

The Psychopolitics of Cognitive Enhancement: The Long Transhuman Shadow

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Abstract: This article explores the shadow side of transhumanist aspirations to transform humanity using cognitive enhancement technologies (CET). The central problem concerns how the desired transhuman anthropogenesis alters the ethical capacities of the human person. Focusing on the intersection between autonomy and equity, the article posits that inequity enhances individual autonomy for some at the expense of others, hence degrading collective autonomy. This process is already unfolding under neoliberalism, as analyzed via Byung-Chul Han’s theory of psychopolitics. Han’s psychopolitics reveals how the imagined increases in autonomy brought by CET would not yield an authentic enhancement of autonomy, but rather result in further undesirable permutations of humanity. It would erode autonomy while increasing inequity, thus degrading empathy and solidarity. Franco Berardi’s critique of semiocapitalism nuances Han’s theory in support of collective autonomy and an anthropogenesis guided by contemplative empathy. Conjoined, they amplify the possibilities for alternative therapeutic forms of transformational CET.

Key words: cognitive enhancement technologies, transhumanism, neoliberalism, semiocapitalism, anthropogenesis

1. Introduction

Libertarian transhumanists have been strong advocates of cognitive enhancement, which they argue should unfold under free market conditions. Although their position constitutes an extreme end of the spectrum, it would be unwise to ignore it, as extremist advocacy often yields “progress” towards the position advocated. The increased potential for cognitive enhancement bears import for the ethical capacities of the human person. This paper will explore the shadow sides of cognitive enhancement technologies in the neoliberal context favored by libertarian

transhumanists. I consider how authentic autonomy to apprehend and decide upon the values with which persons may wish to lead their lives is both amplified and undermined by cognitive enhancement technologies (CET). Byung-Chul Han's theory of psychopolitics in particular offers a novel contribution to an evaluation of how new forms of power transmute neoliberal subjects in processes of subjectivization that may diminish autonomy while appearing to heighten it. I argue, however, that Han's account needs to be tempered with additional critiques to anticipate a wider array of socio-political and economic dimensions. Analysis of CET must remain informed by the reality of myriad inequities that prevail globally. I explore how cognitive enhancement transforms autonomy, and consider how inequity impinges on such autonomy. Ultimately, I ask: how does the desired transhuman anthropogenesis alter the ethical capacities of the human person given the political-economic context of CET?

In what follows, I provide an overview of cognitive enhancement technologies (CET), articulate the import of CET for autonomy, responsibility and equity, discuss the background theories that bear on Han's theory of psychopolitics, explicate this theory and show how it pertains to CET, extend his analysis with Pieter Lemmens' Stieglerian critique and that of Franco Berardi, and offer some recommendations for more inspiring alternative scenarios.

2. Cognitive Enhancement Technologies (CET): An Overview

Cognitive enhancement falls within the broader category of human enhancement. Human enhancement encompasses a range of practices from the meditation systems of the world religions to psychopharmacology, genetic engineering, brain-controlled prostheses, and other forms of technological modifications of the human body or DNA (Juengst and Moseley 2019, 2–3). Human enhancement is often subdivided into the domain of the human in which the enhancement is sought, e.g., physical or cognitive.

Human enhancement includes the range of technologies, techniques, and practices that aim to heighten, extend, or add capacities to human beings in ways that could radically transform the meaning and nature of humanity itself. Human enhancement projects are already underway and widely utilized, in one guise or another, prominently by the military.¹ Those who tend to favor unfettered pursuit of enhancement under libertarian presuppositions generally fall into the transhumanist camp (Bostrom 2005, 2008; Harris 2007; Hughes 2004; Kaku 2018; Kurzweil 2012; Persson and Savulescu 2012; Savulescu and Bostrom 2011). The other end of the spectrum includes forms of opposition to transhumanism grounded in

a variety of objections including bio-conservatism (Fukuyama 2002), human dignity (Kass 2008) and virtue ethics (Sandel 2007). Shannon Vallor (2016) brings a virtue ethics framework to bear on technology generally, calling for the cultivation of “technomoral virtues” specific to emerging technologies, while cautioning that enhancement be assessed in terms of its impact on human flourishing as well as “knowing what to wish for” (Vallor 2016, 230–49; see also Trujillo 2018). Democratic transhumanists and speculative posthumanists approach the opportunities and risks of human enhancement with more sensitive attention to issues of equity, fairness, and socio-ecological embedment (Ferrando 2020, 136–39). Debates about human enhancement are varied and complex (Buchanan 2011; Vallor 2011, 2016; Lemmens 2015; Hofmann 2017; Meacham 2017; Carter 2020). In this paper, I consider the project of cognitive enhancement technologies (CET) that includes a variety of technologies. I focus on CET that intersects with digitalization.

Many of cognitive enhancement technologies directly interface with and/or depend on digitalization, such as Brain-Computer Interfaces (BCIs), and indeed any form of wearable computers, including (in a metaphoric sense of “wearable”) smartphones. Others depend more broadly on the information availability brought on by digitalization, especially insofar as they rely upon predictive algorithms. Even the more apparently menacing prospects of neural implants would be workable on account of the digital revolution. The most optimistic case for the use of smart technology emphasizes the degree to which higher or more important cognitive functions may be freed for greater human flourishing. In this sense, smart technology (which of course depends on digitalization) is itself a form of CET.

In contrast to the popular critiques of smart technologies that emphasize concerns about attention deficit and impoverished relationships, cognitive enhancement mechanisms may be utilized to improve a range of human capabilities. Cognitive enhancement can improve memory/learning, executive function (attention, self-control), problem solving, language ability, etc. and create new senses (Sandberg and Bostrom 2006a). Anders Sandberg and Nick Bostrom (2006a) taxonomize the kinds of cognition to be enhanced as 1) fostering of resilient capacities, 2) amplification of capacities, and 3) creation of new capacities. Neurotechnologies such as Brain-Computer Interfaces (BCIs) are rapidly developing in ways that may “improve the functionality already available in an individual” for both nondisabled enhancements and therapeutic purposes (Cinel, Valeriani, and Poli 2019, 6). Often, cognitive enhancement is differentiated from therapy in that its aim is to enhance abilities in those without disability, although this differentiation is contested (Bostrom and Roache 2008; see also Ferrando 2020, 132).

Sandberg and Bostrom (2006a) suggest that CET can be modeled according to invasiveness (which they imply is to be equated with internality) and the kind of materiality employed (which they categorize as either hardware or software). The relationship/distinction between invasiveness and internality is ambiguous in the article, where they mainly differentiate CET by whether it is internal or external. Table 1 schematizes Sandberg and Bostrom’s proposed category system, following up on their elision between invasiveness and internality, and inserting additional examples from Bostrom and Sandberg (2009) for clarity. Their later paper utilizes this same terminology but does not schematize the technology as clearly as in Sandberg and Bostrom (2006a). That paper treats the topics of “internal hardware,” “internal software,” and “external hardware and software” in 3 distinct subsections. As they are transhumanists, it may be inferred that the paper harbors a hidden agenda of advocating for all kinds of CET, possibly by normalizing some of the apparently threatening versions of it. This tendency becomes even more apparent in Sandberg and Bostrom (2006b) where they seek to demonstrate convergences across technologies and argue that biases against certain forms of CET amount to preconceptions about certain kinds of technologies. Bostrom and Sandberg (2009) offers a thorough treatment of the ethical issues at stake for regulatory purposes.

Table 1: Table based on Sandberg and Bostrom’s (2006a) Taxonomy of CET

		Invasiveness	
		Internal	External
Materiality	Hardware	Genetic Modifications, Drugs, Nutrition, Prenatal and Perinatal Enhancement, Neural Implants, Transcranial Magnetic Stimulation ⇔	AI, Wearable Computers, Virtual Reality, Smart Environments, Exoself, Brain-Computer Interfaces, Collective Intelligence (drawing from connected systems like the Internet), Transcranial Magnetic Stimulation ⇔
	Software	Therapy and Wellness, Education, Enriched Environments, Meditation, and Mental Training, Visualization	(TMS)

Sandberg and Bostrom point out that the kind of CET that often gets the greatest press and draws the most controversy would fall under the category of internal hardware (Sandberg and Bostrom 2006a, 3). In arranging their categories as they do, they broaden the scope of what is ordinarily called CET. However, they may have broadened the category of CET so far that it is hard to see what wouldn't fall under its purview. It is also problematic that they seem to identify internality with high invasiveness and externality with low invasiveness. For one, invasiveness, which is a term they never clearly define, is a matter of degree. Their representation of the internality appears binary (either internal or external) (Sandberg and Bostrom 2006a, 2), which is why it is easily represented in the 2–2 matrix I have constructed above. However, invasiveness does not seem to be something that is either/or, but a matter of degree, so a spectrum may be more appropriate to express this idea. A spectrum would also better represent the possibility that seemingly external hardware and software might carry some elements of invasiveness.

