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Future Human Success

Beyond Techno-Libertarianism

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Some of today's salient environmental challenges, such as climate change and ecosystem depletion, suggest that metrics such as population size or ecological dominance seem inappropriate ways to define "human success" in the 21st century. An increase in population size and rate of resource consumption seems neither desirable nor sustainable. How, then, should we reconceptualize success moving forward? What principles should guide our reflection about this question?

One striking vision of human success is one where technological progress delivers a desirable and sustainable state of affairs. This need not imply some dystopian technocracy. At least in the literature on enhancement ethics (e.g., Harris 2007; Persson and Savulescu 2012; Bostrom 2014; Sandberg 2014), an optimism in technology is typically combined with an embrace of Millian "experiments in living." The enhancing of our bodies and minds should not be coordinated by governments or collectives but should be conducted by individuals in pursuit of personal well-being. For this reason, this vision's concept of human success can be labeled "techno-libertarian success":

> Techno-libertarian success is the realization of maximal individual choice by means of progress in enhancement technology.

The core concept here is choice. It is what grounds the teleological nature of techno-libertarian success (see Hourdequin in this volume): the preferences or choices of the individual determine what "success" means. Thus techno-libertarian success is very pluralistic. It could, in principle, refer to any outcome or state as long as it is the object of an autonomous wish. Common

desires would be for enhanced cognitive/athletic performance or for the enhanced health or talents of one's children (e.g., Savulescu 2005; Sandberg 2014). In fact, *any* valued aspect of human life can be the target of enhancement. Does an individual desire intimacy and healthy relationships? These can be enhanced through "love drugs" (Earp and Savulescu 2020). Are biodiversity and animal well-being to be valued? Then human self-centeredness, speciesism, or parochial altruism should be enhanced by targeting human moral cognition (Persson and Savulescu 2012).

Is techno-libertarian success plausible? One important consideration in its favor is that bets against human technological creativity have often been on the losing side. In fact, Arthur C. Clarke (1964, 14) even deemed it a "law" that "when [an elderly but distinguished scientist] states that something is impossible, he is very probably wrong." And one need not share Clarke's level of optimism to agree that a creative culture focused more on what may work will generate more technological progress than a culture focused on what cannot work. An optimism in technology may be a useful belief, even if it is not always justified.

However, one should not be too quick to downplay technology's potential. Even our basic anatomical features—bipedalism, opposable thumbs, a small gut, and a large skull—reflect how humans evolved in symbiosis with various technologies, including Oldowan/Acheulean stone technologies (see Vermeij or Potts in this volume) and the control of fire (Wrangham 2010; but see also Vermeij, Grove, or Demps and Richerson in this volume). Nobody can deny how important technology has been in the human evolutionary story.

There seems to be no strong reason to doubt this importance will diminish in the future. On the contrary, today it seems possible that we will be able to directly intervene on human genotypes or on brain function. Who can say what the limits are to this symbiosis between humans and technology? Human minds have become so intertwined with technology that for some time now it does not seem absurd to claim that information technologies are simply extensions of the mind (Clark and Chalmers 1998). From a broader evolutionary perspective, powerful technology represents the way in which human evolution could be shaped according to the goals of human agency.

Formulated in terms of more fundamental concepts, this vision of techno-libertarian success would correspond to an unprecedented empowerment

of human agency: our beliefs, intentions, or ideals would control how our minds and bodies develop. It is not that human agency has not played a role in human evolution thus far. (The role of technology attests to that.) However, there have not been attempts to intentionally direct human evolution, except perhaps for eugenics, which relied on mistaken beliefs about heredity. Eugenics also entailed the ethically problematic asymmetry between the empowering of the agency of some humans (policymakers) and the disempowering of others (e.g., those undergoing forcible sterilization). By contrast, techno-libertarian success does not seem—at least at first sight—to involve this asymmetry and, moreover, allows, at least in principle, a direct shaping of individual genotypes and phenotypes. If the vision of techno-libertarian success were to come about, it would represent a significant discontinuity in human evolutionary history, reducing the causal role played by several "natural" processes that have been historically important for the human species: natural selection, development, and—because of the futuristic potential of cognitive enhancement—even forms of social learning such as education.

Even if we should not be quick to dismiss techno-libertarian success, we come back to the question: Is it plausible, given what we know and understand about human evolution? The danger in thinking about future human success is that it quickly becomes overly speculative. Hence, as a first step in bringing this discussion onto a more secure footing, I will introduce a framework by which success concepts can be evaluated: namely, how well they resolve the "problem of human success." Roughly, this is the problem that the human species has become "too" successful in terms of population size and ecological dominance. The problem of human success serves as a benchmark by which to judge candidate success concepts: How sustainable and desirable is a given success metric?

In these terms, my main argument will be that techno-libertarian success is not desirable nor likely to be sustainable. And the main idea is relatively straightforward: when individuals are left to pursue their personal well-being in any way they see fit, they end up competing over a small range of scarce resources all relating to social status, whether nice houses, good education, well-paying jobs, or attractive romantic partners. By focusing on individual-level metrics, techno-libertarian success downplays the role of the social environment and the community. These criticisms, I argue, constitute desiderata for concepts of future human success.

1. The Problem of Human Success

The question of what future human success might be may seem speculative—akin to asking historians to make predictions about where humanity will be in 100 years. However, a more principled treatment can be achieved by focusing on why precisely eco-evolutionary metrics of success are unsatisfactory. For this chapter we will limit the discussion to two important metrics: population size and ecological dominance.

