysis works for all organisms and all biological species, which are most plausibly understood as natural kinds, rather than social groups, which are not. Folk ontology does tend to group nationalities and ethnicities as natural kinds along with leopards and bears; but my analysis trades on the concepts used in biology. Secondly, it would be a natural leap to assume that the good-for-us is an instance of the good simpliciter, but this is a different question altogether. Blackman argues that there *is* no good other than goods of kinds.[16] Others would argue that the good-of-a-kind is an instance of the good simpliciter. I wish to remain agnostic on this issue. While my thesis identifies what is good for us as an instance of something *truly good,* it remains agnostic about the broader metaphysical or cosmic significance of the fact. These are both interesting and important questions but they would take us too far afield of the main point.

A Novel Case

A defense of natural normativity would render ethical naturalism possible. A defense of natural normativity would have to furnish instances of natural norms from widely agreed upon premises from common sense and science. My case for natural normativity depends on two notions: the first is a minimal scientific realism.[17] The second basic notion is a little-utilized

15. Hursthouse, *On Virtue Ethics*, 195.

16. Reid D. Blackman, "Meta-Ethical Realism with Good of a Kind," *European Journal of Philosophy* 23, no. 2 (2015): 273–92. Blackman also disputes the kind of biological foundation of ethics I am trying to defend here. Nevertheless, his article is a good introduction into the sort of "kindism" being discussed.

17. While scientific realism is not uncontroversial per se, my intended audience are committed scientific realists or sympathetic to realism. By minimal scientific realism, I mean something quite general, such as the belief that most sciences, when successful, describe the world. Thus, Anjan Chakravartty: "Scientific realism is a positive epistemic attitude towards the content of our best theories and models, recommending belief in both observable and unobservable aspects of the world described by the sciences. This epistemic attitude has important metaphysical and semantic dimensions, and these various commitments are contested by a number of rival epistemologies of science, known collectively as forms of scientific antirealism... Metaphysically, realism is committed to the mind-independent existence of the world investigated by the sciences. This idea is best clarified

feature of language called "generic propositions," which I shall explain below. The case in brief is this:

1. If some generic statements describing natural entities are true, then some facts are both genuinely natural and normative – there are "natural norms."
2. Some generic statements describing natural entities are true.
3. Therefore, some facts are genuinely both natural and normative – there are "natural norms."

The Special Logic of Generics

Michael Thompson is one of the first to work out "the special logic of judgments we make about living things, and then to indicate its application to ethics." Such judgments have a variety of names in the recent neo-Aristotelian literature: the most common are "Aristotelian categoricals"[18] and "natural-historical judgements,"[19]; less common are "norms,"[20] or "bare plurals."[21] I prefer the shorter and less adorned term *'generic.'*[22]

---

in contrast with positions that deny it. For instance, it is denied by any position that falls under the traditional heading of 'idealism'... Semantically, realism is committed to a literal interpretation of scientific claims about the world. In common parlance, realists take theoretical statements at "face value". According to realism, claims about scientific entities, processes, properties, and relations, whether they be observable or unobservable, should be construed literally as having truth values, whether true or false...Epistemologically, realism is committed to the idea that theoretical claims (interpreted literally as describing a mind-independent reality) constitute knowledge of the world." (Cf. Anjan Chakravartty, "Scientific Realism," in *The Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta, 2015.) McDowell, as a sort of idealist, will deny this minimal scientific realism in favor of something a bit more idealist, as we shall see.

18. Foot, *Natural Goodness*.

19. Thompson, "The Representation of Life"; Thompson, *Life and Action*.

20. G. E. M. Anscombe, "Modern Moral Philosophy," *Philosophy* 33, no. 124 (1958): 1–19

21. Greg N Carlson, "A Unified Analysis of the English Bare Plural," *Linguistics and Philosophy* 1, no. 3 (1977): 413–57. Carlson's essay is an early attempt to account for a variety of linguistic forms under one concept of reference to kinds

22. Cf. Francis Jeffry Pelletier and Greg N Carlson, *The Generic Book* (University of Chicago Press, 1995); Sarah-Jane Leslie, "Generics: Cognition and Acquisition," *Philosophical Review* 117, no. 1 (2008): 1–47; Andrew M Bailey, "Animalism," *Philosophy Compass* 10, no. 12 (2015): 867–83 for a discussion of a specific generic: "we are animals" in metaphysics and philosophical anthropology; Andrei Cimpian, Amanda C Brandone, and Susan A Gelman, "Generic Statements Require Little Evidence for Acceptance but Have Powerful Implications," *Cognitive Science* 34, no. 8 (2010): 1452–82 for an experiment in cognitive psychology that seeks to quantify the prevalence levels at which subjects tend to agree to generics, i.e., how many birds have to lay eggs before we agree to the assertion that

My postulate is this: **some generics about human beings are true.** If this is true then, I shall suggest, we have good hope of cutting up nature at the joints. When combined with a moderate scientific realism, generic truths from sciences such as biology, physics, and anthropology (and perhaps others) support a modest natural normativity which will be further articulated (in a later chapter) to indicate which traits are virtues or vices for human beings.

