


Article

# Naturalistic Moral Realism and Evolutionary Biology

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**Abstract:** Perhaps the most familiar understanding of “naturalism” derives from Quine, understanding it as a continuity of empirical theories of the world as described through the scientific method. So, it might be surprising that one of the most important naturalistic moral realists, Philippa Foot, rejects standard evolutionary biology in her justly lauded *Natural Goodness*. One of her main reasons for this is the true claim that humans can flourish (eudaimonia) without reproducing, which she claims cannot be squared with evolutionary theory and biology more generally. The present argument concludes that Foot was wrong to reject evolutionary theory as the empirical foundation of naturalized eudaimonist moral realism. This is based on contemporary discussion of *biological function* and *evolutionary fitness*, from which a definition of “eudaimonia” is constructed. This gives eudaimonist moral realism an empirically respectable foundation.

**Keywords:** naturalism; moral realism; eudaimonism; evolutionary theory; virtue ethics

## 1. Introduction

While there is certainly general debate over the meaning of “naturalism”, perhaps the most neutral and generic understanding of it involves the natural world as it is studied by empirical science. The basic thought is that the scientific method is our best developed epistemology for studying nature as we find it, independent of how we think about it. This is the route that W. V. O. Quine [1–3] took in arguing that “naturalism” involves a continuity among empirical theories. While debates about ontological reduction and non-reduction between parts or levels of nature become germane downstream (within the special sciences), the empirical method is an adequately neutral place from which to begin. In applying this method to theories of moral realism, we distinguish naturalistic moral realism from other varieties, such as non-naturalistic or quietist versions of moral realism. Thus, if naturalistic moral realism is in fact true and Quine is right, then we should expect this metaethical theory to exhibit a continuity between moral theory and other empirical theories of the natural world.

Over the past forty years or so, naturalistic moral realists have mostly divided into two basic camps. On the one side, there are those who are consequentialists including, most prominently, Cornell-style realists, and then there are those who are virtue theoretic eudaimonists. Of course, all naturalistic moral realists have faced a variety of criticisms, but the most pressing of these have always centered on the question of how normativity can be naturalized. The scientific method seems capable of telling us how things actually are, but the question of how things ought to be is, supposedly, outside the remit of science to teach. How can normativity be a naturalistic phenomenon? Naturalistic moral realists have insisted that normativity can be naturalized, and commonly point to certain complexities in various specialized sciences, such as biology, in which they see, or from which they attempt to derive, normativity. Cornell realism is typified by Richard Boyd’s approach in his classic paper, “How to be a Moral Realist” [4], where he focuses on “homeostatic cluster properties” as a normative model for the control of behavior. And he clearly adopts a Quineian model. He begins this paper as follows:

Scientific realism is the doctrine that scientific theories should be understood as putative descriptions of real phenomena, that ordinary scientific methods constitute a reliable procedure for obtaining and improving (approximate) knowledge



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of the real phenomena which scientific theories describe, and that the reality described by scientific theories is largely independent of our theorizing . . . By “moral realism” I intend the analogous doctrine about moral judgments, moral statements and moral theories. [4] (p. 181)

Of the virtue theoretic eudaimonists, surely Philippa Foot [5] is the most prominent advocate and her monograph *Natural Goodness* its most eloquent expression.<sup>1</sup> She argues for a factual difference between *being good* and *being defective* and attempts to cash out this distinction in terms amenable to naturalists. So, in a manner recapitulated in the argument below, Foot understands *flourishing* in terms of the virtues, where these are understood to be character traits which humans can develop (more or less, as determined by an individual’s talents, efforts, and environment). Foot, however, explicitly breaks from empirical science and hence the Quineian model. She does not write in terms of “biological species” but rather, following Michael Thompson [6], in terms of “life forms”, and Foot understands “natural goodness” in terms of “Aristotelian categoricals” which are true of life forms, here following G. E. M. Anscombe [7]: these are categorical prescriptions which invoke the type of natural necessity with which wolves hunt in packs and lionesses teach their cubs to hunt.