These metrics are quite common when evaluating the evolutionary fate of other species. For instance, general overviews of ant evolution explicitly adopt success talk: ants are said to be "one of evolution's great success stories" (Ward 2006, R152) or, alternatively, "arguably the greatest success story in the history of terrestrial metazoa" (Schultz 2000, 14028). This success talk can and has been transposed to the human species (most recently and notably in Henrich 2016).

However, there are at least two reasons to judge eco-evolutionary metrics insufficient when it comes to defining "human success." The first is that the ecological dominance of the human species is currently paired with unsustainable rates of habitat destruction for other species, threatening future ecological collapse. The second refers to the role of human agency in defining what counts as "success" (McShea and Hourdequin each emphasize this point in this volume). For instance, a continued explosive growth in the human population size would seem, in Malthusian fashion, quite compatible with increasing misery and hardly a scenario one would be tempted to call "one of evolution's great success stories."

Taken together, these two reasons constitute a challenge for any success concept—a challenge that eco-evolutionary success seemingly cannot meet. The failure of the eco-evolutionary success metrics to define a satisfactory success concept can be dubbed "the problem of human success":

> The problem of human success. If success is defined according to the eco-evolutionary metrics of ecological dominance and population size, then human success seems neither sustainable nor desirable, and thus not really a concept of success.

It is not self-evident why eco-evolutionary success should not be sustainable or desirable. For instance, Thomas Malthus worried about overpopulation, and yet the human population has increased about eightfold since the 18th

century. Moreover, while increased rates of resource extraction cause pollution and climate change, they have also allowed for the flourishing of human culture in the past 10,000 years. Nonetheless, here is some further argumentation for why genuine "human success" cannot involve maximal levels of eco-evolutionary success.

Current trends in eco-evolutionary success are unsustainable. The prospect of environmental depletion due to human ecological dominance is not new. For instance, during the hegemony of the Roman Empire, large-scale deforestation and extinction of large fauna occurred (Hughes 2014). However, the scale of threatened depletion is so high today that humans cannot ignore it in the way they could 2,000 years ago. First, no longer do humans merely dominate their evolutionary rivals (i.e., large predatory mammals that require large habitats); now they also threaten to cause the extinction of species across a wide range of phylogenies (Barnosky et al. 2011). Consumption of other species is not the main cause of this, but rather the destruction of habitats, for instance by converting forests into agricultural land or infrastructure. A recent study found that the appropriation of the net primary production of biomass by humans rose from 13% in 1910 to 25% in 2005 (Krausmann et al. 2013).

However, contrary to depictions in the popular media, one should caution against some overly pessimistic conclusions. First, this trend may not continue. Krausmann et al. (2013) note that while biomass appropriation doubled, economic output—a measure for efficiency—rose 17-fold between 1910 and 2005. Hence, future economic growth may well be possible without large increases in biomass appropriation. Second, it is uncertain what precise level of maximal ecological dominance is also sustainable. Through better environmental management and more efficient energy and food production, it may be possible to extract more resources without any existential risk (Ord 2020) or even a cascading reduction in biodiversity. Nonetheless, in the assumption that investment in biomass production requires less than maximal biomass appropriation (i.e., to burn wood one must plant trees), it is safe to say that maximal biomass appropriation is unsustainable.

A similar argument can be made for the metric of population size. The size of the global population has increased dramatically in the past three to four centuries, engendering great uncertainty as to whether the human population size would exceed the carrying capacity of the environment. In the 18th century, Malthus was worried about collapse; almost two centuries later, Paul Ehrlich (1968) predicted imminent population collapse. Both

underestimated the importance of technological progress for agricultural yields (Trewavas 2002). Nonetheless, here too it is safe to say that continued increases in population size and ecological dominance cannot be sustained indefinitely and that the maximal possible population size would not be the sustainable population size.

The lack of sustainability means that "eco-evolutionary success" is not an entirely consistent notion: when population size or biomass appropriation increases beyond a certain point, that increase implies a future *decrease* in population size or biomass appropriation. Beyond a certain point, increased eco-evolutionary success actually corresponds to human failure.

Eco-evolutionary success is not what matters most. Not only do population size and biomass appropriation seem to fail on their own terms, but, for varying reasons, they are not what human agency aims at. We seem to care for biodiversity and animal welfare for their own sakes: environmental ethicists typically think of biodiversity and animal welfare as intrinsic values. Moreover, in a different sign that such value judgments are widespread, the scenario of a future human state where the human population size is astronomical and biodiversity all but destroyed is a staple of dystopian science fiction.

Similarly, in the hypothetical trade-off between global population size and our own flourishing and well-being, we seem to squarely side with the latter. The Parfitian argument illustrates this value judgment: if further increases in the human population size would correlate with the misery of individual humans, then it would be "repugnant" to aim at increasing human population, even if utility calculus dictated it (Parfit 1984). In fact, the vast growth of a population consisting of valueless individuals calls to mind images of parasites or cancers, to which the human species is sometimes compared (Hern 1993).

Of course, these ethical intuitions are not universal: humans once believed that having a large number of future descendants was an ethical priority.[1] Perhaps the trade-off then between large population size and other values was not as sharp as it seems to be today. Nonetheless, we can safely assume for the purpose of this chapter that indefinite increases in eco-evolutionary success, defined in terms of population size and ecological dominance, do not capture what humans actually care about.

2. Evaluating Success Concepts: Eugenicist Success

The problem of human success allows candidate success concepts to be evaluated with some systematicity, by means of two questions: Are indefinite increases in the associated metrics of success sustainable? And are indefinite increases desirable? If not, then the success concept does not identify a long-term direction for human evolution.

