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Autonomy, Cognitive Offloading and Education

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Abstract: If we want our intellectual lives to go as well as possible, should we be 'delegating' as many information-gobbling tasks to our gadgets as we can? If not, then how much cognitive outsourcing is *too much*, and relatedly, what kinds of considerations are relevant to determining this? I submit that one particular dimension of intellectual flourishing that will be helpful for the purpose of exploring such questions is that of *intellectual autonomy*, and in particular, what I'll describe as the value of one's *freedom to achieve*. Several related conclusions are drawn and then applied to recent discussions in the philosophy of education concerning education's epistemic aims.

1. INTRODUCTION

Increasingly, cognitive tasks traditionally accomplished within in the head (or perhaps, in the head in conjunction with pen and paper) are being 'outsourced' almost entirely to extra-organismic elements of the world—and in particular, to technological gadgetry (e.g., iPhones, smartwatches, Google Glass) with which we regularly and uncritically interact. Cognitive scientists call this strategy *cognitive offloading*[1], and it's a very effective strategy, given the kinds of gadgetry now available, for acquiring and storing information almost immediately and with much less effort than could have be done otherwise[2].

[1] See, for example, Dror and Harnad (2008) and Clark (2008). Cognitive offloading, especially in cases of external memory and intelligence augmentation (e.g., wearable computers, augmented and virtual reality/smart environments), itself is becoming less clunky and increasingly seamless; as Michael P. Lynch (2014) has pointed out, our gadgetry each year is becoming smaller, less conspicuous, and seemingly less optional.

[2] See, for example, Risko and Dunn (2015); Risko and Gilbert (2016); Dunn and Risko (2015) for some recent work on cognitive offloading in the case of new technologies. See also Carter and Heersmink for an topography of varieties of cognitive offloading in the case of memory technologies specifically.

But is cognitive offloading a good strategy for intellectually flourishing? Put another way: if we want our intellectual lives to go as well as possible, should we be 'delegating' as many information-gobbling tasks to our gadgets as we can?

Here some caution is needed. For one thing, we don't want to end up like the wealthy but misguided Calvisius Sibenus, as described by Seneca the Younger, who relied extensively on his expensive slaves to do his thinking for him[3]. Sibenus would demand that his slaves memorise and recite epic poetry so that Sibenus himself, as owner of the slaves, could receive credit for being 'cultured while having nothing in his head'[4]. Nor however do we want to end up at the other end of the spectrum, like the hero of Emerson's *Self-Reliance*[5], who is disinclined to accept any information that is not the product of individual intellectual toil.

I am going to take as a starting point that, *contra* Emerson, at least *some* cognitive outsourcing is required in order to lead a suitably virtuous and fulfilled intellectual life[6]; and (ii) *contra* Calvisius Sibenus, outsourcing *can* be taken too far, in such a way that it undermines intellectual flourishing. Accordingly, the broad question that will be of interest in what follows is: from the perspective from which we care about our intellectual lives going well, just how much cognitive outsourcing is *too much*? Relatedly, what kinds of considerations are relevant to determining this?

As I'll suggest, one dimension of intellectual flourishing which is of particular interest in exploring such questions is that of *intellectual autonomy*, and in particular, what I'll describe as the value of one's *freedom to achieve*.

Here is the plan for the paper. §2 explores the relationship between intellectual flourishing and autonomy with reference to two specific kinds of cases of cognitive offloading involving smartphone apps and SATNAVS. §3 motivates the view that the most fruitful way to articulate the kind of challenge that cognitive offloading poses to autonomy is by *restricting our freedom to achieve*. In order to spell out this challenge properly and how it might potentially be overcome, I engage in this section in detail with some of the literature on achievement, effort, and perfectionism, with particular focus on recent work by Gwen Bradford (2013; 2015a; 2015b). §4 applies some of the lessons from §3 to issues in the philosophy of education concerning the virtue and critical thinking aims and raises some new puzzles.

[3] For an excellent discussion of Calvisius Sibenus in the context of cognitive outsourcing and extended cognition, see Wheeler (2017).

[4] Seneca, *Epistulae morales ad Lucilium*.

[5] See, along with *Self-Reliance* (1841/2012, e.g., 55) also Emerson's depiction of intellectual self-reliance in his essay 'The American Scholar' (1837/1901).

