



## Harder, Faster, Stronger – Better: Aristotle’s Ethics and Physical Human Enhancement

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### Abstract

Physical human enhancement is usually perceived as a morally insignificant topic, especially in the rare instance when it is considered outside the realm of competitive sport. Nick Bostrom explains the physical enhancement literature’s narrow focus by noting that “the value of such enhancement outside the sporting and cosmetic arenas is questionable” (2008, 131). In the present paper, I argue that this perception is a result of limitations inherent to the ethical paradigms under which bioethical analysis is commonly done. It is unsurprisingly difficult to find moral value in brute physical capacity when we tend to attach the tags “moral” and “ethical” only to interpersonal, especially altruistic, relations. I proceed to describe Aristotle’s ethical paradigm as having a wider scope, and present his apparently self-contradictory views on the moral value of physical excellence. I then sketch a modified Aristotelian theory, which consistently affirms the value of human physical and mental activity alike, and show how an Aristotelian emphasis on human function can reveal physical human enhancement to be a tap into intrinsic moral value.<sup>1</sup>

### Aristotle’s ethics

It is worth asking at the outset how a 2,300-year-old corpus of Greek texts could be relevant to some of our time’s fastest-moving, highest-tech ethical dilemmas. Aristotle was a groundbreaking biologist in his day, but no one would claim that he could have foreseen particular enhancement technologies that now exist or soon will. Though he can’t tell us which carbon fibers should be allowed in Olympic track prosthetics, or whether erythropoietin injections should be banned from the Tour de France, I suggest that

he absolutely can give a novel account of ethical considerations relevant to enhancement. In fact, his eudaimonistic ethical system, with its emphasis on human activity and human functioning, is practically custom-built to address the ethical implications of expanded human capacity.

Aristotle takes a long view of moral action. Where contemporary ethical discourse tends to chew over what is “the right thing to do” in response to some one-and-done moral dilemma, Aristotle’s ethical writings are concerned to find the habitual mode of action that results in a life well-lived (*Nicomachean Ethics* [NE] I.7.1098a18-21).<sup>2</sup> He can and does regard some individual actions as being morally commendable (NE X.8.1179a3), but regards each as only a small piece of the moral puzzle that takes a lifetime to assemble. When we live a life of consistently excellent activity, we live in *eudaimonia*, a state of well-being that’s difficult to express by one English word, although “happiness” is a common choice. It would be fair to call the *eudaimon* person “happy,” but in a deep, long-term sense, more French *heureux* than *content*.

If *eudaimonia* is paraphrased as “living well,” pretty much everyone will agree that *eudaimonia* is the proper goal for a human life. But what are the pieces that come together to construct and comprise a well-lived life? That is, which habitual activities are the right ones? Aristotle recognizes that this question is the nub of all ethical disagreement (NE I.7.1097b24-26), but his own account of the content of a well-lived life is famously incoherent.<sup>3</sup> Broadly speaking, three readings of Aristotle’s account of *eudaimonia* have found currency among commentators: the intellectual, the inclusive, and the inconsistent.<sup>4</sup> The intellectual interpretation has Aristotle placing philosophical contemplation on a pedestal by itself as the only intrinsically worthwhile activity a human being can engage in. The inclusive interpretation has Aristotle making a more commonsense case for human well-being, with intellectual activity as only one important piece of a life that also includes family, friendship, physical fitness, material possessions, and other non-intellectual goods. The inconsistent interpretation has Aristotle failing to present a coherent system, presenting an intellectualist case in some places, and an inclusivist case in others, with no clear reconciliation of the two.

The present paper is rooted in an inclusivist theory of *eudaimonia*. This is probably not surprising. Since the vogue for Aristotle’s “virtue ethics” began some fifty years ago, it has often been marketed as a commonsense ethic for everyday life. An intellectualist virtue ethics would have less broad appeal. Virtue ethics has also been presented as an alternative to the two reigning ethical paradigms of our day, deontology and consequentialism. Not everyone has been impressed – the status of virtue ethics as a truly independent third paradigm has been disputed (e.g. Nussbaum 1999), and its purveyors have been taken to task for a tendency to lard their writings with exhortations to warm, fuzzy, and decidedly un-Aristotelian virtues (see Coope 2006 for a grouchy but incisive critique). Enough criticisms of the trend seem warranted that I am unwilling to present myself as a card-carrying virtue ethicist.