Foot builds her version of naturalism and her moral realism upon these foundations. While not discussing metaphysical realism *per se*, it is clear that Foot is a realist: following Thompson, she discusses Aristotelian categoricals as given in “natural-historical” propositions [5] (p. 29), and she wants to discuss the truth of moral claims in the same way we are willing to discuss the truth about trees needing good roots.<sup>2</sup> And while the view has faced a number of objections, the most significant of these is based on this departure: Foot’s brand of naturalism is not continuous with evolutionary theory or the biological sciences. One might think this would be a safe course: if natural selection works on the principle of “the survival of the fittest”, it seems like a dubious place to begin a moral theory. Nature is “red in tooth and claw”, etc. Nevertheless, spurning empirical science will have unsurprising costs if the goal is to naturalize morality. So, for example, Philip Kitcher [8], in discussing Foot’s view along with a perfectionist view of Thomas Hurka [9], says, “Both these accounts while often original and insightful, founder, I believe, because of the failure to take the details of current biological understanding sufficiently seriously” [9] (pp. 164–165).

Foot rejects a strictly biological model because humans are capable of voluntary action, acting on ends apprehended *as ends* [5] (p. 54ff) but also, and perhaps more importantly, because the practical rationality of human beings can license choices which are contrary to how biologists understand the forces of natural selection which drive evolution. Leaving aside issues of voluntary action and free will, Foot is surely correct to think that a human being can flourish despite never reproducing, and yet evolution only gives to us the ends of survival and reproduction.<sup>3</sup> If we can flourish without having children, then there must be something discontinuous between the flourishing of all other creatures and human flourishing. She writes:

Lack of capacity to reproduce is a defect in a human being. But choice of childlessness and even celibacy is not thereby shown to be defective choice, because human good is not the same as plant or animal good. The bearing and rearing of children is not an ultimate good in human life, because other elements of good such as the demands of work to be done may give a man or woman reason to renounce family life. And the great (if often troubling) good of having children has to do with the love and ambition of parents for children, the special role of grandparents, and many other things that simply do not belong to animal life. [5] (p. 42)

Foot’s thinking seems to be that since evolutionary theory assigns a fitness of zero to any organism which fails to reproduce, “flourishing” cannot be defined in terms of “fitness” and that, therefore, moral theory and evolutionary biology are not consistent. (We return below to the claim about non-reproducing organisms having “a fitness of zero”.)

Is this really the case or is there a construal of human flourishing, of eudaimonia, which is both consistent with evolutionary biology and the choices of childlessness or celibacy?<sup>4</sup> The thesis of the present essay is to defend the idea that there need be no tension between evolutionary biology and naturalistic moral realism: there is a way to understand morality and eudaimonia from an evolutionary point of view which does not necessitate choosing to have children or even engaging in sexual activity. What is needed, and what Foot did not pursue, is a deeper investigation into the details of contemporary philosophy of biology and evolutionary theory.

In pursuit of this thesis, the structure of what follows is that we must first grasp the nature of *biological function*, and after this, we will be in a position to see how functions are related to an evolutionary understanding of *fitness*. Once these concepts are laid out, they can be used to construct a definition of “eudaimonia”, giving naturalistic moral realism an empirically respectable foundation.

## 2. Function

So, we begin with biological function. There have been a number of different theories of biological function: cybernetic, etiological, propensity, learning, organizational, and the Cummins view of functions.<sup>5</sup> We may leave aside Cummins’ view as its instrumentalism is anti-realist, and the differences between the other views of *function* need not concern us directly. (The organizational view is slightly different and is addressed below.) What is crucial in understanding functions is that, regardless of which theory one accepts about them, function statements all involve an answer to the question, “what is it (good) for?”<sup>6</sup> And no one has been able to give an answer to this question without, in one way or other, citing a purpose or an end. As an example: the function of the heart is to circulate blood for the purpose of exchanging O<sub>2</sub> for CO<sub>2</sub>. So, in answering the question about the heart’s function, we must cite its purpose. This is most important because it is the existence of *purpose* that allows the account its purchase on the most difficult aspect of morality for a naturalistic realist to explain, namely normativity. As will be discussed more below, an item is functioning properly if it reliably achieves its purpose, otherwise it is malfunctioning; an item is doing what it *ought* to do if it achieves its purpose, otherwise it is doing what it *ought not* to do.