[6] This is a point that has been made by Roberts and Wood (2007) in their discussion of virtuous intellectual autonomy as a mean between extremes.

2. INTELLECTUAL FLOURISHING AND INTELLECTUAL AUTONOMY

Intellectual flourishing is a rich notion, and any satisfactory account of intellectual flourishing will need to be predicated upon—or at least reconcilable with—a defensible *epistemic axiology*—viz., with theses specifying a fundamental source or sources of epistemic (as opposed to, say, moral, aesthetic or political) value[7]. And which are the right views in epistemic axiology is highly controversial, especially in recent epistemology[8].

But we can sidestep much of the controversy here, by focusing in on a crucial *precondition* of intellectual flourishing (whatever values are involved in specifying it)—–which is *intellectual autonomy*, roughly, the capacity for intellectual self-direction—viz., to choose for ourselves which inquiries we pursue and (within limits) the shape they take.

Plausibly, we lack the kind of autonomy needed to flourish (at least, in our capacity as epistemic agents, viz., as would-be knowers) if the role of our own agency is significantly diminished in the way we seek and acquire epistemic goods. (Compare: we do not regard ourselves as morally flourishing if our actions, no matter how else they are appraised, have little to do with our own free choices and more to do with some external manipulation[9].)

Two kinds of cases, which I've discussed elsewhere in detail[10], are useful for bringing this point into sharp relief. The first kind of case concerns (in short) smartphone apps and the illusion of control. While our smartphone apps allow us very quick information-retrieving capabilities, they are riddled with various kinds of framing effects (e.g., Tversky and Kahneman 1985). This is especially the case when searching for information via drop-down menus and auto-complete search functions, where the technological design decisions that influence which choices appear salient to us are themselves not transparent. As Google design ethicist Tristan Harris (2016) puts it:

[7] See Pritchard (2017) for a recent overview, as well as the essays in Haddock, Millar, and Pritchard (2009).

[8] For example, according to one kind of position in epistemic axiology, epistemic value monism, there is one fundamental epistemic end such that epistemically valuable properties, processes, etc., are explained with reference to their connection to that end. Goldman (1999) and Pritchard (2009) have defended *epistemic value truth monism* as a variation of this type of view, though epistemic value knowledge monism is an increasingly popoular position, in part due to the increasing popularity of knowledge-first approaches in epistemology. For a representative discussion of some of the issues at stake between proponents of truth- and knowledge- value monism in epistemology, see the correspondence between Kvanvig (2001) and David (2001). Those who deny epistemic value monism in any of its guises—e.g., Riggs (2009)—insist that epistemic value derives from multiple sources the epistemic value of which themselves needn't be accounted for in terms of their connection to other epistemic values.

[9] See, for example, Duff (1998) for discussion on this and related issues on the topic of moral responsibility.

[10] See Carter (2017).

> When people are given a menu of choices, they rarely ask: "what's not on the menu?" "why am I being given these options and not others?" "do I know the menu provider's goals?" "is this menu empowering for my original need, or are the choices actually a distraction?"

When our curiosity is satisfied, our app-assisted inquiries eventually will have terminated in some new set of beliefs. These will be (thanks to a series of framing effects) beliefs we are are *guided* or nudged towards (depending on the extent of the framing effects), and when a lot of this nudging is not noticed, it becomes appropriate to question to what extent the shape our inquiry takes is down our own control as opposed to manipulated. The upshot of gaining information quickly via apps, thus, is that—and to put it crudely—the specific information we end up with might be better described as what someone else wants us to know as opposed to what we originally wanted to know, viz., as answers to questions that were our own[11].

A second kind of outsourcing case that reveals potential disconnections between epistemic agency and information acquired via outsourcing involves the deteriorisation[12] of navigational skills and SATNAV use. Roger McKinlay (2016), in a recent article in *Nature*, reports studies according to which drivers relying on SATNAVS are (in simulation tests) more inclined to drive past the same place twice without noticing, revealing themselves to be comparatively less vigilant than those drivers relying on paper maps. McKinlay's critical conclusion is that navigational skills are atrophying as a result of this particular kind of cognitive outsourcing (see also Maguire, Woollett and Spiers (2016)), and the atrophying of on-board skills in turn leads to increased dependence on SATNAVS in order to navigate.

Putting this all together, it looks as though taking advantage of at least certain kinds of cognitive offloading possibilities—despite the fact that doing so affords us quick information access—might potentially come at a certain price—viz., the price of significantly disconnecting whatever epistemic goods we acquire from our own agency.