Generics are neither universal nor particular

Now, what are generics? "A fine question, but a difficult one," Andrew Bailey says. His recent paper provides a helpful (and humorous) introduction to the topic of generic statements:

> Start with this sentence: 'Buddhists are way into meditation'. This first sentence is, let us suppose, true. So far so good. But is it equivalent to 'for every x, if x is a Buddhist, x is way into meditation'? It does not appear to be. For the second sentence might be false (some Buddhists might not be way into meditation) even if the first sentence is, as we have supposed, true. The first sentence could be true, somehow, even if not all Buddhists are way into meditation (similarly, 'ducks lay eggs' may be true even if not all ducks lay eggs, 'mosquitos carry dengue fever' may be true even if only a very few mosquitos carry that virus, and so on). We are now positioned to observe one curious property of generics: they admit of exceptions.[23]

Thus, generics are statements of the form "S is F" or "S has or does F" where S is not an individual but a class or natural kind. The logical form of "all S's φ" does not predicate φ-ing to all members of the category S without exception, nor does it simply assert that some "S's φ", which is true but uninteresting. For example, consider the true statement, "wolves hunt in packs" as opposed to the clearly false statements "every particular wolf that has ever existed has hunted or will hunt in a pack." Rabid wolves hunt alone, and injured, or very old wolves don't hunt at all. Furthermore, it is true but trivial that *a large number of wolves hunt in packs.* The generic proposition is a unique logical expression, neither universal nor particular.

A generic is interesting because it is, or we treat it as, a truth about forms, or species. The subject of the statement is not all S's nor merely some S's, but the "infima species."[24] In this way, generics pick out what we might call formal facts, facts about the life form in question. Thus Sarah Leslie: "It is widely accepted that [definite] generics are singular statements which predicate properties directly of kinds. For example, "tigers are extinct"

"birds lay eggs"? Manfred Krifka, "Bare NPs: Kind-Referring, Indefinites, Both, or Neither?" in *Semantics and Linguistic Theory*, vol. 13, 2003, 180–203; Ariel Cohen, "On the Generic Use of Indefinite Singulars," *Journal of Semantics* 18, no. 3 (2001): 183–209.

23. Bailey, "Animalism," 869.

24. Christopher Toner, "Sorts of Naturalism: Requirements for a Successful Theory," *Metaphilosophy* 39, no. 2 (2008): 222. "Infima species" is the narrowest cut in a genus-species tree, or the most determinate determinable.

predicates the property of being extinct directly of the kind Panthera tigris, and would be true just in case Panthera tigris had the property of being extinct."[25]

Generics are not merely statistical regularities. The members of extinct species do not exhibit any properties at all, yet it is still true in some sense that members of the species exhibit properties.[26] Likewise, all the living members of a species might fail to exemplify its formal attributes. Consider the fact that "California condors can fly for hours without resting."[27] In 1987 there were only 27 known condors alive. One could easily imagine a scenario in which every living member of such an endangered species were too injured, old, or diseased to exemplify this attribute. It would be strictly false of the individual condors that any of them could fly for hours; nevertheless the generic would still be true that "condors" (as a class) *can* fly for hours.

McDowell thinks that such exceptions are a "logical weakness" in deriving ethical conclusions from generics about human beings. He cites the example from Anscombe (and Aristotle) that "humans have 32 teeth", saying "there is a truth we can state in those terms, but from that truth, together with the fact that I am a human being, it does not follow that I have 32 teeth. (In fact it is false)."[28] McDowell accepts that generics are generally true. His objection to their application seems to be that the relation between a normative expectation and reality fails to reach deductive certainty. If this is his objection, it rather misses the point. Aristotelian-categoricals are not half-hearted universal judgments; they are not universes with widely-acknowledge counterexamples. They are judgments of a logically different kind. Far from being a logical weakness, generics are what enable us to capture truths about natural kinds that help explain statistical variation and inconsistency.

Prasada says that, "Much of our conceptual knowledge consists of generic knowledge — knowledge about kinds of things and their properties."[29] We can approach generics through a "formal, quantificational" semantics or through "principled connections". Principled connections support formal explanations, normative expectations, and a statistical expectation of prevalence. In other words, we explain that the dog has four legs *because* it is a dog (formal explanation); we expect that Fido should have four legs *unless something is wrong* (normative expectations); and we expect that if we counted up a population of dogs, *most* dogs would in fact turn out to have four legs (statistical expectation).

Generic truths, once discovered, set a normative expectation by which we evaluate individual members on how well or badly they exemplify their life form.[30] The normative expectation cannot, it seems, be reduced to

25. Leslie, "Generics," sec. 1.

26. We might say that at time t1 the species exhibited properties A and B, while at time t2 the species exhibits no properties.

27. Jeffrey P. Cohn, "Saving the California Condor," *BioScience* 49, no. 11 (1999): 864–68.

28. John McDowell, "Two Sorts of Naturalism," in *Mind, Value, and Reality* (Cambridge: Harvard University Press, 1998), 171–2.