Moreover, associating invasiveness with internality may only be appropriate when considering hardware such as utilized by NBIC (nanotechnology, biotechnology, information technology, and cognitive sciences) technologies like a neurally implanted chip. Interestingly enough, after substituting the word invasiveness for internality at the outset of this paper and placing TMS in the “internal hardware” category whose externality they qualify, they drop the term invasive, until returning later to TMS, which they characterize as “noninvasive” (Sandberg and Bostrom 2006a, 15). If being internal alone is a condition of invasiveness, then the so-called software technologies of meditation and learning techniques they mention would have to be invasive as well. Certainly, such a view does not cohere with a commonsense notion that would judge invasiveness negatively, unless one were referring to mind-control techniques. Rather, their idea of invasiveness makes more sense as a product of internality and hardware, where something outside the person is inserted into them. The imputed value judgments of invasiveness may be something these authors would seek to avoid as a normative proscription against certain types of CET; rather the negative associations with invasiveness may serve to explain why prejudice adheres to those types of CET even if invasiveness properly characterized CET we take for granted.

Furthermore, their differentiation of materiality according to hardware and software imports a computer science frame of reference that, while being relevant to digitalization, may not adequately capture the range of materiality in question. We might instead wish to differentiate the kind of materiality according to inorganic and organic, while acknowledging that some substances like drugs and nu-

trition involve a mixture and complex relationship between inorganic and organic materials, as used in the technologies of contemporary chemistry and pharmacology. In all fairness, Sandberg and Bostrom problematize clear-cut differentiations in their 2006b piece, but their tendency in doing so is to sidestep ethical objections through convergence.

One might well wonder which distinctions are important for our analysis of CET and why. As noted regarding Sandberg and Bostrom, the term invasiveness carries an ethical connotation and the problematic equation of invasiveness with internality serves their transhumanist agenda insofar as meditation and therapy would also have to count as invasive given their internality. In order to remove these biases from the framework, I suggest examining CET in terms of its potential for transformation of the human (transformational CET), on a scale of highly transformational to merely superficial or cosmetic. We also might consider the degree of integration into the person's being versus how siloed the CET is. Finally, we could look at removability and permanence as other important factors affecting transformation. Regarding materiality, some dualities of relevance could be: organic vs. inorganic, natural vs. artificial, material vs. immaterial, material vs. spiritual, physical vs. mental, and biological vs. psychological. The value of these possible transformations depends on further ethical analysis. I suggest a focus on autonomy, while considering equity.

3. Ethical Problems Pertaining to Autonomy, Responsibility, and Equity

CETs will indubitably impact autonomy, and hence moral responsibility, in a variety of ways. Furthermore, structures of power intersect with autonomy, amplifying the autonomy of some at the expense of others. What is interesting about CET in contrast with more common critiques of technology as threatening freedom and responsibility (by weakening intelligence or fostering dependencies) is its potential to augment these very aspects of the human being. However, existing inequities serve to problematize such optimism.

Within the analytic tradition of philosophy, a considerable literature exists on the engineering of the human being via smart technologies (Achterhuis 2001; Allenby and Sarewitz 2011; Clark 2004, 2007; Heersmink 2017; Floridi 2013, 2014; Vallor 2015). Brett Frischmann and Evan Selinger's 2018 book on *Re-Engineering Humanity* provides a sustained critique of the techno-social engineering of humans via smart technologies that threaten to undermine a broad set of cognitive abilities as well as freedom, autonomy, and moral responsibility. Their concern is that the ongoing trend of excessive outsourcing of cognitive functions to machines

both reduces our capabilities and fosters dependence on the devices and systems as guided by the values of the designers. They argue that the main problem with GPS² and related technologies is “techno-social engineering creep,” wherein the temptation is to rely ever more on such technologies to the point where too many capabilities have been outsourced (Frischmann and Selinger 2018, 101).

Those who adopt the neutrality thesis would emphasize the importance of moral responsibility in the use of technologies for the betterment of intellectual capabilities.³ It is clearly possible to engage in self-discipline and choice regarding one’s engagement with smart technologies, using them only in ways that expand knowledge without degrading one’s relationships. This same point may be applied to supposedly manipulative recommender systems and social media. In other words, if someone compulsively shops or overspends in response to repeated and continuous exposure to stimuli based on algorithms that have identified their strongest consumer preferences or deepest desires, then it would be their fault for failing to self-monitor and cultivate the requisite virtues that support self-restraint and parsimony. Likewise, if someone spends an exorbitant amount of time on social media to their personal detriment, it would be because they have a poor character and need to develop better habits and attitudes.⁴

From the vantage point of technological neutrality, CET would receive an even cheerier endorsement because these technologies hold the potential to augment the conditions for responsible choice. If users can recall more information, calculate costs and benefits, better regulate impulse control, and mentally simulate multiple courses of future action and their likely consequences, it may be easier for them to make reasonable and morally acceptable choices. Moreover, responsibility in whether, what, and how to enhance cognitive capability would then reside with the individual users.

Of course, this analysis misses the addictive component of Internet usage, as well as the established literature on use of neuroscience (and now algorithms: see Zuboff 2019) to tap into the unconscious aspects of decision-making, not to mention how socio-economic inequalities impinge on autonomy.⁵ The view of freedom and responsibility embedded in technological neutrality is one that remains informed by a naïve libertarian notion of the subject divorced from socio-economic, cultural, historical and political realities. This view of freedom undergirds the libertarian transhumanist embrace of technological neutrality. However, Bostrom and Sandberg (2009) attempt to nuance their transhumanist account by incorporating serious consideration of the ethical problems of authenticity, hyper-agency, and inequality (among other issues), concluding with a brief comment on positive rights

and the suggestion that: “The societal benefits of effective cognitive enhancements may even turn out to be so large and unequivocal that it would be Pareto optimal to subsidize enhancement for the poor just as the state now subsidizes education” (Bostrom and Sandberg 2009, 334). They tend to resolve moral responsibility issues concerning freedom by invoking consequentialist considerations and making a case for CET based on negative rights.

I instead focus on autonomy and equity, locating the former in a view that depends on deeper reflection on and evaluation of the good as well as independence from systems of power and control that enforce conformity. Autonomy is not the same as mere freedom of choice between available goods/services in the marketplace that one would select based on pre-existing and unexamined preferences. It is bound up with moral reasoning, as expressed in the quintessential Kantian and derivative neo-Kantian formulations and can also be viewed as a virtue (Carter 2020). The neoclassical conception of freedom proceeds from an impoverished anthropology that undercuts capacities for moral reasoning (Giovanola 2009).

Lemmens (2015) has shown how CET erodes autonomy, when considered from a Stieglerian perspective. Bernard Stiegler drew from Marx, Heidegger, Derrida, and others to develop one of the most significant theories of technics in our time (a full accounting of which is beyond the scope of this article). Drawing on Stiegler’s corpus, Lemmens argues that existing discussions of CET, especially by transhumanists and extropians, tend to presume a neo-Darwinist outlook on evolution that ignores the “original technicity” of the human being (see also Hayles 2008) and the way human cognition evolves through a transductive relationship between three organ systems: psychic (which includes the brain), social, and technical (Lemmens 2015, 171–72). He notes that what is new about CET in this process is its “interiorization” and subsequent heteronomizing influences, which threaten to erode both individual and collective autonomy, and the capacity for reflective critique, effectively “disenhancing cognition” (Lemmens 2015, 177–79, 181). Focusing on the “political-economic backdrop (of cognitive or informational capitalism) in which the enhancement project unfolds” becomes essential for developing a positive pharmacology that can find the therapeutic aspects of these technologies (Lemmens 2015, 181–82).

Technologies aimed at cognitive enhancement may represent a paradigm case of technology being value laden and power driven in that they may increase autonomy and moral responsibility for some people and in certain ways, while simultaneously serving the interests of powerful parties. Unlike many smart technologies—whose potential for cognitive enhancement via the extension of time

and information availability easily unravels into trivial amusements, distraction, and isolation—the technologies under consideration heighten intellectual capabilities. As such, the issue of exercising self-discipline to limit technology use to valuable ends may come to be supplanted by a mandate to use such technologies so as to improve the basic capacities for freedom and moral responsibility. Such a mandate may be enforced through soft forces such as peer pressure, emulation, social competition, or by harder mechanisms of institutional discipline and control such as currently exist regarding requirements for students to use computers and tablets at increasingly younger ages. Moreover, insofar as the range of technologies to be used for cognitive enhancement are primarily produced by for-profit businesses, myriad forms of economic power come into play and bear on individual freedom and responsibility.

Meanwhile, access to such enhancement technologies remains bound to privilege in the power matrix and serves to reinforce existing structures that amplify inequities and environmental destruction. Those who have a greater claim on class, race, gender, or geo-political privilege also have more access to the educational and training technologies to make responsible choices and resist temptations toward distraction or trivial enhancements. Greater power in society augments one's individual autonomy and hence capacity for moral choice. Alternatively, it may generate excessive individualism, undercutting the powers of social critique and eroding collective autonomy. The digital divide threatens to increase these inequities with regard to autonomy as CET continues to be developed and differentially disseminated. Let us turn to theories supporting deeper analysis of the power dynamics regarding technological developments that bear on CET.