In fact, a full and explicit rendering of a functional explanation contains more variables than the mere appeal to purpose. As Wimsatt [15] explicates it, all function statements have the following implicit structure:

$$F [B(i), S, E, P, T] = C$$

This is to be read as the following (clumsy) sentence: “A theorem of background theory *T* is that a function of behavior *B* of item *i* in system *S*, in environment *E*, relative to purpose *P* is to do *C*” [15] (p. 32). For example, roughly, “According to biological theory, a function of the beating of the heart in a mammal in normal conditions and environments, relative to the purpose of exchanging O<sub>2</sub> for CO<sub>2</sub>, is to circulate the blood”.

Of course, biological systems (not merely “items” or “traits”) have functions as well, consider the immune system, and so the purposes ascribed by function statements can become hierarchically “nested” within each other. This encourages one to consider the most general purpose, or the final end of a biological system as an individual.<sup>7</sup> In determining this, there is agreement that biological functions are the result of natural selection, and so this leads to the question of what the final ends of this process are. The Darwinian response is the ability “survive and reproduce” or, to employ jargon, “fitness”, where it is understood that we are talking about the fitness of individual organisms to survive the dangers of nature, the competition with conspecifics for resources, etc.

Eventually, our understanding of genes and natural selection came together in the “modern synthesis”, which at first yielded the reductive result that organisms are actually only, merely “survival mechanisms” for genes, and that the final end of biology is the

replication of genes. Richard Dawkins' [24] "selfish gene theory" was the predominant theory of natural selection in the late 20th century, though since the advent of group selection theory, Dawkins' view is no longer seen as authoritative [25]. Alternatives to the Dawkins' view have been developed, and the view most important of these for present purposes is known as "multilevel selection theory" [26,27].

Multilevel selection theory stands in sharp and important contrast to the selfish gene theory. Elliott Sober and David Sloan Wilson [26] (among others) have cogently argued that the "unit of selection" in processes of natural selection is not limited to the gene, but that selection can occur among groups as well. Therefore, strictly reductivist tendencies no longer hold dominion in biology. This is what one should expect, since the most likely special science in which to find some form of non-reduction is biology, especially evolutionary biology, with its appeal to *fitness* and *environmental niches*. While it has been attempted, it seems unlikely that life will successfully reduce to chemistry and physics.<sup>8</sup> The relevant implication is that our evolutionary ends do not reduce to the replication of DNA: when we ask of a biological trait or system, "What is it for?", the answer need not ground out solely in terms of how a particular kind of molecule reproduces itself.

Another lesson from thinking about the role of biological function in natural selection and evolutionary theory is more important for moral realism. This is the way in which discussions of biological function are capable of grounding normativity in a naturalistically respectable way, solving the familiar problem facing naturalistic moral realism mentioned above. Of course, Foot would have been sympathetic to this idea, given her distinction between an animal "flourishing" and its being "defective". All theories of biological function must be able to distinguish traits and systems which function well or properly from those which are dysfunctional or malfunctioning. The naturalistic moral realist can claim that the normative distinction which grounds all others is the function/malfunction distinction: *each item with a function ought to function well, it ought not to malfunction*. A theory of functions is not in the theoretical game if it cannot draw the "function/malfunction" distinction properly, and we can leverage this fact to naturalistically understand normativity—or the difference between *X*'s doing what it ought to do and *X*'s failing to do this—in terms of function and malfunction.<sup>9</sup>

In substantiating this idea, we find that in those subdisciplines of contemporary philosophy in which normativity plays a role, there are already theories of normativity cast in terms of proper function. There are ways we ought to form beliefs and ways in which we ought not to do so. While Alvin Plantinga [33] tried to ground epistemic normativity in proper function, he did not attempt to naturalize his project, though Tyler Burge [34] has done so in a powerful way. There are also ways we ought to speak and others we ought not speak, and this kind of semantic normativity has been discussed in terms of etiological function since Ruth Millikan's groundbreaking *Language, Thought, and Other Biological Categories* [35] gave us teleosemantics. And finally, from the moral point of view, there are actions we ought to perform and others which ought not to be performed. It has been hard to see how biological function might help the moral realist, as long as eudaimonism was off the table, as was the case until recently. But given the advent of virtue theory in the latter half of the 20th century, and the rise of "agent centered" ethics, the theoretical possibility of biological function grounding moral normativity has emerged. For one such early example, see Lawrence Becker's *A New Stoicism* [36], and his more recent work, *Habilitation, Health, and Agency* [37] (see also [38]). Another example is Judith Jarvis Thomson *Goodness and Advice* [39], though she does not distinguish natural function from the functions of artifacts. So, whether or not one is convinced by these theories, there are solid, extant examples in epistemology, semantics, and moral philosophy of how to ground normativity in the concept of a *function*, such that it should no longer garner an "incredulous stare" to claim that the distinction between function and malfunction is the metaphysical ground of moral normativity.

