

Knowing What to Wish For

TECHNOMORAL WISDOM AND HUMAN ENHANCEMENT TECHNOLOGY

IN THIS AND coming centuries, nanoscale, biological, information, and cognitive (NBIC) sciences are expected to converge in ways that enable the development of powerful new technologies for human enhancement.¹ We can define 'human enhancement' as the technological improvement and expansion of various 'species-typical' qualities and capabilities of human beings in ways that differ importantly from existing *therapeutic* uses of medical technology. Enhancement can be sought by a variety of means, alone or in combination, including genetic, biomechanical, nanomedical, and/or pharmacological techniques. The precise scope and essential characteristics of enhancement, and even its coherence as a concept in contrast with medical therapy, are hotly contested.² What is not in question is the considerable market potential of these technologies, which may offer radical life extension and slowed aging; enhanced bodily strength, endurance, resilience, size, or appearance; enhanced memory, attention, sensory perception, judgment, mood, or wakefulness; and enhancement of our moral faculties or dispositions.

Some enhancements are already available, such as the controversial but common 'off-label' uses of pharmacological agents such as Adderall or Modafinil to enhance attention, wakefulness, memory, mood, or endurance in healthy people. Other enhancements are in development and likely to emerge in the near future, thanks to brain-computer interfaces, genome editing, and biomechanical implants to enhance both cognitive and physical capacities. Still other enhancements envisioned by futurists fall into the realm of wild speculation: for example, the digital 'uploading' of human consciousnesses into 'cyber-immortality,' or the creation of transgenic human-animal hybrids.

10.1 Competing Visions of Human (or Posthuman) Flourishing

The most enthusiastic promoters of these developments call themselves 'transhumanists.' Transhumanists expect the obstacles to human flourishing presented by age, death, disability, and disease, as well as 'normal' cognitive and physical limitations, to be partly or wholly transcended by means of emerging technologies. Many speak of a coming 'posthuman' era that will fully liberate us from the straitjacket of our biological heritage.³ A diverse community of scholars, technologists, and futurists of various philosophical and political stripes, transhumanists are united by four widely shared convictions: 1) that enhancement technologies have the potential to greatly improve the quality of our existence; 2) that research and development of such technologies should generally be fostered rather than banned or discouraged; 3) that decisions about the wisdom of enhancing ourselves, or about what constitutes a genuine 'enhancement,' will often be best left to private individuals; and 4) that many or even most individuals will have good reasons to choose enhancement for themselves and/or their children.

Bioconservative ethicists, on the other hand, reject human enhancement on several grounds. Chief among them is the belief that the transhumanist vision poses a grave threat to human dignity, and depreciates the meaning and value of human nature.⁴ Other concerns include worries about existing global socio-economic inequalities being magnified by a split between enhanced and unenhanced social classes, fear of the physical and psychological risks of enhancement, and theological concerns about 'playing God.' Like transhumanists, bioconservatives are motivated by diverse philosophical, political, and spiritual convictions. They differ, for example, in the degree and scope of their opposition to existing genetic and reproductive technologies such as in-vitro fertilization and pre-implantation genetic diagnosis. Yet they share the view that transhumanism, far from promising unprecedented levels of well-being, in fact threatens to undermine the most basic moral and material conditions of human flourishing embedded in our biological nature. Limitations of space preclude a full survey of the debate over the ethics of human enhancement.⁵ There is, however, one fundamental question, largely ignored on both sides of this debate, which we need to ask: *what technomoral virtues would humans need to have in order to enhance themselves wisely and well?*

Of course, if human enhancement is always unethical *in principle*, regardless of the character and motivations of those who pursue it, then our question will be moot. However, as we will see, bioconservative arguments for an unconditional rejection of human enhancement technologies are deeply problematic,

even philosophically incoherent. Too often, transhumanists treat the weakness of these arguments as a free pass to overlook thornier and more nuanced ethical worries about enhancement, including those motivating our question. To reach those worries, let us first clear the road ahead by exposing the problems with the extreme bioconservative position. Only then can we confront the more daunting ethical challenge for transhumanists, and assess the wisdom of pursuing human enhancement from within our present technomoral condition.

10.1.1 Bioconservatism, Human Dignity, and Virtue

Many arguments against human enhancement are of a socially and technically contingent, rather than principled, sort. For example, concerns about the biological or socioeconomic risks of human enhancement depend heavily upon the particular worldly conditions under which such technologies will be developed, tested, and disseminated. If those conditions can be suitably controlled, the risks of enhancement could perhaps be mitigated or greatly reduced. Yet most bioconservatives offer a single *a priori* principle as justification for a blanket rejection of any and all human enhancement proposals, regardless of the specifics of those proposals or their social implementation. Bioconservatives typically claim that any proposal for human enhancement involves a profound violation of the moral imperative to respect *human dignity*.

Yet it is far from clear what bioconservatives mean by ‘human dignity.’ Francis Fukuyama notoriously defines it as the possession of an ineffable “Factor X,” an “essential human quality” defying description that lies behind “a person’s contingent and accidental characteristics.”⁶ This is problematic for a number of reasons, not the least of which are its vagueness and reliance on a questionable and apparently *ad hoc* metaphysics. Fukuyama defends his view on the grounds that the cultural and political ideals of Western liberalism depend for their intellectual coherence upon the existence of this universal and essential human quality. One could easily dispute this assertion, but regardless, it is not clear how Fukuyama can defend a metaphysical claim *simply* by observing that it happens to sit better with his political and cultural ideals.

Leon Kass, in his essay ‘Defending Human Dignity,’ attempts to overcome the lack of specificity that he admits tends to plague bioconservative appeals to this concept.⁷ He defines human dignity as fundamentally connected with human *aspiration*. Here dignity depends upon our species’ conscious striving to realize our natural potentialities through excellent activity, in order to flourish in our given biological form. Thus he equates dignity with the very capacity for moral self-cultivation we explored in Part II. Yet Kass links this aspiration to fulfill our *natural* potential for excellence to another aim: namely, a “self-denying aspiration

for something that transcends our own finite existence.⁸ Here we encounter a deep and perhaps irreconcilable tension in the bioconservative position. The first aspiration is deeply and inextricably linked to our biological heritage and the finite contours of natural existence that it marks out for us. This is the aspiration consistent with Fukuyama's emphasis on the "species-typical" features of embodied human existence, and fellow bioconservative Michael Sandel's insistence on appreciation for the "gifts of our natural finitude."⁹ It implies a commitment to not only embrace but to *preserve* the biological integrity of the human condition.

Kass frames his second aspiration, on the other hand, as a desire to *transcend* our finitude in the direction of something understood as higher, even if this requires some element of self-forgetting or self-denial. Now Kass has in mind the kind of religious self-denial in which one sacrifices one's natural desires in order to close the gap between, and establish a relationship with, a higher being that embodies the "good, the true, and the beautiful."¹⁰ Yet why could this reading not be reconstructed to accord with the secular aspiration to *attain* a qualitatively different and higher form of being—that is, to 'deny' one's given, biological form in order to remake it into something recognizably more beautiful and good? Here the relationship sought with a higher being is not one of communion, but identity. That Kass would reject such hubris does not prevent his account of dignity from technically permitting this aspiration; in fact, he arguably invites it by celebrating the "god-like" quality of humans to "articulate a future goal and bring it into being by their own purposive conduct," along with our freedom to "quit the state of nature" and establish ourselves under laws of our own making.¹¹ Here a deep tension emerges between the claim that human dignity is inextricably linked to the natural givens of our biology, and the claim that it is inextricably linked to the conscious striving to transcend what is naturally given, in search of the beautiful, the true, or the good.

This tension is not merely abstract; it comes into play when we consider how bioconservatives might evaluate various concrete proposals for human enhancement. Imagine two possibilities. One is a hypothetical technique for germline modification and gene insertion to bioengineer humans with canine DNA, giving them olfactory capacities well beyond the species-typical range. With proper training, these capacities can greatly enhance the work of soldiers, airline security personnel, police officers, firefighters, and health workers. The second proposal is a biomechanically engineered, permanent subdermal implant that releases a neurochemical agent to stimulate species-typical feelings of self-esteem and satisfaction at the user's command. Present these proposals to two bioconservatives, one primarily motivated by respect for the integrity of humanity's biological givenness, and the other primarily motivated by respect for effortful human striving toward excellent activity and virtue. It is reasonable to think that they may come

to very different judgments about which proposal poses a greater threat to human dignity.

Notice that the first proposal employs germline modifications of human DNA to alter our species-typical capacities in a manner that clearly fails to preserve the integrity and finitude of our biological givens. Yet for the humans altered with nonhuman DNA, as well as for others who depend upon their work, the changes would appear to enhance and expand, rather than reduce, their human potential for virtuous activity. Such enhanced humans could attend to a far greater range of morally significant phenomena—for example, previously undetectable olfactory markers of fear, anxiety, aggression, decomposition, contamination, infection, cancer, fire, or airborne toxins. They would thus be able to glean more information related to core human goods such as security, justice, and health. Moreover, learning to use their new sensory powers in these excellent ways would require just the same sorts of education, practice, and deliberate striving that professionals undertake *now* in order to refine their professional discernment and perception. Thus at least some radical human enhancements could not only be compatible with, but might even *enrich* our aspirations to moral self-cultivation, our attainment of virtue and the goods internal to practices, and our consequent flourishing. How could this offend human dignity?

Now consider the second proposal. Though the implant is an alien presence in the human body, it is no more so than a pacemaker or stent, neither of which alarm bioconservatives. Imagine also that the neurochemical agent released by the implant is biologically identical to a substance naturally produced in the human body. No alterations have been made here to our genetic heritage, nor would such an implant produce any experience beyond the ‘species-typical’ capacity of an unenhanced human. By one bioconservative standard, then, the change seems fairly benign. Yet the use of this implant, which produces on-demand feelings of contentment regardless of one’s circumstances, could *radically* reduce the motivation for effortful human striving, and the achievements of excellence that often result from such efforts, by dampening the desire to transform one’s life situation, and/or one’s own character, into something more satisfying. By the *other* bioconservative standard, then, this proposed enhancement would appear to present a far more profound threat to human dignity than the former.

Most bioconservatives articulate a concern for biological integrity *and* for human striving.¹² However, the tension between them renders such accounts problematic, both conceptually and practically. If the human aspiration to cultivate ourselves is the root of our dignity, and if human enhancement can open up new paths of cultivation and higher states of cultivated excellence, then at least some imaginable enhancements could reinforce our dignity by removing biological obstacles to those higher states. Thus bioconservatism appears incoherent

as long as these disparate moral intuitions are conflated and packaged together under the amorphous heading of ‘human dignity’. Why has this tension not been purged from the bioconservative position?

Fukuyama’s account of dignity provides an important clue. Beyond his unhelpful invocation of ‘Factor X’, he tells us that human dignity is rooted in a coherent biological whole that is more than the sum of its parts, incorporating reason, consciousness, the capacity of moral choice, and “the distinctive gamut of human emotions.”¹³ Now, some higher animals also appear to possess consciousness, instrumental reason, and a rich emotional life. Why is there not also, say, ‘chimp dignity’ or ‘elephant dignity’? Are the champions of human dignity motivated only by what transhumanist James Hughes labels “human racism,” a special moral regard for humankind grounded in no relevant moral facts?¹⁴ Fukuyama *could* avoid this objection by noting the one item on his list not widely acknowledged as appearing in other higher animals: the faculty of ‘moral choice.’ This is the capacity to reflect upon, select, and freely carry out a course of action guided by a cognized moral ideal. A person can say to herself, ‘what kind of person do I want to become?’ or even ‘what kind of person *should* I become?’ and can consciously act on the answers she finds in reflection. Perhaps elephants, gorillas, or whales meditate on things like this and act accordingly, but there is no compelling evidence to date that this is so. It might seem odd, then, that Fukuyama has not made *this* capacity the linchpin of his account of human dignity, particularly since it could save him from Hughes’ charge of ‘human racism.’