29. Sandeep Prasada et al., "Conceptual Distinctions Amongst Generics," *Cognition* 126, no. 3 (2013): 405.

30. Ibid., 3.

statistical correlations. Rather, statistical correlations can be a sign of (or can be an illusion of) a principled connection.

There is much to be learned about the linguistic features of generics, but none of the unexplored frontiers render generics useless for applications in neo-Aristotelian ethics. A few examples of what needs to be learned include the correlation between statistical prevalence and normative identity; many generic truths describe what is statistically prevalent but not all. What is the difference? Is one reducible to the other? Furthermore, Leslie distinguishes between indefinite generics such as "tigers are striped" which admits of the specification "that tiger over there is striped" and definite generics such as "domestic cats are common" which does not admit of specification, "that domestic cat is common". What is the difference here? Finally, indefinite generics are trickier: "Ducks lay eggs" is a true generic while "ducks are female" is false one, even though only female ducks lay eggs. And "mosquitoes carry the West Nile virus" is true even though less than one percent of mosquitoes carry the virus while "books are paperbacks" is false even though more than eighty percent of books are paper backs.[31] How do we sort through these correlations between generic connection and statistical prevalance?

These unexplored frontiers represent fascinating puzzles but do not render generics unsuitable for use in normative and ethical arguments. Nor should the presence of outstanding questions lead one to believe generic propositions are confusing or confused. Rather, their normal acquisition and usage is a very familiar, and perhaps inevitable.

Generic truths are acquired via a normal scientific means of empirical observation, rational reflection, and discussion.To use a silly example, suppose that someone from a warm and landlocked country has never heard of penguins before. This person visits a zoo and sees penguins for the first time. He notices that these astonishing creatures are called 'penguins', and appear to be birds (for they have beaks, feathers, lay eggs, emit squawks, etc.). He reflects that most – if not all birds – have many of these macro features. Fascinated, he consults encyclopedias, biology or zoology textbooks, and consult zoologist friends. All these sources confirm the categorization. Although I am not aware of when the first penguin was studied by a modern naturalist, we can easily imagine that it was from observations and reflections such as these that penguins long ago earned an entry in the annals of scientific knowledge. The biological community gave them a scientific name ('sphenisciformes') and began to fill in gaps with a detailed description of their evolutionary history, characteristics, genetics, environments, diet, predators, and so on. The scientific conclusion, upon initial observation, bolstered by reflection, underwrites the initial hypothesis: penguins are indeed birds. This familiar scientific process may not be easy or free of dangers, but it is at least *a familiar scientific process*. Scientists are continually correcting formerly established generics (the notion that all mammals give live birth was thrown into crisis by the platypus). Scientists also work to distinguish between the (statistically) normal and (statistically) abnormal traits of a species, and within abnormal traits distinguish good from defective traits.

This familiar process is certainly revisable. For example, an ethologist who discovers a wolf hunting along may have a normative expectation that

31. Leslie, "Generics."

the wolf is not healthy. But she cannot know certainly in advance that this is so. She must test the hypothesis. A few reasonable interpretations are available: perhaps the lone wolf is unhealthy; perhaps the initial generic that 'wolves hunt in packs' was false; or perhaps this wolf is actually a new species of wolf. As it happens, in the case of wolves, no known species of wolf hunts alone so there is very strong reason to conclude that a lone wolf is rabid. But the point more generally is that generics are acquired and modified by a familiar, if complicated, process of scientific reasoning. Michael Thompson points out that: there is a "general and thoroughgoing reciprocal mutual interdependence of vital description of the individual and natural historical judgment about the form or kind."[32] Put differently, Micah Lott says:

> At each stage of an empirical investigation, our observations are mediated by our current understanding of the life form whose members we are observing. At the same time, our observations of those individual members will in turn improve our understanding of the life form itself, which then makes possible even more accurate and extensive future observations.[33]

Again, the fact that generic truths are revisable is not a weakness but a strength of the case I am building. It may be, for all we know, that penguins can fly (in the air), that some species of penguin can fly, or that all penguins are really just defective birds. But the most reasonable belief thus far is the generic truth that penguins don't fly; that they are excellent swimmers, not defective flyers; and that these truths hold of penguins *as a kind* – a biologist or zoologist who discovered the first flying penguin would become (justifiably) famous because we would all be (justifiably) surprised. The surprise would not originate merely from something out of the ordinary — new and extraordinary creatures, both living and extinct, are discovered every year. The surprise would originate from the upending of a firmly established scientific fact.

Generics are teleological

The first kind of natural normativity I am defending is the mere idea of a life-form. Knowing what a thing is, knowing about its species or life-form, is to know something descriptive and something normative about any member of that species. Knowing what a thing is, furthermore, licenses a range of normative expectations. But we can make the case for natural normativity stronger. There is another, related kind of normativity in the natural teleological features of life-forms. Such natural teleology can also be captured in generic propositions.