4. Theoretical Background of Psychopolitics

Han articulates an incisive critique of neoliberalism, which he recasts as technologies of power propagated psychopolitically. We now examine the political-economic system favored by transhumanists in their CET advocacy through Han's lens of psychopolitics. The cognitively enhanced transhuman will be seen to cast a long shadow. I use the term shadow in the Jungian sense in this paper. The shadow refers to what is dark to conscious awareness, where elements of the psyche remain hidden. Such unconscious elements contain both positive and negative potential. Every being casts a shadow, but since we don't often attend to it, we lack access to the shadow's potency. This paper uses the term shadow as metaphor for what remains in the dark about transhumanism, for good or ill.⁶ Let us follow the development of Han's assessment of biopolitics as having permuted into

psychopolitics, wherein Michel Foucault's disciplinary society of control over the body morphs into an exploitation of the psyche via programs of self-optimization and transparency (Han 2017b). Han offers a critique of neoliberalism that draws on both Foucault and Marx, while developing an account of power that synthesizes and moves beyond them both. Han's psychopolitics amounts to a permutation of Foucault's biopolitics, but more informed by Marx, filtered through a reversal of Arendt, and mediated by Heidegger.

Biopolitics is a field of theory spawned by Foucault's analysis of the shifts in power that constituted European modernity (Foucault 1978, 2003). Foucault redefines biopolitics against its prior naturalistic and political meanings as "life as the basis of politics" vs. "life as the object of politics" respectively (Lemke 2011). Foucault's notion of biopolitics explores how the power-knowledge matrix disciplines individuals and regulates populations via a variety of technologies of power or *dispositifs* that operate through institutions such as schools, hospitals, and prisons. In Foucault's later lectures and writings, he began to explore the intersection between biopolitics and neoliberalism, favoring the cultivation of "technologies of the self" and "care of the self" (Foucault 1986, 2008). While these latter ideas remain underdeveloped, some have argued that Foucault didn't have the time to develop a robust critique of neoliberalism (Han 2017b, 24 critique of Agamben 1998, 4), while others have viewed Foucault as problematically endorsing neoliberalism (see discussions on this complex topic in Audier 2015; Dean 2015; Gane 2016; Lorenzini 2018; Sherman 2019). Michael Hardt and Antonio Negri's conception of biopolitics builds on both Foucault and Marx to critique the global empire of capitalism in postmodernity (Hardt and Negri 2001; Negri 2017, 2018).

Han takes a cue from Marx in theorizing the master-slave dialectic as having become internalized within the "neoliberal subject" who becomes an "entrepreneur of its own self" (as Foucault has argued), willingly engaged in "auto-" (rather than "allo-") exploitation (Han 2017b, 2–5). Han also rejects Marx's valorization of labor as an ultimate end, which, against Arendt, Han interprets as an expansion of the "*vita activa*" to the universal exploitation of humanity by work wherein the "*vita contemplativa*" gets extinguished (Han 2017c). However, his critique of neoliberalism shares Marx's hostility to capital, as he argues that "Today, the Dictatorship of Capital rules over everyone" (Han 2017b, 6). Han argues that capital is abolishing the proletarian class by turning all workers into entrepreneurs in a new process of subjectivization and converting class struggle into internal battles wherein freedom itself is exploited in the service of power (Han 2017b, 7, 13). For

Han, power encompasses both capital and digital technology, as the “Dictatorship of Transparency” comes to accompany that of Capital (Han 2017b, 8–12).

Han’s account of psychopolitics relates to his critique of Arendt’s attempt to resurrect the *vita activa* (Han 2017c, 101–14). Contra Arendt, Han argues that the primary temporal crisis of today arises from a retreat of the *vita contemplativa*, and following Aristotle, Aquinas, and Sir Thomas More, he regards the contemplative life as the highest form of humanity. “It is erroneous to assume that the primacy of contemplation is responsible for the reduction of the *vita activa* to labor. Rather, we must assume that human action is reduced to mere activity and labor precisely by losing all its contemplative aspects” (Han 2017c, 101). Han thinks Marx also makes the mistake of elevating labor to the point where he calls for a universal exploitation by labor once we all become laborers. Marx’s vision also pushes aside the contemplative life in ways that devalue everyone’s humanity. While Han is sympathetic to concerns about exploitation of labor, he mainly worries that the technological reality of today places too much emphasis on the life of action and calculative thinking with the consequence that time loses all orientation and direction, spinning out of control in what appears to be a “general acceleration” of endless possibilities all of which rapidly lose any authentic meaning (Han 2017c, vi–vii, 10–11).

A Heideggerian account of technology as enframing that considers the human being ontologically as *Dasein* would worry about how the project of human enhancement via technology adversely alters human ontology in ways that undermine deeper thinking, if not causing Being itself to retreat (Heidegger 1977). Central to the Heideggerian view of technology is the concern that technology makes everything from nature to the human into a form of “standing-reserve,” something ready to be made into efficient use in the broader technological system oriented towards instrumentality and efficiency. It is this last course of analysis that Han will take up as mediated by Foucault in his theory of psychopolitics, where the human being becomes a self-exploiting resource. Han will also take up an evaluation of temporality in his psychopolitical evaluation of technology. Contra Hartmut Rosa’s (2013) thesis about acceleration causing “de-narrativization,” Han argues that it is “de-narrativization” that generates the illusion that time is speeding up (Han 2017c, 32–35). Taking a cue from Heidegger, Han calls the current era “Non-Time” (Han 2017c, 1). Following Proust, Han suggests pathways by which we might give time a “scent,” hence finding duration, truth, and narrative.

5. From Biopolitics to Psychopolitics

Regarding the performance optimizations sought by transhumanists with CET, Han's theory of psychopolitics serves to explain how neoliberal technologies of power exploit and co-opt the cognitive abilities of the privileged members of global society. Han argues that various technologies of power converge in ways that compel (educated) neoliberal subjects to produce, consume, and communicate ceaselessly, all the while taking themselves to be free and responsible for their own success or failure. Some of the main consequences of this self-exploitation include exhaustion and depression (burnout), conformity to the detriment of authentic encounter with the other, impaired intimacy in relationships, and impoverished contemplative capability. Han explores these technologies of power largely against the backdrop of digitalization, and identifies numerous pathologies brought on by the latter. He offers a number of recommendations for re-engaging the other and contemplative lingering.

Han argues that the biopolitical era of disciplinary society theorized by Foucault has given way to a system of psychopolitics that exploits the freedom of the "achievement subject" who becomes a "project," endlessly pursuing possibilities to the point of burnout (Han 2015, 2017b). Whereas disciplinary society acts on the obedience subject in ways that "inhibit" individual actions, Han's "achievement society" operates on the subject in a more "permissive" way. "Smart power cosies up to the psyche rather than disciplining it with coercion or prohibitions" (Han 2017b, 14), meaning that power appeals to emotions and freedom; it flatters, cajoles, and "seduces." Foucault's society of discipline was characterized by the negative ("no") commandments of "should" and "must not," whereas neoliberalism is characterized by the positive ("yes") exhortation of "can" and unlimited potential (Han 2017b, 1–2, 14).

This positivity of potential applies not merely to achievement but also to communication and connection: "It does not impose silence. Rather, it is constantly calling on us to confide, share and participate [. . .] to tell all about our lives" (Han 2017b, 14–15). Through social media and other digital media, we voluntarily reveal everything, and this data becomes usable for the purposes of Smart power. We believe we can do anything we want and utilize technologies to continually work on improving ourselves in an endless array of activities, all of which we disclose publicly for the purview of "friendly big brother" (Han 2017b, 37–40), becoming in effect our own private panopticons (Han 2017b, 40) while power retreats to ultimate invisibility (Han 2017b, 14). Where biopolitics disciplined the body and regulated populations, Han suggests it focused primarily on

the body and failed to dominate the soul or psyche itself (Han 2017b, 20–21). The technologies of power that neoliberalism deploys make just that leap and expand to psychopolitics.

The freedom of the neoliberal subject gets exploited by that very subject, who serves capital by becoming master and slave in one as a self-exploiting entrepreneur. Contra Foucault, “perpetual self-optimization—represents [. . .] a highly efficient mode of domination and exploitation” (Han 2017, 28) because it is undertaken under the feeling of freedom: one feels one is ordering oneself to perform even if the mandate to perform issues from the neoliberal context of capital domination. From Han’s standpoint, Foucault’s “technologies of the self” or “care of the self,” which Foucault had seen as an expression of freedom, instead come to represent the voluntary exhaustion of freedom. The subjectivization Foucault theorizes amounts to a conversion of the subject into a mere project once the *vita activa* has been totalized under conditions of technological capitalism.