As an illustration of such an evaluation, consider the concept of human success that late 19th- and early to mid-20th century eugenicists implicitly operated with. Eugenicists were worried about how natural selection was disrupted by the improved circumstances in modern societies, whether through nutrition, healthcare, or vaccination. The problematic consequence was that those who *would have been* fitter in a "natural" environment no longer out-reproduced those who *would have been* less fit—and in partic-ular, the lower socioeconomic classes were out-reproducing the upper ones. These lower socioeconomic classes were believed to be characterized by he-reditary traits such as "pauperism," "feeble-mindedness," or "imbecility" (Kevles 1985, 20–21).[2] In fact, it was this eugenicist concern with heritability that spurred the biostatistical research that was to become the modern syn-thesis (see Desmond 2022 for a further exploration of this). In any case, this difference in reproductive output, together with the hereditary nature of their undesirable traits, was believed to be leading to the "degradation" of the human species. Action was needed to stop and reverse this trend. This was the rationale, as is well known, for deliberate artificial selection by means of antimiscegenation laws, forcible sterilization, and worse.

The concept of human success implicit in this eugenicist vision of human evolution is a species-level concept: success is achieved not by the species as a whole but by individuals alone. Moreover, eugenicist success is not plu-ralistic but is spelled out in terms such as "intelligence" or "giftedness" or "virtue." For instance, the state of human success then would have been, in the words of Galton (1869, 1), a "highly gifted race of men."

In its own way, the eugenic concept of human success can be interpreted as a response to the problem of human success. Increases in population size were viewed as unsustainable and undesirable, not so much because of the threat of ecosystem collapse but rather because they created a differential reproduction rate between "high-quality" and "low-quality" humans. The

eugenicists were the progressives of their era: they were critical of hereditary aristocracy,[3] and their main opposition, at least in the United States, came from religious (Catholic) corners. In this way, eugenics is an illustration about how a certain understanding of the problem of human success gave rise to a concept of future human success, which in turn was heavily laden with nefarious ethical and political implications.

3. Techno-Libertarian Success and Its Evolutionary Rationale

Of main concern to this chapter is what sometimes is termed contemporary "liberal eugenics," as distinguished from "population eugenics" of the late 19th and early to mid-20th centuries (Agar 2005). Liberal eugenics leverages developments in gene-editing technology and holds that the state should neither actively intervene on human phenotypes or genotypes nor prohibit individuals from enhancing themselves, as long as others are not harmed by doing so. In this way, liberal eugenics typically has a distinctively libertarian flavor (Sparrow 2011).[4]

The associated success concept is techno-libertarian success: the future success of the human species lies in putting more and more powerful enhancement technologies at the disposal of individuals, so that they can live longer, healthier, and more satisfied lives. In this way, techno-libertarian success seems to offer a relatively straightforward response to the problem of human success. First, it straightforwardly answers the problem of desirability: if one assumes that individuals are the best judge of what they want in life, then by maximizing individual choice individuals can achieve what they desire. Usually this is greater flourishing and/or happiness. In Harari's (2017) view, it will mean eternal youth, a permanent state of happiness, and the possession of "super-abilities." In Harris's (2007, 9) view, it will be the "healthier, longer-lived, and altogether 'better'" lives mentioned earlier.[5] At no point would it seem like further increases in these goods would be a bad thing: it seems desirable that techno-libertarian success should increase indefinitely.

Second, techno-libertarian success addresses the issue of sustainability through cognitive and especially moral enhancement. The underlying idea here is that our self-centeredness and lack of concern for both non-human species and future human generations play a significant role in the unsustainability of eco-evolutionary success. There is in fact some evidence

that this is the case. For instance, habitat destruction correlates with economic inequality within a country (Mikkelson, Gonzalez, and Peterson 2007). In other words, the more relative poverty there is in a society, the more willing individuals are to exploit environmental resources to further their own economic standing (and, likely, the more willing regulators are to turn a blind eye). Hence our self-centeredness and parochial altruism are a prime target for cognitive enhancement technology.[6] In sum, through increased techno-libertarian success, both dimensions of the problem of human success can be resolved.

Techno-libertarian success could be read as a purely ethical notion: a value judgment of what humans should aim for, affirming the principle of autonomy and indirectly other values such as biodiversity or the well-being of animals or that of future human generations. If that were the only reading possible, it would not be of interest in the context of this volume. However, what is perhaps more fascinating—and problematic—about techno-libertarian success is how it is closely linked to a narrative or quasi-prediction of what will happen if we *do not* enhance. The success concepts involve an evolutionary rationale: without the promoting of enhancement technologies, the current path of human evolution will lead to suboptimal outcomes, if not catastrophe. Thus, techno-libertarian success is a predictive notion as well and is another illustration of how success concepts often uneasily straddle the divide between the ethical-normative and the causal-descriptive (see Desmond and Ramsey or McShea, this volume).