### 3. Fitness

So, while we may generally ground normativity in the proper function/malfunction distinction, this still leaves open the question of how moral normativity is supposed to arise from a biological grounding. To see this, we must see how *biological function* is related to *evolutionary fitness*, for it is through this relation that we can see a way to understand eudaimonia and flourishing. As noted, the evolutionary theory has already moved away from “selfish gene” reductivism so that organisms are considered as whole individuals, and not just as collections of traits. Given the centrality of functions in the account, the natural question to ask next is, “What is good for organisms qua individuals?” Answering this requires us to recenter biology on organisms and various research projects have been engaged to do just that. This is true especially in evolutionary biology where the role of evolution in the ontogenetic development of organisms is gaining attention: the project is sometimes called the “extended evolutionary synthesis”.<sup>10</sup> The theory of functions typically related to this research program is the organizational view, where its proponents see the ends of development as orthogonal to the ends of evolution.<sup>11</sup> Relevant to our concerns is that one aspect of this new perspective on biology is the recent study of evolutionary-developmental biology, or “evo-devo” as it is called, and work has already begun on applying evo-devo to Foot-style eudaimonist ethics in papers by Parisa Moosavi [40,41].<sup>12</sup> Here, however, we limit our attention to the relation of *function* to *fitness*, understood in evolutionary terms where the ends of development are determined by the ends of evolution, so as to preserve the sort of Quineian continuity of empirical theory with which we began.

The predominant theory of fitness today goes back to work by Susan Mills and John Beatty [44] who developed a propensity view of fitness. (We must be careful to distinguish the propensity theory of function from the propensity theory of fitness; the commitment here is only to the latter which is consistent with other theories of function.) Proper functions can be understood as contributions to an organism’s fitness, where these are aggregated statistically [11]. And population genetics which studies the fitness of traits per se requires some understanding of the fitness of organisms as individuals; for, as Elliott Sober [45] points out, the fitness of a trait is the average fitness of the organisms which have that trait.

The crucial distinction made by propensity theory of fitness is to understand an organism’s fitness as its *propensities* for survival and reproduction, not in terms of the organism’s *actual success*. Why? Sober explains:

There is the important insight that individuals of identical fitness can differ in how successful they are at surviving and reproducing. The individuals have the same abilities, but good luck for some and bad luck for others can lead to unequal outcomes. [45] (p. 336)

See also Sober’s earlier discussion [46]. If we have two identical twins with the same upbringing, it is reasonable to think that they have the same fitness—up until the point where one is struck by lightning and the other is not. This point is made by Mills and Beatty [44] (p. 268) and even earlier by Michael Scriven [47]. On reflection, perhaps this should not be a surprise, since “fitness” is clearly a dispositional term, naming a kind of capacity and not a categorical behavior.

There are empirical challenges facing the measurement of individual fitness. While individual fitness was important for Darwin, some contemporary theorists are skeptical about it because it is impossible, in practice, to measure.<sup>13</sup> This is because (cf. the quote from Sober above) it is impossible to distinguish, for any given individual, the differences between endogenous fitness and exogenous luck or other contingencies in the environment. Intuitively, there is an important difference between dying as result of poor hearing and dying because of a bolt of lightning. To put this point in terms of function, there is a difference between an organism’s dying due to some internal malfunction, indicating a problem with fitness, and its dying due to being in the wrong place at the wrong time, where fitness is irrelevant. Sober [45] (p. 337) acknowledges the practical problem of



measuring individual fitness but says that this measurement is not theoretically or logically impossible: were we to have or create carbon copies of an organism, we could track them all, thereby distinguishing fitness from luck for that “individual”. As it is, however, because organisms “taste of life but once”, to use Sober’s phrase, measuring individual fitness is beyond us.