Digital technologies constitute key *dispositifs* making such a reconfiguration of freedom possible (Han 2017a). Foucault used the term *dispositif*⁷ to express the concept of a technology of power that enables the system to exert power often in ways that conceal its workings. Han compares the smartphone to a rosary and calls the Facebook “like” the “digital amen” (Han 2017b, 12, 15). In addition to generating depression, these *dispositifs* also foster social conformity, and seemingly voluntary self-disclosure, enabling massive data collection, compilation, and computation for the sake of heightening predictability, dependency, and the further erosion of freedom. Other elements of digital *dispositifs* include transparency, emotional capitalism, and gamification. The latter two in particular work to destroy authentic feeling and leisure. The primary shifts from Foucault’s biopolitics to Han’s psychopolitics are summarized in figure 1.

<u>Biopolitics</u>	→	<u>Psychopolitics</u>
Power over Body/Population	→	Power over Psyche/Soul
Disciplinary Society	→	Achievement Society
Obedience Subject	→	Neoliberal Subject
Command: Must Not	→	Persuade: Can Do Anything
Sense of External Constraints	→	Sense of Internal Freedom
Affect: Negativity (NO)	→	Affect: Positivity (YES)
Centralized, controlling powers	→	Smart Power: Friendly Big Bro
Disciplinary Model: Panopticon	→	Self-Discipline: Digital Panopticon

Figure 1: Shift from Biopolitics to Psychopolitics

Han draws from Heidegger, whom he interprets through the lens of the *vita contemplativa* as calling for depth of thought that involves lingering, hesitation, and meandering at thresholds and through diverse pathways (Han 2017c, 67, 74–76). It is not just a matter of slowing down, but of ceasing to allow thought to remain captive to goals, directionality, and linearity in ways that force thought to work and reduce it to calculative operations (Han 2017c, 92–93). Moreover, he calls for a kind of “idiotism” that refuses conformity and opens up radically new possibilities (Han 2017b, 81–87). In a prior work on *The Expulsion of the Other*, Han explores the way contemporary realities reproduce the Same in echo-chambers that become a new form of Hell (Han 2018). Part of his solution is to find time to listen to the Other. Doing so requires exiting from the Non-Time of the Internet (which in storing endless information only “counts but does not recount”) (Han 2017b, 60, 2017c, 1–11) and to re-constituting time and relation to the Other via contemplation, voice and narrative.

6. Psychopolitics and CET

When evaluating the ethics of transhumanist CET ambitions, I have postulated that an increase in autonomy for some could come at the expense of greater inequity. Han’s theory of psychopolitics enables us to see how the imagined increases of autonomy would not yield an authentic enhancement of autonomy, but rather result in further permutations of humanity that might be undesirable. These effects could reveal certain CET to be problematic even if the inequity issues were addressed. Psychopolitics deals with the neoliberal subject broadly as they act in myriad spheres—economic, political, social, and cultural. In applying psychopolitics to CET, let us focus solely on the economic dimensions, considering the import for people of all classes in society. I examine the potential applications, possibilities, limitations and dangers of CET, to expose the shadow side of transhumanist aspirations.

Technologies that move toward cognitive enhancement amplify some of Han’s concerns while problematizing approaches that serve to disrupt psychopolitical *dispositifs*. If Han is right about how neoliberal technologies of power induce people to seek performance optimization in an endless quest for freedom, those same *dispositifs* should increase these subjects’ motivation to engage in cognitive enhancement. CET would extend and maximize one’s chances to improve and work, so it seems to serve psychopolitical objectives well. And yet, cognitive enhancement can be used to reduce the threat of burnout feared by Han because it enables faster, easier, more efficient work. It may even be deployed to improve

our capacity for contemplation and reflection, for example, by heightening our powers of attention, memory, focus, or even empathy. These same capacities could also be developed to support more attentive and focused listening or awareness of others as well as the ability to understand and appreciate difference rather than seek refuge in the comfort of the familiar. These potential benefits are lauded by transhumanists, who favor market-driven realities.

On the one hand, CET will likely be utilized to cultivate the abilities that are to be exploited by businesses for increased productivity and hence profitability. On the other hand, CET could expand the ability to engage in contemplation, as has happened with psychedelics. These increases in ability would then cancel one another out, in the sense that better contemplative capacities might lead one to question the self-optimization or self-disclosure mandates. Yet, the temptation remains to simply magnify and expand one's overall capabilities endlessly and for superficial purposes. The contemplation would have to occur in a social context supportive of critique of the overall system. If one of the effects of psychopolitics on neoliberal subjects is conformity, the social context would merely amount to a reproduction of the Same, which could lead either to amplification and proliferation of critiques based on identical perspectives (echo chambers) or to trivialization and absorption in the "They" (as with Heidegger). Just as mindfulness has already been appropriated by businesses to increase employees' capacity for focus and emotional self-management in the service of efficiency (Cederstrom 2015; Spicer and Cederström 2015), so-called "McMindfulness" (Gelles 2015, 200–227; Purser 2019), CET that improves contemplative ability could likewise hold the same implications.

The analogy to McMindfulness also points to another complexity of an analysis of CET based on psychopolitics. Whereas the transhumanists Sandberg and Bostrom (2006) had sought to justify and normalize myriad forms of CET by placing meditation and visualization techniques in the category of internal software, Han argues that contemplation and listening are essential for humanity to recover its depth in the face of neoliberal digitalization. In a certain sense, Sandberg and Bostrom are right to emphasize the fact that meditation impacts humans in powerful ways, in what I have dubbed transformational CET. The question concerns the ethical evaluation of such transformations and by which criteria we might deem certain ones to be good and others problematic. In this sense, the sort of contemplation discussed by Han is what would heighten human capacities for genuine autonomy, whereas the psychopolitical feeling of freedom would only amount to the neoclassical conception of freedom. Yet, even if we focus on a CET ori-

ented towards meditation, it could still be co-opted to sponsor over-achievement. Based on Sanders and Bostrom's definition of internal software, McMindfulness is already doing so. Moreover, due to inequities, many lack the privilege to enjoy the leisure time necessary to contemplate, a concern that goes all the way back to Aristotle's defense of slavery in that some needed to (do forced) labor so that others could contemplate.

Furthermore, CET does little to abate the manipulation concerns regarding big data, and if anything, may actually exacerbate them. Those with certain heightened cognitive abilities may experience expanded capacities for critique, and hence feel a motivation to retreat from or even subvert systems of power. However, just as many people have been persuaded by the lure of wealth and glamor to apply their talents and genius to service the goals of Wall Street, intelligence agencies, and powerful industries, so might cognitively enhanced individuals feel drawn to utilize their intellects to develop even more powerful algorithms and machine learning techniques to further enhance the Smart powers of Big Data (and AI). This reality could obtain even if the CET emphasized involves the "internal software" of meditation or contemplation. Under such a scenario, it is easy to see how CET could serve to intensify the stranglehold of neoliberal capitalism on everyone. Transhumanists need to reflect more deeply upon the problem of whom/what CET ultimately serves.

Like other forms of human enhancement, CET is likely to proceed for some time to favor and increase existing inequalities, notwithstanding Bostrom and Sandberg's (2009) regulatory recommendations on behalf of "disadvantaged" groups. Han's theory of psychopolitics may help us consider the implications of CET for those who will have access to it, as his account mainly explores the technologies of power that neoliberalism deploys in relation to privileged members of the global economy. This is more so the case regarding the "achievement subject" who is an entrepreneur of themselves than it is regarding the subject who tells all on social media, twitter, blogs, etc. and engages in massive online shopping. Certainly, the latter type of neoliberal subject may lack many of the privileges of the former and amount to more of a laborer than an entrepreneur. Han's turn to contemplation, which may be reinterpreted as a type of CET, won't address some of the concerns about degradation of autonomy under psychopolitical conditions and may even depend (as with Aristotle's account) on existing conditions of inequity. So, Han's psychopolitics by itself does not contain sufficient resources for thinking through the effects of CET on everyone, given existing socio-economic and geo-political inequities worldwide.

7. Critiques and Conjunctions: Lemmens, Stiegler, and Berardi

While we have found that Han's theory of psychopolitics furnishes myriad insights when exploring how the privileged knowledge worker is transformed by digitalization and may be driven toward and impacted by CET, it is evident that the account lacks comprehensiveness in consideration of globally prevailing inequities. The main problem with Han's account is that it does not apply to the masses of people globally who are excluded from knowledge work due to geo-politics, class, race, gender, disability, or other factors. Sweatshop workers, for example, are neoliberal subjects because their workplace conditions are dictated by the neoliberal global economic order, and yet application of the above critique would seem far-flung in their case. Consider also the victims of global sex trafficking, who operate as slaves hidden within the domestic spheres of neoliberal "entrepreneurs." In other words, the neoliberal subject is far from uniform, as we do not all have the opportunity to become (metaphoric) entrepreneurs.