In previous work (e.g., Carter 2017), I've argued that the right way to understand the kind of *prima facie* threat to intellectual autonomy (and by extension, intellectual flourishing) posed by cognitive outsourcing cases is in terms of a particular way of thinking about *intellectual self-direction*. More specifically, the idea in play was that, to the extent that framing effects (in the first kind of case) and SATNAV use (in the second kind of case) threaten to undermine our autonomy, it is because the dimin-

[11] This is especially the case when questions are themselves framed via autocomplete. For discussion of malicious external manipulation involving autocomplete functionality, see Gelernter et al. (2016).

[12] Whether skills are in fact, or only apparently, deteriorating is a matter of some dispute—a point I'll revisit later.

ished role of agency in such cases (for different reasons) indicated that our own agency was thereby not significantly enough shaping or directing our inquiries.

I'm now of the view that this way of setting up the problem is flawed[13]. It relies implicitly on the supposition that the kind of connection agency must bear to the shape one's inquiries take that's needed for autonomy is a connection of direct control. But it's not clear why this should be so. Provided that the kind of outsourcing cases considered are themselves ones where the choice to outsource to apps, SATNAVS, etc. is itself non-coerced and not otherwise manipulated, the shape our inquiries take when facilitated by our gadgets are at least arguably under *indirect* control—viz., indirectly explained by our agency, rather than (as suggested before) not sufficiently explained *at all* by our agency.

Rather than to (i) attempt to argue that direct and *not merely indirect* control of the direction of our inquiries is essential to the retention of intellectual autonomy; or (ii) to concede that indirect control suffices and to then insist that the kinds of offloading cases described pose no *prima facie* threat *at all* to intellectual autonomy, I will be taking a different route entirely. I want to suggest that while cognitive offloading does (in certain circumstances) legitimately threaten to undermine intellectual autonomy, it does so in the main by threatening to restrict our *freedom to achieve* and that this is where the more interesting action lies.

3. FREEDOM, ACHIEVEMENT AND EFFORT

3.1 Some thought experiments

Let's take as a starting point the following thought experiment concerning autonomy more generally:

> *Prince*: Peter is a sheltered prince whom the king and queen desire to make happy whilst at the same time keeping as safe as possible. Whenever Peter wants something, the king and queen send slaves on errands. For example, when he wants a material item, the slaves simply go get it for him. When Peter wants something done (e.g., a fence painted, a song played on the lute, a plant grown, etc.) the slaves do it for him. While Peter is not allowed to leave his room to get anything for himself, or for that matter to do anything himself, what he wants he gets and what he wants done is done.

Peter, in the above scenario, lacks a certain kind of freedom. Never mind that he can't leave his room—that's one freedom he obviously lacks. But Peter, despite all else

[13] Thanks to Emma C. Gordon for helpful conversation on this point.

he is able to attain via the slaves, is not free to acquire anything he gets *by himself*. Should this really matter, *vis-a-vis* his autonomy, provided he is able to get everything he in fact wants?

This is a difficult question, but there is some good cause to think it does matter. Here it will be helpful to briefly consider the three key components of the kind of 'performance normativity' framework popular in contemporary virtue epistemology (e.g., Sosa 2007; 2015; Greco 2010), which offers a straightforward way of thinking about how successes through ability might be valuable (for their own sake) in a way that mere successes are not.

Performance Normativity Framework

Dimensions of evaluation thesis Any performance with an aim can be evaluated along three dimensions: (i) whether it is successful, (ii) whether it is skilful, and (iii) thirdly, whether the success is because of the skill.

Achievement thesis If and only if the success is because of the skill, the performance is not merely successful, but also, an achievement.

Value thesis Achievements are finally valuable (i.e., valuable for their own sake) in a way that mere lucky successes are not.

For example, to borrow an (abridged) example from Ernest Sosa, if we find out (after witnessing a ballet) that a ballerina's performance of a complicated Grand Jete, which looked deft and impressive from the spectator's point of view, was actually guided by tiny invisible strings which ensured the movements would correspond perfectly with the Grand Jete, we would naturally feel cheated. What we wanted to see was an *achievement*, not merely successful moves disconnected entirely from any Grand-Jete-performing ability of the ballerina. Likewise, on this model, there is something valuable about the archer's hitting the bullseye through skill rather than through, say, a fortuitous gust of wind, even though both shots secure equally the aim of hitting a bullseye.