Why is techno-libertarian success, at least as it is commonly used, a hybrid concept in this way? First, it often involves referring to evolution by natural selection as a blind, directionless, and contingent process. This view of evolutionary history has deep roots and tends to be used to argue that some human state of affairs is contingent and likely maladaptive (Street 2006). In other work I argue that it is problematic (Desmond 2018, 2021a). However, using it as if it were as a "meme," the view has been taken up in enhancement ethics, where it is combined with the mismatch hypothesis in evolutionary psychology. As an illustration, consider the following:

> After all, our brains are products of evolution, which is a blind process that hardly seeks to maximize the good, or make us morally best. Evolution "cares" only about reproductive success. Moreover, even if the evolutionary process somehow led to what is in one sense an optimal result, this result may be optimal only in the environment in which our very distant ancestors

lived. It is very unlikely to be optimal in our utterly different modern environment. (There was, for example, no police in the primeval savannas, nor were there planes or hijackers. . . .) But if the current level isn't optimal, and we now have means of improving it (in whichever direction), then surely we have strong reasons to do so—including by biomedical means. (Kahane and Savulescu 2015, 138)

This is the "stone-age brains in modern skulls" logic most readers of this volume will be familiar with (Barkow, Cosmides, and Tooby 1992). The difference is perhaps that it entails a pessimism about our adaptiveness: our brains and bodies are not designed for the challenges of the Anthropocene, and our maladaptedness is so deep that it needs direct intervention by means of enhancement technology (Harris 2007; Harari 2017; Persson and Savulescu 2012). Our inherited genotypes and phenotypes are barriers to our well-being and must be overcome.

It would require a different type of work than is possible here to ascertain just *how* frequently this view pops up in enhancement ethics, but even a superficial review reveals other instances.[7] It seems fair to say that the scientific presuppositions of the view are seldomly made explicit, and that the mismatch hypothesis is applied far beyond relatively circumscribed psychological mechanisms like mate preferences or parental care (cf. Buss 2019) to all aspects of the human phenotype—including feelings of intimacy in long-term relationships (Earp and Savulescu 2020) as well as even our capacities of reasoning about what is valuable (Schaefer, Kahane, and Savulescu 2014).

At this point one can wonder why evolution is invoked in order to make an ethical argument. Why not keep ethics and evolution separate? And why connect ethics and evolution in this specific way? After all, the mismatch hypothesis need not imply any specific ethical conclusion. Mismatch could be viewed as warranting a collectivist or totalitarian approach to enhancement, where the state mandates enhancement regardless of individual choice. Alternatively, the mismatch could even be judged ethically unproblematic, or yet again, as a source of pain that should be tolerated as part of the human condition.

I believe that the best answer to this question is multifaceted, involving both logic and rhetoric, as it were. Regarding the former, a view of the evolution and causal nature of humans supports a utilitarian calculus about consequences. In particular, the emphasis on maladaptedness not only implies that enhancement is desirable but also that it involves a focus on individuals. Proponents of techno-libertarian success tend not to acknowledge that maladaptedness

can be a group-level property, but tend to emphasize individual-level properties: our brains are incapable of dealing optimally with evolutionary novelties in our environment, whether the presence of police, planes, or hijackers. Well-being is also defined in terms of individual properties, as a "state of an [*individual*] person's biology or psychology" (Savulescu, Sandberg, and Kahane 2014, 7, my emphasis). In this conceptual framework, when the utility calculus is carried out, only individual states and properties are taken into consideration, and thus group-level considerations are ignored. (This will be crucial for my argument later in the chapter.)

One consequence of this focus on the individual is that technologically mediated enhancement appears to be the only plausible way to overcome humans' deep maladaptedness. In this respect, techno-libertarian success should be distinguished from rival social liberal approaches to enhancement ethics, where the importance of policy and/or education are emphasized (see Buchanan and Powell, this volume). Given our inherited limitations, especially regarding our tribal moral psychology, the question arises as to whether policy and education are powerful enough.[8] We need cognitive enhancement, ranging from pharmaceuticals that manipulate neurochemicals (such as oxytocin) to computer-brain interfaces. Thus, interestingly, techno-libertarian success seems to depend on some implicit human nature concept: namely that it lies within "human nature" to be maladaptive to such an extent it can be meliorated only by means of technological phenotypic or genotypic interventions (see Kaebnick 2014 for how the concept "nature" is difficult to entirely eliminate).

In this way, the evolutionary considerations help rig the utilitarian calculus in the direction of the necessity of technological enhancement. However, a rhetorical element (if it can be called that) is involved as well, in that the evolutionary rationale helps position techno-libertarianism within a broader intellectual-political landscape. First, techno-libertarians champion change and progress and seek to overcome the status quo. Some have argued for this explicitly: cautionary arguments have been recast as irrational aversions caused by cognitive biases (Bostrom and Ord 2006; Caviola et al. 2014). At other times the association with Enlightenment and progress are more implicit. Consider, for instance, the following:

> This possibility of a new phase of evolution in which Darwinian evolution, by natural selection, will be replaced by a *deliberately* chosen process of selection, the results of which, instead of having to wait the millions of years over which Darwinian evolutionary change has taken place, will be seen

and felt almost immediately. This new process of evolutionary change will replace natural selection with deliberate selection, Darwinian evolution with "enhancement evolution." (Harris 2007, 3–4)

Here is a dichotomous understanding of human evolution: a "natural" part where human evolution is driven by blind and chancy natural selection, and a "rational" part where humans intentionally shape their own evolutionary destiny in the image of moral values. Add to this the fact that prominent cautionary approaches use quasi-religious language, such as respect for givenness or the sacredness of life (L. Kass 2003; Sandel 2007), and science versus religious overtones are added to the concept of techno-libertarian success.

This politicization of human evolution is fascinating, even though an attempt to analyze it would bring us beyond the scope of this chapter. However, it illustrates a mixing of fact and value that is strongly rejected by others (see McShea or Powell and Buchanan, this volume) and that yet seems to be more than fleetingly fallacious thinking. For it is striking how techno-libertarian success at least chimes with some of the eugenicist arguments. Moreover, the old eugenics was portrayed as a progressive movement overcoming human obscurantism and/or irrationality. This fact is often misrepresented today in political discourse, but Ordover (2003, 53) reminds us, "Eugenics meant, to its proponents, the victory of rationality over shortsighted altruism . . . science over sentimentalism." Or yet again, in the words of Galton (1909, 42), "[W]hat Nature does blindly, slowly, and ruthlessly, man may do providently, quickly, and kindly."