This is no oversight on Fukuyama’s part, however. He does not make this argument because he rejects Kant’s idea that moral choice *liberates* us from our natural inclinations.¹⁵ If dignity arose *only* from the capacity of autonomous moral choice, as Kant believed, then respecting dignity would only require preserving that capacity, not other given elements of our biology. In fact, we might be *obliged* to ignore, modify, or override our natural heritage in the interests of our own moral and intellectual development. Such a view supports transhumanist claims that human enhancement has already been taking place for millennia by means of cultural enterprises such as art, philosophy, and education, and that enhancement is, in the words of transhumanist Ronald Bailey, the “highest expression of human dignity and human nature.”¹⁶ A celebration of moral choice as the locus of human dignity is *simply too amenable to deliberate projects of self-transformation* to sit well with the bioconservative position.¹⁷

It is worth noting that while bioconservatives tend to self-identify as humanists, their conflicted attitudes toward humanity’s creative moral freedom embody a different strain of humanism than that found in many voices from the past. Consider a much older tradition of philosophical and religious humanism,

captured in 1486 by Pico della Mirandola's *Oration on the Dignity of Man*, in which he imagines God giving this charge to Adam:

We give you no fixed place to live, no form that is peculiar to you, nor any function that is yours alone. According to your desires and judgment, you will have and possess whatever place to live, whatever form, and whatever functions you yourself choose. All other things have a limited and fixed nature prescribed and bounded by our laws. You, with no limit or no bound, may choose for yourself the limits and bounds of your nature. We have placed you at the world's center so that you may survey everything else in the world. We have made you neither of heavenly nor of earthly stuff, neither mortal nor immortal, so that with free choice and dignity, you may fashion yourself into whatever form you choose. To you is granted the power of degrading yourself into the lower forms of life, the beasts, and to you is granted the power, contained in your intellect and judgment, to be reborn into the higher forms, the divine.¹⁸

For della Mirandola, it is this capacity for self-transformation that makes humanity deserving of respect: "Who could not help but admire this great shapeshifter? In fact, how could one admire anything else?..."¹⁹ A broad range of philosophical, scientific, religious, and artistic perspectives have resonated with della Mirandola's vision, from Condorcet to Nietzsche to Teilhard de Chardin to Shaw. Its embodiment on the front lines of transhumanism is simply its newest expression. Why, then, do bioconservatives, who portray themselves as humanistic insofar as they wish to celebrate the special majesty of our species above all others, shrink from the newest invocation of this vision?²⁰

For one thing, the prospects of 21st century technological convergence raise the stakes of this vision by several orders of magnitude. Classical and medieval possibilities of self-transformation were limited to those habits, passions, and aspirations that could be remade by unaided reason. Despite della Mirandola's evocation of unlimited creative freedom, our physical embodiment was, until very recently, still largely beyond the scope of our choice. Certainly, cultural traditions of body modification, meditative control of autonomic functions, and asceticism testify that humans have tested the boundaries of our corporeal givenness for millennia. The possibilities, however, were always quite limited. Today, through the potential of converging technologies, it appears that *any* part of us might someday be made responsive to our creative whims. Confronted with this dizzying power, many contemporary humanists understandably experience deep unease.

Yet della Mirandola insists that bodily transformation is no threat to human dignity so long as our reflective and aspirational nature endures:

Bark does not make a plant a plant, rather its senseless and mindless nature does. The hide does not make an animal an animal, but rather its irrational but sensitive soul. . . . Who would not admire man, who is called by Moses and the Gospels "all flesh" and "every creature," because he fashions and transforms himself into any fleshly form and assumes the character of any creature whatsoever?²¹

That bioconservatives do not share this liberality with regard to the flesh is plain. Yet it is worth asking why. By Kass's logic it would seem that as long as we transform our minds and bodies according to a clear vision of the "good, the true, and the beautiful," the dignity of human aspiration to a higher form should remain intact. One can also enumerate a host of conventional modifications of the flesh, done for both medical and aesthetic reasons, to which most bioconservatives offer no objection. What aspect of the transhumanist program of modification presents a moral difference sufficient to justify the bioconservative reaction?

I suggest that there is no sufficient moral difference. Instead, resistance to human enhancement becomes persuasive only when framed not in terms of an *a priori* argument from dignity, but a contingent argument from *virtue*, one that appreciates the contemporary practical obstacles to acquiring that "clear vision" of the good needed to guide transhumanist aspirations to their successful realization.

10.2 Technomoral Humility, Wisdom, and the Argument from Hubris

Our contingent argument from virtue takes seriously one objection to the transhumanists that we have not yet considered: that they are guilty of technomoral *hubris*. This objection can take many forms. Arguments from hubris are often muddled by vague warnings about the dangers of 'playing God' or trying to 'become Gods'; but as C.A.J. Coady notes, such warnings are highly ambiguous. They can refer to specific theological concerns likely to be dismissed by nonreligious parties to the debate, but such phrases are frequently used in a secular context as shorthand for the limits of human virtue, both intellectual and moral.²²

Arguments from hubris, at least as old as the myth of Daedalus and Icarus, can represent more than just blind conservatism or an irrational fear of change. They can also reflect enduring concerns about human aspirations to transcendence becoming excessive or pathological. Is the transhumanist project guilty of such excess? By joining the vision of transcendence with the promise of virtually unlimited technological powers, the transhumanist vision exponentially raises

the moral and material stakes of human aspiration. For perhaps the first time in history, della Mirandola's remark about degrading ourselves to a subhuman form of life becomes a literal possibility, should we wield these new technologies unwisely. This danger calls forth a need for *technomoral humility*: the ability to make an honest and clear-headed assessment of the present limits of our ability to wield these powers wisely and well.

Among transhumanists, Nick Bostrom has been the most transparent about the considerable risks of human enhancement technologies. While optimistic that there is likely "more distance to rise than to fall," he acknowledges potentially grave risks of these technologies. There are non-negligible risks that we might foolishly or unwittingly use them to "clip the wings of (our) own souls," losing "hold of our ideals, our loves and hates, or our capacity to respond spontaneously with the full register of human emotion."²³ Perhaps through ignorant and misguided tinkering with the human genome we may even bring about our own extinction. Against the backdrop of these very real risks, the old argument from moral hubris, waved off by many transhumanists as the counsel of cowardly or unimaginative souls, acquires renewed force.

Remember that courage, in our case *technomoral* courage, is a mean between cowardice and rashness. If the libertarian transhumanists who champion unrestrained experimentation in this arena do not represent the vicious extreme of rashness, who does? Yet having rejected the bioconservative argument for *a priori* restraint, doesn't *that* view look now like the extreme of moral cowardice, or at least an unreasonable and even *anti-humanist* affinity for the status quo? Where, then can we find the appropriately virtuous mean with respect to human enhancement technologies? How do we find the delicate balance of moral attitude in which both *technomoral* humility *and* courage are embodied, and integrated in a holistic moral perspective? Someone who can achieve this delicate calibration and integration of multiple *technomoral* virtues is an exemplar of *technomoral wisdom*. Looking at the parties and stakeholders to the enhancement debate, how many such exemplars can we confidently identify at present? Who among them are the 21st century equivalents of the *phronimoi*, the *junzi*, or the *Sangha*?

But why, the transhumanists will argue, should we exercise cautious restraint now, when centuries of technosocial innovation have repeatedly demonstrated the triumph of futurists and 'imagineers' over the naysayers and spreaders of moral panic? It may seem that the new always wins out over the old, but if we ask ourselves *honestly* just how reliably our innovations have served us in a century marked by global economic, environmental, public health, and military disasters, we will admit that our recent record of human ingenuity has some shining successes; but arguably as many misfires and more than a few horror stories. The transhumanists are right that our time calls for bold action, not for clinging to

the status quo, but that is precisely because the status quo is already destabilized by our past and ongoing technomoral failures. Before we push on blindly as we have, we ought to heed della Mirandola's warning that humanity's creative destiny is not to be taken lightly, but embraced only with the greatest possible virtue, lest we spoil our opportunity and allow ourselves to become "animals and senseless beasts":

Above all, we should not make that freedom of choice God gave us into something harmful, for it was intended to be to our advantage. Let a holy ambition enter into our souls; let us not be content with mediocrity, but rather strive after the highest and expend all our strength in achieving it.²⁴

Let us not forget that proposals to chemically tinker with our moral faculties, to replace neurons with silicon, or to modify the content and emotional tone of our memories, all carry some risk of rendering us, if not "animals and senseless beasts," at least something *even less* noble than our present selves. For example, it is tempting to embrace proposals to enhance the brains of soldiers so that they are less vulnerable than ordinary humans to post-traumatic stress. If successful, we could spare soldiers often crippling psychological and moral injuries strongly associated with increased risks of suicide, substance abuse, anxiety, rage, and depression. Such injuries tear apart individuals, families, and communities every day, around the globe. If we have the technological means to shield soldiers' minds from such injuries, it would seem inhumane not to use them.

And yet, to dampen the moral horrors of war for individual soldiers would also dampen these same horrors on the civic level, where decisions to make war are collectively made, endorsed, and funded. Historically, our wish to spare our sons and daughters the grave physical and mental harm that comes with war has served as one of the strongest impediments to casual warmaking. As with the robotic means of warfare discussed in chapter 9, lowering the psychological barriers to waging war could have devastating results around the globe.²⁵ How should a moral society, in a world where war is sometimes necessary to restrain genocide or similar evils, resolve this tension? How many political leaders, biomedical researchers, or transhumanist scholars can you name whom you are confident could resolve this profound moral dilemma wisely, at this very moment? What about your fellow citizens—how confident are you that a popular vote today would yield the right result? How confident are you that *you* can discern the right result?

In such a case, and many others like it that arise from various human enhancement proposals, any virtuous response has to begin from a stance of technomoral humility. There are few easy answers to be found, and the consequences of choosing wrongly are likely to be among the most devastating and potentially irreversible

that we face. Yet we also need technomoral *courage* to act; even rejecting an enhancement is a choice for which we will be accountable. We cannot evade moral responsibility with passivity or self-imposed ignorance. In the example of enhancing soldiers' mental and emotional resilience, a virtuous response must meet demanding conditions: it must embody appropriate *empathy* for all those who suffer from war, actively take *care* of those for whose welfare we are most responsible, display *civility* in reaching a decision cooperatively with other local and global stakeholders, and attain a moral *perspective* in which the moral meaning of our global human and planetary situation is held in view. Any person or body actually capable of such a response would have to take an ambitious stance of *magnanimous* moral leadership with respect to the various medical, commercial, political, and other institutions with the power to produce and distribute such enhancements. All of this together requires the cultivation and exercise of exemplary *technomoral wisdom*.