To the extent that the foregoing is on the right track, we have a useful lens through which to assess an important respect in which Peter in *Prince* is constrained. Peter lacks the *freedom to achieve*, despite possessing a rather robust freedom to attain various desired ends. Even if Peter wanted to, he could not (for example) grow a plant himself, play a song himself, paint a picture himself. The best he can hope for is (to draw from the performance normativity framework) the equivalent of a 'mere success' with respect to his respective aims, and (like arrows guided by wind and ballerinas controlled by strings) mere successes lack the value they would otherwise have if connected in the right way to the subject's relevant archery/ballet abilities. Moreover,

Peter's lack of autonomy in this respect—viz., his lack of a freedom to achieve—is significant as regards his capacity to flourish. To the extent that achievement is among the valuable aspects of human life, Peter is much worse off than he could be, as—for him—it looks as though achievement possibility is taken off the table for him.

Let's begin now to transpose the foregoing about Peter to the epistemological arena. This can be done through a series of tweaks to our original case. Firstly, it seems clear that it matters not, *vis-a-vis* Peter's freedom to achieve, whether what is doing his bidding for him is slaves as opposed to a network of computers. And nor does it matter that he is locked in a room as opposed to prevented in some other fashion from attaining his adopted ends through ability. Consider now the following revised case:

> *Prince**: Peter is not confined to his room, however, he is forced to wear futuristic osseointegrated headgear that (i) takes as inputs his desires; and (ii) satisfies these desires using an elaborate system of robots (rather than slaves).

In short, if Peter's freedom to achieve is constrained in the original case, then so it is as well in the revised case *Prince**, with the room and the slaves out of the picture. Now, let's consider a further tweak to *Prince**.

> *Prince***: Peter is not confined to his room, *nor* is he forced to wear futuristic osseointegrated headgear. However, Peter *elects* to enshackle himself with devices that do the following: for nearly anything Peter wants, he simply enters his query into his devices, knowing it will be done immediately by a network of robots.

In *Prince***, Peter could disencumber himself, by unshackling himself from the devices, but so long as he wears these devices and comes to depend upon them, he is arguably cutting himself off from the opportunity to achieve his ends. The robots will see to that, and in such a way that has as a consequence (with respect to the performance normativity framework) that the ends he attains are not achievements properly creditable to him.

Now, finally, let's add one final tweak, one that delimits the domain of the wearable tech to the epistemological arena.

> *Prince****: Peter is not confined to his room, *nor* is he forced to wear futuristic osseointegrated headgear. However, Peter *elects* to enshackle himself with devices that do the following: for nearly any information Peter wants to possess, he simply enters his query into his devices, knowing that the gear's network of computers will immediately find the answer.

Now, for two observations. Firstly, on the surface, it looks as though Peter's freedom to achieve his intellectual ends in *Prince**** is constrained in a manner that is analogous to the way his freedom to achieve his more general ends is constrained in *Prince***. Secondly, Peter in *Prince**** is in many respects just like us—for in the default case when Peter needs any item of information, he habitually inputs this query into the gadgetry he equips himself with, a network of computers immediately finds the answer. And that's more or less what is nowadays normal for most of us[14].

3.2 Achievement and effort

The foregoing discussion indicates that, in short, at least some now-ubiquitous forms of cognitive offloading threaten our intellectual autonomy in a very specific way: by *constraining our freedom to achieve intellectual goods*—viz., by making us such that the cognitive successes we characteristically and effortlessly attain (e.g., when our gadgets quickly deliver to us the informational responses to our queries) are not *cognitive achievements* any more than is Sosa's ballerina's performance of the Grand Jete, as guided by strings.

However, an objection to this reading of the landscape lies waiting in the wings. *But our freedom to achieve intellectual goods is not constrained* by cognitive outsourcing. After all, we are exercising our information-gathering abilities, even if minimal, by (for example) Googling for our answers or relying on SATNAVs to navigate. Granted, the ability to Google properly and consult and operate a SATNAV properly is not particularly difficult to acquire and maintain, and such abilities can be exercised with little to no effort on our part. But the acquisition of information in these cases constitutes a manifestation of (sufficient enough) ability nonetheless.