To see this second kind of natural normativity, begin with the concept of a function. Eyes perform the function (in an organism) of seeing, hemlock trees perform the function (in an ecosystem) of shading rivers, and so on. Thompson, for example, cites the scientific observation that "flowers have

32. Michael Thompson, "Apprehending Human Form," *Royal Institute of Philosophy Supplement* 54 (2004): 52.

33. Micah Lott, "Moral Virtue as Knowledge of Human Form," *Social Theory and Practice* 38, no. 3 (2012): 414.

blossoms of such-and-such type in order that such-and-such insects should be attracted and spread their pollen about."[34]

While some philosophers of science have thought that teleological normativity could be explained in terms of function, I would suggest that the reverse is rather true: the structure of a function is teleological. There are many senses of the term 'function', but the kind of biological functions under review are teleological, or least teleonomic, in that it is an arrangement of parts toward a particular purpose or end.

A functional process is not necessarily *willfully* undertaken. But it does have a beginning, an end (in time), and an end (telos). Clarifying that functions need not be intentional, we can understand the natural functions of organisms and organic systems as instances of natural teleology. James Barham explains the notion of natural teleology in this way:

> By "teleology," I have in mind such words and concepts as "purpose," "end," "goal," "function," "control," and "regulation," as well as the real-world biological phenomena to which these words and concepts refer. This means that the word "teleology" should always be construed here in its internal or "immanent" sense—purposiveness existing in living beings themselves—and never in its external or "transcendent" sense of an overarching cosmic principle.[35]

Ernst Mayr (following Colin Pittendridgh) calls a process "teleonomic" if it is not a process of intentional purposes.[36] He says, "I have therefore refrained from using anthropomorphic language, Particularly the terms of purpose and intention, when explaining teleonomic phenomena in animals and plants."[37]

Mayr further distinguishes between teleological (purpose-driven end-directed processes), teleonomical (non-intentional end-directed processes in living things) and "teleomatic" (non-intentional processes in non-living things). A teleomatic process is an "automatic" process governed by natural law:

> All objects of the physical world are endowed with the capacity to change their state, and these changes strictly obey natural laws. They are end-directed only in a passive, automatic way, regulated by external forces or conditions... All teleomatic processes come to an end when the potential is used up (as in the cooling of a heated piece of iron) or when the process is stopped by encountering an external impediment (as when a falling object hits the ground). The law of gravity and the second law of thermodynamics are among the natural laws which most frequently govern teleomatic processes.[38]

34. Thompson, *Life and Action*, 293–94.

35. James Barham, "Teleological Realism in Biology" (PhD thesis, University of Notre Dame; Web, 2011), 1.

36. Mayr, "The Idea of Teleology." Cf. Colin S. Pittendridgh, "Adaptation, Natural Selection, and Behavior" in Anne Roe and George Gaylord Simpsons (eds.), *Behavior and Evolution* (New Haven, 1958), 390-416.

37. Ibid., 123.

38. Ibid., 125.

For my purposes, however, even teleonomic programs would count as instances of natural normativity insofar as the development of an organism at one time is incomplete but will be complete in future. As Waddington puts it, "the end state of the process is determined by its properties at the beginning."[39] Normative, in my sense, is not the antonym of "descriptive"; normative is the antonym of descriptive *at present*. "The egg is not a chicken" is true at present. But "chickens start their life as eggs" is also generically true. Hence "the egg is a chicken" is a kind of teleological judgment about what it may, under proper conditions, become. As Chris Toner says, "natural-historical judgments readily admit of combination into teleological judgments."[40]

Taken broadly, then, the first point is to realize that talk about functions and ends is just as scientific as talk about life-forms, species, and natural health or disease. Mayr quickly rebuts many of the common objections (I should rather say prejudices) against teleonomic processes. For instance, teleological statements and explanations, he says, do not "imply the endorsement of unverifiable theological or metaphysical doctrines in science."[41] Rather,

As Mark Perlman says:

> Many objects in the world have functions. Some of the objects with functions are organs or parts of living organisms... Hearts are for pumping blood. Eyes are for seeing. Countless works in biology explain the "Form, Function, and Evolution of ..." everything from bee dances to elephant tusks to pandas' 'thumbs'. Many scientific explanations, in areas as diverse as psychology, sociology, economics, medical research, and neuroscience, rest on appeals to the function and/or malfunction of things or systems.[42]

Mayr's highly suggestive alternative to conscious purposes is natural "programs". A program is "coded or prearranged information" that regulates an organism's behavior or development up to a pre-defined end-point.[43] Mayr's examples include the development of bones, organs, and shapes that come with physiological maturity, migration. Programs are "the result of natural selection". However, they contain information: "not only blueprints of the goal but also the instructions of how to use the information of the blue print."[44] The concept of a program, he assures us, is similar to concepts deployed by geneticists and computer programmers. The point is that the telos is not some mysterious spirit hovering above the organism, beckoning it to reach its full potential but coded into the organism from the beginning.