Much more could be said about techno-libertarian success, but what can be concluded here is that it is much more than a cleanly ethical concept. It is also supported by an evolutionary rationale: humans are deeply maladapted to the challenges of the Anthropocene and hence are in need of enhancement. In this way, techno-libertarian success seems to offer a prima facie resolution to the problem of human success by sketching a vision of future human evolution involving sustainable and desirable increases in liberty through technological progress.

4. Liberty and Status Competition

The "stone-age brains in modern skulls" logic that techno-libertarianism relies on has its strengths; for instance, it helps to explain why many sexual,

mating, parenting, and kinship behaviors seem cross-cultural and recal-
citrant to changes in the social environment (Buss 2019). However, as a
sweeping view of human evolution, it is quite limited. First, the very con-
cept of a single type of ancestral environment characterizing the majority
of human evolution is suspect (e.g., Foley 2005). Second, and more impor-
tant, many aspects of human cognition are highly influenceable by social
learning and thus are very adaptable to the cultural environment (Boyd and
Richerson 1985; Henrich and Boyd 1998). Humans respond to social norms,
whether status or sexual norms, and in fact, sensitivity to norms seems to be
hardwired via various cognitive biases, such as the conformity bias (Baron,
Vandello, and Brunsman 1996), which is adaptive whenever social learning
is adaptive (Henrich and Boyd 1998). Thus, portraying human phenotypes as
primarily shaped by natural selection in the ancestral environment ignores
the role played by changing social structures. What happens to techno-
libertarian success—the maximization of individual choice through techno-
logical means—when social structure is taken into consideration?

Let us return to the quote by Kahane and Savulescu (2015), where, to il-
lustrate the challenges of environmental novelty, they give examples of po-
lice, planes, and hijackers. Do these factors constitute evolutionary novelties?
Consider police: obviously there were no individuals in hunter-gatherer
societies enforcing social norms with the backing of batons, judges, and
prisons. But the function of enforcing social norms is hardly a novelty. In
fact, many view enforcement as a necessary counterpart to the spread of al-
truistic social norms (see, e.g., Tomasello 2016). What counts as an evolu-
tionary novelty or as a mere variation of past environmental circumstances
is a difficult question (Desmond 2022). Perhaps planes are more plausible
evolutionary novelties, but then the further question arises: Do evolutionary
novelties always warrant cognitive enhancement?

Here it is instructive to look at the history of technology, and in particu-
lar at how people sometimes panicked at technological change. For in-
stance, rather amusingly today, the advent of train travel in 1860s and
1870s Victorian England was accompanied by widespread moral panic
(documented in, e.g., Milne-Smith 2016). Newspapers regularly reported
on how otherwise healthy individuals were driven to insanity by rail travel,
or of how some passengers suddenly turned violent without any discernible
reason. Doctors took to warning that the human body and mind were not
made for the intense vibrations and unnatural speed of rail travel (21). This
raises the question whether the championing of enhancement technology

to upgrade our brains is actually—and paradoxically—somehow related to classic forms of panic at technological progress. Today we no longer fear unprecedented speed: once we got used to trains, the speeds of planes and rockets seemed to be smaller psychological steps. Now, instead, we fear the unprecedented advances in computing and artificial intelligence (see Bostrom 2014 for an overview).

In this way, I share with Buchanan and Powell (this volume) some of the worry that cognitive plasticity is being downplayed in this view of human success. However, I wish to draw a different conclusion, namely that the impact of the social environment on individual cognition means that the concept of individual autonomy is exaggerated and is an abstraction of how individuals actually conduct their reasoning and decision-making, especially regarding enhancement decisions.

As an illustration, consider one of the most primeval but psychologically powerful enhancements: enhancing the length of one's body. Sometimes children are short without any particular pathology causing the short stature (e.g., hormone deficiencies or insensitivities). This condition is known as "idiopathic short stature" (Argente 2016). Is it a disability? There are no physical health risks involved. Even so, short stature is sometimes viewed as a psychosocial disability by the parents of the child (see Allen 2017, 146). Children themselves may experience it as a psychological burden (Ranke 2013). Hence, as an obstacle to well-being, targeting short stature may seem like an instance of techno-libertarian success. In fact, idiopathic short stature is regularly addressed through administering human growth hormone (hGH or somatotropin) and is sanctioned by the U.S. Food and Drug Administration when the child is in the first percentile for height (or more precisely, when the child's height is 2.25 standard deviations shorter than the average height; Ranke 2013, 330).

But what is the underlying story? What explains why we experience short stature as a disability? If we shift from the medical-ethical domain to human evolution, the reason is straightforward: physical height (and, in general, physical formidability) is one of the most widespread indicators of dominance across animal species (together with strength and aggression; see Ellis 1994, 1995). Human status hierarchies are more complicated than those of, say, lizards, but height still plays a measurable role. Taller people are viewed as superior in leadership and intelligence, and taller males in particular are viewed as healthier and more dominant than shorter males (van Vugt and Tybur 2015; Blaker et al. 2013). Other studies show how height correlates

with income, the likelihood of having a managerial position, and military rank (see Blaker et al. 2013 and references therein). While the effect of size should not be overestimated (i.e., many other factors predict income, such as education and socioeconomic class), sensitivity to physical height is ingrained in our inherited psychology, and this helps explain why parents and children may view short stature as a disability.