While this line of thought would seem to comport with the performance normativity framework sketched in §3.1 provided *any* kind of success (no matter how easy) through ability suffices for achievement[15], there is a very natural counterreply here, one that we find in different ways in work by Thomas Hurka (1993), Douglas Portmore (2007) and in particular Gwen Bradford (2013; 2015) and which deserves some sustained attention. The guiding insight is that *effort* is indispensable to achievement.

Bradford's (2015a; 2015b; 2016) view here is the most detailed. According to Bradford, all achievements have a process, which culminates in a product, and the process

[14] See, for example, Carter et al. (2018), Carter et al. (eds.) (2014; 2017), Lynch (2016), Heersmink and Carter (2017) for some representative discussions. See also Palermos (2016) for a discussion of distributed offloading.

[15] On one way of dealing with this issue, due to Pritchard, we can distinguish weak from strong achievements, where the former merely need to involve competent causation and that latter must involve overcoming difficulty or exhibiting significant skill. Cf., Carter and Gordon (2014) for critical discussion.

itself must be *difficult* to some sufficient degree. As she puts it, 'if running a marathon and writing a novel were easy, we wouldn't be inclined to call them achievements (2013, 205)'. Finally, the difficult process has to be non-accidentally connected to the product such that it is creditable to the agent's efforts—a condition Bradford calls 'competent causation'. This view is in many respects compatible with the performance normativity account of achievement outlined in §3.1, with the caveat that the process in question must be *difficult*. And difficulty itself, on Bradford's proposal, is a matter of requiring effort which itself is understood in terms of a significant exertion of the will[16].

If Bradford is right that achievements must be difficult, where difficulty is construed as involving significant level of effort, then the observation that gadget-clad information seekers retain a 'freedom to easy achievements' despite cutting themselves off from more difficult achievements is a nonstarter (as 'easy achievements' aren't genuine achievements on Bradford's view), and the *prima facie* tension between offloading and (genuine) achievement remains.

3.3 The Kasparov reply

Suppose, for the sake of argument, that the difficulty element of Bradford's line on achievement is assumed. Provided we do not dispute that cognitive offloading requires little effort, is there any silver lining?

Let's consider at this juncture a strand of thinking that has been advanced in a recent book by chess grandmaster and political activist Garry Kasparov, entitled *Deep Thinking: Where Machine Intelligence Ends and Human Creativity Begins* (2017). In 1997, Kasparov became the first world chess champion to lose a match to a computer, IBM's Deep Blue[17]. Although Kasparov's initial reaction to the defeat was bitter, he has now 20 years later made peace with what he takes to be technology's place in an overall advantageous division of intellectual labour:

> Let's look at this historical process. Machines that replace manual labor, they have allowed us to focus on developing our minds. More intelligent machines, I understand that they will take over more menial aspects of cognition and will elevate our lives towards curiosity, creativity, beauty, joy, you can continue this line[18]

[16] Hurka (1993) by contrast takes the significance of difficulty to be a matter of *complexity* in the exercise of practical reason, as opposed to exertion of the will. For a helpful overview of these differences, see Bradford (2015b).

[17] See, for example, http://time.com/3705316/deep-blue-kasparov.

[18] For the full interview, see https://medium.com/conversations-with-tyler/garry-kasparov-tyler-cowen-chess-iq-ai-putin-3bf28baf4dba.

Kasparov's thinking here would seem to furnish some cause for optimism even if our freedom to achieve is significantly restricted through cognitive offloading. The Kasparov-inspired line, relevant to our purposes, can (with some adjustments) be stated as follows: whilst cognitive offloading will generally involve foregoing the possibility of achieving certain kinds of intellectual goods—i.e., those goods characteristic of simple information gathering—this is an acceptable loss because such offloading at the same time allows for greater opportunities to achieve other more *significant* intellectual goods—viz., perhaps those predicated upon the exercise of creativity[19].