But despite its hesitations about “virtue ethics” so called, I hope the present paper identifies an excellent instance of an Aristotelian approach to morality leading to a viewpoint that’s out of reach for deontological and consequentialist approaches, along with the synthetic “principlist” approach popular among bioethicists. And despite my compunctions about un-Aristotelian accretions in modern virtue ethics, I will be arguing beyond Aristotle myself. The difference, I hope, will be in a clear exposition of what Aristotle says and what he doesn’t say.

### **Aristotle on the ethics of physical excellence**

This paper’s focus on physical, as opposed to cognitive, enhancement results from my perception that it’s here that Aristotle’s thought can inspire the most immediately novel contribution. The mind, even for an inclusivist Aristotle, is central to the full realization of human moral perfection, because our rational faculty is uniquely human, separating us from the lower animals. Being an excellent human has much to

do with whether and how one makes use of our most distinctive ability. Cognitive enhancement ethics has been done in frameworks reminiscent of Aristotle, such as Barbro Fröding's virtue-ethical analysis (Fröding 2012),<sup>5</sup> and Norman Daniels' idea of species-typical functioning (Daniels 2006, 23), but giving Aristotle a seat at the table by directly applying his writings to issues of cognitive enhancement could prove fruitful. He would have much to say.

Despite his emphasis on the rational, Aristotle also remarks on the human body's role in ethical living. Although apparent inconsistencies make it difficult to systematize the body's place in his moral theory, his writings sometimes laud bodily goods as necessary to *eudaimonia*, and worthy of cultivation and esteem. Aristotle takes the category of bodily goods to include capacities such as speed and strength,<sup>6</sup> the latter of which will be my focus.<sup>7</sup> When dividing and classifying the goods of human life, Aristotle sometimes makes a distinction between internal and external goods (e.g. *Rhetoric* I.5.1360b30-32). In general, internal goods are more valuable and more closely associated with the individual, while external goods are of lower rank and are added to the individual from outside. But Aristotle does not present consistent classifications in all his works, notably placing bodily goods sometimes among internal, sometimes among external goods, and sometimes in a category of their own (Rapp 2009, 222; Cooper 1999, 294-95; Reeve 1992, 161-63).

Aristotle maintains that external goods are gained through good luck, even in passages where he classifies bodily goods as external (e.g. *Politics* IV.11.1295b3-10; *NE* VII.13.1153b17-19). This is puzzling, since his specific analyses of the etiology of physical strength uniformly hold that strength is gained by hard but measured labor and zealous attention to diet.<sup>8</sup> Any athlete knows that a certain amount of luck is required to avoid injury, but it seems odd to acknowledge the rigors of training and still maintain that luck is the primary source of strength.

Additionally, at *EN* II.4.1105a10, Aristotle lays down an aphorism that we might expect to see on the wall of a weight room, or the back of a track team's T-shirt: "a good thing is better when it's more difficult." This remark accentuates how odd it is to class physical strength with goods of fortune like height or inherited wealth. At the least, it would seem to necessitate a distinction between the value of a given level of strength exercised on one hand by a hard-training featherweight, and on the other hand by someone who was just born burly.

Finally, while Aristotle uniformly classes strength as a good, he contradicts himself as to whether strength is an intrinsically valuable good – it is at *Rhet.* I.7.1363b8-1364a2, but not at *Eudemian Ethics* VIII.3.1248b23-24 and *Topics* III.1.116b37-117a2.<sup>9</sup>

### **Aristotle's ethics, evolved**

Aristotle never explicitly acknowledges the tension created by his apparently contradictory evaluations of the ethics of physical strength. What if we were to iron the inconsistency out of his thought ourselves? What would the resulting theory look like? If we maintain the inclusivist stance on *eudaimonia*, we would have to grant that exercise of physical strength is imbued with moral excellence. Our own classification of goods – i.e., just what proportion of *eudaimonia* consists in the exercise of physical strength – will dictate how weighty, as it were, this excellence is. It might be significant, or it might be small potatoes in comparison to the excellence inherent to other activities that contribute more to *eudaimonia*. The key point remains: in such an evolved Aristotelian ethics, exercise of physical strength has intrinsic moral value. Not merely as a means to health, or self-confidence, or longer life – it is valuable in itself.<sup>10</sup>