Techno-libertarian success dictates that hGH therapies should be made available to all, and that these would allow the parents and children to better pursue their well-being. The problem here for techno-libertarian success is that the meaning of "short" is largely comparative (average height has fluctuated significantly throughout human history; Steckel 1995) and that the value we place on height is—in a society where services are increasingly intellectual instead of physical—almost entirely due to the fact that others place value on height. Height enhancements thus raise the prospect of individuals feverishly enhancing their height in order to escape the first percentile. Each may be maximizing utility given the circumstances, but choosing height enhancement in such circumstances is clearly not an instance of a genuinely free choice. A libertarian could even deem that, in this circumstance, the sociocultural environment represents some kind of "tyranny," reducing the free choice of individuals: if parents did not have the sword of lifelong discrimination hanging over their heads, they would be in a better position to decide freely.

In itself, this consideration does not sink the techno-libertarian concept of success. One could respond that the sociocultural environment should be enhanced—for instance, by enhancing the moral psychology of the school bullies. In the context of enhancement ethics, social status has been recognized as important in how enhancing positional goods can create inequality (Mehlman and Botkin 1998) or perverse competitions (Sparrow 2019). However, the typical response is to point out how many competitions are beneficial for the community (e.g., Anomaly 2020, 11–13) and that the challenge lies in (technologically) promoting beneficial status competition and suppressing the perverse kind.

In the next section, I argue why this way of thinking about social status and individual decision-making does not work. However, first I will lay the ground for that by sketching just how crucial it is to take the sociocultural environment into consideration when evaluating decisions to enhance.

In general, it is difficult to overstate the importance of status for human psychology and for life outcomes. The desire for status has even been stated

to be a "fundamental motive" across cultures, genders, ages, and personalities (Anderson, Hildreth, and Howland 2015). Social status is a currency that can be traded in for a whole host of goods. Higher status correlates with higher subjective well-being, higher self-esteem, and better mental and physical health (Anderson, Hildreth, and Howland 2015). Conversely, people with lower status, whether through lack of wealth or education, have higher levels of stress (Thoits 2010), less experience of having control over their lives (Ross and Wu 1995), and higher rates of mortality from all causes (Wilkinson 2001; Marmot 2005). Status is thus at the nexus of all sorts of other desirable goods. It could be compared to a kind of a "gatekeeper good": the gate of social status is narrow and competitive, but once one passes through, all sorts of benefits follow.

Enhancements are—per definition—interventions to increase human capacities, so if one considers why one would be motivated to enhance, it does not take many steps to suspect that status-related reasons may play a large role. Of course, they *need* not play a large role. In principle, individuals could be highly motivated to enhance their ear-wiggling capacity—just to pick out one trivial-seeming trait. This could presumably be a component of techno-libertarian success. However, absent Swiftian scenarios where those with a superior ear-wiggling capacity are admired and lauded, nobody currently cares much about this capacity.

Conversely, we do care a great deal about other types of bodily movement that determine the outcomes of athletic competitions. Athletes using performance-enhancing drugs are, at a superficial level, merely trying to win. But why do they want to win? Why risk one's health for an athletic competition? In one of the few studies on athletes' incentives to use doping (Kegelaers et al. 2018), athletes list a host of motivations related to improving social status: their image, respect from others, greater popularity among friends, obtaining what Kegelaers and colleagues call "hero status," and, finally, financial gain. It is doubtful there would be the same incentive to use performance-enhancing drugs if the status rewards of athletic success, both financial and in terms of respect and recognition, were not so great.

Cognitive enhancement is often viewed as intrinsically beneficial. Yet also here the motivations for cognitive enhancement seem closely related to status. Consider education, which is today still the most effective way of enhancing one's cognition (even if nontechnologically). Education is not merely undertaken for its intrinsic benefits; education credentials are perhaps the single most important means to gain access to socioeconomic

status, since they allow entry into high-status professions (medicine, law, engineering, etc.). Students sometimes use technological cognitive enhancements (e.g., Adderall, Ritalin; see Ragan et al. 2013). Would they do this if their educational outcome did not determine their future in the way it does? According to a strict application of the techno-libertarian concept of success, permanent diminishments of cognitive capacities could also count as "success," as long as they increase well-being by satisfying preferences (Earp et al. 2014). However, whether such diminishment would occur with much frequency is doubtful, given the close link between cognitive capacity and status gains and human psychology's orientation toward status.

The role social status plays in decisions to enhance is documented in more detail in other work (Desmond 2021b). However, for purposes here, we can conclude that techno-libertarian success does not reflect how individuals are entangled with their social environments. The libertarian ideal of negative liberty (freedom from coercion) does not give direct guidance when the preferences underlying decision-making are themselves strongly influenced by status hierarchies, as seems to be the case with many (and perhaps all) decisions to enhance.

In this way, the response that techno-libertarian success offers to the problem of human success seems doubtful. The prospect of ever more powerful enhancement technologies to promote individual choice is consistent with perverse forms of status competition, and hence techno-libertarian success does not seem necessarily either desirable or sustainable. In such a regime of perverse status competition, increasing one's choice through technology would thus correspond to a de facto decrease in one's range of choice. For instance, actively promoting the ability to choose to enhance one's height yet further would also mean suppressing the ability to reject the importance of height. The libertarian would, of course, reject the latter cases as not genuine forms of techno-libertarian success. Then the question becomes how to distinguish genuine liberty from the merely apparent: how to distinguish genuinely autonomous choices from the apparent, or choices that deliver genuine well-being from choices we mistakenly believe will deliver well-being.