This line is certainly interesting, though when submitted to scrutiny, several problematic issues emerge. For one thing, the aspects of our cognitive lives which are 'menial' and 'non-menial' do not align so naturally as Kasparov seems to suppose with what is offloadable and what is not. For example, as the literature on extended cognition in the philosophy of mind and cognitive science suggests, aspects of human life previously taken to be distinctively human aspects (e.g., our narrative sense of selfhood (e.g., Heersmink 2016; 2017), sophisticated emotions with cognitive dimensions (e.g., Carter, Gordon and Palermos 2016; Krueger 2014; Slaby 2014) are already such that their material realisers arguably criss-cross the boundaries of the brain and artifacts in the world we interact with. At least, if cognition itself can be partly realised by extraorganismic artifacts (as per extended cognition, e.g., Clark and Chalmers 1998), it's hard to see why any particular dimensions of cognising such as creativity and curiosity, to use some examples Kasparov offers, would be *immune* to this outsourcing. Of course, the Kasparov line according to which outsourcing the menial tasks to technology allows us to 'elevate our lives towards curiosity, creativity, beauty, joy' could be re-envisaged so that these elevated goods are themselves understood as potentially realisable through mechanisms of offloading[20]. But on such a re-imagining of the view, it is less clear how this constitutes any kind of optimism, at least so long as we are excluding (*a la* Bradford) from the realm of achievements *anything that does not involve significant effort*. After all, if we could bring creativity and the like under the umbrella of the effortless, then we are not foregoing the opportunity to achieve menial intellectual goods for the sake of *achieving* higher goods at all.

Of course, a proponent of the Kasparov line could potentially counter here by insisting that whilst menial tasks can be *entirely* offloaded to our gadgets, the more 'elevated' intellectual activities can only be *partially* offloaded but never fully offloaded and that this fact is sufficient for rendering the more elevated intellectual activities as

[19] Thanks to Christoph Kelp for helpful discussion on this point, and for suggesting this kind of line as a possible move.

[20] It is difficult to make any empirical predictions on this point; the philosophical conjecture here is that it seems at least conceivable. Put another way, there does not seem to be an obvious in principle barrier to offloading these kinds of activities through certain kinds of technology, perhaps, technology that we have not yet conceived of. Thanks to a referee for suggesting clarification on this point.

not the sort of thing that would in principle be *effortless* and thus outside the scope of Bradford-style achievement when they succeed. Even if this were granted, though, the point would be at most a highly contingent one; for even if, for example, some intellectual activities can only be partially offloaded at present, there is no good reason to think that this would remain the case if our technological capabilities continue to advance at approximately the present rate.

3.4 Achievement, effort and perfectionism

Rather than to simply grant Bradford's difficulty/effort condition on achievement and make peace with the *prima facie* threat to the freedom to achieve posed by offloading by availing ourselves to the kind of thinking suggested by Kasparov, I think that a more promising strategy will be to call into question Bradford's claim that *effort* and difficulty are as indispensable to valuable achievements as she has suggested. For if it turns out that this claim doesn't hold up to scrutiny, then the threat that cognitive offloading poses to intellectual autonomy (*vis-a-vis* the freedom to achieve) isn't as direct as it would seem to be with Bradford's view in the background.

I think there are two central lines of resistance to take the difficulty/effort condition on achievement. One such problem is highlighted in prodigy cases. When the young Mozart sits down to the piano and effortlessly plays a beautiful piano piece through what might be best described as natural or innate skill, there is no substantial level of effort on display at any point in the process of Mozart's playing the piece. And nor, in such prodigy cases, is any effort retroindicated as it often is when an effortless performance is predicated upon effortful practice. Considerations such as these have led Duncan Pritchard (2009; 2010) in various places to have suggested that in cases where valuable achievements aren't valuable because of difficulty they might be nonetheless simply through the display of high levels of skill.

Bradford (2013, 219-21; 2015b, §2.2) has indicated some sensitivity to this kind of worry and has canvassed some potential replies. Even if we assume for the sake of argument that the difficulty/effort condition on achievement can ultimately be reconciled with such cases, there is I think a more interesting and pressing line of critique worth developing. Here it will be helpful to consider Bradford's own rhetorical question:

> […] all achievements are characterized by difficulty, and this is a ground of their value. Difficulty, I have claimed, is a matter of exerting the will. *But what's so good about that*?

What's needed is a clear reason to think that exerting the will en route to some success, as we do when significant effort is on display when performing a difficult

task, constitutes a better or more valuable state of affairs than, say, attaining the success having never exerting the will at all. Any such story will at some point need to explicitly connect exertions of the will with value.