This is a very foreign notion to most of us. Contemporary usage tends exclusively to apply terms like "moral," "ethical," and "the right thing to do" to interpersonal relations, especially altruistic intentions and actions. Such usage reflects the same conceptual prejudices that consistently preclude physical

enhancement from being treated in bioethical literature. We can easily see moral worth in the actions of a firefighter who dashes up several flights of stairs to axe a heavy door and save a child from a burning building, but most of us would locate moral worth only in the consequence of a child's being rescued, or in the firefighter's good intentions. That there might be moral worth intrinsic to the firefighter's physical prowess is an alien idea. Some would no doubt even see it as a *reductio ad absurdum* of inclusivist, Aristotelian moral theory – that is, if an ethical system entails moral worth in brute physical activity, the system must be defective.<sup>11</sup> Here we see how the moral world really can look different through an Aristotelian lens.

If there is moral worth in the exercise of physical strength and speed, what is its nature, and where does it come from? One possible answer is rooted in Aristotle's Function Argument (*NE* I.7.1097b22-1098a20). In this argument, Aristotle asserts that the human good is determined by considering the function most proper to humans, and he concludes that since humans are the only rational creatures, the human good must be a certain sort of mental activity. The arbitrary limitation to a single, exceptionally distinctive activity seems hard to defend, especially if we hold to inclusivism, which affirms the moral relevance of non-rational activity. Instead of throwing out the Function Argument, though, an evolved Aristotelian theory may be able to expand it to be inclusive of non-rational human functions. This expansion is not without peril. It could well run out of control, yielding results unacceptable to almost everyone. If moral value is found in activities that humans tend to do and are good at doing, how could we non-arbitrarily condemn time-honored pursuits like lying, adultery, slavery, or killing? Any naturalistic theory of ethics must answer this difficult question by giving grounds for drawing the moral-immoral line where it does.<sup>12</sup> As Gavin Lawrence puts it, it may be "human to do all kinds of nasty things" (2006, 39). There isn't room to decide such a fundamental question in this paper, but it must be pointed out as a potential problem.<sup>13</sup>

A focus on function in ethics is indicative of Aristotle's broader emphasis on teleology in metaphysics and natural philosophy. Teleological theories of nature, emphasizing ends (*teloi*) for the sake of which events occur, have had a rough ride since the rise of modern science (Westfall 1977). But within biology, Aristotle's teleology was at least partly vindicated by the discovery of evolution by natural selection. While we don't say that the process of evolution as a whole is directed by aspiration toward a *telos*, modern biological theory seems to invoke such ends to explain naturally selected traits.<sup>14</sup> Why do apes have opposable thumbs? Aristotle and Darwin give the same answer: because it helps them grasp things (Gotthelf 1999, 23; *Parts of Animals* IV.10.687b3-25).

There isn't space here to explore Aristotle's broader teleology in detail, nor to investigate the relationship between Aristotelian and evolutionary ethics. Suffice to say that a close relation of fact and value is integral to both theories. While some modern readers have accused Aristotle of committing the naturalistic fallacy (culpably deriving "ought" from "is") (e.g. Moore 1993, 225; see also Lawrence 2006, 65), others find his account sophisticated and compelling enough to install as the foundation of their own theories (e.g. Arnhart 1998; Casebeer 2003b). In the parlance of William Casebeer's neo-Aristotelian, evolutionary ethics, "to say that something is maximally moral is to say that it is maximally functional" (Casebeer 2003a, 67). Or as Abraham Lincoln is supposed to have said, "whatever you are, be a good one."<sup>15</sup>

### **Aristotelian vs. other ethics**

Consider a hypothetical biological enhancement procedure that would double a human being's overall physical strength. If we need specification about what "physical strength" means, let's go with Aristotle: "strength is the power of moving another thing as one wishes; and to move another thing, one must either pull, push, lift up, press down, or squeeze" (*Rhet.* I.4.1361b15-17). What would non-Aristotelian theories

say about this enhancement's moral significance? A consequentialist theory would assign moral significance based on an assessment of the enhancement's positive or negative outcomes. This could be read very broadly, including anything from bystanders' anxiety about the technology used, to how the enhanced individual is likely to apply his newfound strength (more effective firefighting, or more violent domestic violence?). The enhancement and resulting strength therefore might be extrinsically good or bad, depending on the happiness or suffering they bring to pass. A Kantian theory would look to the intentions of those involved in the procedure, and unless the intentions were pronouncedly benevolent or nefarious, it would be likely to shrug off the enhancement and its direct results as amoral events. A generalized bioethical principlism might try to blend consequentialism and deontology, as in Beauchamp and Childress' "Georgetown Mantra" of autonomy, beneficence, non-maleficence and justice. With no guidelines for prioritizing the four principles, the results of such a flexible (some might say squishy)<sup>16</sup> approach are notoriously difficult to predict.