#### 4. Eudaimonia and Virtue

These epistemic problems of measurement do not impugn (at least by themselves) the metaphysical reality of individual fitness, and for naturalistic and eudaimonist moral realists like Foot this should be sufficient. The eudaimonist moral realist has been looking to ground claims of flourishing or happiness in a biologically respectable way, and the concept of *individual fitness* based on that of *proper function*, gives us exactly this grounding. To move from *fitness* to *eudaimonia*, we must attend to sets of problems which all members of a species face, call these “life problems”, where these are problems for “whole organisms” or individuals. Tyler Burge [50] calls these the “biological functions of individuals”, as opposed to functions of particular organs, subsystems, or traits, and he grounds his understanding of agency on these functions. These organismic functions typically concern activities such as eating, predating, mating, navigating, parenting, etc. Each species will face its own set of life problems and each will evolve species-specific adaptations to solve them. If “fitness” is understood as an aggregated measure of how an organism’s traits function, “eudaimonia” can be understood as involving that subset of traits the proper functions of which involve solving an organisms “life problems”. Given all this, we can define “eudaimonia” as follows:

*Eudaimonia*: for any species X, a member of that species, x, is a eudaimon [is flourishing or thriving] if and only if x has developed to a high [excellent] degree the propensities for carrying out the organismic functions characteristic of X, which solve, in normal circumstances, the life problems characteristic of X.

So, Homo sapiens will have a set of life problems endemic to “the human condition” and will flourish if they *actually* develop those traits, to an excellent degree, which give them the *propensity* to solve those problems. These problems can all be seen, from the first-person point of view, as problems of self-governance or even as forms of management. Human life problems will concern, for example, how to best manage our basic appetites, emotions, desires, etc., and given that we (like bees) are social creatures, our social relations must be managed carefully. (We return to bees below.) In general, the world is dangerous and human beings can manage these many dangers either well or poorly. Finally, and perhaps most importantly, whatever doing well or flourishing amounts to for a human, it will not happen by accident: while one can die as a result of accident, one cannot flourish as a result of accident as flourishing involves how a person lives and what that person does. As a result, if we want to do well, we need to plan for the future and be able to execute those plans. This requires each of us to see our life as a whole, and to establish, even if only implicitly or inchoately, hierarchical goals and values which determine much of the content and structure of these plans.<sup>14</sup>

Effective solutions to the life problems facing Homo sapiens involve (i) self-regulation, (ii) danger, (iii) social engagement, and (iv) planning and execution, and the solutions will require the development of certain character traits. “Character traits” are understood as a subset of “personality traits”, where a personality trait can be understood, following the psychologist L. A. Pervin [52], as “a disposition to behave expressing itself in consistent patterns of functioning across a range of situations” [52] (p. 108). What differentiates character traits from other personality traits, according to Christian Miller [53], is that character traits are those personality traits for which a person is responsible, and which open a person, or a person’s beliefs, speech, and actions, to normative assessment.<sup>15</sup> Which character traits are necessary for solving human life problems and are also suitable for bearing a normative load? While one might try to fill out the normative content here in either deontological or consequentialist ways, in the context of a discussion of eudaimonia, a

more “natural” and “Footian” approach appeals to traditional virtue theory, where “virtues” are understood as excellently functioning deliberative and managerial systems [54].