Hence, it will be necessary to draw on analyses of neoliberalism that are better informed by the Marxist tradition so as to adequately take stock of class-based oppression and inequality, a treatment of which is otherwise missing in Han's account and flimsily addressed by transhumanists.⁸ Marxist critique offers an important angle to assess technological developments under neoliberalism, considering dimensions such as proletarianization and capital accumulation (Greenfield 2018; Lemmens 2015; Stiegler 2010, 2013), as well as cognitive capitalism and immaterial labor (Berardi 2012; Lazzarato 2002; Negri 2017, 2018).

Berardi's work from the Italian autonomist tradition will prove instructive, especially as interpreted by Lemmens (2015). Lemmens' organological analysis based on Stiegler, and drawing from Berardi, reveals how the capitalist framing and orientation driving CET leads to the cultivation of aspects of cognition, like attention, that aim at profit maximization, ultimately to the detriment of reflective and critical thinking, which undermines authentic autonomy (Lemmens 2015, 11–12). These theorists acknowledge the fundamentally technogenic nature of humanity (Lemmens 2017; Stiegler 1998, 2009; also Sloterdijk 2013), while also remaining wary of any and all enhancements and assessing critically the social-political-economic context of enhancement.

Against transhumanist CET aspirations, Lemmens argues that the neoliberal context may come to dictate which cognitive capabilities are to be enhanced and for what purpose (Lemmens 2015, 181–84). In particular, he focuses on the context of "cognitive capitalism" as theorized by Lazzarato (2002), where digital networks

coordinate “the cooperation between brains” (Lemmens 2015, 182). Looking at the example of the capability for attention that CET could improve, Lemmens points out that “for cognitive capitalism [attention] is a resource that has to be exploited [. . .] efficiently” (Lemmens 2015, 183). Obviously, if workers can focus for a longer time and attend to details without error, productivity, and hence profit, will increase. Likewise, advertisement for consumer goods is constantly competing for our attention. Hence, attention is something worth cultivating from the business standpoint. Referencing Berardi, Lemmens points out that the “expansion and acceleration of the semiotic or information flows in the infosphere [. . .] puts ever more pressure on the ‘processing power’ of the cognitive apparatuses of individuals” (Lemmens 2015, 182). Consider the demands placed on attention by social media, the 24-hour news cycle, and online shopping ads, for example. Attention is something to be “captured and controlled” (Lemmens 2015, 176).

Lemmens continues to build on Berardi’s (2012) work to explore the “anthropological shift,” or transformation of humanity, wrought by digitalization. Lemmens is particularly interested in Berardi’s distinction between conjunction and connection, where the former enables “the ability to bond with others in irregular and unpredictable non-codified ways and to interpret non-verbal signs,” while the latter reformats the human neural apparatus to communicate with all others linked together by codes (Lemmens 2015, 183). Berardi argues that digital networks alter humanity in ways that reduce our thinking and behavior to machine-like processes. Like Berardi, Lemmens’ focus is on enhancing empathy, reflection, and criticism so as to cultivate personal and social autonomy and ward off continued proletarianization. Proletarianization is a term in the Marxist tradition that theorizes forms of exploitation. However, Lemmens follows Stiegler’s (2011, 104) re-interpretation of this term as amounting to “the loss of knowledge and know-how of the laborer—and by extension of every subject [. . .]—to the technical organs, onto which this knowledge and know-how is progressively transferred” (Lemmens 2015, 174). Lemmens ultimately finds Stiegler’s pharmacological approach more helpful than Berardi’s critical account in envisioning therapeutic uses of various technologies, particularly digital network ones (Lemmens 2017).

Lemmens frames his proposed solution along the lines of Foucault’s notion of “technologies of the self,” which he generously interprets as supporting care of others as well as of oneself. It is this last move that Han would reject, as we have seen with his account of how psychopolitics converts such technologies of the self into new technologies of power. Whereas Han identifies the negative implications of digital anthropogenesis, Lemmens follows Stiegler in looking for pharmaco-

logical aspects of technologies for anthropogenesis. Lemmens' pharmacological adaptation of technologies of the self seeks resistance to the proletarianizing impact of transhumanist CET, in what I call here transformational CET.

Berardi's (2009) book on *The Soul at Work* parallels Han's account to a remarkable degree. Even the title expresses some of the same concerns as Han's notion of psychopolitics: that capitalism comes to exploit the psyche and soul of the worker. Berardi utilizes the term "cognitariat" to express the conjoining of "cognitive labor" with the "proletariat" (Berardi 2009, 105). The book builds on the work of Deleuze and Guattari to develop a theory of Semiocapitalism to explain how capitalism makes use of language and symbols to produce meaning, which become key elements of production and circulation in the economy. Unlike Han, Berardi focuses on how cognitive capitalism generates precarity through the fragmentation of labor time and relationships.⁹ While Berardi uses the term soul, he makes clear not to intend any spiritualist interpretation, but rather refers more to the psyche and profundity of meaning for human beings. In this sense as well, Berardi's work dovetails with the theory of psychopolitics developed by Han.

Berardi later argues that digital abstraction for the cognitive worker encounters a boundary in "the exhaustibility of psychic resources" (Berardi 2012, 114). According to Berardi, Marx's notion of abstract labor reached a second level with digitalization and then proceeded to another level with financialization (Berardi 2012, 104). He later observes that the cyber-revolution was driven by the fantasy of abolishing the old materialist concerns about scarcity, as the Internet was supposed to make resources and productivity infinite. Akin to Han's analysis of "burn-out," Berardi argues that the infosphere generally overtakes our nervous system and overloads our psychosphere as the speed of information acceleration well exceeds our cognitive abilities to process that information, as well as our emotional capacities in relation to this information. Going further than Han, Berardi, argues that humanity itself has been forced to mutate in order to exist in this digital reality. In this vein, he espies a digital mandate for humans to change the way we think and relate to one another in a shift that he characterizes as a move towards networked connection instead of conjunction (Berardi 2012, 123–27).¹⁰ His analysis of human mutation informs Lemmens' assessment of the anthropogenesis at work in CET, which he proposes we evaluate "anthropotechnologically" (Lemmens 2015, 183–84). More recently, Johannes F.M. Schick (2021) finds inspiration for "new modes of being human" in Berardi's notion of potency (Berardi 2017).

Regarding digital mutation, Berardi explicitly draws upon Han's (2017a) *In the Swarm* to interpret the Trump phenomenon of power in the United States as

utilizing noise to generate “nervous hyper-stimulation” (Berardi 2019, 91). Quoting liberally from Han’s analysis of the “shitstorm,” Berardi applies these ideas to Trump’s destruction of truth in semiotic terms. “The very foundation of political power is reframed in the hyper-saturated infosphere. No longer is it ideological consensus or dogmatic obedience that is the foundation of power, but noise, mental confusion, discharge of emotional distress, and revenge for humiliation”¹¹ (Berardi 2019, 92). Power operates as “enigma” (Berardi 2019, 100). And yet, the use of digital connectivity proved indispensable to opening a post-Trump era and resuming social welfare initiatives in the U.S. Lemmens has noted that “Berardi fails to perceive the emancipatory potential of [Digital Network Technologies]” (Lemmens 2017, 289), which would fall in what Jungian psychoanalysts call the “golden shadow.”

Certainly, the “anthropological mutation” that alarms Berardi could also be exacerbated by cognitive enhancements seeking to further reconfigure humans in the service of capital. If we examine CET dependent on some sort of hardware, it threatens to entangle us further in connection. This might also be the case for so called software forms of CET insofar as they are generated or proceed by cognitive structures oriented toward functionality, repetition, and task completion. While Berardi’s critique, like Han’s, tends to focus on the impact of digitalization on the cognitariat, his emphasis on anthropogenesis in relation to the machine certainly applies to factory work or other forms of repetitive, formulaic labor. And yet, we might wonder if there are any liberationist potentials of CET for conjunctive concatenation, as Lemmens suggests.

8. Future Directions

Possibilities for liberation and justice may be found in Han’s account of listening time and Berardi’s turn to poetry. Both Han and Berardi offer possibilities for alternative futures even as they dedicate most of their focus to critique of prevailing realities. Han strives to bring contemplation together with listening to the Other in a move that could address some of the inequity concerns with his call for lingering and leisure. The emphasis on listening, especially in person, relates well with Berardi’s use of poetry to disrupt the anthropogenesis toward connection produced by cognitive capitalism. Berardi’s theory of semiocapitalism allows for a greater focus on language, and he argues that an act of language, such as the “Communist meme” or an affective representation of communism as an ideal, could help us disentangle ourselves from the system and the way it is producing digital humanity (Berardi 2015, 263; Berardi 2019, 3, 123). Poetry engenders conjunctive relation-

ships because it deploys language in novel ways and conjunction always needs to move beyond language and its ordinary syntactic uses (Berardi 2015, 148–49, 320; Berardi 2018, 30–32). Such creative strategies for transforming the system should be analyzed in tandem with the trend towards McMindfulness to avoid co-option by existing power structures.