39. Conrad Hal Waddington and others, "The Strategy of the Genes. a Discussion of Some Aspects of Theoretical Biology. with an Appendix by H. Kacser." *The Strategy of the Genes. A Discussion of Some Aspects of Theoretical Biology. With an Appendix by H. Kacser.*, 1957, ix+–x262.

40. Toner, "Sorts of Naturalism," 222.

41. Mayr, "The Idea of Teleology," 122.

42. Mark Perlman, "The Modern Philosophical Resurrection of Teleology," *The Monist* 87, no. 1 (2004): 1–4.

43. Mayr, "The Idea of Teleology," 127–8.

44. Ibid., 128.

Regardless of the details of Mayr's proposal for explaining teleonomic processes, the mere fact of natural process is indisputable. And (to return to the main point) such behaviors are expressed in generic propositions.

Generic propositions usefully capture the functional or teleological properties of natural organisms. As Chris Toner says, "natural-historical judgments readily admit of combination into teleological judgments."[45] This kind of combination of generic truths is very familiar. No sooner have I learned the formal facts about a penguin (that it is a bird, that it can swim, that it has a countershaded white belly and dark back etc.) do I learn that *penguins are countershaded in order to avoid predators from above and below.*[46] Since an individual penguin may fail to be countershaded in the way that expresses its form, it would be defective. This defect is not a judgment made by scientists and "imposed" as it were, from the outside, on the penguin. It is rather a normative fact about the penguin. As Hursthouse says, "Wolves hunt in packs; a 'free-rider' wolf that doesn't join in the hunt fails to act well and is thereby defective."[47]

We should add that generics express the formal and functional features of natural entities *when they are mature.* It is a normal – indeed universal – fact of organisms that they grow and develop and mature according to the life process of their particular species. Before maturation, we might say, the formal and functional properties in question exist merely potentially. For example, a wolf that cannot hunt might be injured, ill, or simply young. Similarly, eyes that cannot see might be injured, ill, or simply developing.

Nevertheless, it is true that "eyes see". In discovering and expressing the simple generic truth that "eyes see", we abstract away from the processes of maturation and development to pick out a fact that is true of all eyes that are normal and have had enough time. This is a descriptive, judgment that is also a normative judgment – without changing our meaning we could say that fully developed eyes are *supposed to* see, *ought to* see – or just that *eyes see.*

There is one objection that is easy to forestall. Someone might point out that genetic drift results in species evolving every which way, including the emergence of adaptive, maladaptive, and adaptation-neutral traits. This is true, so far as it goes, but not really an objection. Two replies are, I think, sufficient. First, it is an inextricable part of the scientific process to reason out which traits are instances of natural goodness and which are not. Just because one hundred percent of organisms eventually die doesn't mean that death is naturally good for them. Just because a high statistical number of organisms have a particular feature – a stripe or a scale or whathave you – doesn't necessarily mean that the feature is a formal one of the species. Rather, one must keep an eye open to larger samples, possible counterexamples, and one must keep one's generics tentative until they are very well grounded. Similarly, part of the scientific process is reasoning out which traits are *adaptive.* Even the way the objection is phrased assumpes that some traits are adaptive – that is adaptive *survival and reproduction.* Allowing even this minimal sense of normativity concedes my point that

45. Toner, "Sorts of Naturalism," 222.

46. A shark looking up may miss a penguin, because its white belly blends in with the sunlight surface waters; a shark looking down may miss a penguin, because it blends in with the pitch dark waters of the abyss.

47. Hursthouse, *On Virtue Ethics*, 201.

the normativity is discovered by the scientist rather than purely ascribed by him or her. A second response is that the generics under discussion are not about species-qua-fluid-across-millenia but about species-qua-fixed or apparently fixed within a given period. The fluidity of species over time, like a slow-motion film with thousands of frames, requires countless generations. For all we can observe of most species in the course of a human lifetime (say) or even since the birth of modern science in the 16th century, the species-at-present are fixed enough.

In my overall argument, generic truths are intended to serve as a counterexample to premise 2 of the **Bald Nature Challenge** above. That challenge asserted that no facts are genuinely both natural and normative. Generics are both genuinely natural and normative: natural, in that a large percentage of scientific knowledge consists of scientists predicating generic truths of natural kinds; normative, in that the life-form in question is one which an individual may or may not "live up" to, and in that *some* generics pick out natural functional or teleological facts about life forms (that penguins are counter-shaded *to avoid* predators, that hearts are *for* pumping blood, etc.). On my view, accepting the straightforward, generic truths delivered by such sciences about forms and functions is quite simply the respectable thing to do.

IV. Three Paths Forward

The case for natural norms is that there best science suggests that some facts of nature (such as natural kinds and natural functions) are both normative and natural. I called this kind of natural normativity 'organic normativity'. It seems to me there are three paths forward: one could reject organic normativity, reduce it to non-normative facts, or accept that there are most likely such things as natural norms.

Reject

The first path is to reject generic truths about species and their formal and functional characteristics. Probably, those who are tempted to reject natural teleology believe there are no *ends* (τελοι). Call this view teleological nihilism or teleological eliminativism.