Focusing on the cardinal virtues: (i) temperate people are excellent at managing or self-regulating their appetites, desires, and emotions, while (ii) courageous people are excellent managers of danger. (iii) Justice, or being fair-minded, manages our social relations, including reactive attitudes, such as resentment and respect, extending to family relations and intra-personal relations of the self to the self (e.g., self-respect, shame, etc.).<sup>16</sup> Finally, of course, there is (iv) wisdom, which itself requires both practical wisdom (phronesis) and theoretical wisdom (sophia), and is responsible for developing an axiology: determining what is of value in the world and, using those values, establishing goals and devising executable plans.<sup>17</sup>

Just as Aristotle and Foot thought, we will flourish by becoming virtuous, where the virtues are understood as traits required for solving problems endemic to the “human condition”. Those who are not “defective” aspire to flourish, or to live well and be happy. The substantial ethical arguments are about which lives are in fact best, which Foot brought to the fore in her early essay, “Moral Beliefs” [63], when she wrote, “if justice is not a good to the just man, moralists who recommend it are perpetrating a fraud” [63] (pp. 125–126). She rightly assumes that there is an empirical fact as to whether being just is beneficial to the just person, and the question is figuring out what the fact of the matter is. Foot was right to think that we should let the empirical chips fall where they may. Thus, if it turns out that, say, Thrasymachus is right about justice and it is in fact “the interest of the stronger”, then so be it. This is work that normative ethical theorists must do [64,65].

Now, given all this background and the above definition of “eudaimonia”, we finally come to the point where we can assess the claim that reproduction is necessary for the fitness of an individual organism, because this is the claim that Foot sees as running most afoul of the moral requirements which common sense places on the idea of a human being’s flourishing. As she suggests, we think that people can live morally flourishing lives without reproducing, but if reproduction is necessary for biological fitness, then never the twain shall meet: moral flourishing and biological fitness will be inconsistent with each other.

Now, one gloss on Foot’s way of thinking about *fitness*, in terms of actual success in survival and reproduction, is typically accepted: it is not uncommon to read that sterility reduces fitness to zero. However, given the propensity theory of fitness, the situation is in fact more complicated. True, on this view, members of a species that are biologically sterile will still have a fitness of zero but, given the propensity theory of fitness and the definition of “eudaimonia” above, even sterile members of species can flourish, if they are excellent at solving the life problems characteristic of their species. So, worker drone bees have a fitness of zero, but they may still flourish or not. Therefore, a person can fail to have children, either due to sterility or choice, and still flourish. What ends up being important are people’s *propensities* for being a parent.

Perhaps an example from a non-human species will be helpful. Consider a single oak tree planted in an ideal environment for oaks. Because of its ideal niche, this oak’s traits have developed to a high degree relative to other oaks, it is strong and thriving and fully capable of reproduction. But, for whatever reason, the acorn for this oak had been transported and planted too far from any other oak tree to successfully reproduce. The propensity theory of fitness would say the oak tree’s individual fitness is not zero, despite its actual failure to reproduce.

For these reasons, if one chooses to be monk or a nun, or a hermit, or just wishes to devote him or herself to science, art, or something else in life, these choices, all by themselves, do not bear on the fitness or the flourishing of the person who is making the choice. As Gavin Lawrence puts it, humans can question their “natural desires”, such as the instinct to reproduce, but contra Lawrence [66], this does not make human eudaimonia fall outside the scope of biology. There is no reason to treat *Homo sapiens* as biologically exceptional in this regard.

Note that Mills and Beatty [44] wrote their propensity theory of fitness in 1979, and Sober [67] discussed this at length in his 1984 book, so Foot could have been aware of this view of fitness while writing *Natural Goodness* which was published in 2001. And perhaps, had she been aware of this, she might have had a view of moral flourishing much more similar to the one presented here.

A further point reinforces the conclusion and regards some practical applications of these ideas: strict evolutionary fitness requires more than merely the ability to survive and reproduce, since it is evolutionarily important that one's progeny also survive and reproduce themselves: just reproducing, at least for some species, is not enough.<sup>18</sup> So, for example, ornithologists have coined the term "aggressive neglect", which refers to the way that some male birds are so busy defending their territories against interlopers that they neglect their paternal duties to provision their young, who end up undernourished and sometimes dead [68–70]. This is obviously not a good evolutionary outcome for the male birds, despite their success at reproducing. So, what fitness requires is not just the ability to reproduce and be the biological parent of offspring, but an individual must be able to be, at least, a good-enough parent, or one whose progeny are themselves capable of survival and reproduction. What makes for a good-enough parent?