Relatedly, a turn to fantasy and science fiction texts could help us to imagine future realities in which certain technologies have advanced and come to prominence—and then these scenarios could be ethically assessed. For example, the literature responding to Aldous Huxley’s classic *Brave New World* (1946) fosters analysis of the class implications of CET under advanced capitalism. Human enhancement populates many a sci-fi tale. In another vein, Kazuo Ishiguro’s *The Buried Giant* (2015) invites us to consider how un-enhancement, such as forgetfulness, could be good for human beings, enabling us to compensate for innate ethical failings, in his example, to forgive. Insights from disability studies should be pursued in conjunction with such analyses.

9. Conclusion

While this paper has examined the aspects of CET that transhumanists tend to downplay, at the current juncture a great deal remains unexplored. The nascence of CET deployment is mainly because much of the technology has not yet progressed very far. This paper has explored the shadow side of such advancement in the realm of cognitive enhancement. In particular, we have looked at the anthropological implications for the human person, considering specifically the economic dimensions of life, insofar as autonomy is being transmuted in a highly inequitable world. Inequalities are likely to be exacerbated by CET, and there may only be illusory gains in autonomy for privileged knowledge workers. Ultimately, a market-based conception of freedom of choice between commercially available options may come to supplant authentic autonomy without a pharmacological approach to CET as transformational. Han’s contemplative alternative to psychopolitics, when conjoined with Berardi’s emphasis on collective autonomy, creativity, and empathy, offers a therapeutic anthropogenic alternative. The long transhuman shadow tracks us at the dusk and dawn of transformation.

Notes

1. The Defense Advanced Research Projects Agency (DARPA), the agency that created ARPANET, the predecessor of the Internet, has been a frontrunner in the development of cognitive enhancement technologies. At present, their work with neural-interface technology primarily deals with non-invasive (no neural implants) approaches to heal soldiers afflicted by traumatic brain injury and related illnesses (DARPA 2019b). They claim to have “led efforts aimed at revolutionizing the state of the art in prosthetic limbs” (DAPRA 2019a). The popular press has been more concerned about the potential military applications of such technology, given the Agency’s mission and prior objectives (Gross 2018).

In a book on “the untold story of DARPA,” Sharon Weinberger (2018) details the antecedents to this seemingly benign application of CET. As early as the 1970s, DARPA ran a program on biocybernetics, funding academic research that created the “brain computer interface” (Weinberger 2018, 233). Weinberger attributes the inspiration for such research on “man-computer symbiosis” to DARPA scientist George Lawrence’s repudiation of the CIA’s parapsychology research (Weinberger 2018, 232). By 2001, another antecedent of CET appeared in the form of a vision to create super-soldiers, which DARPA director Tony Tether successfully pitched to Vice President Dick Cheney, Secretary of Defense Donald Rumsfeld, and Pentagon chief weapons buyer Pete Aldridge with cartoons of “superhuman soldiers with mind-controlled weapons” (Weinberger 2018, 295–96). While that project got derailed by 9-11, DARPA would eventually develop another program on “augmented cognition” to develop “mind reading caps” for soldiers, but this project also got killed due to an exposé on its poor research methodologies (Weinberger 2018, 322–327). Weinberger ultimately concludes with a more optimistic outlook on the prospect of DARPA successfully developing CET for soldiers but worries about the ethical implications (Weinberger 2018, 371–72).

The U.S. military uses cognitive enhancement via psychopharmaceuticals (Gonzales 2017; Sahakian et al. 2015), and studies a range of possible applications including more benign interpretations of CET as “education” (Anton 2016; Feltman et al. 2020; Kelley et al. 2019). As with other commercial applications of technology originally developed for the military, applications of CET to business will clearly follow suit (Consider DARPA and the Internet). Technically, virtually all industries are already using CET insofar as smart technology and wearable computers are being categorized as a form CET. Technologies humans are most accustomed to interacting with in a direct manner are not often regarded as CET.

2. They consider the ordinary example of GPS navigation, which in a thought experiment they imagine could be implanted via chip into newborns without any side effects or technological glitches. They argue that over-reliance on GPS technologies

leads to poor spatial awareness and modeling of one's environment. Such problems would be magnified and the implications for moral responsibility worsened for other technologies such as self-driving cars.

3. Technological neutrality is a position that represents technologies as mere instruments with responsibility solely residing with their users.

4. Returning to the example of GPS, it is possible for someone to use such navigation systems in much the same way as they would temporary guidance by a human navigator: merely as a means to find one's way in a yet-to-be known environment for the very purposes of getting to know it. Instead of passively receiving instructions on right vs. left, one would be learning from the navigation so as to extend one's internal mental mapping of the environment.

5. It also fails to account for a phenomenological analysis of the human psyche (Trigg 2012) insofar as humans' real experience of the world (or in the case of GPS, space) may be inadequately modeled by certain technologies (Butler 2019).

6. My focus tends to be on the dangers in the transhuman shadow rather than its liberatory potential, though Stiegler would remind us not to neglect the latter potentiality. Future "shadow work" in a Stieglerian vein would emphasize the elements with therapeutic potential.

7. *Dispositif* could be literally translated as "dispositive," but is usually rendered in English as "apparatus" to express the technical conceptual meaning at play in Foucault's theory.

8. Marxism is but one of a number of critical theories from the Continental tradition that could help to assess the inequalities at play. For instance, feminist and postcolonial theories also open up potent critiques of the contexts under which technological developments unfold; see for example, Neda Atanasoski and Kalindi Vora's theory of "surrogate humanity" in the development of robotics, which they argue proceeds from an imaginary of "technoliberal capitalism" (Atanasoski and Vora, 2019, 4, 54) that enshrines a futurity originating in settler colonialism, racial slavery, and patriarchy. Judith Butler's notion of the "psychic life of power" (Butler 1997) informed by the psychoanalytic tradition also adds value to this discussion. Posthumanism constitutes a significant alternative to transhumanism in how it embraces the roles of technology in reconfiguring humanity. Philosophical posthumanism builds on the cyborg literature initiated by Donna Haraway (1985) in conjunction with postmodernism. The movement draws on feminist and decolonial critiques of the humanities and a decentering of the subject, while searching for non-anthropocentric and non-anthropomorphic relations with our technological futures (Hayles 1999; Braidotti 2013, 2019; Ferrando 2020). Regarding human enhancement, philosophical posthumanism evaluates it bioethically considering "the cultural specificity of values" concerning what counts as an enhancement, "post-anthropocentric critique" regarding impacts on nonhuman life (Ferrando 2020, 133, 136–37). Speculative posthumanism may come close to demo-

cratic transhumanism with regard to human enhancement (Ferrando 2020, 138). A general theme weaving through all these critiques includes an acknowledgement that the amplification of technological means when applied to existing unjust structures will exacerbate existing injustices unless the ends and values undergirding them are assessed and overhauled.

9. And, while Han's work reveals a proclivity for resurrecting Catholic framing, categories, and metaphors, Berardi's account represents a cleaner break with religious trappings. Han's work has been charged with being "sacerdotal."

10. We can certainly see the applications of Berardi's insights when examining the relationship between neoliberal subjects to one another or to businesses on the Internet. Virtually everything we view on the Internet, from advertising, to friends' posts on social media, to news articles, are determined by algorithms that aim to tailor our relationships, products, experiences, and thoughts to what we want based on actions we have taken in the past. While one might complain about mistakes in the presentation of this information, Berardi's concerns would deal more with the way our social relations, understanding of reality, and our very beings are coming to be determined by machine processes that crowd out other aspects that have characterized our humanity for much of our evolution. Whereas most of human evolution proceeded in a conjunctive approach, connective concatenation has begun to dictate the next phase of evolution of digital humanity. This concern applies particularly to younger generations of digital natives who have had much less time and opportunity to practice the conjunctive mode, as they begin life already absorbed in their "smart" devices.

11. Berardi diagnoses the causes of what he dubs "anti-global national socialism [. . .] Putin-Trumpism" in global capitalism, viewing racism and nationalism as their backlash: "Neoliberal hyper-capitalism has finally resulted in the resurrection of Nazism" (Berardi 2017, 41, 2019, 112). He views the rise of identitarian politics and the alt-right as owing to humiliation by neoliberalism and a desire for revenge, which leads to racism in the void of solidarity that would be generated by a communist alternative. The latter could unify workers from a range of locations, but has failed to present a viable option, partially owing to digital mutations towards connectivity. This analysis, while valuable in its engagement with structural racism, needs to go deeper into decolonial theory.

References

- Achterhuis, Hans. 2001. *American Philosophy of Technology: The Empirical Turn*, trans. Robert F Crease. Bloomington, Indiana: Indiana University Press.
- Agamben, Giorgio. 1998 *Homo Sacer: Sovereign Power and Bare Life*, trans. Daniel Heller-Roazen. Stanford, California: Stanford University Press.