Teleological nihilism arrogates itself to call to the witness stand "*modern science" as a whole.* Has"science" refuted teleological realism? Hardly. The cost of rejecting all generic truths would be to reject many scientific statements in biology, organic chemistry, anthropology, psychology, sociology, economics, anatomy, and medicine.

Yet why is there such prejudicial feeling? I believe it comes down to a bit of fuzzy thinking about history. It is true that Francis Bacon and others believed that the search for final causes corrupted science.[48] And

48. Cf. Bacon, *New Organon*, Book I. XLVIII "Although the most general principles in nature ought to be held merely positive, as they are discovered, and cannot with truth be referred to a cause, nevertheless the human understanding being unable to rest still seeks something prior in the order of nature. And then it is that in struggling toward that which is further off it falls back upon that which is nearer at hand, namely, on final causes, which have relation clearly to the nature of man rather than

it is true that abandoning the search for natural teleology was a harbinger of modern science. But was progress in experimental methods correlated to or caused by the abandonment of teleological explanations in natural sciences? Many believe the relation was one of causation. Furthermore, a more parsimonious methodology would engage only in efficient and material causal talk. As it turns out, they would say, such talk is enough.

The glaring fact is that such talk is not enough. Animals, plants, insects, all living things (and even ecosystems) exhibit end-directed or teleonomic behavior: eyes see, hemlock trees offer shade to fish, stomachs digest, deer leap to avoid predators. Even when Kant denies natural teleology – the biological theory that the form of an organism causes the parts to grow and relate to each other in a particular way – he admits we *cannot help thinking so.*[49]

The proper reply to Bacon is that the teleological nihilism hypothesis has been tried and found wanting. Modern science is no less teleological than it was in the 16th century; perhaps even more so. Darwin himself might have been a teleologist.[50] Whether Darwin's theory of natural selection *undermines* and debunks or *underwrites* and justifies the teleological view at least debatable.

Things are even clearer when it comes to natural kinds and generic truths about species. If we accept scientific realism of any form, we cannot deny that some generics are true. It is probably true that if we accept *any* form of conceptual knowledge, we are probably implicitly already committed to the truth of some generics, for much of our conceptual knowledge consists in generics.[51] Animals, plants, and all living things belong to species, and our knowledge of them consists of generic truths about not just individuals but that species. A species involves a defined range of potential attributes that normally come to be actualized over time. An individual hemlock tree may or may not shade any fish in any rivers, but it may in time; or it may never do so, but it is still a scientific insight that that is one thing 'hemlock trees' in general do.[52]

Hence, to reject *all truths* about natural kinds and natural functions, I contend, is untenable. And generics are, it seems, necessarily normative propositions. If we suppose for *reductio* that no generic statements are true, then not only do we reject natural functional talk but natural formal talk. If all generics are false (or only conventionally true) then it is in some important sense false that 'wolves hunt in packs' and false even that 'penguins are birds'. It is false not only that "eyes see" but even that "humans are pri-

---

to the nature of the universe; and from this source have strangely defiled philosophy."

49. Philippe Huneman, "Naturalising Purpose: From Comparative Anatomy to the 'Adventure of Reason'," *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences* 37, no. 4 (2006): 649–74.

50. James G Lennox, "Darwin Was a Teleologist," *Biology and Philosophy* 8, no. 4 (1993): 409–21; James G Lennox, "Teleology," *Keywords in Evolutionary Biology*, 1992, 324–33.

51. Prasada et al., "Conceptual Distinctions Amongst Generics.

52. Compare with Thomas Nagel's point that some "laws of nature would apply directly to the relation between the present and the future." Thomas Nagel, *Mind and Cosmos* (Oxford University Press, 2012) 93.

mates". Such denials are, I think, absurdities.[53] If we accept the truth of at least some generics, then Perlman's surprise is well founded: "It is surprising that analytic philosophers, with their strong focus on science, would reject a notion that is so central to some areas of science, most notably, biology and engineering sciences... Biology cannot, or at least in practice does not, eliminate functions and purposes."[54] One might suppose that Perlman's qualification "or at least in practice does not" leaves open space for the normative anti-realist. I welcome the critic who would try to show that biology *can* eliminate functions; what I have tried to suggest, and what Barham argues in great detail, is that the attempt has been made and has failed. A few failed attempts at reduction does not prove that reduction is impossible. But it does make the more plausible view, teleological realism, a better candidate for the default view.

The notion that some of nature is normative – or that some norms are natural – is not only a good logical explanation of the natural phenomena of biology but also a good *scientific* explanation. While natural teleological realism is still controversial, it is not a controversy between science and philosophy but a controversy *within science*. It is a legitimate discussion between scientists of one stripe and scientists of another.