In contrast, an evolved, inclusivist Aristotelian ethics considers the exercise of increased strength an intrinsic good. Not because it enables good consequences – as an aspect of human excellence, it is a good in itself. Now, although moral improvement may follow quickly upon enhancement, it isn't automatic, and the distinction between capability and action is worth pointing out. By Aristotle's lights, merely being the sort of person who would act morally if called upon does not make a person good. Action is necessary, and only habitual actions can be claimed as evidence for moral character. For this reason, even an evolved Aristotelian theory would not quite call a physical enhancement good in itself – moral improvement lies only in the exercise of increased capacity.<sup>17</sup>

Of course, accepting some amount of good as intrinsic to the exercise of increased capacity does not preclude foregoing enhancement to avoid attendant evils. Aristotle's writings are marked by circumspect attention to detail, and one can scarcely get through a chapter of *NE* without being reminded that contextual information about time, place, person, intention and manner is necessary for properly gauging an action's ethical status. If our proposed strength enhancement is accomplished by the fabled strength-boosting effect of a street drug like phencyclidine (PCP) or "bath salts," Aristotle would say that adverse side effects – especially the frightening damage done to our cardinal function, rationality – render it completely unacceptable.<sup>18</sup> An Aristotelian theory is also equipped to consider social impact, and we find at *NE* I.2.1094b8 that the good of the polity is more important than the good of an individual. Although we may disagree with Aristotle about what constitutes a good polity, his framework is nonetheless sophisticated enough to place social welfare on the balances when judging an action's ethical status.

Since an Aristotelian theory is willing and able to weigh moral improvement against any detriments that may accompany a physical enhancement, we might wonder if its position ends up being much different from the consequentialist's – especially since Aristotle values bodily activity less than pursuits like friendship and philosophical contemplation. How significant is the comparatively small kernel of moral value at the heart of a physical enhancement? In certain contexts, it may prove decisive. Since physical enhancements are usually thought to confer only competitive or positional benefit, it's generally recognized that a physical enhancement received by everyone becomes "self-defeating" (Brock 1998, 60). If Tom becomes much stronger than Dick, the thinking goes, he'll gain some advantages. He'll be able to defend himself better; if he works with his hands, he'll be more likely to get hired; maybe he'll enjoy the respect and praise of Harry for being impressively superior. If Dick and Harry and everyone else become as strong as Tom, what good does Tom's strength do him? None, if the good is merely positional. The moral landscape looks identical whether everyone is equally strong or equally weak, and the resources squandered to regain equality after the first enhancement are essentially wasted. On balance, it would have been better for everyone to stay weak.

An evolved Aristotelian theory begs to differ. From this Aristotelian perspective, everyone with an increased level of physical strength is capable of better executing functions proper to human beings, and

thereby capable of achieving greater moral excellence. Far from hemorrhaging benefit as they spread through populations, many of these allegedly “self-defeating” enhancements would only make more and more people better. A world of equally strong, capable human beings is, *ceteris paribus*, morally superior to a world of equally weak, inept human beings. This means that if the psychological, social, economic, and medical drawbacks of an enhancement are negligible, availing ourselves of it may become a moral obligation – especially if the expanded capacity cannot be obtained otherwise. Aristotle does value hard-won excellence more than what comes easily, so he finds greater moral worth in ability earned by physical exercise than in ability gained by effortless enhancement. Such a view credits additional moral excellence to those people who struggle through diseases like cancer or genetic obesity to expand such capacities as strength and speed, but the possibility of morally obligatory enhancement remains.