Obviously, if we limit our view to human beings, this is an age-old question, and books and books have been written about good parenting. One point to note up front is the way that parenting belies the claim that nature is, as noted at top, "red in tooth and claw" and is one natural point from which we can derive "the better angels of our nature". From the point of view of eudaimonia, we should not be surprised to think of excellent parenting as virtuous parenting: what makes a person be an excellent parent, is that the person is wise, courageous, temperate, and just. Clearly, at bottom, it is an empirical question as to which people make the best parents, but a virtue-theoretic account of parenting certainly sounds like a promising place to start since it is hard to imagine someone defending the idea that foolish, intolerant, cowardly, reckless, gluttonous, negligent, mean-spirited, unfair people can make good parents.<sup>19</sup> If it is common sense to think that vicious people make bad parents, it is equally commonsensical that virtuous people make excellent parents. In fact, given an account of flourishing based on the resources of evolutionary theory, we should expect that those traits which nature selected to make good parents would also be those which make the parent's own life go well: we should expect a consistency between the biological "imperative" of becoming a successful parent and what it takes for an individual to flourish. Were the traits constituting an individual's own well-being to diverge greatly from the traits that make one a good parent, this would be a recipe for the extinction of the species to which the individual belongs.

Note, importantly, that thinking of "eudaimonia" in terms which ultimately boil down to proper function does not make the virtues themselves adaptations: there is no gene or set of genes which encode courage in the genome. Rather, the adaptation is the *capacity* to become courageous, or virtuous in general. This claim can be understood on the model of language: what we inherit genetically is the capacity for language which develops in normal environments.<sup>20</sup> So, we are born with a capacity for virtue and, if developed, this gives us a high propensity to survive and reproduce. Of course, most people are "average" when it comes to being courageous, temperate, just, and wise, and well-developed virtue is nowhere near as ubiquitous among humans as well-developed fluency in language. So, we should probably conclude that merely "normal" environments are not sufficient for a thorough development of virtue. As a general rule, children need (more or less) virtuous parents to provide an environment in which virtue can reliably develop. But exceptions to the rule exist too: virtue can also be learned out of the house, so to speak, or as a reaction to the vices of a parent. We can learn virtue from grandparents, adoptive parents, teachers, friends, etc. What seems likely is that vice engenders vice just as, normally, we find virtue engendering virtue: it is probably normal to model our parents.<sup>21</sup> So, eudaimonist versions of naturalistic moral realism can accept Aristotle's [30] old claim about the relation of morality to human nature, "The virtues arise in us neither by nature



nor contrary nature, but nature gives us the capacity to acquire them, and completion comes through habituation" [30] (1103a24–25).

If one wants to be a naturalistic moral realist, one need not reject the biological sciences, as Foot did. While there may be other reasons to reject eudaimonist moral realism, evolutionary theory and eudaimonism are empirically consistent.