Even if we adopt della Mirandola's religious verbiage as only a metaphor, how many of us today are filled with such a 'holy ambition,' or embody the deep individual or collective technomoral wisdom needed to justify and exercise it? It was precisely this challenge of steering biomedical enhancement in an era of moral confusion and apathy that led Hans Jonas to lament that, in a cynical postmodern age, "We need wisdom most when we believe in it least."²⁶ Nor was he the first to judge his own era ill-equipped for moral ambition. George Bernard Shaw apparently despaired of the 'Creative Evolution' celebrated in passages of *Man and Superman* ever being realized in an age given to moral laziness, waste, and senseless destruction.²⁷ Even Nietzsche's Zarathustra, hardly a voice of conservative caution, warned his disciples against liberating themselves from the constraints of society's given norms without a clear vision of the future for which they would liberate themselves, and the virtue to actually realize that vision:

You call yourself free? Your dominant thought I want to hear, and not that you have escaped from a yoke. Are you one of those who had the right to escape from a yoke? There are some who threw away their last value when they threw away their servitude. Free from what? . . . But your eyes should tell me brightly: free for what?²⁸

Historically, then, the argument from hubris is not owned by timid defenders of the status quo. It also reflects the insight that visionary human projects, especially those that involve great risk to ourselves and others, require *actual* visionaries—people with a clear vision and the considerable moral and intellectual virtue needed to realize that vision with others. Thus the greatest barrier to successful human enhancement is not the dubious technical means often

proposed to achieve a posthuman future,²⁹ nor is it our inability to anticipate all of the effects or challenges we will face along the way—that is, the inherent *technosocial opacity* of the project.³⁰ Challenges will declare themselves and be overcome, or not, as our ingenuity and resources permit. No, of all the difficulties transhumanism faces, the real problem is *knowing what it is that we ought to wish for*. It is not that transhumanists simply wish for the wrong things. Rather, the libertarian philosophies that pervade the transhumanist community seem to preclude them from wishing for any clear ends at all, only the widespread availability of certain technological *means*, to be used however free individuals and groups see fit.

Consider Nietzsche's warning once more. We hear much from transhumanists about what they want to free us *from*: sickness, aging, death; the limitations of our bodily form; the tyrannies of entropy, space, and time. But do we hear as clearly what they want to free us *for*? They offer a host of possible scenarios for our consideration, but these form no comprehensible whole. We are told we might choose to constantly renew and rebuild our human bodies, or switch them out for non-biological or virtual ones; we might choose to adopt new bodies and personalities at will or form a global 'hive' mind. We might chase immortality or we might just choose to live to a modest age and pull the plug. We might use these technologies to make ourselves more emotionally stable, more emotionally free and capricious, or to enjoy emotions inconceivable in our current state; to create better lives for our children, or to shed biological reproduction as an outmoded relic; to make the Earth whole again, or to abandon the Earth for the stars.

The problem is not the unforeseeable technological possibilities, but a problem that defines our time and our world: in a neoliberal age, who among us has the courage and genuinely magnanimous moral leadership to point the way to a positive vision of the human future? Among the transhumanists we find many negative visions, by which I mean visions of liberation from constraint. In a posthuman future one can choose anything, any physical form or mental constitution, as long as the technological means and social opportunity exist. The posthuman future is one of free play, experimentation, a blank canvas upon which individuals can realize their personal visions of the good without interference from government or their fellow citizens.³¹ But this vision itself has little or no positive substance; it is a moral ghost.³²

Transhumanist and science fiction writer Ramez Naam tells us that, although we may not be able to imagine how our descendants will use human enhancement technology, "the lesson of history is that they will use the powers we provide them to make their world a better place."³³ One can debate the extent to which history really warrants this conclusion. Many would argue that we have used our technological powers to make the world better in certain respects, and

much worse in others. Yet the statement is a confession that today's transhumanist visionaries *lack* a coherent moral vision and resist any call to provide one, while still assuring us that human enhancement technologies will indeed yield genuine *enhancements*—that is, that they will be conducive to human flourishing and the good life in general, despite the absence of any clear sense of what this involves. Transhumanists wish to let the inheritors of this technology "chart their own course."³⁴ But if we do not trust *ourselves* to reliably chart a wise course, what warrants such confidence in the ability of our descendants, the inheritors of our culture and our wisdom, to do so? What could warrant this confidence, except a widespread human recommitment to the practice of moral self-cultivation, embodied in a new culture of global technomoral education?

The standard transhumanist reply is to reject the demand that any one course be charted. Naam's book tells us that "We will not all opt for the same changes. . . . Different men and women, different communities, different ideologies will all select different goals to work toward. . . . Humanity will expand, splinter, and blossom."³⁵ Yet this claim betrays itself. We are told not merely that we will expand and splinter, but that we will "blossom"—this is a normative metaphor that presupposes flourishing in the achievement of some appropriate state or end. Certainly the metaphor is compatible with a wide range of such ends, but still there must be criteria for what qualifies as 'blossoming' and what does not. Not all change or growth in living systems amounts to flourishing. Some change is *rot*. Some growth is *malignant*. What justifies Naam's faith that the free and undirected pursuit of enhancement is more likely to promote human 'blossoming' than the alternatives? As he goes on, the incoherence becomes even starker. In the same passage he adds that though our future descendants might be so different "in ways we cannot imagine" that we would fail to recognize them, we may be reassured that nevertheless they "will have the traits most dear to us."³⁶ What could possibly ensure that result, given what has otherwise been said?

Similarly, famed inventor and futurist Ray Kurzweil, known even among transhumanists for extraordinarily exotic visions of the future involving cyborgs and uploaded minds, assures us that our transition to the next phase of existence will be guided by (unspecified) "human values." He tells us that our nonbiological descendants "will be even more humanlike than humans today" and will exhibit the "finer qualities of human thought to a far greater degree" than do we; that they will cherish knowledge above all while enjoying the "full range of emotional and spiritual experiences that humans claim to have."³⁷ It is unclear why a transhumanist calling for radically experimental transformations of human minds and bodies under conditions of profound technosocial opacity would anticipate, or even desire, such constancy of values and experience.

This tension recurs again and again in transhumanist writings. Ronald Bailey tells us that this century "will offer an ever-increasing menu of life plans and choices" which should allow people maximal freedom "to pursue the good and the true in their own ways," without the burden of any prespecified normative ideal.³⁸ Yet he tells us that "the future will see miracles, cures, ecological restoration, vivid new art forms, and a greater understanding of the wellsprings of human compassion."³⁹ Set aside the question of how we are to evaluate this as a positive outcome without some normative ideal of a good life. Even if we accept that the future so described is a good one, what justifies our confidence that it will be the actual terminus of the transhumanist project? Bailey assures us that "history has shown that with vigilance—not with blanket prohibitions—humanity can secure the benefits of science for posterity while minimizing the tragic results of any possible abuse."⁴⁰ Is this really what, say, the history of environmental policy in the modern era tells us? If not, then why should one be confident that 'ecological restoration' will be a priority of an enhanced human society? Imagine that new technology greatly reduces the burden of living in a degraded environment—say, by using nanoscale robots to repair cell damage from radiation and toxins, or by using clouds of linked nanobots to form a "utility fog" that cosmetically disguises unpleasant surroundings, or enabling colonization of other planets, or by providing a host of pharmacological tonics to compensate for the lost psychological benefits of pristine wilderness.⁴¹ Might ecological restoration be among the *lowest* priorities of such a society?

Transhumanist writings seem to assume the unobtrusive operation in technosocial life of some sort of 'invisible moral hand,' an assumption that is neither made explicit nor defended. And yet, even without enhancement, our species already faces a number of grave perils, from extinction risks to 'merely' a miserable and hopeless existence for the vast majority of the human family. Nick Bostrom is right that stasis is probably not the safest bet.⁴² If enhancement *can* boost our cognitive and moral resources to confront these perils, along with the inevitable challenges that will result from enhancement itself, then perhaps throwing our resources behind the development of such technologies is the least risky alternative. An 'enhanced' future might not be any better than ours, but then again, an unenhanced future might not be very good either. As Coady notes, conservatism can be its own kind of hubris.⁴³ Still, is a technologically aggressive but morally blind 'Hail Mary' pass *really* our best option?

Inaction is impossible; given the risks of humanity's current status, resisting innovation requires moral wisdom to justify it too, and if we lack the virtue to safely push ahead, we also lack the virtue to safely stay put. *We are at an impasse, and the cultivation of technomoral virtue is our only way forward.* While the technological means for human enhancement are already emerging, we lack the moral

means today to reliably answer the question of whether and how it can be done ethically. We are not ready to answer, though as Hans Jonas warned us, we should have made ourselves ready long ago. The challenge we face today is not a moral dilemma; it is rather a moral *imperative*, long overdue in recognition, to collectively cultivate the technomoral virtues needed to confront this and many other emerging technosocial challenges wisely and well.

Does this mean that the only prudent course is to put all human enhancement research on indefinite hold until we manage to jump-start a massive global reinvestment in the practices of moral self-cultivation and education for technomoral virtue? Not necessarily. We have noted that forgoing any given technological development carries certain risks just as does pushing forward. Technomoral humility, courage, perspective, and wisdom all entail a skilled disposition not to *avoid* but to *confront* and intelligently *manage* the unavoidable moral risks of technosocial life. In their 2014 book *Unfit for the Future: The Need for Moral Enhancement*, philosophers Ingmar Persson and Julian Savulescu argue that forgoing one particular type of human enhancement research—in particular, research aimed at enhancing the *moral* capacities of human beings—may greatly amplify the existential risks to human flourishing *already* posed by the hitherto glacial pace of our species' collective moral development.

The technomoral failures of existing and past human generations have already placed the flourishing of future generations in grave jeopardy. How much more time can we safely allow ourselves to wise up by traditional means of moral self-cultivation, before we attempt more drastic measures to artificially accelerate our moral maturation as a species? Persson and Savulescu argue that we may have very little time, and that biomedical and pharmacological means of enhancing and extending our capacities for human empathy, justice, and other moral traits, if successful, could hasten our species' collective moral development, perhaps enough to greatly reduce the danger of our self-destruction.⁴⁴

This will not be easy, since the lion's share of the planet's technological and scientific resources are controlled by liberal societies operating in cultures focused on short-term private gains, alienated from any shared conception of the ultimate moral goods to be realized by collective action in the long-term interests of the human family. Even the notion that there *are* such goods—as opposed to the immediate, subjective, and often arbitrary preferences of private individuals—is no longer readily granted in many such cultures. This ethical alienation from a vision of our own higher flourishing was described by the 20th-Century Spanish philosopher José Ortega y Gasset as a uniquely modern crisis that inhibits the intelligent and creative use of technical power.⁴⁵ This crisis must at least begin to be mitigated by new and vital programs of technomoral education and habituation before any part of the transhumanist vision can be wisely managed. Thus the active pursuit of

human enhancement technologies, including moral enhancement, is probably indefensible without a concurrent cultural movement to invest significant resources and energies in the wider cultivation of technomoral virtues and leadership.