### **Kicking the tires**

Two questions naturally arise here. First, we might wonder what an Aristotelian theory says about the moral standing of people with physical disabilities. Calling some people more fully human than others is bound to raise some eyebrows. But because even an inclusive Aristotle unambiguously identifies the mind as much more ethically relevant than the body, his theory offers ample room for people with physical disabilities to lead morally excellent lives.<sup>19</sup> Take astrophysicist Stephen Hawking as an example. Having lived a brilliantly successful life of the mind, in spite of all the hardships that attend his disability, Hawking stands out as a shining example of Aristotelian human excellence. Aristotle is commonsensical about physical disability, noting that unqualified happiness (*eudaimonia*) requires the good fortune of external blessings such as ability, health, and physical beauty. Yes, an able-bodied and strong Stephen Hawking would be better-off, and would closer approximate the ideal human being. But intellectual achievement is better than physical, and becomes more valuable as it becomes more difficult to attain. Successful struggle against disability may allow an individual to gain back the moral standing their disability has taken away, and perhaps even become better than they could have been otherwise. Like the “liberal eugenics” proposed by Buchanan, Brock, Daniels, and Wikler (Buchanan et. al. 2001, 278), Aristotelian ethics devalues physical disability, not the disabled.<sup>20</sup>

A second question that arises here is just how far the moral imperative to enhancement extends. Aristotle locates many virtues at the mean between two extremes, such as courage between cowardice and rashness (*NE* III.7.1115b24-1116a7). Is it possible to go too far with physical enhancement, to become too fast or too strong? The answer seems to be no, not *per se*. That is, not as long as nothing else is damaged or inhibited by increasing physical ability. An inclusivist theory must keep in mind all the goods of human life, and take care that these are not sold off or unduly marginalized in the pursuit of strength or any other single good. Beauty is a fraught topic, but if it’s included in the list of human goods, and if increased strength requires increased muscle mass, we would have to ask at some point whether the tradeoff for a certain level of strength is worth looking like a hulking freak. Similarly, if gaining strength requires investment of time and money, there is a limit beyond which we will become destitute, socially bankrupt, morally culpable meatheads. Aristotle also cautions that great blessings of physical excellence are often too much weight for a person’s character to bear, and can make one rash and haughty (*Eudemian Ethics* VIII.3.1248b25-31; *NE* I.3.1094b19-20; *Rhet.* II.5.1383a3-8; *Politics* IV.11.1295b6-9). We should seek only as much strength as our characters can sustain.

But if some cybernetic enhancement could be done with minimal damage to appearance and any other goods – if our character can hold up to it, if the financial and social costs are negligible, the health risks minuscule, etc. – then it would seem that there exists a moral obligation to undergo the procedure, and become a better human being.

Given that an evolved Aristotelian ethics is rooted in a conception of proper human function, what can we say about an extreme enhancement that would leave enhanced individuals somehow less recognizable as being human? If some humans gained the ability to run one-hour marathons, or deadlift SUVs, they would still be executing recognizably human functions – they would just be performing them to a standard previously thought impossible. But what if we could conquer the physiological processes of aging, leaving ourselves effectively immortal? Or give ourselves literal wings to fly? In contrast to boosted strength and running speed – capacities that seem obviously proper to humans – enhancements like these seem alien to our nature.

Still, the fact that they're hard to fit into a framework of human function doesn't necessarily make them undesirable. Aristotle brands existence intrinsically good, and death intrinsically bad (*EN* IX.9.1170a20-21). He also says that the very best imaginable fate for a human being would be to become a god (*EN* VIII.7.1159a8). Conquering the limitations of human nature is intuitively desirable to Aristotle as it is to us. Who really wants to age and die? Even so, the uneasiness that many of us feel over the prospect of such obviously "unnatural" enhancements deserves consideration. Insofar as we shake off the bonds of our nature, we would weaken the foundations of Aristotelian ethics as an authoritative moral system. Rules for human excellence may not apply to a transhuman species. If such dramatic enhancements became feasible, we would need to proceed with caution.