Bradford at this juncture appeals to a certain kind of perfectionist theory of well-being, where perfectionism is the view that human well-being is a matter of the exercise of characteristically human capacities[21]. As neo-Aristotelian perfectionist Thomas Hurka (1993) articulates the position generally construed, perfectionism

> [...] [S]tarts from an account of the good life, or the intrinsically desirable life. And it characterizes this life in a distinctive way. Certain properties, it says, constitute human nature or are definitive of humanity—they make humans human. The good life, it then says, develops these properties to a high degree or realizes what is central to human nature. Different versions of the theory may disagree about what the relevant properties are and so disagree about the content of the good life. But they share the foundational idea that what is good, ultimately, is the development of human nature (1993, 3).

On Bradford's own preferred perfectionist line, (i) the will is a characteristic human capacity, and (ii) 'engaging in difficult activity *just is* the excellent exercise of the will' (2013, 222).

Or course, one might take issue with perfectionism, generally stated—for example, by appealing to well-rehearsed objections concerning elitism or inequality[22]. Or, one might grant the general perfectionist thesis and dispute Bradford's claim that the will is a characteristic human capacity such that the exercise of it should be included in a list of those valuable things that make up an objectively good human life.

I'll opt for neither of these. Rather, I think that under closer consideration, there's cause to think that (i) and (ii) are jointly unstable. This is in short because (ii) is plausible only if (i) is not. In more detail: the equivalence of excellent exercise of the will with difficulty in (ii) is plausible only on a reading of (i) where the kind of will that is *distinctively human* is obstacle-laden. 'Excellence' in the exercise of divine will, free of obstacles, would not correspond with difficulty at all, but with some other features. To the extent that the identity of difficulty with excellent exercise of the will in (ii) is plausible within Bradford's story, it must be premised upon some tacit commitment to the view that the kind of will that's a distinctively human capacity in (i) is not obstacle free but obstacle-laden.

[21] For an survey of various forms of perfectionism, see Wall (2012). See Hurka (1993) for a notable defence.

[22] See Wall (2012, §2.2 for an overview).

But the extent to which we are obstacle laden looks entirely contingent as opposed to anything distinctly or essentially human. And one needn't be a normative transhumanist in order to accept this point[23]. Consider that, to the extent that the latest high-tech innovations continue to smooth out the kinds of cognitive obstacles that feature in the background within which the human will is situated, excellence in the exercise of the will needn't be associated with difficulty.

These points caution against grounding, *a la* Bradford, the value of achievements in perfectionist-based considerations to do with difficulty specifically. And if that's right, then, even if perfectionism offers the right way to think about human well-being in terms of human capacities, and even if the will is a distinctively human capacity, we needn't be committed to thinking that cognitive offloading, *simply by making things easier*, restricts the freedom to achieve.

Instead, and more cautiously, we should suppose that cognitive offloading threatens to restrict the freedom to achieve only if offloading undermines the possibility conditions for what Bradford, no less than Sosa, Greco and other advocates of the performance normativity model of achievement, take to be essential to something counting as even the most minimal kind of achievement—viz., what Bradford calls *competent* causation. This is the condition on achievement (outlined initially in §3.1) that the success in question (e.g., information acquired through gadgets, in the case of cognitive offloading) be *because of the agent's abilities*.

If cognitive offloading (in the ubiquitous kinds of cases considered) imperils achievement by threatening *this* condition (as opposed to the difficulty/effort condition), then we really do have scope to think that whatever cognitive gains we can make by offloading must be weighted against a restriction on autonomy—-viz., that (in short) the more we capabilise ourself to attain information by surrendering our abilities, the less free we are to achieve. However, the techno-progressive side of this coin is (also, in gist) that if offloading is generally compatible with our cognitive abilities doing enough explanatory work in our cognitive successes—as would be the case if our abilities can supervene partly on the cognitive scaffolding we rely on[24]—then capabilising ourselves to attain information quickly and effortlessly via our gadgetry wouldn't undermine our intellectual autonomy by restricting our freedom to achieve. This is the fraught situation, in a nutshell, and it's unfortunately not as elegant as we'd hope for. It's at any rate not a situation that can be adjudicated without engaging in much more depth with the literature on extended cognition—and it is beyond the scope of what we can do here to engage with this satisfactorily.

Nonetheless, a number of qualified conclusions have already been reached over the course of §§2-3 about the relationship between cognitive outsourcing and auton-

[23] This topic will be revisited in §4.

[24] See in particular here Pritchard (2010) and Palermos (2014).

omy, achievement and flourishing, and in the next section, I want to show how some of these related conclusions have some interesting ramifications for the philosophy of education.