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## Notes

- 1 While criticisms are to follow of Foot, I trust my respect for and indebtedness to her philosophy is apparent.
- 2 She writes, "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'*" (italics in original) [5] (p. 39).
- 3 Why may we leave aside issues regarding voluntary action, free will? The answer is that naturalistic moral realists are committed to naturalism, so that whatever "volition" and "free will" turn out (not) to be, they will be construed naturalistically. Naturalistic moral realists are committed to there being facts about what is good and bad, right and wrong, and will say that these facts are determined by empirical human nature and what makes human life go well. How or if we are able to train our wills to do what we ought to do is a psychological issue, not a metaethical or metaphysical one.
- 4 Foot is wrong about the lack of role for grandparents in the animal world: Darwin explains the sterility of worker bees explicitly in terms of the relation between a Queen bee and her grand-offspring. See Sober [10].
- 5 For an overview of the literature on biological functions that covers etiological theories, propensity theories, and Cummins functions, see D. Walsh and A. Ariew [11]. Walsh and Ariew do not discuss "learning theories" or "organizational theories". For the former, see C. A. Mace [12]; I. Scheffler [13]; D. T. Campbell [14]; W. Wimsatt [15]; B. Enc and F. Adams [16]. For organizational theories, see G. Schlosser [17]; P. McLaughlin [18]; W. Christensen & M. Bickhard [19]; M. Weber [20]; M. Mossio, C. Saborido & A. Moreno [21].
- 6 The classic statement of the explanandum of biological function is Wright [22].
- 7 While normativity is taken up below, issues regarding the possible mysterious contributions of teleology are left behind, as we are assuming both naturalism and that biology, and the physical sciences generally, have the resources to fully explain biological function. For a current view of naturalized teleology, see D. Walsh [23].
- 8 One famous attempt to reduce life is Erwin Schrodinger [28]. Schrodinger posited "anti-entropy" to explain the way that living organisms resisted the second law of thermodynamics, but this obviously just names the basic problem and does not solve it.
- 9 Do these ancient thoughts, with their roots in the *ergon* arguments of Plato [29] (352d–354c) and Aristotle [30] (1097b21–1098a20), contravene Hume's dictum telling us that we can never derive an "ought" from an "is"? Yes, they do! But here we can side with Arthur Prior, who implicitly appealed to functions when he said that, "from the premise that 'he is a sea captain', we can conclude that 'he ought to do whatever a sea captain ought to do'." The biological analog is to infer from "it is a heart" to "it ought to do what hearts ought to do": a heart ought to circulate the blood for reasons adduced above; a heart in acute myocardial infarction is not doing what it ought to do. This example is attributed to Prior without reference by Alasdair MacIntyre [31] (p. 57). For an expansion of Prior's thought, though he does not discuss this example per se, see [32].
- 10 See, for instance, see the website for EES at <http://extendedevolutionarysynthesis.com/> (accessed on 6 August 2021).
- 11 This issue is complicated and somewhat vexed. There are prima facie concerns about how the development of organisms could be distinct from evolution, given that each organism is a member of the species which itself is the product of evolution. But there is no need to investigate these questions here.
- 12 For general introductions to evo-devo, see M. Laubichler [42]; G. B. Müller [43].
- 13 In fact, there is a theory of population genetics which fully rejects the idea of individual fitness, arguing that fitness is only a property of traits, considered on their own. This theory is called "statisticalism", and if indeed it is the truth about fitness, then the naturalistic moral realist will not be able to appeal to fitness as it presently can. See, Mohan Matthen and André Ariew [48]; Denis Walsh, André Ariew, and Mohan Matthen [49].
- 14 For the importance of seeing "one's life as a whole" to the project of eudaimonism, see Julia Annas [51].
- 15 For a comment on the nature of the responsibility we have for our characters, cf. footnote 7 above, re: free will and volition.
- 16 For reactive attitudes, see P. F. Strawson [55]. For justice in the family, see Jean Hampton [56]. For justice as an intrapersonal relation, see Hampton [57] and Bloomfield [58].
- 17 For views of wisdom as a "metaheuristic" for solving problems endemic to the human condition, see the Berlin Wisdom Paradigm, as developed by the psychologists, Paul Baltes and Ursula Staudinger [59]; Paul Baltes, Judith Glück, and Ute Kunzmann [60]. For philosophical approaches to wisdom along similar lines, see Jason Swartwood [61] and Tsai [62].
- 18 Indeed, this is part of the explanation for why bee hives have so many sterile workers. Cf. Note 8.

- 19 In personal communication (16 June 2018), the anthropologist Sandra Hrdy writes, “Relevant to your thesis that the ‘best human parents will be brave, well-tempered, fair, and wise, and the children of these parents will be most likely to survive and flourish themselves’ is the recent interest by anthropologists in child-rearing among African and other people still living as hunter-gatherers . . . In general, these findings are consistent with your thesis though I would add ‘tolerant’ [to the list of virtues].” A traditional virtue theoretic perspective would, I think, understand tolerance as an aspect of temperance. Hrdy cited [71–73].
- 20 The idea that we can understand moral cognition by modeling it on linguistic has been entertained by many including Noam Chomsky and John Rawls, but for one way of developing this thought in detail, see, John Mikhail [74].
- 21 There are some indications that, at least, Western parents do not play as important a role in the development of their children’s character as common sense says. For more on this see Judith Harris [75]. There are also some indications that, in fact, people abused as children are *not* more likely to be abusive parents than people not abused as children. Even if this is the case, it still seems likely that in a variety of characterological ways, children model their parents. See Cathy Spatz Wisdom, Sally Czaja, Kimberly DuMont [76].

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