5. Technological Solutions to Status Competition?

Can the techno-libertarian conception of success not be rescued by targeting the sociocultural environment in some way? After all, one of the strengths of techno-libertarian success is its pluralism: as previously mentioned, *any* valued property P can be enhanced. In the ethics literature, this has allowed previous objections pointing to a decrease in "humility" or "appreciation of giftedness" (Sandel 2007) to be parried: "humility" and "appreciation of giftedness" are themselves experiences that could be the target of cognitive enhancement (see Roache and Savulescu 2016 for this argument). Thus, if techno-libertarian success is criticized as undesirable due to some property P, then the response could simply be "enhance P." If techno-libertarian success can lead to perverse status competitions, then why not simply enhance prosocial attitudes to avoid such status competitions?

Let us add some detail and plausibility to this objection. A unique dimension of human status hierarchies is that they are characterized by what has been termed "prestige" as opposed to "dominance" (Henrich and Gil-White 2001). Dominance indicates which individual would be the victor in a direct, physical confrontation, while prestige indicates some kind of competence or excellence. Since humans are biased toward learning from high-status individuals (Atkisson, O'Brien, and Mesoudi 2012), organizing status hierarchies according to prestige benefits social learning and cumulative culture—core elements of human eco-evolutionary success (see Demps and Richerson in this volume).

This distinction between dominance and prestige gives more detail as to what an "enhancement" of status competition would look like: it would enforce adherence to what some anthropologists call "service-for-prestige" norms (Price and Van Vugt 2014). High-status individuals are expected to act in the group's interests, and hence competition for prestige is more beneficial for the group over the long term than competition for dominance. Thus, the techno-libertarian promoting biomedical enhancement would target the moral cognition of high-status persons by increasing their prosocial tendencies to offer service to the group (in exchange for whatever status they may receive). In this way, the challenge to the sustainability and desirability of techno-libertarian success seems to be saved by yet further technological enhancement.

However, this attempt to save techno-libertarian success fails to consider a crucial question: *Who* should decide how such prosocial moral

enhancements are administered? In reality, the distinction between prestige and dominance can be ambiguous. Consider the example of silencing someone in a public debate. This can be a service to the community when that someone is engaging in hate speech. However, it can also be a form of self-serving dominance, where the silencing mainly functions as a way to suppress challengers. The techno-libertarian response sketched above presupposes that some group of persons—"guardians," if you will—would have a deep understanding of social dynamics, and indeed of ethics itself. In this way, the techno-libertarian needs a further and yet more problematic assumption in order to address the problem of perverse status competition. Not only could it be doubted that such guardians are humanly possible, and not only does it raise the problem of infinite regress (who guards the guardians?), but the idea that there would be such arbiters deciding on which enhancements promote "true liberty" and which merely promote "apparent liberty" runs counter to the very concept of negative liberty at the core of libertarianism. In the effort of techno-libertarian success to engineer benign status competition, the core libertarian tenet that individuals should conduct their lives as they see fit is severely compromised—and even if we end up with benign status competition, it is no longer a form of *libertarian* success.

Hence the second and even more radical response to the problems facing techno-libertarian success: Could status competition itself be removed through technological progress? In this vision of the human future, humans would simply lead their lives and not be motivated by any type of status consideration. Perhaps technological progress would allow for abundant resources, removing the need to compete for social status, or perhaps the psychological tendency to be motivated by status would itself be pharmaceutically suppressed. Would not this benignly anarchical state be preferable?

Yet this response must be parried, because it ignores the basic function of social status hierarchies, which evolved in order to streamline group-level decision-making procedures concerning individual access to scarce resources such as mates, food, or shelter (see, e.g., van Vugt and Tybur 2015). In other words, without a status hierarchy, physical conflicts would determine who gets what, and such conflicts would leave the group as a whole worse off. Thus, a group of hens with a pecking order will be better off than one where each feeding session provokes conflict about who gets what. A group of humans making collective decisions about who gets nice houses, a good education, interesting jobs, and so on will do better than a group where these issues are decided through physical conflicts. In fact, the principle that decides

status hierarchies would, in a different context, be referred to as a "principle of justice" (Rawls 1999). Status, at its most fundamental, determines which organism's needs are prioritized and prevents violent conflict over scarce resources.

For the sake of argument, one could grant that technological progress can alleviate most scarcity. Housing quality seems like something that could be "solved." Perhaps unrewarding lines of work could also be "solved" by advances in artificial intelligence so that computers and robots would take over all the drudgery. For the sake of argument, one could also grant that some future biomedical enhancement would suppress our unconscious obsession with social status. Yet the structural factors for which social status provides an adaptation cannot be enhanced away. Consider Arrow's theorem: in a group of at least three people deciding between three options, an impasse can be avoided only by some "dictatorship," where one individual's preferences weigh more on the collective decision. (This is a very rough formulation of Arrow's theorem; see Morreau 2019.) Similarly, unless one were to suppress human agency itself, it is inevitable that in a community, (1) the preferences of individuals do not coincide, (2) some collective decisions sometimes must be made, and (3) some principle is necessary to prioritize the preferences of some individuals over those of others. In other words, there is one scarce resource that technological progress cannot possibly alleviate: who gets to decide. From this perspective, it is not a coincidence that most institutions (whether corporations, governments, or charities) have "leaders," that is, individuals whose preferences are decisive for the collective, at least with regard to certain types of activity or subject matter. Competition for status (e.g., leadership positions) will not cease regardless of how much technological enhancement will occur. According to the line of reasoning presented here, the only way this could occur is if individuals ceased to be agents—that is, entities that act in order to realize their preferences. However, in that event there cannot be any techno-libertarian success.[9]

In sum, techno-libertarian success cannot resolve the problem of human success. It depends on concepts of autonomy and negative liberty that are implausible given how intertwined social environments and individual cognition are. We compete for social status, and this competition strongly influences our attempts to achieve well-being through enhancement, sometimes in a self-defeating way. Such challenges cannot be engineered away through further enhancement. Promoting benign status competition through further technological enhancement is not only inherently

problematic (it presupposes guardians who can make prior distinctions be-
tween benign and perverse status) but goes against core libertarian tenets.
Moreover, status competition cannot be engineered *away* either. It is here to
stay, and human success concepts must take this into consideration.