- Allenby, Braden, and Daniel Sarewitz. 2011. *The Techno-Human Condition*. Cambridge, Massachusetts: Massachusetts Institute of Technology Press.
<https://doi.org/10.7551/mitpress/8714.001.0001>
- Anton, Mihail. 2016. "Hybrid Pedagogies for Hybrid War." *Proceedings of the Scientific Conference AFASES 2*(May): 509–16.
<https://doi.org/10.19062/2247-3173.2016.18.2.3>
- Atanasoski, Neda, and Kalindi Vora. 2019. *Surrogate Humanity: Race, Robots, and the Politics of Technological Futures*. Durham, North Carolina: Duke University Press. <https://doi.org/10.1215/9781478004455>
- Audier, Serge. 2015. "Neoliberalism through Foucault's Eyes." *History & Theory* 54(3): 404–18. <https://doi.org/10.1111/hith.10768>
- Berardi, Franco. 2009. *The Soul at Work: From Alienation to Autonomy*. Los Angeles, California: Semiotext(e).
- Berardi, Franco. 2012. *The Uprising: On Poetry and Finance*. Intervention 14. South Pasadena, California: Semiotext(e).
- Berardi, Franco. 2015. *And: Phenomenology of the End*. South Pasadena, California: Semiotext(e).
- Berardi, Franco. 2017. *Futurability: The Age of Impotence and the Horizon of Possibility*. London, United Kingdom: Polity Press.
- Berardi, Franco. 2018. *Breathing: Chaos and Poetry*. South Pasadena, California: Semiotext(e).
- Berardi, Franco. 2019. *The Second Coming*. Cambridge, United Kingdom: Polity Press.
- Bostrom, Nick. 2005. Transhumanist Values. *Review of Contemporary Philosophy* 4(1–2): 87–101.
- Bostrom, Nick. 2008. "Why I Want to be a Posthuman When I Grow Up." In *Medical Enhancement and Posthumanity*, ed. Bert Gordijn and Ruth Chadwick, 107–36. Berlin, Germany: Springer, Dordrecht.
https://doi.org/10.1007/978-1-4020-8852-0_8
- Bostrom, Nick, and Rebecca Roache. 2008. "Ethical Issues in Human Enhancement." In *New Waves in Applied Ethics*, ed. Jesper Ryberg, Thomas S. Petersen, and Clark Wolf, 120–52. Basingstoke, UK: Palgrave Macmillan: Basingstoke, 120–52.
- Bostrom, Nick, and Anders Sandberg. 2009. "Cognitive Enhancement: Methods, Ethics, Regulatory Challenges." *Science and Engineering Ethics* 15(3): 311–41.
<https://doi.org/10.1007/s11948-009-9142-5>
- Braidotti, Rosi. 2013. *The Posthuman*. Cambridge, United Kingdom: Polity Press.
- Braidotti, Rosi. 2019. *Posthuman Knowledge*. Cambridge, United Kingdom: Polity Press.

- Buchanan, Allen. 2011. *Better than Human: The Promise and Perils of Enhancing Ourselves*. New York, New York: Oxford University Press.
- Butler, Judith. 1997. *The Psychic Life of Power: Theories of Subjection*. Stanford, California: Stanford University Press. <https://doi.org/10.1515/9781503616295>
- Butler, Michael. 2019. "Developmental Space: What Navigation Apps Get Wrong about Our Experience of Movement. Presentation." *The 21st Conference of the Society for Philosophy and Technology on Technology and Power*. College Station, Texas.
- Carter, J. Adam. 2020. "Intellectual autonomy, epistemic dependence and cognitive enhancement." *Synthese* 197: 2937–61. <https://doi.org/10.1007/s11229-017-1549-y>
- Cederstrom, Carl. 2015. "Dangers of Happiness." *New York Times* 18 July 2015. <https://opinionator.blogs.nytimes.com/2015/07/18/the-dangers-of-happiness/>.
- Clark, Andy. 2004. *Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence*. New York: Oxford University Press.
- Clark, Andy. 2007. "Re-Inventing Ourselves: The Plasticity of Embodiment, Sensing, and Mind." *Journal of Medicine and Philosophy* 32(3): 263–82. <https://doi.org/10.1080/03605310701397024>
- Cinel, Caterina, Davide Valeriani, and Riccardo Poli. 2019. "Neurotechnologies for Human Cognitive Augmentation: Current State of the Art and Future Prospects." *Frontiers in Human Neuroscience* 13. <https://doi.org/10.3389/fnhum.2019.00013>
- DARPA. 2019a. "Reliable Neural-Interface Technology. RE-NET." Accessed 20 June 2019. <https://www.darpa.mil/program/re-net-reliable-peripheral-interfaces>.
- DARPA. 2019b. "Six Paths to the Nonsurgical Future of Brain-Machine Interfaces." Accessed 20 June 2019. <https://www.darpa.mil/news-events/2019-05-20>.
- Dean, Mitchell. 2015. "Foucault Must Not Be Defended." *History & Theory* 54(3): 389–403. <https://doi.org/10.1111/hith.10767>
- Feltman, Kathryn A., Amanda M. Hayes, Kyle A. Bernhardt, Emmanuel Nwala, and Amanda M. Kelley. 2020. "Viability of tDCS in Military Environments for Performance Enhancement: A Systematic Review." *Military Medicine* 185(1–2): e53–60. <https://doi.org/10.1093/milmed/usz189>
- Ferrando, Francesca. 2020. *Philosophical Posthumanism*. London, United Kingdom: Bloomsbury. <https://doi.org/10.5040/9781350059511>
- Floridi, Luciano. 2013. *The Ethics of Information*. Oxford, United Kingdom: Oxford University Press.
- Floridi, Luciano. 2014. *The Online Manifesto: Being Human in a Hyperconnected Era*. New York: Springer.
- Foucault, Michel. 1978. *The History of Sexuality: An Introduction, Vol. 1.*, trans. Robert Hurley. New York: Vintage Books.

- Foucault, Michel. 2003. *Society Must Be Defended: Lectures at the College de France 1975-1976*, ed. Arnold I. Davidson, trans. David Macey. London: Picador.
- Foucault, Michel. 2008. *The Birth of Biopolitics: Lectures at the Collège de France, 1978-1979*, trans. Graham Burchell. New York: Springer.
- Frischmann, Brett, and Evan Selinger. 2018. *Re-Engineering Humanity*. Cambridge, United Kingdom: Cambridge University Press.
<https://doi.org/10.1017/9781316544846>
- Fukuyama, Francis. 2002. *Our Posthuman Future: Consequences of the Biotechnology Revolution*. New York: Farrar, Straus, and Giroux.
- Gane, Nicholas. 2016. "Undoing the Demos: Neoliberalism's Stealth Revolution." *Theory, Culture & Society* 33(7–8): 350–55.
<https://doi.org/10.1177/0263276416669574>
- Gelles, David. 2015. *Mindful Work: How Meditation Is Changing Business from the Inside Out*. Boston: Houghton Mifflin Harcourt.
- Giovanola, Benedetta. 2009. "Re-Thinking the Anthropological and Ethical Foundation of Economics and Business: Human Richness and Capabilities Enhancement." *Journal of Business Ethics* 88(3): 431–44.
<https://doi.org/10.1007/s10551-009-0126-9>
- Greenfield, Adam. 2018. *Radical Technologies: The Design of Everyday Life*. London, United Kingdom: Verso.
- Gross, Michael Joseph. 2018. "The Pentagon Wants to Weaponize the Brain. What Could Go Wrong?" Illustrations by Eddie Guy. *The Atlantic Magazine. The Tech Issue*, November: 82–92.
- Han, Byung-Chul. 2015. *The Burnout Society*, trans. Erik Butler. Stanford, California: Stanford University Press.
- Han, Byung-Chul. 2017a. *In the Swarm: Digital Prospects*, trans. Erik Butler. Cambridge, Massachusetts: The MIT Press.
- Han, Byung-Chul. 2017b. *Psycho-Politics: Neoliberalism and New Technologies of Power*, trans. Erik Butler. London, United Kingdom: Verso.
- Han, Byung-Chul. 2017c. *The Scent of Time: A Philosophical Essay on the Art of Linger*, trans. Daniel Steuer. Cambridge: Polity.
- Han, Byung-Chul. 2018. *The Expulsion of the Other: Society, Perception and Communication Today*, trans. Wieland Hoban. Cambridge, United Kingdom: Polity.
- Haraway, Donna. (1985) 2004. "A Cyborg Manifesto: Science, Technology, and Socialist Feminism in the Twentieth Century." In *The Haraway Reader*: 7–46, New York, NY: Routledge.
- Hardt, Michael, and Antonio Negri A. 2001. *Empire*. Cambridge, MA: Harvard University Press. <https://doi.org/10.4159/9780674038325>
- Harris, John. 2007. *Enhancing Evolution: The Ethical Case for Making Better People*. Princeton, New Jersey: Princeton University Press.