Reduce

If rejecting organic normativity as expressed in generics is not plausible, perhaps it can be reduced to non-normative talk. This strategy accepts the appearance of such things as natural kinds, natural teleology, natural functions, etc., but *reduces* these phenomena to less spooky (read: more mechanistic) phenomena consistent with a conception of bald nature. Arguing for or against teleoreductionism has become a cottage industry.[55] James Barham summarizes the two main positions in the recent literature on teleological and natural functions:

> The first position, stemming from a seminal article by Cummins (1975), views being a function fundamentally as making a causal contribution (in the efficient-causal sense) to the maintenance of a larger system of which the function in question is a component part. The other position, adumbrated by Wright (1973) and clearly articulated by Millikan (1984), takes a present trait's being a function to be equivalent to its having been naturally selected due to the fitness advantage conferred on an organism by the physical effects of the ancestral trait of the same type from which the present trait-token is descended. It has also been suggested that it may

53. That is not to say that the denial is not worth considering. It might well be true. My point in calling the denial 'absurd' is to say that if it is true, an absurdity is true. If it is true, then the truth is absurd. And reality itself might well be absurd. I don't think it is, but there have been many philosophers who have thought so, and such thoughts cannot be justly dismissed without consideration. Since absurdist philosophers are not my primary audience, I simply lay the issue aside.

54. Perlman, "The Modern Philosophical Resurrection of Teleology," 6.

55. Cf. ibid., sec. III; and Barham, "Teleological Realism in Biology," chap. 3.

be necessary to combine elements of both analyses (e.g., Kitcher, 1993)[56]

I will content myself to note, and critique, two popular forms of reduction: the first reduces biological functions to causal contributions to a system and the second reduces teleonomic biological functions to naturally selected effects. A proponent of the first reduction is Donald Davidson. A proponent of the second is Ruth Millikan. For example, Ruth Millikan argues that an organism's proper function simply cannot be "read off" its capacities at present but must be known via empirical history. Her theory entails the unpalatable conclusion that an organ that is otherwise physically identical to, say, a heart, that was magically apparated into existence would not have a "proper function". She bites the bullet on this.
James Barham argues that neither of these forms of reduction is very promising. Neither alternative is coherent, in his view. The problem with the "causal-role" reduction of teleonomic phenomena is that in order to even posit a hypothesis about how some parts of a system contribute to the achievement of its end or purpose, we must identify *in advance* which parts of the organism play a role in bringing about the end or purpose. But if we already know the causal contribution of those parts, what more could we learn by positing the causal-role theory?[57]

As regards the second form, things are no more promising. While Millikan's theory of "proper function" might be ingenious and might be true of the historical or "etiological" history of present-day functional attributes of organisms, it is irrelevant. The question is not "how historically did present-day function X come to be?" but "is present-day X a function?" One cannot go looking for the etiological history of a functioning organism if one does not already know, in advance, that the organism in question is functioning.

Michael Thompson, too, insists that judgments about natural teleology are made true from the form of life under question, not from "hypotheses about the past."[58] James Barham points out that the problem with Aristotle's views of biology (say, believing that the seat of perception was not in the brain) was not that he lacked knowledge of evolution, but that he lacked adequate knowledge of physiology.

Accept as is

The third option is to accept that some natural facts are intrinsically normative, irreducible, natural facts. Although the very word 'teleology' is liable to sound quaint to modern ears, Barham has argued that 'teleological realism' is a rationally permissible view to take on biology. Indeed, it is making a come-back. For instance, Arnhart persuasively argues that teleology is

56. Barham, "Teleological Realism in Biology," 9.

57. Cf. ibid., , chapter 3.

58. Cf. Thompson, "The Representation of Life," 293. Christopher Toner adds that judgments about natural teleological facts are made true regardless of the origin of the facts, "whether about creation or natural selection.", Toner, "Sorts of Naturalism," 223. This seems right to me. It does not matter for present purposes *how* the function came to be, just whether or not it really *is* at present.

assumed in medicine.[59] Zammito clarifies its ongoing relevance in biology, since organisms seem to be intrinsically purposeful.[60] Fitzpatrick says that, "While neo-Darwinian evolutionary theory does soundly reject any appeal to teleology in the process of evolution itself, there is a large literature in contemporary philosophy of biology defending the legitimacy of employing teleological concepts in connection with adaptations."[61]

Thomas Nagel has offered one philosophical defense of scientific, Darwinian, natural teleology.[62] Michael Chorost's review of Thomas Nagel's *Mind and Cosmos* reminds readers that natural teleology is not so scientifically heretical as it might first seem. He says:

> Natural teleology is unorthodox, but it has a long and honorable history. For example, in 1953 the evolutionary biologist Julian Huxley argued that it's in the nature of nature to get more advanced over time. "If we take a snapshot view, improvement eludes us," he wrote. "But as soon as we introduce time, we see trends of improvement."...[63]

Chorost argues that Nagel did not "go wrong" in his thesis but in presenting it philosophically without engaging the support from relevant scientific literature. He continues with a few more examples:

> paleontologist Simon Conway Morris, at the University of Cambridge, has argued that natural structures such as eyes, neurons, brains, and hands are so beneficial that they will get invented over and over again. They are, in effect, attractors in an abstract biological space that pull life in their direction. Contingency and catastrophe will delay them but cannot stop them. Conway Morris sees this as evidence that not only life but human life, and human-like minds, will emerge naturally from the cosmos: "If we humans had not evolved, then something more or less identical would have emerged sooner or later.