6. Conclusion: Desiderata for Human Success

Individuals are embedded in their communities and are not only highly de-
pendent on them for basic survival but also make core life choices in light
of their sociocultural environment. This chapter focused especially on the
role that status hierarchies and status competition—central components
of any social-cultural environment—play in forming individual choices.
Enhancement technologies merely alter or even intensify existing status
competitions but cannot remove them. Because individuals actively adapt
to sociocultural environments, the evolutionary rationale for techno-
libertarian success (i.e., the deep flaws of inherited human genotypes and
phenotypes) is likely overestimated. Moreover, because further promotion
of human enhancement can involve promoting perverse status competi-
tion, the very desirability and sustainability of techno-libertarian success are
undermined.

In such cases, "success" seems to lie in changing the social-cultural envi-
ronment rather than simply individual capacities. In this way, the failure of
techno-libertarian success suggests two desiderata for satisfactory concepts
of future human success. The first is that a concept of human success should
integrate community-level metrics. Eco-evolutionary success integrates
only species-level metrics (population size, ecological dominance), and
techno-libertarian success emphasizes individual-level metrics (i.e., indi-
vidual choice). However, the desires of individuals are very often oriented
toward the good of the community, and the community is organized so as to
contribute to the development and well-being of its members (e.g., through
social learning or division of labor). This means that a satisfactory con-
cept of "human success" would need to refer to dimensions of "successful
communities," for instance those with cultural environments where the flow
of social learning is optimized. One specific metric could be the degree to
which high status is accorded to individuals who have benefited the group
the most, or who have the potential to benefit the group the most (via their
competence or excellence).

The second desideratum concerns the content of such community-level metrics, which should acknowledge the importance of how status hierarchies are organized. Status hierarchies are a crucial feature of the structure of social environments; insofar as they allow multiple agents to coordinate in collective decision-making, they are perhaps *the* crucial feature. Status hierarchies can be organized in many different ways. Some reward actions that promote long-term interests, while others reward short-term ones. Some reward actions that involve overt self-sacrifice, while others celebrate individual status-seeking on the assumption that individuals chasing status will ultimately contribute the most to community-level metrics of human success. Yet others discourage individuals from pursuing status maximization for its own sake: ideals and virtues should be the primary values, with status and its various correlates (wealth, fame, recognition) mere afterthoughts.

In this way, ethics and politics cannot be excised from thinking about the future evolution of an intensely social species such as *Homo sapiens*. We compete and cooperate, and even at our most egoistic seek the approval of others. Concepts of future human success would need to identify successful forms of status competition, and in general would need to identify dimensions of what it means to be a "successful community."

Notes

1. For instance, in Genesis 22:17, Jahweh tells Abraham, "[I]n blessing I will bless you, and in multiplying I will multiply your descendants as the stars of the heaven, and as the sand which is upon the seashore."
2. Even Darwin (1871, 167), somewhat embarrassingly, spoke of how "the reckless, degraded, and often vicious members of society tend to increase at a quicker rate than the provident and generally virtuous members."
3. For instance, British eugenicists proposed reorganizing the House of Lords along eugenic principles in lieu of hereditary principles (reported in Kevles 1985, 73).
4. Liberal eugenics often employs utilitarian reasoning; however, the utilitarian logic is compatible with strong state intervention. Think of how the Benthamite line of thinking of "everybody to count for one, nobody for more than one" led to new charitable impulses, as well as reforms of public health and public education. This Benthamite line is not wholly absent in the literature on enhancement ethics (e.g., Savulescu 2001).
5. However, this need not be the case, given the primacy of individual autonomy. Techno-libertarian success can in principle entail sickly, short-lived, and miserable lives, if that is what the autonomous individual wants.

6. For a more detailed defense of this argument, see Persson and Savulescu (2012, chapter 7). For a challenge to this view, and a defense of the importance of policy and education in light of human cognitive plasticity, see Buchanan and Powell (2018) as well as their chapter in this volume.

7. For direct quotes, consider, for instance, Bostrom and Ord (2006, 665–666): "[O]ur current environment is in many respects very different from that of our evolutionary ancestors . . . [and] places very different demands on cognitive functioning than did an illiterate life on the savanna." Or, alternatively, Pugh, Kahane, and Savulescu (2016, 407): "[T]he relatively contingent and arbitrary features of human nature, selected as they were blind evolutionary processes."

8. In a recent response to criticisms by Buchanan and Powell (2018), Persson and Savulescu (2019) have stated that biomedical enhancement is merely one avenue to pursue moral progress, alongside social, legal, and institutional avenues. This seems like a dilution of techno-libertarian success, though in the response one can discern a similar structure or argument, where technological enhancement is necessary because "natural capacities for moral concern [are left] far behind" (818).

9. Harari (2017) seems to go down this path in speculating that, at some point in the human future, all decisions would be taken by artificial intelligence on the basis of large amounts of empirical data. However, that would also entail jettisoning techno-libertarian success altogether, along with the concepts of autonomy and liberalism.

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