- Hayles, N. Katherine. 1999. *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago, Illinois: University of Chicago Press. <https://doi.org/10.7208/chicago/9780226321394.001.0001>
- Hayles, N. Katherine. 2008. "Wrestling with Transhumanism." In *H+/-: Transhumanism and Its Critics*, ed. Gregory. R. Hansell and William Grassie, 215–26. Philadelphia, Pennsylvania: Metanexus.
- Heersmink, Richard. 2017. "Extended Mind and Cognitive Enhancement: Moral Aspects of Cognitive Artifacts." *Phenomenology and Cognitive Sciences* 16(1): 17–32. <https://doi.org/10.1007/s11097-015-9448-5>
- Heidegger, Martin. 1977. *The Question Concerning Technology and Other Essays*, trans. William Levitt. New York, New York: Garland Publishing.
- Hofmann, Bjørn. 2017. "Toward a Method for Exposing and Elucidating Ethical Issues with Human Cognitive Enhancement Technologies." *Science and Engineering Ethics* 23(2): 413–29. <https://doi.org/10.1007/s11948-016-9791-0>
- Hughes, James. 2004. *Citizen Cyborg: Why Democratic Societies Must Respond to the Redesigned Human of the Future*. Cambridge, Massachusetts: Westview.
- Huxley, Aldous. 1946. *Brave New World*. New York, New York: Harper and Bros.
- Ishiguro, Kazuo. 2015. *The Buried Giant*. New York, New York: Alfred A Knopf.
- Juengst, Eric, and Daniel Moseley. 2019. "Human Enhancement." In *The Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta. Stanford, California: Metaphysics Research Lab.
- Kaku, Michael. 2018. *The Future of Humanity: Terraforming Mars, Interstellar Travel, Immortality, and Our Destiny Beyond Earth*. New York, New York: Doubleday.
- Kass, Leon. 2008. "Defending Human Dignity." In *Human Dignity and Bioethics: Essays Commissioned by the President's Council on Bioethics*, 297–32. Washington, District of Columbia: The President's Council on Bioethics.
- Kelley, Amanda, Kathryn Feltman, Emmanuel Nwala, Kyle Bernhardt, Amanda Hayes, Jared Basso, and Colby Mathews. 2019. "A Systematic Review of Cognitive Enhancement Interventions for Use in Military Operations." U.S. Army Aeromedical Research Laboratory, Oak Ridge Institute for Science and Education. USAARL Report No. 2019–11. Fort Rucker, Alabama, 2019. Accessed 31 May 2021. <https://apps.dtic.mil/sti/pdfs/AD1083490.pdf>.
- Kurzweil, Ray. 2012. *How to Create a Mind: The Secret of Human Thought Revealed*. New York, New York: Penguin.
- Lemke, Thomas. 2011. *Biopolitics: An Advanced Introduction*, trans. Eric Fredric Trump, prefaces by Monica J. Casper and Lisa Jean Moore. New York, New York: NYU Press.

- Lemmens, Pieter. 2015. "Cognitive Enhancement and Anthropotechnological Change: Towards an Organology and Pharmacology of Cognitive Enhancement Technologies." *Techné: Research in Philosophy and Technology* 19(2): 166–90.
<https://doi.org/10.5840/techne20159834>
- Lemmens, Pieter. 2017. "Social Autonomy and Heteronomy in the Age of ICT: The Digital *Pharmakon* and the (Dis)Empowerment of the General Intellect." *Foundations of Science* 22(2): 287–96. <https://doi.org/10.1007/s10699-015-9468-1>
- Lorenzini, Daniele. 2018. "Governmentality, Subjectivity, and the Neoliberal Form of Life." *Journal for Cultural Research* 22(2): 154–66.
<https://doi.org/10.1080/14797585.2018.1461357>
- Meacham, Darian. 2017. "Introduction: Critiquing technologies of the mind: enhancement, alteration, and anthropotechnology." *Phenomenology and the Cognitive Sciences* 16(1): 1–16. <https://doi.org/10.1007/s11097-017-9505-3>
- Negri, Antonio. 2017. *Marx and Foucault*, trans. Ed Emery. Cambridge, United Kingdom: Polity Press.
- Negri, Antonio. 2018. *From the Factory to the Metropolis*, trans. Ed Emery. Cambridge, United Kingdom: Polity Press.
- Persson, Ingmar, and Julian Savulescu. 2012. *Unfit for the Future: The Need for Moral Enhancement*. Oxford, United Kingdom: Oxford University Press.
<https://doi.org/10.1093/acprof:oso/9780199653645.001.0001>
- Purser, Ronald. 2019. *McMindfulness: How Mindfulness Became the New Capitalist Spirituality*. London, United Kingdom: Repeater.
- Rosa, Hartmut. 2013. *Social Acceleration: A New Theory of Modernity*, trans. Jonathan Trejo-Mathys. New York and Chichester: Columbia University Press.
- Sahakian, Barbara J., Annette B. Bruhl, Jennifer Cook, Clare Killikelly, George Savulich, Thomas Piercy, Sepehr Hafiz, Jesus Perez, Emilio Fernandez-Egea, John Suckling, and Peter B. Jones. 2015. "The Impact of Neuroscience on Society: Cognitive Enhancement in Neuropsychiatric Disorders and in Healthy People." *Philosophical Transactions of the Royal Society B: Biological Sciences* 370(1677): 1–13. <https://doi.org/10.1098/rstb.2014.0214>
- Sandberg, Anders, and Nick Bostrom. 2006a. "Cognitive Enhancement: A Review of Technology." EU ENHANCE Project.
- Sandberg, Anders, and Nick Bostrom. 2006b. "Converging Cognitive Enhancements." *Ann. New York Academy of Sciences* 1093(1): 201–27.
<https://doi.org/10.1196/annals.1382.015>
- Sandel, Michael. 2007. *The Case Against Perfection: Ethics in the Age of Genetic Engineering*. Cambridge, Massachusetts: Harvard University Press.
<https://doi.org/10.4159/9780674043060>
- Savulescu, Julian, and Nick Bostrom, eds. 2011. *Human Enhancement*. Oxford: Oxford University Press.

- Schick, Johannes F.M. 2021. "The Potency of Open Objects: (Re-)Inventing New Modes of Being Human in the Digital Age with Bergson, Franco "Bifo" Berardi, and Simondon." *Techné: Research in Philosophy and Technology* 25(3): 379–406. <https://doi.org/10.5840/techne2021723144>
- Sherman, David. 2019. "Foucault's Neoliberal Ideology." *European Journal of Philosophy* 27(2): 500–14. <https://doi.org/10.1111/ejop.12429>
- Sloterdijk, Peter. 2013. *You Must Change Your Life*, trans. Wielan Hoban. Cambridge, United Kingdom: Polity.
- Spicer, André, and Carl Cederström. 2015. "Under the Whip of Wellness." *New Scientist* 225(3009): 26–27. [https://doi.org/10.1016/S0262-4079\(15\)60352-9](https://doi.org/10.1016/S0262-4079(15)60352-9)
- Stiegler, Bernard. 1998. *Technics and Time, 1: The Fault of Epimetheus*, trans. Richard Beardsworth and George Collins. Stanford, CA: Stanford University Press. <https://doi.org/10.1515/9781503616738>
- Stiegler, Bernard. 2009. *Technics and Time, 2: Disorientation*, trans. Stephan Barker. Stanford, California: Stanford University Press.
- Stiegler, Bernard. 2010. *For a New Critique of Political Economy*, trans. Daniel Ross. Cambridge, UK: Polity Press.
- Stiegler, Bernard. 2011. *The Decadence of Industrial Democracies: Disbelief and Discredit*, vol. 1. Cambridge, United Kingdom: Polity Press.
- Stiegler, Bernard. 2013. *What Makes Life Worth Living: On Pharmacology*, trans. Daniel Ross. Cambridge: Polity Press.
- Trigg, Dylan. 2012. *The Memory of Place: A Phenomenology of the Uncanny*. Athens: Ohio University Press.
- Trujillo, Jr., Glenn M. 2018. "From Taquería to Medical School: Juan Carlos, Aristotle, Cognitive Enhancements, and a Good Life." *Techné: Research in Philosophy and Technology* 22(1): 1–27. <https://doi.org/10.5840/techne201791368>
- Vallor, Shannon. 2011. "Knowing What to Wish For: Human Enhancement Technology, Dignity and Virtue." *Techné: Research in Philosophy and Technology* 15(2): 137–55. <https://doi.org/10.5840/techne201115213>
- Vallor, Shannon. 2015. "Moral Deskillling and Upskilling in a New Machine Age: Reflections on the Ambiguous Future of Character." *Philosophy and Technology* 28(1): 107–24. <https://doi.org/10.1007/s13347-014-0156-9>
- Vallor, Shannon. 2016. *Technology and the Virtues: A Philosophical Guide to a Future Worth Wanting*. New York: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780190498511.001.0001>
- Weinberger, Sharon. 2018. *The Imagineers of War: The Untold Story of DARPA, the Pentagon Agency That Changed the World*. New York, New York: Vintage Books.
- Zuboff, Shoshana. 2019. *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*. New York: PublicAffairs.