Such a commitment represents humanity's best hope for living, and living *well*, in the 21st century and beyond. The human family is not yet up to the moral task it is facing: finding a way to wisely manage *together* the increasing global complexity, instability, plurality, interdependence, rapid change, and growing opacity of our technosocial future. This book recommends a classical solution: an energetic (perhaps even desperate) collective effort to reinvest our cultures in the habits of moral self-cultivation and education for technomoral wisdom. Notably Persson and Savulescu, although they are proponents of human enhancement, endorse the very same effort. They write, "We are not envisaging that moral bioenhancement will ever reach a point at which traditional methods of moral education—or other social strategies like institutional redesign using incentives—will ever be redundant . . . we think that these methods will need to be used well and, indeed, that they should be employed more extensively than they are today."⁴⁶

Given, however, that traditional methods of moral education and self-cultivation *alone* may not work well enough, or fast enough, to save us from the shortsighted and selfish habits that have already brought our planet to the edge of ruin, they conclude that biomedical technologies of moral enhancement, should they become available, may be necessary and prudent accelerants. They could amplify and sustain the impact of traditional moral practices and character education on our habits and virtues, especially the virtues of care and empathic concern. While the technical path to effective moral enhancement is not well marked, and the obstacles to it hard to foresee, Persson and Savulescu note that "the predicament of humankind is so serious that all possible ways out of it should be explored."⁴⁷

Yet in the absence of new cultural reinvestments in moral education and practice adapted for contemporary technosocial life, the *wise* use of moral enhancement is unlikely, given that we need it precisely *because* moral wisdom among our species is in such dangerously short supply. Persson and Savulescu thus call for a new educational dedication to "what might be called a 'science-sophy,'"—that is, a new body of moral wisdom about appropriate and justified uses of scientific and technical power.⁴⁸ The account of technomoral wisdom developed here is one small step toward such a philosophy, one that must evolve *together* with emerging technologies in ways that will inevitably challenge existing neoliberal norms of technology development. Short of a long string of dumb luck or unearned grace, this path is our species' best, and likely only, hope for continued flourishing.

By philosophical *and* technological means, then, technomoral virtues such as self-control, courage, empathy, justice, care, flexibility, civility, and perspective

must begin to be explicitly targeted for promotion by researchers, educators, parents, and policymakers. Such efforts will require private and public funding, sometimes at the expense of other possible paths of educational and technological development. Among the paths that must be sacrificed are human enhancements that would impede our cultivation of technomoral virtue: enhancements that would weaken our capacities for self-control and moderation, generate group solidarity even in the absence of justice or care, or reduce empathic concern by blunting our emotional response to suffering. Each of these enhancements could be desirable to many for psychological, commercial, or political reasons. Yet if freely but widely chosen in an unrestricted market, they would preclude the very flourishing that transhumanists promise us in a posthuman world.

Indeed, to insist upon neoliberal, free-market norms for human enhancement or any other new technosocial power is to assume either 1) that our descendants will, without any wise guidance from us, *magically* acquire the moral convictions we lack to build a future worth choosing; or, 2) that our progeny will chart their own arbitrary technosocial course more or less as we have, without the benefit of any greater moral wisdom or insight than we enjoy today. The latter world will be what it is, but cannot be expected to be any *better* than our own, and given the depleted resources and compromised environment that we will have left them, it is quite likely to be worse.

10.3 Technomoral Virtue and Contemporary Life: A Crisis of Moral Wishing

Before we close this chapter, let us reflect upon the words of José Ortega y Gasset. His 1939 essay “Meditación de la Técnica” (known in English as “Man the Technician”) expresses his existentialist conception of human life as *autofabrication*: a project of self-realization, bringing into being “the aspiration we are.”⁴⁹ For Ortega y Gasset as for later existentialists, the freedom of human choice means that a human person is not a *thing*, natural or otherwise, but “a project as such, something which is not yet but aspires to be.”⁵⁰ To those who advocate relinquishment of the power to enhance ourselves, Ortega y Gasset might have replied that “in the very root of his essence man finds himself called upon to be an engineer. Life means to him at once and primarily the effort to bring into existence what does not exist offhand, to wit: himself . . . ”⁵¹

Yet he tempers his enthusiasm for human creativity and freedom with a warning about technology and virtue. He notes that for a human being, flourishing is the only subjective necessity, and she will often place her organic life in peril in order to pursue it. Of course, conceptions of human flourishing are not fixed, but individually and culturally plastic. Yet this very plasticity exposes a problem at

the heart of our technosocial aspirations. For technology is not an end in itself; nor is it merely a means to the preservation of organic life—were that its ultimate aim, advanced technology would be quite redundant, a duplication of more primitive mechanisms for survival that we already possess. Rather, technologies are instruments whose ultimate ends must exist outside the technological sphere. As Ortega y Gasset puts it, ". . . technology is, strictly speaking, not the beginning of things. It will mobilize its ingenuity and perform the task life is; it will—within certain limits, of course—succeed in realizing the human project. But it does not draw up that project; *the final aims it has to pursue come from elsewhere*. The vital program is pretechnical."⁵²

The unresolved crisis of the 20th century, still with us in the 21st, is a crisis of meaning—the meaning of human excellence, of flourishing, of the good life. The transhumanist project pushes this crisis to its absolute limit. What is the good that radical life-extension will serve? More time, obviously. But time for what? Not simply to live, for I desire more than that to live *well*. What will maximal detachment from my bodily needs and limitations afford me? More freedom, certainly. But to echo Nietzsche: freedom *for* what? Freedom to *do* what? Ortega y Gasset tells us that our humanity rests entirely upon the “to do” of projected action, and hence “the mission of technology consists in releasing man for *the task of being himself*.⁵³ But who do we want to be? Is our vision of this task any clearer than it was for our classical or Enlightenment predecessors? Or is it in fact more clouded than ever?

It is here that contemporary technosocial culture, especially in the wealthy nations driving global technology innovation, rings hollow at its core. We are showered with an endless and ever-deepening deluge of choices. The distinctions between the thousands of cellphones on Amazon, the millions of apps in the App Store, the hundreds of kinds of cereal in an American supermarket, or the dozens of gourmet coffee presses reviewed on a ‘lifestyle blog,’ are often virtually impossible for us to identify, much less evaluate. With such choice comes not happiness, but paralysis of the will, the haunting fear of a suboptimal selection. While Ortega y Gasset did not witness technosocial desire as it is today, his words still resonate for us:

Desiring is by no means easy. The reader need only remember the particular quandary of the newly rich man. With all wish-fulfilling means at his command he finds himself in the awkward situation of not knowing how to wish. At the bottom of his heart he is aware that he wishes nothing, that he himself is unable to direct his appetite and to choose among the innumerable things offered by his environment. He has to look for a middleman to orient him. And he finds one in the predominant wishes of

other people, whom he will entrust with wishing for him. Consequently, the first purchases of the newly rich are an automobile, a radio, and an electric shaver. As there are hackneyed thoughts, ideas which the man who thinks them has not thought originally and for himself but blindly and automatically, so there are hackneyed wishes which are but the fiction and the gesture of genuine desire.

Ortega y Gasset's point is not the easy condemnation of shallow consumerism. In his view, the latter is merely the shadow cast by a malady of far greater significance:

If this happens in the realm of wishing with objects which are there and lie to hand before they are wished for, one may imagine how difficult the properly creative wish must be, the wish that reaches out for things yet nonexistent and anticipates the still unreal. . . . If a man is unable to wish for his own self because he has no clear vision of a self to be realized, he can have but pseudo wishes and spectral desires devoid of sincerity and vigor. It may well be that one of the basic diseases of our time is a *crisis of wishing* and that for this all our fabulous technical achievements seem to be of no use whatsoever.⁵⁴

For Ortega y Gasset, the emergent technosocial crisis is a vacuity of moral imagination for life, and its chief symptom is an "appalling restlessness" that manifests itself in frenzied but directionless seeking.⁵⁵ This "crisis of wishing" is a culturally-induced deficiency of practical wisdom, the absence of authentically motivating visions of the appropriate ends of a human life. If Ortega y Gasset was right, then in the absence of some deliberate intervention, contemporary technosocial life is likely to be marked by a progressive paralysis of practical wisdom, in which our expanding technical knowledge of effective means receives less and less direction by meaningful desires and moral ends. Like nerve cells gradually cut off by a neurodegenerative disease from their directing impulses in the brain, a technosocial crisis of wishing would result in actions that appear increasingly spasmodic, uncoordinated, and lacking in purpose.

Ortega y Gasset's diagnosis is an empirical claim; it stands or falls based upon the social, psychological, and moral phenomena it predicts. The prediction is clear—that humans in the technologically developed world, powerful and marginalized alike, will increasingly find themselves rudderless and impotent to direct their own lives or to discover their own ends, and in desperation will gradually turn to the compulsive consumption of ends manufactured for them by mass technosocial culture, consumption that itself points to no further ends

or aims, and in satisfying only 'spectral desires' leaves them ever searching for more. The reader may judge for herself the extent to which this diagnosis has been confirmed.⁵⁶

My aim in this book has been to shine a light on this all too real disease: a widening cultural gap between the scope of our global technosocial power and the depth of our technomoral wisdom. Throughout the book, culminating with this chapter, I have suggested the only plausible first step toward a cure: to convene new institutions, communities, and cultural alliances in the service of global technomoral cultivation. This will require intense, cooperative, and sustained human efforts, many of them on a worldwide scale. Yet such efforts are not without precedent in a species well acquainted with fighting massive, protracted world wars for far less happy gains. A long-overdue commitment to the cultivation of technomoral habits and virtues may be the human family's only real chance for not merely continuing to live, but live *well* in this century and those to come. If we act now, while there is still time and hope, we may at last discover what kind of human, or posthuman, future is worth wishing for.

Epilogue

THE EMERGING TECHNOLOGIES explored in Part III underscore the immense challenge of predicting and securing the future of human flourishing in the 21st century and beyond. From biomedical enhancement to social robotics and artificial intelligence, technology is opening up a seemingly infinite number of new trajectories for our species, and those with whom we share our planet. Some of these possible futures look quasi-utopian. Most are the usual mixed bag of blessings and curses, but a few are truly catastrophic for humanity—and it is not only technophobes and neo-Luddites who are worried about those scenarios. Prominent voices among the technoscientific cognoscenti, from Stephen Hawking to Elon Musk to the worldwide community of climatologists, are already issuing urgent warnings concerning the risks posed by mass extinctions, dramatic climate shifts, artificial intelligence, and other potentially ‘existential’ threats to human survival and flourishing. Similar concerns haunt the popular imagination, as we can see mirrored in the exploding number of apocalyptic scenarios in film, television, and literature.

Are the voices that warn of us a coming crisis alarmist, or do we have actual reasons to worry? Some of the rhetoric is almost certainly overblown. Those who are predicting an imminent ‘rise of the robots’ or an ‘AI singularity,’ in which artificially intelligent beings decide to dispense with humanity or enslave us, in my view serve as an unhelpful distraction from the far more plausible but less cinematic dangers of artificial intelligence. These mostly involve unexpected interactions between people and software systems that aren’t smart *enough* to avoid wreaking havoc on complex human institutions, rather than robot overlords with ‘superintelligence’ dwarfing our own.¹ Other existential risks, such as environmental devastation, nuclear or biological warfare, and massive cosmic impacts are very, very real, and more importantly, the magnitude of those risks depends greatly upon what we choose to do today with our technosocial power. Even with near-earth objects such as asteroids, the paths of which we do not presently

control, the existential risk they pose can conceivably be mitigated by wise investment in science and technology, from improved detection systems to improvised devices to alter their course. Likewise, the existential risk of environmental devastation, resource depletion, and food chain collapse on a planetary scale will depend greatly on how we choose to confront the technosocial challenges of clean and renewable energy, ocean acidification, and a rapidly warming planet.