There is plenty to debate, of course, over whether Aristotle's paradigm is the best moral system we have now. This paper is too short to engage in much of it, but to bolster the plausibility of the Aristotelian contribution to enhancement ethics, I will note that its valuation of bodily excellence accords with some of our own intuitions, although we do not routinely brand these intuitions "moral." We share feelings of awe and approbation at the sheer ability on display in nature's strongest, swiftest, most capable creatures. Think of the cultural currency in images of Michael Jordan leaping from the free-throw line for a slam dunk, or a cheetah in full sprint, legs a crossed blur beneath it, or a hunting lion, sinews rippling as it pulls down some hapless beast. We just don't feel the same way about couch potatoes, sloths and sea cucumbers.<sup>21</sup> Our intuitive regard for capability may be behind some of the public uproar over a 2012 article by Liao, Sandberg and Roache.<sup>22</sup> The article suggests various ways to minimize humanity's eco-footprint, including engineering people to be 25 per cent smaller by volume (2012, 214). Intentionally engineering humans to be smaller, and therefore weaker and less capable, strikes many of us as somehow sinisterly dystopian. Aristotelian ethics brands such engineering intrinsically immoral and offers a systematic explanation why, giving our intuitive horror a logical voice.<sup>23</sup>

## **Conclusion**

This paper is not intended to persuade its readers that an evolved Aristotelian ethical theory is true. A verdict on such a theory's plausibility would require extended treatment of the controversies and possible problems I have noted along the way. This paper is primarily intended to present a new vantage point for looking at one small piece of the moral world, and to show how such a shift in ethical viewpoint can change what we see there. If the ethical paradigms most popular in bioethics today are round holes, the concept of moral value inherent in physical activity is a square peg. It doesn't make sense, and so we haven't thought much about it. Reaching all the way back to Aristotle, we can find the foundations of a paradigm that allows for very different thinking.

Every popular ethical framework has its own problems. Until we find a perfect theory, we will continue to debate the merits of the ones we know, and the debate can only be aided and expanded by consideration of new ideas, even when they come from old philosophers.

## Notes

1. Such an Aristotelian theory, especially insofar as it is naturalistic, lives or dies with the plausibility of some controversial assumptions and entailments. There is no room to decide all relevant disputes in the present paper, but I point them out as potential problems where appropriate.

2. Throughout the paper, I will cite Aristotle by work, book, chapter, and the Bekker numbers of TLG's Greek text. All quotations of Aristotle are my own translations.

3. Jörn Müller references "die immer noch virulente Debatte über den Charakter der εὐδαιμονία" (2003, 540) and Jon Miller agrees that it is an "enduring exegetical problem" (2011, 16).

4. See Nagel 1980 for a brief introduction to the problem, Ackrill 1980 for an inclusivist case, Kraut 1989 for an intellectualist case, and Gauthier and Jolif 1958 for a contradictionist case.

5. Despite the potentially inclusive title, Fröding deliberately restricts her treatment to cognitive enhancement (2012, xiii and xvi).

6. At *NE* I.12.1101b15-18, Aristotle appears to endorse physical capacities for strength and running ability as "good and valuable." Gerard Hughes (2001, 130) holds that this is "clearly not a moral assessment," but passages like *Rhetoric* I.7.1363b8-1364a2, where Aristotle says physical strength is good in itself, and *Physics* VII.2.246b6, where strength is again identified as an excellence, muddy the waters. The plausibility of 1101b15-18 being a moral assessment seems to depend on how inclusively we interpret Aristotle on *eudaimonia*. Since "fine actions express moral excellence" (*NE* X.8.1179a4-6), physical activity could well qualify.

7. Beauty is also classed as a physical excellence (*Rhet.* I.5.1360b25-26), but an examination of cosmetic enhancement would call for forays into aesthetics, psychology and anthropology, and so falls outside the scope of this paper.

8. *Politics* VII.3.1338a21; *NE* II.2.1104a15; *Magna Moralia* I.5.1185b14-20; *Problems* II.5.867a1-3, XIX.38.921a1-2. Note that *Magna Moralia* and *Problems* are of questionable authorship.

9. Given that Aristotle's ethics center on value inherent to activity (*energeia*), how can strength, a mere capacity (*dunamis*), be intrinsically good? The answer may lie in Aristotle's metaphysics. For Aristotle, the activity of exercising physical strength is ontologically and temporally prior to the capacity. "Accordingly, it seems impossible to be a builder if one hasn't built anything, or a harpist if one hasn't played anything" (*Metaphysics* Θ.8.1049b30-31). In his commentary on *Metaphysics* Θ, Stephen Makin writes:

[Aristotle] cites as an accepted fact that in lots of cases someone learns to φ by φ-ing...from which it follows that it will be impossible to be an expert φ-er if one has never φ-ed (1049b29–31). And that constitutes direct confirmation of the claim that actuality is temporally prior to potentiality.