My point here is that a respectable subset of scientists and others countenance natural normativity in organic nature. Philosophers of various schools (metaphysicians and ethicists) would do well to dialogue with biologists and cosmologists to come to grips with the possibility that our best evidence suggests that there are normative natural life forms and natural ends.

---

59. Larry Arnhart, "Aristotle's Biopolitics: A Defense of Biological Teleology Against Biological Nihilism," *Politics and the Life Sciences* 6, no. 2 (1988): pp. 173–229.

60. John Zammito, "Teleology Then and Now: The Question of Kant's Relevance for Contemporary Controversies over Function in Biology," *Studies in History and Philosophy of Science Part* 37, no. 4 (2006): 748–70.

61. William FitzPatrick, "Morality and Evolutionary Biology," in *The Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta, Spring 2016 (`http://plato.stanford.edu/archives/spr2016/entries/morality-biology/`, 2016).

62. Nagel, *Mind and Cosmos*.

63. Michael Chorost, "Where Thomas Nagel Went Wrong," *Chronicle of Higher Education*, 2013.

V. Conclusion

The goal of this chapter has been to meet the **Bald-Nature Challenge** stated above. While I conceded that the **Is-Ought Gap** could not be overcome, I suggested that it could be undercut by appealing to genuine facts that are both natural and normative. The conclusion we have drawn is that indeed *some* facts – especially facts about living things – are both natural and (probably) irreducibly normative.

These are natural formal and functional facts about organic beings and their parts and operations. Such facts are expressed in perfectly respectable scientific judgments we have called "generics" but may also be called "Aristotelian categoricals", "natural-historical judgements", "norms", "bare plurals", etc. Generics like these render it at least *possible* to conclude the the scientific picture of nature includes normativity in the form of natural teleology. If true generics could be stated about human beings, then it is conceivable we can use them as a basis for ethical theory.

J. L. Mackie exploits the apparent silliness of the notion that "to-be-pursuedness" is built into things. We should not confuse ourselves with loaded rhetoric. We should not think of natural norms in explicitly contradictory or paradoxical terms. Instead, we should think of other perfectly ordinary natural relations such as causation. A natural norm is not a one-place predicate things but a relation between things. For example, one type of natural norm might be a relation between a living thing and another object, such as food, shade, or a predator. Given the kind of thing snakes are, and the kind of thing mice are, a mouse is to be eaten by the snake and the snake is to be fled by the mouse.

Of course, I have not yet tried to show *which* true generics about humans can serve as the basis for ethical theory. All I have tried to show is that *some* of these generics are true. By denying the consequent, we are not necessarily affirming the antecedent. That affirmation requires another step, namely, to apply the above argument to human beings. Foot is well aware that the imposition of normativity onto brute nature, or the derivation of normativity from brute nature, is likely to seem absurd:

> The idea that any features and operations of humans could be evaluated in the same way as those of plants and animals may provoke instant opposition. For to say that this is possible is to imply that some at least of our judgements of goodness and badness in human beings are given truth or falsity by the conditions of human life. And even if it is allowed that certain evaluations of this kind are possible—-those vaguely thought of perhaps as 'merely biological'—-there is bound to be skepticism about the possibility that 'moral evaluation' could be like this.[64]

Despite such legitimate worries, we have followed Foot in trying to earn a hearing for this notion by arguing that the "meaning of 'good' in so-called 'moral contexts'" does not have a special logic of its own. Rather, 'good' and 'defective' pick out natural properties of living things. The goodness of a cactus is relative to its cactus nature; the goodness of human beings is relative to their human nature. And that human nature is to be or have the potential to become practical, rational animals. Hursthouse continues:

64. Foot, *Natural Goodness*, 38.

> When we moved from the evaluations of other social animals to ethical evaluations of ourselves, there was an obvious addition to the list of aspects which are evaluated. The other animals act [as opposed to chemicals which are only acted upon]. So do we occasionally, but mostly we act from reason, as they do not, and it is primarily in virtue of our actions from reason that we are ethically good or bad human beings. So that is one difference that our being rational makes.[65]

The task in discovering true generics about human beings is capturing what is common between us and other animals and what is unique about rational animals. The argument that will help us transition from generics about the biological world in general to generics about human beings and which may provide the basis of normative *ethics* is this:

Human Normativity

1. On ethical naturalism, generics about natural entities are both descriptive and normative (they are natural norms), and hence can be used as premises in arguments with normative conclusions.
2. Humans are natural entities, (there are some *human* natural norms).
3. Therefore, generics about humans are both descriptive and normative, and hence can be used as premises in arguments with normative conclusions.

Establishing premise 1 has been our task in this chapter. Establishing premise 2 is the task for the next chapter.

65. Hursthouse, *On Virtue Ethics*, 217.