We may or may not be the first intelligent species in the universe to face such crucial tests. Unfortunately, there is reason to believe that if we are *not* the first, most of those who have gone before us have failed. I'm speaking here of something known as "Fermi's Paradox" and the hypothesis of the "Great Filter." Fermi's Paradox, posed by the physicist Enrico Fermi in 1950, refers to the curious absence of detectable signals from alien civilizations in a universe that appears to host so many suitable planets for intelligent life, and is, in the words of one contemporary astronomer, "bulging at the seams with ingredients for biology."² One commonly proposed solution to Fermi's Paradox is a hypothesis that is deeply disturbing, precisely because it is so intuitively plausible: the possibility that the universe is silent because technologically advanced species typically don't last very long before they self-destruct—for example, by draining and toxifying their nonrenewable resources through uncontrolled industry, or by developing weapons of planet-killing power. This hypothesis holds that humanity may be quickly approaching a "Great Filter," one that may have prevented other intelligent civilizations in the universe from surviving their own sudden explosions of technosocial innovation.³

A "Great Filter" need not be of our own making—some of the things that could tend to 'filter out' advanced species from the galaxy, such as large asteroids, are simply markers of our universe as a dangerous place. However, the scenario in which advanced species tend to bring a Great Filter upon themselves is plausible precisely because the only instance of a technological civilization that we have as a data point, our own, has already been endangered in precisely these ways. Historians of the Cold War have documented multiple occasions during that period in which the likely devastation of the human race by intercontinental nuclear bombardment was narrowly prevented, not by advanced technological controls and failsafes, but only by the extraordinary prudence, courage, and critical judgment of a few people, or in some cases, just one.⁴ Later, international treaties successfully brought at least a temporary pause to the nuclear arms race, but the existential risk of a global nuclear holocaust endures, and on some accounts, is again increasing.⁵ Unfortunately for us and for the planet, global environmental devastation, mass extinctions, and resource depletion cannot, unlike an impending nuclear launch, be called back by the virtue of one or two wise souls in key positions of responsibility. They can only be halted by the cooperative efforts

of millions, even billions of humans willing to countenance the sacrifice of significant short-term positional gains in wealth and power in the interests of the long-term survival of the species. Nor is survival our sole concern. Even if our descendants have the good fortune to make it through the technosocial growing pains of the next few centuries, what are their chances of not merely living, but living *well*?

All of this underscores the claim articulated in this book—that better technical systems *alone* will not secure the future of human flourishing. Only with the broader and more intensive social cultivation of technomoral virtues such as wisdom, courage, and perspective can this aim be accomplished. Regardless of how high or low one estimates the existential risks to humanity to be, reason compels us to lower that risk if we can. Yet it would be the height of foolishness to attempt to lower that risk by a reactionary campaign against further scientific and technical developments, for these innovations in knowledge and practice offer us new ways of preserving and enhancing human flourishing, not just tools to destroy it. Consider the significant natural risks to humanity posed by asteroids, massive radiation bursts from the sun, and the mutation of dangerous flu strains; then ask yourself if you want your children to forego the technoscientific innovations that will be necessary to manage and mitigate those future dangers.

In any case, José Ortega y Gasset was right; the human family may be many things, but in essence we are a family of engineers. We engineer *ourselves*, in various modes: science and craftsmanship, but also humanistic education, art, literature, music, spiritual practice, physical exertion, and of course, the practice of philosophy. Over the millennia these modes have produced many new tools and many visions of the future; today it happens to be the tools of the digital era that shape most powerfully our sense of what is possible for the human family. Yet this book concerns the one tool that humanity *must* finally master, if we and those with whom we share our world are to have any solid hope of living well in the 21st century and beyond. This tool is not an artifact of silicon but of cultural wisdom; its repeated invention is documented in the histories of moral practice that are the legacy of philosophical cultures around the globe, including those explored in this book. Now we must use it to hammer out a new culture of technomoral virtue, in which human individuals, families, communities, and institutions consciously work to inculcate the specific moral skills and capabilities that intelligent life needs in order to responsibly direct and wisely manage the use of technoscientific power.

If we estimate the likelihood of humanity successfully meeting these challenges by looking at our recent record, we will be given pause—indeed, many of the environmental problems we face today are the result of a record of exceedingly poor management of our technoscientific powers, in ways that repeatedly underestimate their risks and discount the value of the future, prioritizing

modest short-term gains, often for the wealthy few, over long-term harms to the home that we and future generations must all share. Fortunately, humans are not doomed to repeat the mistakes of the past. Our cognitive powers of reflection, imagination, creativity, and judgment, not to mention our capacities for moral ambition, empathy, and hope, have already enabled us to resist many of our most cruel and self-destructive impulses. We still live in a world where fear, hatred, and violence based on race, sex, gender, religion, and nationality are rampant—but we no longer live in a world where these evils are uncontroversial, and in many countries both the laws and the will of the majority now oppose them. We still live in a world with nuclear weapons—but no longer one in which these instruments of the apocalypse proliferate with impunity. We still live in a world with poverty, disease, and famine. But we no longer live in a world without tools to fight them, and scientific, political, and economic advances can deliver even more powerful tools in the future. We also know that humans are capable of massive and sustained collaboration in immensely complex and challenging tasks. Consider the construction of the Large Hadron Collider in Switzerland, the largest machine on the planet, built over ten years by a cooperative effort of 10,000 scientists from more than one hundred different countries. Is it beyond our imagination to think that cooperative efforts of this kind, on even greater scales, are possible if the stakes are the survival of meaningful human life on this planet?

Even if most other intelligent civilizations in the universe have failed to meet this challenge, we need not despair at our prospects of doing so. Our species enjoys a long, rich, and diverse cultural history of successfully harnessing and disseminating our creative power, our capacity for philosophical insight, our nobler ambitions, and our sheer will to flourish, with astounding results—from space flight, to vanquishing polio and smallpox, to building global networks and institutions dedicated to higher learning and moral and spiritual practice. So there is cause for much hope—but not much comfort, for there is a lot of work for us to do if we are to equip ourselves for the existential challenges that lie ahead. And as we all know, we humans are chronic procrastinators, especially when the hard work that has to be done today will only pay off—if it pays off at all—in a distant tomorrow. This may be the hardest weakness for us to overcome. *Can we cultivate the will, and the wisdom, to do today what is needed for tomorrow?*

For human beings, nothing is written in stone; yet in a perplexing irony, it is often those most welcoming of technosocial innovation who succumb to the false belief that present patterns of moral, economic, and political practice are permanent fixtures, rather than what they are—malleable cultural habits with a long history of adapting to changing social conditions.⁶ While the funhouse mirrors of internet comment boards, nationalistic politics, religious extremism, and corporatized mass media produce a distorted image of the human

Knowing What to Wish For

TECHNOMORAL WISDOM AND HUMAN
ENHANCEMENT TECHNOLOGY

IN THIS AND coming centuries, nanoscale, biological, information, and cognitive (NBIC) sciences are expected to converge in ways that enable the development of powerful new technologies for human enhancement.¹ We can define 'human enhancement' as the technological improvement and expansion of various 'species-typical' qualities and capabilities of human beings in ways that differ importantly from existing *therapeutic* uses of medical technology. Enhancement can be sought by a variety of means, alone or in combination, including genetic, biomechanical, nanomedical, and/or pharmacological techniques. The precise scope and essential characteristics of enhancement, and even its coherence as a concept in contrast with medical therapy, are hotly contested.² What is not in question is the considerable market potential of these technologies, which may offer radical life extension and slowed aging; enhanced bodily strength, endurance, resilience, size, or appearance; enhanced memory, attention, sensory perception, judgment, mood, or wakefulness; and enhancement of our moral faculties or dispositions.

Some enhancements are already available, such as the controversial but common 'off-label' uses of pharmacological agents such as Adderall or Modafinil to enhance attention, wakefulness, memory, mood, or endurance in healthy people. Other enhancements are in development and likely to emerge in the near future, thanks to brain-computer interfaces, genome editing, and biomechanical implants to enhance both cognitive and physical capacities. Still other enhancements envisioned by futurists fall into the realm of wild speculation: for example, the digital 'uploading' of human consciousnesses into 'cyber-immortality,' or the creation of transgenic human-animal hybrids.

that we face. Yet we also need technomoral *courage* to act; even rejecting an enhancement is a choice for which we will be accountable. We cannot evade moral responsibility with passivity or self-imposed ignorance. In the example of enhancing soldiers' mental and emotional resilience, a virtuous response must meet demanding conditions: it must embody appropriate *empathy* for all those who suffer from war, actively take *care* of those for whose welfare we are most responsible, display *civility* in reaching a decision cooperatively with other local and global stakeholders, and attain a moral *perspective* in which the moral meaning of our global human and planetary situation is held in view. Any person or body actually capable of such a response would have to take an ambitious stance of *magnanimous* moral leadership with respect to the various medical, commercial, political, and other institutions with the power to produce and distribute such enhancements. All of this together requires the cultivation and exercise of exemplary *technomoral wisdom*.

Even if we adopt della Mirandola's religious verbiage as only a metaphor, how many of us today are filled with such a 'holy ambition,' or embody the deep individual or collective technomoral wisdom needed to justify and exercise it? It was precisely this challenge of steering biomedical enhancement in an era of moral confusion and apathy that led Hans Jonas to lament that, in a cynical postmodern age, "We need wisdom most when we believe in it least."²⁶ Nor was he the first to judge his own era ill-equipped for moral ambition. George Bernard Shaw apparently despaired of the 'Creative Evolution' celebrated in passages of *Man and Superman* ever being realized in an age given to moral laziness, waste, and senseless destruction.²⁷ Even Nietzsche's Zarathustra, hardly a voice of conservative caution, warned his disciples against liberating themselves from the constraints of society's given norms without a clear vision of the future for which they would liberate themselves, and the virtue to actually realize that vision:

You call yourself free? Your dominant thought I want to hear, and not that you have escaped from a yoke. Are you one of those who had the right to escape from a yoke? There are some who threw away their last value when they threw away their servitude. Free from what? . . . But your eyes should tell me brightly: free for what?²⁸

Historically, then, the argument from hubris is not owned by timid defenders of the status quo. It also reflects the insight that visionary human projects, especially those that involve great risk to ourselves and others, require *actual* visionaries—people with a clear vision and the considerable moral and intellectual virtue needed to realize that vision with others. Thus the greatest barrier to successful human enhancement is not the dubious technical means often

proposed to achieve a posthuman future,²⁹ nor is it our inability to anticipate all of the effects or challenges we will face along the way—that is, the inherent *technosocial opacity* of the project.³⁰ Challenges will declare themselves and be overcome, or not, as our ingenuity and resources permit. No, of all the difficulties transhumanism faces, the real problem is *knowing what it is that we ought to wish for*. It is not that transhumanists simply wish for the wrong things. Rather, the libertarian philosophies that pervade the transhumanist community seem to preclude them from wishing for any clear ends at all, only the widespread availability of certain technological *means*, to be used however free individuals and groups see fit.

Consider Nietzsche's warning once more. We hear much from transhumanists about what they want to free us *from*: sickness, aging, death; the limitations of our bodily form; the tyrannies of entropy, space, and time. But do we hear as clearly what they want to free us *for*? They offer a host of possible scenarios for our consideration, but these form no comprehensible whole. We are told we might choose to constantly renew and rebuild our human bodies, or switch them out for non-biological or virtual ones; we might choose to adopt new bodies and personalities at will or form a global 'hive' mind. We might chase immortality or we might just choose to live to a modest age and pull the plug. We might use these technologies to make ourselves more emotionally stable, more emotionally free and capricious, or to enjoy emotions inconceivable in our current state; to create better lives for our children, or to shed biological reproduction as an outmoded relic; to make the Earth whole again, or to abandon the Earth for the stars.