10. A *prima facie* objection may present itself: if we exercise physical strength for the sake of attaining *eudaimonia*, isn't the exercise of physical strength merely an extrinsic good? J.L. Ackrill's inclusivist reply (1980, 19) is to assert that the various goods which make up *eudaimonia* are part of it in the same way that putting is a part of golf. We do putt *in order to* play golf, but at the same time, putting itself *is*, in fact, playing golf. In the same way, the exercise of physical strength may simultaneously aspire to and participate in *eudaimonia*.

11. In response, the Aristotelian can only ask for a fair hearing, noting that a thorough inquiry into ethical theory requires us to suspend our prejudices as best we can.

12. The moral-amoral line may also be a problem – see note 15 below.

13. On facing this challenge and related ones, Scott James writes (2011, 207):

The updated Aristotelian can either abandon the idea that morality has... normative force or promise to show that biology can supply it. The first choice looks drastic. The second choice is but an unfulfilled promise. At best, a naturalized virtue ethic is a work in progress.

14. Marcus Hester takes it to be generally agreed ("though perhaps not true") that "Darwin's evolutionary theory is nonteleological" (1991, 19), but for recognition of teleology in evolution, see Depew and Weber 1994 (pp. 45-46 for discussion of Aristotle), Ayala 1999 (pp. 29-31 for Aristotle), and Mayr 1992 (p. 121 for Aristotle).

15. The wide scope of this prescription indicates how moral-amoral distinctions can become blurred in Aristotelian theory. A Function Argument-type approach could potentially bestow moral excellence on any organism which well exemplifies its kind's proper activities. Are we prepared to grant moral approbation to an especially swift horse? What about a particularly sticky limpet? (Establishing which functions are proper to which organisms is, of course, yet another fraught enterprise.) The breadth of ancient usage of the word *arete* (usually translated as "virtue" or "excellence") illustrates the point. Even soil is remarked as having *arete* (Thucydides I.4; Strabo *Geography* XVII.3.21), namely fertility. The Aristotelian ethicist must either find convincing grounds for drawing an amoral line in advance of dirt, or convince doubters that dirt can indeed be morally excellent.

16. Criticizing bioethical principlism, David Seedhouse writes (2009, 99):

Beauchamp, Childress and Gillon have got it lamentably wrong. Nebulous principles generally acceptable to well-heeled Western liberals do no more than offer conclusions: (a) open to wide interpretation; and (b) acceptable only to those who agree with them in the first place[.]

17. And before it is exercised, it is questionable whether the capacity can be claimed at all, certainly as far as its moral value is concerned. See note 9 above.

18. Eugene Garver writes (2006, 64) that “[t]he world-class athlete who has the virtue of running fast, but who does so through a regimen of drugs, has not put his body in good condition,” but an Aristotelian theory need not share his blanket prejudice against pharmacological enhancement. If the drugs are attended by damage that outweighs the benefit of increased capability, as in the case of PCP, then of course they ought not be used. If there were no appreciable side effects, however, it’s hard to see how an Aristotelian theory could condemn their use.

19. In contrast, there’s no doubt that Aristotle believes a severe mental handicap can preclude a person from being truly human. For Aristotle, humans are distinguished from (and elevated above) other animals by our rational faculties, and if you do not possess and make use of distinctively human rational faculties, you are not human. This view may be jarring, although it does not, of course, preclude humane treatment of those afflicted with severe mental disability, any more than it precludes humane treatment of non-rational infants or other animals. In any case, how and whether Aristotle’s view of severe mental disability should be revised in an evolved Aristotelian theory is a question that begs attention, but it cannot receive more here.

20. The relevant point made by Buchanan and his colleagues is that, as they put it, “We devalue disabilities because we value the opportunities and welfare of the people who have them.” See Agar 2004 for a much broader defense of what its author refers to as “liberal eugenics.”

21. Justly or not, the abilities we have the most intuitive regard for are the ones we can identify with, such as strength and speed. No doubt sea cucumbers have various abilities that are brilliantly adapted to a life of squiggling around on the ocean floor, but few of us are much impressed.

22. See Hickman (2012) for an example of the uproar.

23. Of course, the caveat must be added that, if anthropogenic climate change is regarded as a sufficiently dire threat to humanity’s future, an Aristotelian theory can allow endorsement of human dys-engineering as a lesser evil than extinction.

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