The problem is not the unforeseeable technological possibilities, but a problem that defines our time and our world: in a neoliberal age, who among us has the courage and genuinely magnanimous moral leadership to point the way to a positive vision of the human future? Among the transhumanists we find many negative visions, by which I mean visions of liberation from constraint. In a posthuman future one can choose anything, any physical form or mental constitution, as long as the technological means and social opportunity exist. The posthuman future is one of free play, experimentation, a blank canvas upon which individuals can realize their personal visions of the good without interference from government or their fellow citizens.³¹ But this vision itself has little or no positive substance; it is a moral ghost.³²

Transhumanist and science fiction writer Ramez Naam tells us that, although we may not be able to imagine how our descendants will use human enhancement technology, "the lesson of history is that they will use the powers we provide them to make their world a better place."³³ One can debate the extent to which history really warrants this conclusion. Many would argue that we have used our technological powers to make the world better in certain respects, and

much worse in others. Yet the statement is a confession that today's transhumanist visionaries *lack* a coherent moral vision and resist any call to provide one, while still assuring us that human enhancement technologies will indeed yield genuine *enhancements*—that is, that they will be conducive to human flourishing and the good life in general, despite the absence of any clear sense of what this involves. Transhumanists wish to let the inheritors of this technology "chart their own course."³⁴ But if we do not trust *ourselves* to reliably chart a wise course, what warrants such confidence in the ability of our descendants, the inheritors of our culture and our wisdom, to do so? What could warrant this confidence, except a widespread human recommitment to the practice of moral self-cultivation, embodied in a new culture of global technomoral education?

The standard transhumanist reply is to reject the demand that any one course be charted. Naam's book tells us that "We will not all opt for the same changes. . . . Different men and women, different communities, different ideologies will all select different goals to work toward. . . . Humanity will expand, splinter, and blossom."³⁵ Yet this claim betrays itself. We are told not merely that we will expand and splinter, but that we will "blossom"—this is a normative metaphor that presupposes flourishing in the achievement of some appropriate state or end. Certainly the metaphor is compatible with a wide range of such ends, but still there must be criteria for what qualifies as 'blossoming' and what does not. Not all change or growth in living systems amounts to flourishing. Some change is *rot*. Some growth is *malignant*. What justifies Naam's faith that the free and undirected pursuit of enhancement is more likely to promote human 'blossoming' than the alternatives? As he goes on, the incoherence becomes even starker. In the same passage he adds that though our future descendants might be so different "in ways we cannot imagine" that we would fail to recognize them, we may be reassured that nevertheless they "will have the traits most dear to us."³⁶ What could possibly ensure that result, given what has otherwise been said?

Similarly, famed inventor and futurist Ray Kurzweil, known even among transhumanists for extraordinarily exotic visions of the future involving cyborgs and uploaded minds, assures us that our transition to the next phase of existence will be guided by (unspecified) "human values." He tells us that our nonbiological descendants "will be even more humanlike than humans today" and will exhibit the "finer qualities of human thought to a far greater degree" than do we; that they will cherish knowledge above all while enjoying the "full range of emotional and spiritual experiences that humans claim to have."³⁷ It is unclear why a transhumanist calling for radically experimental transformations of human minds and bodies under conditions of profound technosocial opacity would anticipate, or even desire, such constancy of values and experience.

This tension recurs again and again in transhumanist writings. Ronald Bailey tells us that this century "will offer an ever-increasing menu of life plans and choices" which should allow people maximal freedom "to pursue the good and the true in their own ways," without the burden of any prespecified normative ideal.³⁸ Yet he tells us that "the future will see miracles, cures, ecological restoration, vivid new art forms, and a greater understanding of the wellsprings of human compassion."³⁹ Set aside the question of how we are to evaluate this as a positive outcome without some normative ideal of a good life. Even if we accept that the future so described is a good one, what justifies our confidence that it will be the actual terminus of the transhumanist project? Bailey assures us that "history has shown that with vigilance—not with blanket prohibitions—humanity can secure the benefits of science for posterity while minimizing the tragic results of any possible abuse."⁴⁰ Is this really what, say, the history of environmental policy in the modern era tells us? If not, then why should one be confident that 'ecological restoration' will be a priority of an enhanced human society? Imagine that new technology greatly reduces the burden of living in a degraded environment—say, by using nanoscale robots to repair cell damage from radiation and toxins, or by using clouds of linked nanobots to form a "utility fog" that cosmetically disguises unpleasant surroundings, or enabling colonization of other planets, or by providing a host of pharmacological tonics to compensate for the lost psychological benefits of pristine wilderness.⁴¹ Might ecological restoration be among the *lowest* priorities of such a society?

Transhumanist writings seem to assume the unobtrusive operation in technosocial life of some sort of 'invisible moral hand,' an assumption that is neither made explicit nor defended. And yet, even without enhancement, our species already faces a number of grave perils, from extinction risks to 'merely' a miserable and hopeless existence for the vast majority of the human family. Nick Bostrom is right that stasis is probably not the safest bet.⁴² If enhancement *can* boost our cognitive and moral resources to confront these perils, along with the inevitable challenges that will result from enhancement itself, then perhaps throwing our resources behind the development of such technologies is the least risky alternative. An 'enhanced' future might not be any better than ours, but then again, an unenhanced future might not be very good either. As Coady notes, conservatism can be its own kind of hubris.⁴³ Still, is a technologically aggressive but morally blind 'Hail Mary' pass *really* our best option?

Inaction is impossible; given the risks of humanity's current status, resisting innovation requires moral wisdom to justify it too, and if we lack the virtue to safely push ahead, we also lack the virtue to safely stay put. *We are at an impasse, and the cultivation of technomoral virtue is our only way forward.* While the technological means for human enhancement are already emerging, we lack the moral

means today to reliably answer the question of whether and how it can be done ethically. We are not ready to answer, though as Hans Jonas warned us, we should have made ourselves ready long ago. The challenge we face today is not a moral dilemma; it is rather a moral *imperative*, long overdue in recognition, to collectively cultivate the technomoral virtues needed to confront this and many other emerging technosocial challenges wisely and well.

Does this mean that the only prudent course is to put all human enhancement research on indefinite hold until we manage to jump-start a massive global reinvestment in the practices of moral self-cultivation and education for technomoral virtue? Not necessarily. We have noted that forgoing any given technological development carries certain risks just as does pushing forward. Technomoral humility, courage, perspective, and wisdom all entail a skilled disposition not to *avoid* but to *confront* and intelligently *manage* the unavoidable moral risks of technosocial life. In their 2014 book *Unfit for the Future: The Need for Moral Enhancement*, philosophers Ingmar Persson and Julian Savulescu argue that forgoing one particular type of human enhancement research—in particular, research aimed at enhancing the *moral* capacities of human beings—may greatly amplify the existential risks to human flourishing *already* posed by the hitherto glacial pace of our species' collective moral development.

The technomoral failures of existing and past human generations have already placed the flourishing of future generations in grave jeopardy. How much more time can we safely allow ourselves to wise up by traditional means of moral self-cultivation, before we attempt more drastic measures to artificially accelerate our moral maturation as a species? Persson and Savulescu argue that we may have very little time, and that biomedical and pharmacological means of enhancing and extending our capacities for human empathy, justice, and other moral traits, if successful, could hasten our species' collective moral development, perhaps enough to greatly reduce the danger of our self-destruction.⁴⁴

This will not be easy, since the lion's share of the planet's technological and scientific resources are controlled by liberal societies operating in cultures focused on short-term private gains, alienated from any shared conception of the ultimate moral goods to be realized by collective action in the long-term interests of the human family. Even the notion that there *are* such goods—as opposed to the immediate, subjective, and often arbitrary preferences of private individuals—is no longer readily granted in many such cultures. This ethical alienation from a vision of our own higher flourishing was described by the 20th-Century Spanish philosopher José Ortega y Gasset as a uniquely modern crisis that inhibits the intelligent and creative use of technical power.⁴⁵ This crisis must at least begin to be mitigated by new and vital programs of technomoral education and habituation before any part of the transhumanist vision can be wisely managed. Thus the active pursuit of

human enhancement technologies, including moral enhancement, is probably indefensible without a concurrent cultural movement to invest significant resources and energies in the wider cultivation of technomoral virtues and leadership.

Such a commitment represents humanity's best hope for living, and living *well*, in the 21st century and beyond. The human family is not yet up to the moral task it is facing: finding a way to wisely manage *together* the increasing global complexity, instability, plurality, interdependence, rapid change, and growing opacity of our technosocial future. This book recommends a classical solution: an energetic (perhaps even desperate) collective effort to reinvest our cultures in the habits of moral self-cultivation and education for technomoral wisdom. Notably Persson and Savulescu, although they are proponents of human enhancement, endorse the very same effort. They write, "We are not envisaging that moral bioenhancement will ever reach a point at which traditional methods of moral education—or other social strategies like institutional redesign using incentives—will ever be redundant . . . we think that these methods will need to be used well and, indeed, that they should be employed more extensively than they are today."⁴⁶

Given, however, that traditional methods of moral education and self-cultivation *alone* may not work well enough, or fast enough, to save us from the shortsighted and selfish habits that have already brought our planet to the edge of ruin, they conclude that biomedical technologies of moral enhancement, should they become available, may be necessary and prudent accelerants. They could amplify and sustain the impact of traditional moral practices and character education on our habits and virtues, especially the virtues of care and empathic concern. While the technical path to effective moral enhancement is not well marked, and the obstacles to it hard to foresee, Persson and Savulescu note that "the predicament of humankind is so serious that all possible ways out of it should be explored."⁴⁷

Yet in the absence of new cultural reinvestments in moral education and practice adapted for contemporary technosocial life, the *wise* use of moral enhancement is unlikely, given that we need it precisely *because* moral wisdom among our species is in such dangerously short supply. Persson and Savulescu thus call for a new educational dedication to "what might be called a 'science-sophy,'"—that is, a new body of moral wisdom about appropriate and justified uses of scientific and technical power.⁴⁸ The account of technomoral wisdom developed here is one small step toward such a philosophy, one that must evolve *together* with emerging technologies in ways that will inevitably challenge existing neoliberal norms of technology development. Short of a long string of dumb luck or unearned grace, this path is our species' best, and likely only, hope for continued flourishing.

By philosophical *and* technological means, then, technomoral virtues such as self-control, courage, empathy, justice, care, flexibility, civility, and perspective

must begin to be explicitly targeted for promotion by researchers, educators, parents, and policymakers. Such efforts will require private and public funding, sometimes at the expense of other possible paths of educational and technological development. Among the paths that must be sacrificed are human enhancements that would impede our cultivation of technomoral virtue: enhancements that would weaken our capacities for self-control and moderation, generate group solidarity even in the absence of justice or care, or reduce empathic concern by blunting our emotional response to suffering. Each of these enhancements could be desirable to many for psychological, commercial, or political reasons. Yet if freely but widely chosen in an unrestricted market, they would preclude the very flourishing that transhumanists promise us in a posthuman world.

Indeed, to insist upon neoliberal, free-market norms for human enhancement or any other new technosocial power is to assume either 1) that our descendants will, without any wise guidance from us, *magically* acquire the moral convictions we lack to build a future worth choosing; or, 2) that our progeny will chart their own arbitrary technosocial course more or less as we have, without the benefit of any greater moral wisdom or insight than we enjoy today. The latter world will be what it is, but cannot be expected to be any *better* than our own, and given the depleted resources and compromised environment that we will have left them, it is quite likely to be worse.

10.3 Technomoral Virtue and Contemporary Life: A Crisis of Moral Wishing

Before we close this chapter, let us reflect upon the words of José Ortega y Gasset. His 1939 essay “Meditación de la Técnica” (known in English as “Man the Technician”) expresses his existentialist conception of human life as *autofabrication*: a project of self-realization, bringing into being “the aspiration we are.”⁴⁹ For Ortega y Gasset as for later existentialists, the freedom of human choice means that a human person is not a *thing*, natural or otherwise, but “a project as such, something which is not yet but aspires to be.”⁵⁰ To those who advocate relinquishment of the power to enhance ourselves, Ortega y Gasset might have replied that “in the very root of his essence man finds himself called upon to be an engineer. Life means to him at once and primarily the effort to bring into existence what does not exist offhand, to wit: himself . . . ”⁵¹

Yet he tempers his enthusiasm for human creativity and freedom with a warning about technology and virtue. He notes that for a human being, flourishing is the only subjective necessity, and she will often place her organic life in peril in order to pursue it. Of course, conceptions of human flourishing are not fixed, but individually and culturally plastic. Yet this very plasticity exposes a problem at

10.1 Competing Visions of Human (or Posthuman) Flourishing

The most enthusiastic promoters of these developments call themselves 'transhumanists.' Transhumanists expect the obstacles to human flourishing presented by age, death, disability, and disease, as well as 'normal' cognitive and physical limitations, to be partly or wholly transcended by means of emerging technologies. Many speak of a coming 'posthuman' era that will fully liberate us from the straitjacket of our biological heritage.³ A diverse community of scholars, technologists, and futurists of various philosophical and political stripes, transhumanists are united by four widely shared convictions: 1) that enhancement technologies have the potential to greatly improve the quality of our existence; 2) that research and development of such technologies should generally be fostered rather than banned or discouraged; 3) that decisions about the wisdom of enhancing ourselves, or about what constitutes a genuine 'enhancement,' will often be best left to private individuals; and 4) that many or even most individuals will have good reasons to choose enhancement for themselves and/or their children.

Bioconservative ethicists, on the other hand, reject human enhancement on several grounds. Chief among them is the belief that the transhumanist vision poses a grave threat to human dignity, and depreciates the meaning and value of human nature.⁴ Other concerns include worries about existing global socio-economic inequalities being magnified by a split between enhanced and unenhanced social classes, fear of the physical and psychological risks of enhancement, and theological concerns about 'playing God.' Like transhumanists, bioconservatives are motivated by diverse philosophical, political, and spiritual convictions. They differ, for example, in the degree and scope of their opposition to existing genetic and reproductive technologies such as in-vitro fertilization and pre-implantation genetic diagnosis. Yet they share the view that transhumanism, far from promising unprecedented levels of well-being, in fact threatens to undermine the most basic moral and material conditions of human flourishing embedded in our biological nature. Limitations of space preclude a full survey of the debate over the ethics of human enhancement.⁵ There is, however, one fundamental question, largely ignored on both sides of this debate, which we need to ask: *what technomoral virtues would humans need to have in order to enhance themselves wisely and well?*

Of course, if human enhancement is always unethical *in principle*, regardless of the character and motivations of those who pursue it, then our question will be moot. However, as we will see, bioconservative arguments for an unconditional rejection of human enhancement technologies are deeply problematic,

even philosophically incoherent. Too often, transhumanists treat the weakness of these arguments as a free pass to overlook thornier and more nuanced ethical worries about enhancement, including those motivating our question. To reach those worries, let us first clear the road ahead by exposing the problems with the extreme bioconservative position. Only then can we confront the more daunting ethical challenge for transhumanists, and assess the wisdom of pursuing human enhancement from within our present technomoral condition.

10.1.1 Bioconservatism, Human Dignity, and Virtue

Many arguments against human enhancement are of a socially and technically contingent, rather than principled, sort. For example, concerns about the biological or socioeconomic risks of human enhancement depend heavily upon the particular worldly conditions under which such technologies will be developed, tested, and disseminated. If those conditions can be suitably controlled, the risks of enhancement could perhaps be mitigated or greatly reduced. Yet most bioconservatives offer a single *a priori* principle as justification for a blanket rejection of any and all human enhancement proposals, regardless of the specifics of those proposals or their social implementation. Bioconservatives typically claim that any proposal for human enhancement involves a profound violation of the moral imperative to respect *human dignity*.

Yet it is far from clear what bioconservatives mean by ‘human dignity.’ Francis Fukuyama notoriously defines it as the possession of an ineffable “Factor X,” an “essential human quality” defying description that lies behind “a person’s contingent and accidental characteristics.”⁶ This is problematic for a number of reasons, not the least of which are its vagueness and reliance on a questionable and apparently *ad hoc* metaphysics. Fukuyama defends his view on the grounds that the cultural and political ideals of Western liberalism depend for their intellectual coherence upon the existence of this universal and essential human quality. One could easily dispute this assertion, but regardless, it is not clear how Fukuyama can defend a metaphysical claim *simply* by observing that it happens to sit better with his political and cultural ideals.

Leon Kass, in his essay ‘Defending Human Dignity,’ attempts to overcome the lack of specificity that he admits tends to plague bioconservative appeals to this concept.⁷ He defines human dignity as fundamentally connected with human *aspiration*. Here dignity depends upon our species’ conscious striving to realize our natural potentialities through excellent activity, in order to flourish in our given biological form. Thus he equates dignity with the very capacity for moral self-cultivation we explored in Part II. Yet Kass links this aspiration to fulfill our *natural* potential for excellence to another aim: namely, a “self-denying aspiration

for something that transcends our own finite existence.”⁸ Here we encounter a deep and perhaps irreconcilable tension in the bioconservative position. The first aspiration is deeply and inextricably linked to our biological heritage and the finite contours of natural existence that it marks out for us. This is the aspiration consistent with Fukuyama’s emphasis on the “species-typical” features of embodied human existence, and fellow bioconservative Michael Sandel’s insistence on appreciation for the “gifts of our natural finitude.”⁹ It implies a commitment to not only embrace but to *preserve* the biological integrity of the human condition.

Kass frames his second aspiration, on the other hand, as a desire to *transcend* our finitude in the direction of something understood as higher, even if this requires some element of self-forgetting or self-denial. Now Kass has in mind the kind of religious self-denial in which one sacrifices one’s natural desires in order to close the gap between, and establish a relationship with, a higher being that embodies the “good, the true, and the beautiful.”¹⁰ Yet why could this reading not be reconstructed to accord with the secular aspiration to *attain* a qualitatively different and higher form of being—that is, to ‘deny’ one’s given, biological form in order to remake it into something recognizably more beautiful and good? Here the relationship sought with a higher being is not one of communion, but identity. That Kass would reject such hubris does not prevent his account of dignity from technically permitting this aspiration; in fact, he arguably invites it by celebrating the “god-like” quality of humans to “articulate a future goal and bring it into being by their own purposive conduct,” along with our freedom to “quit the state of nature” and establish ourselves under laws of our own making.¹¹ Here a deep tension emerges between the claim that human dignity is inextricably linked to the natural givens of our biology, and the claim that it is inextricably linked to the conscious striving to transcend what is naturally given, in search of the beautiful, the true, or the good.

This tension is not merely abstract; it comes into play when we consider how bioconservatives might evaluate various concrete proposals for human enhancement. Imagine two possibilities. One is a hypothetical technique for germline modification and gene insertion to bioengineer humans with canine DNA, giving them olfactory capacities well beyond the species-typical range. With proper training, these capacities can greatly enhance the work of soldiers, airline security personnel, police officers, firefighters, and health workers. The second proposal is a biomechanically engineered, permanent subdermal implant that releases a neurochemical agent to stimulate species-typical feelings of self-esteem and satisfaction at the user’s command. Present these proposals to two bioconservatives, one primarily motivated by respect for the integrity of humanity’s biological givenness, and the other primarily motivated by respect for effortful human striving toward excellent activity and virtue. It is reasonable to think that they may come

to very different judgments about which proposal poses a greater threat to human dignity.

Notice that the first proposal employs germline modifications of human DNA to alter our species-typical capacities in a manner that clearly fails to preserve the integrity and finitude of our biological givens. Yet for the humans altered with nonhuman DNA, as well as for others who depend upon their work, the changes would appear to enhance and expand, rather than reduce, their human potential for virtuous activity. Such enhanced humans could attend to a far greater range of morally significant phenomena—for example, previously undetectable olfactory markers of fear, anxiety, aggression, decomposition, contamination, infection, cancer, fire, or airborne toxins. They would thus be able to glean more information related to core human goods such as security, justice, and health. Moreover, learning to use their new sensory powers in these excellent ways would require just the same sorts of education, practice, and deliberate striving that professionals undertake *now* in order to refine their professional discernment and perception. Thus at least some radical human enhancements could not only be compatible with, but might even *enrich* our aspirations to moral self-cultivation, our attainment of virtue and the goods internal to practices, and our consequent flourishing. How could this offend human dignity?

Now consider the second proposal. Though the implant is an alien presence in the human body, it is no more so than a pacemaker or stent, neither of which alarm bioconservatives. Imagine also that the neurochemical agent released by the implant is biologically identical to a substance naturally produced in the human body. No alterations have been made here to our genetic heritage, nor would such an implant produce any experience beyond the ‘species-typical’ capacity of an unenhanced human. By one bioconservative standard, then, the change seems fairly benign. Yet the use of this implant, which produces on-demand feelings of contentment regardless of one’s circumstances, could *radically* reduce the motivation for effortful human striving, and the achievements of excellence that often result from such efforts, by dampening the desire to transform one’s life situation, and/or one’s own character, into something more satisfying. By the *other* bioconservative standard, then, this proposed enhancement would appear to present a far more profound threat to human dignity than the former.

Most bioconservatives articulate a concern for biological integrity *and* for human striving.¹² However, the tension between them renders such accounts problematic, both conceptually and practically. If the human aspiration to cultivate ourselves is the root of our dignity, and if human enhancement can open up new paths of cultivation and higher states of cultivated excellence, then at least some imaginable enhancements could reinforce our dignity by removing biological obstacles to those higher states. Thus bioconservatism appears incoherent

as long as these disparate moral intuitions are conflated and packaged together under the amorphous heading of ‘human dignity’. Why has this tension not been purged from the bioconservative position?

Fukuyama’s account of dignity provides an important clue. Beyond his unhelpful invocation of ‘Factor X’, he tells us that human dignity is rooted in a coherent biological whole that is more than the sum of its parts, incorporating reason, consciousness, the capacity of moral choice, and “the distinctive gamut of human emotions.”¹³ Now, some higher animals also appear to possess consciousness, instrumental reason, and a rich emotional life. Why is there not also, say, ‘chimp dignity’ or ‘elephant dignity’? Are the champions of human dignity motivated only by what transhumanist James Hughes labels “human racism,” a special moral regard for humankind grounded in no relevant moral facts?¹⁴ Fukuyama *could* avoid this objection by noting the one item on his list not widely acknowledged as appearing in other higher animals: the faculty of ‘moral choice.’ This is the capacity to reflect upon, select, and freely carry out a course of action guided by a cognized moral ideal. A person can say to herself, ‘what kind of person do I want to become?’ or even ‘what kind of person *should* I become?’ and can consciously act on the answers she finds in reflection. Perhaps elephants, gorillas, or whales meditate on things like this and act accordingly, but there is no compelling evidence to date that this is so. It might seem odd, then, that Fukuyama has not made *this* capacity the linchpin of his account of human dignity, particularly since it could save him from Hughes’ charge of ‘human racism.’

This is no oversight on Fukuyama’s part, however. He does not make this argument because he rejects Kant’s idea that moral choice *liberates* us from our natural inclinations.¹⁵ If dignity arose *only* from the capacity of autonomous moral choice, as Kant believed, then respecting dignity would only require preserving that capacity, not other given elements of our biology. In fact, we might be *obliged* to ignore, modify, or override our natural heritage in the interests of our own moral and intellectual development. Such a view supports transhumanist claims that human enhancement has already been taking place for millennia by means of cultural enterprises such as art, philosophy, and education, and that enhancement is, in the words of transhumanist Ronald Bailey, the “highest expression of human dignity and human nature.”¹⁶ A celebration of moral choice as the locus of human dignity is *simply too amenable to deliberate projects of self-transformation* to sit well with the bioconservative position.¹⁷

It is worth noting that while bioconservatives tend to self-identify as humanists, their conflicted attitudes toward humanity’s creative moral freedom embody a different strain of humanism than that found in many voices from the past. Consider a much older tradition of philosophical and religious humanism,

captured in 1486 by Pico della Mirandola's *Oration on the Dignity of Man*, in which he imagines God giving this charge to Adam:

We give you no fixed place to live, no form that is peculiar to you, nor any function that is yours alone. According to your desires and judgment, you will have and possess whatever place to live, whatever form, and whatever functions you yourself choose. All other things have a limited and fixed nature prescribed and bounded by our laws. You, with no limit or no bound, may choose for yourself the limits and bounds of your nature. We have placed you at the world's center so that you may survey everything else in the world. We have made you neither of heavenly nor of earthly stuff, neither mortal nor immortal, so that with free choice and dignity, you may fashion yourself into whatever form you choose. To you is granted the power of degrading yourself into the lower forms of life, the beasts, and to you is granted the power, contained in your intellect and judgment, to be reborn into the higher forms, the divine.¹⁸

For della Mirandola, it is this capacity for self-transformation that makes humanity deserving of respect: "Who could not help but admire this great shapeshifter? In fact, how could one admire anything else?..."¹⁹ A broad range of philosophical, scientific, religious, and artistic perspectives have resonated with della Mirandola's vision, from Condorcet to Nietzsche to Teilhard de Chardin to Shaw. Its embodiment on the front lines of transhumanism is simply its newest expression. Why, then, do bioconservatives, who portray themselves as humanistic insofar as they wish to celebrate the special majesty of our species above all others, shrink from the newest invocation of this vision?²⁰

For one thing, the prospects of 21st century technological convergence raise the stakes of this vision by several orders of magnitude. Classical and medieval possibilities of self-transformation were limited to those habits, passions, and aspirations that could be remade by unaided reason. Despite della Mirandola's evocation of unlimited creative freedom, our physical embodiment was, until very recently, still largely beyond the scope of our choice. Certainly, cultural traditions of body modification, meditative control of autonomic functions, and asceticism testify that humans have tested the boundaries of our corporeal givenness for millennia. The possibilities, however, were always quite limited. Today, through the potential of converging technologies, it appears that *any* part of us might someday be made responsive to our creative whims. Confronted with this dizzying power, many contemporary humanists understandably experience deep unease.

Yet della Mirandola insists that bodily transformation is no threat to human dignity so long as our reflective and aspirational nature endures:

Bark does not make a plant a plant, rather its senseless and mindless nature does. The hide does not make an animal an animal, but rather its irrational but sensitive soul. . . . Who would not admire man, who is called by Moses and the Gospels "all flesh" and "every creature," because he fashions and transforms himself into any fleshly form and assumes the character of any creature whatsoever?²¹

That bioconservatives do not share this liberality with regard to the flesh is plain. Yet it is worth asking why. By Kass's logic it would seem that as long as we transform our minds and bodies according to a clear vision of the "good, the true, and the beautiful," the dignity of human aspiration to a higher form should remain intact. One can also enumerate a host of conventional modifications of the flesh, done for both medical and aesthetic reasons, to which most bioconservatives offer no objection. What aspect of the transhumanist program of modification presents a moral difference sufficient to justify the bioconservative reaction?

I suggest that there is no sufficient moral difference. Instead, resistance to human enhancement becomes persuasive only when framed not in terms of an *a priori* argument from dignity, but a contingent argument from *virtue*, one that appreciates the contemporary practical obstacles to acquiring that "clear vision" of the good needed to guide transhumanist aspirations to their successful realization.

10.2 Technomoral Humility, Wisdom, and the Argument from Hubris

Our contingent argument from virtue takes seriously one objection to the transhumanists that we have not yet considered: that they are guilty of technomoral *hubris*. This objection can take many forms. Arguments from hubris are often muddled by vague warnings about the dangers of 'playing God' or trying to 'become Gods'; but as C.A.J. Coady notes, such warnings are highly ambiguous. They can refer to specific theological concerns likely to be dismissed by nonreligious parties to the debate, but such phrases are frequently used in a secular context as shorthand for the limits of human virtue, both intellectual and moral.²²

Arguments from hubris, at least as old as the myth of Daedalus and Icarus, can represent more than just blind conservatism or an irrational fear of change. They can also reflect enduring concerns about human aspirations to transcendence becoming excessive or pathological. Is the transhumanist project guilty of such excess? By joining the vision of transcendence with the promise of virtually unlimited technological powers, the transhumanist vision exponentially raises

the moral and material stakes of human aspiration. For perhaps the first time in history, della Mirandola's remark about degrading ourselves to a subhuman form of life becomes a literal possibility, should we wield these new technologies unwisely. This danger calls forth a need for *technomoral humility*: the ability to make an honest and clear-headed assessment of the present limits of our ability to wield these powers wisely and well.

Among transhumanists, Nick Bostrom has been the most transparent about the considerable risks of human enhancement technologies. While optimistic that there is likely "more distance to rise than to fall," he acknowledges potentially grave risks of these technologies. There are non-negligible risks that we might foolishly or unwittingly use them to "clip the wings of (our) own souls," losing "hold of our ideals, our loves and hates, or our capacity to respond spontaneously with the full register of human emotion."²³ Perhaps through ignorant and misguided tinkering with the human genome we may even bring about our own extinction. Against the backdrop of these very real risks, the old argument from moral hubris, waved off by many transhumanists as the counsel of cowardly or unimaginative souls, acquires renewed force.

Remember that courage, in our case *technomoral* courage, is a mean between cowardice and rashness. If the libertarian transhumanists who champion unrestrained experimentation in this arena do not represent the vicious extreme of rashness, who does? Yet having rejected the bioconservative argument for *a priori* restraint, doesn't *that* view look now like the extreme of moral cowardice, or at least an unreasonable and even *anti-humanist* affinity for the status quo? Where, then can we find the appropriately virtuous mean with respect to human enhancement technologies? How do we find the delicate balance of moral attitude in which both *technomoral* humility *and* courage are embodied, and integrated in a holistic moral perspective? Someone who can achieve this delicate calibration and integration of multiple *technomoral* virtues is an exemplar of *technomoral wisdom*. Looking at the parties and stakeholders to the enhancement debate, how many such exemplars can we confidently identify at present? Who among them are the 21st century equivalents of the *phronimoi*, the *junzi*, or the *Sangha*?

But why, the transhumanists will argue, should we exercise cautious restraint now, when centuries of technosocial innovation have repeatedly demonstrated the triumph of futurists and 'imagineers' over the naysayers and spreaders of moral panic? It may seem that the new always wins out over the old, but if we ask ourselves *honestly* just how reliably our innovations have served us in a century marked by global economic, environmental, public health, and military disasters, we will admit that our recent record of human ingenuity has some shining successes; but arguably as many misfires and more than a few horror stories. The transhumanists are right that our time calls for bold action, not for clinging to

the status quo, but that is precisely because the status quo is already destabilized by our past and ongoing technomoral failures. Before we push on blindly as we have, we ought to heed della Mirandola's warning that humanity's creative destiny is not to be taken lightly, but embraced only with the greatest possible virtue, lest we spoil our opportunity and allow ourselves to become "animals and senseless beasts":

Above all, we should not make that freedom of choice God gave us into something harmful, for it was intended to be to our advantage. Let a holy ambition enter into our souls; let us not be content with mediocrity, but rather strive after the highest and expend all our strength in achieving it.²⁴

Let us not forget that proposals to chemically tinker with our moral faculties, to replace neurons with silicon, or to modify the content and emotional tone of our memories, all carry some risk of rendering us, if not "animals and senseless beasts," at least something *even less* noble than our present selves. For example, it is tempting to embrace proposals to enhance the brains of soldiers so that they are less vulnerable than ordinary humans to post-traumatic stress. If successful, we could spare soldiers often crippling psychological and moral injuries strongly associated with increased risks of suicide, substance abuse, anxiety, rage, and depression. Such injuries tear apart individuals, families, and communities every day, around the globe. If we have the technological means to shield soldiers' minds from such injuries, it would seem inhumane not to use them.

And yet, to dampen the moral horrors of war for individual soldiers would also dampen these same horrors on the civic level, where decisions to make war are collectively made, endorsed, and funded. Historically, our wish to spare our sons and daughters the grave physical and mental harm that comes with war has served as one of the strongest impediments to casual warmaking. As with the robotic means of warfare discussed in chapter 9, lowering the psychological barriers to waging war could have devastating results around the globe.²⁵ How should a moral society, in a world where war is sometimes necessary to restrain genocide or similar evils, resolve this tension? How many political leaders, biomedical researchers, or transhumanist scholars can you name whom you are confident could resolve this profound moral dilemma wisely, at this very moment? What about your fellow citizens—how confident are you that a popular vote today would yield the right result? How confident are you that *you* can discern the right result?

In such a case, and many others like it that arise from various human enhancement proposals, any virtuous response has to begin from a stance of technomoral humility. There are few easy answers to be found, and the consequences of choosing wrongly are likely to be among the most devastating and potentially irreversible

being as incorrigibly selfish, petty, violent, paranoid, and foolhardy, most humans have always made an effort to be something far better than that, using millennia-old habits of moral and intellectual cultivation encoded in virtually every stable culture. Updating these codes for technosocial life in the 21st century, and renewing our attention to their importance for our survival and flourishing on ‘Spaceship Earth,’ is not an idealistic fantasy—it is a practical necessity staring us in the face, and a task for which our history offers important cultural resources to be reclaimed and renewed, as I have suggested in this book. As important as they are, the engineers of the 21st century who fashion code for machines are not as critical to the human mission as those who must fashion, test, and disseminate *technomoral* code for humans—new habits and practices for living well with emerging technologies.

Thus instead of seeking solace in the post-apocalyptic fantasies of the cultural present, which express a yearning for a global calamity that will press the ‘restart button’ for humanity and erase our past mistakes along with our triumphs, I urge the reader to embrace a far more courageous hope and ambition, one embedded in another popular entertainment vision of the future—*Star Trek*. In the words of its philosophical and creative voice, Gene Roddenberry:

Star Trek speaks to some basic human needs: that there is a tomorrow—it's not all going to be over with a big flash and a bomb; that the human race is improving; that we have things to be proud of as humans.⁷

In the original series, the humans of the 23rd century repeatedly reference a critical leap in *moral* development made by 21st–22nd century humans; a *cultural* transition that enabled their narrow escape from self-destruction in internecine wars fueled by new technoscientific powers. In the future Roddenberry envisioned, humanity passes through its Great Filter not by inventing warp drives and transporters, nor by enduring a global apocalypse that erases our weakened cultures and broken institutions, but by consciously cultivating the *technomoral* virtues needed to improve them: the self-control, courage, empathy, civility, perspective, magnanimity, and wisdom to make humanity worthy of its greatest technoscientific aspirations. Such a future has not been promised to us; but it is the only future worth wanting.