4. IMPLICATIONS FOR THE PHILOSOPHY OF EDUCATION

4.1 Education and intellectual virtue

According to one increasingly popular view about the epistemic aims of an education—the intellectual virtue approach (e.g., Baehr 2013; Battaly 2006; Pritchard 2013; Kidd 2015; Tanesini 2016)—the primary aim or goal of an education is to foster intellectual virtues, such as curiosity, open-mindedness, intellectual courage, and intellectual honesty.

If this approach is correct, then two implications from §3 are worth drawing attention to. Firstly—and this is a point that has already been raised by Pritchard (e.g., 2013) and Clark (2016)—offloading itself can be done with more or less epistemic hygiene. If our abilities or virtues *include* some extended abilities (e.g., externally stored memory, as opposed to merely biomemory), then educating for intellectual virtues involves not merely educating for the kind of traits that take for granted that (in short) cognition supervenes on processes that go on in the head. If they do *not*, then given the presumption that cognitive scaffolding is widespread, some of the abilities or virtues that should be educated for are those by which we can (through our own biologically endowed abilities) come to manage scaffolding technologies responsibly[25].

A second point, however requires revisiting a strand of Kasparov's thinking. In particular, recall Kasparov's optimistically framed conjecture that intelligent machines will continue to take over more 'menial aspects of cognition' and will elevate our lives towards curiosity, creativity, and the like. Given that intellectual character virtues such as curiosity and creativity are precisely what proponents of the virtue aim of education submit that we should be fostering in an education, a complex question emerges: *if* these kinds of cognitive standings could be attained or realised in part by the same kinds of intelligent machines that Kasparov would prefer be relegated to menial aspects of cognition[26], *should* they? If not, then the proponent of the virtue aim has a sorting task on her hands: for it will be incumbent upon the proponent of the virtue aim of education to determine just which virtues should not be (to put it crudely) 'tainted' by offloading, and which can. If, however, no such character virtues should be exempt in this respect, then this should be reflected in curricula design and

[25] See for example Pritchard (forthcoming) and Carter (2017).

[26] Some of these kind of possibilities were briefly sketched in §3.3.

assessment—as there would be no principled reason to restrict the encouragement of offloading to only some kinds of virtue-aimed activities but not others.

4.2 Education, offloading and regress

While the intellectual virtue approach to the philosophy of education places a premium on the development of cognitive abilities, the same is true of the related but competitor *critical thinking account* of the aim of education (e.g., Scheffler 1989; Siegel 2003; 2013a; 2013b) according to which, as Israel Scheffler (e.g., 1989) puts it, critical thinking is 'of first importance in the conception and organisation of educational activities'; and (ii) the educational value that should be maximized 'by making as pervasive and free as possible the free and critical quest for reasons'[27].

On either of these approaches, an important question arises: what kind of intellectual labour can permissibly be offloaded (in light of the virtue/critical thinking aims) and what kind of intellectual labour cannot?

Here is one natural (albeit, rather restrictive) kind of proposal to this effect, stated in the abstract in order to illuminate a structural dilemma: The only kind of intellectual labour that is permissibly offloaded is *information gathering labour*—i.e., fact finding. All other intellectual labour must not be offloaded if we are to properly further the virtue/critical thinking aims. Or so such an envisioned proposal has it.

But given that the kind of labour involved in *managing our offloading gadgets* can itself be done intelligently or stupidly[28], a further question of immediate relevance here is the following: can the management labour associated with cognitive offloading be *itself* permissibly offloaded, or must it not be? We can imagine here a reply to the effect that we cannot have cognitive offloading 'all the way down'; at some point, there is intellectual labour—labour associated specifically with the responsible management of offloading technologies—which cannot be offloaded to further technologies. Such a reply, however, should be a principled one. But how might a non-arbitrary stopping point be identified? These are questions that philosophers of education partial to the view that we should educate for virtues, abilities and skills, generally speaking, must at some point engage with. Such questions bear direct relevance to the matter of *how* certain kinds of skills relevant to any form of offloading should be inculcated and assessed.

[27] For a recent discussion of the critical thinking and virtue approaches to education in connection with one another, see Kotzee et al. (2018).

[28] This wording is intentionally suggestive of Ryle's (1949) regress in the *Concept of Mind*, however, the dialectical goals (and targets) are importantly different.

4.3 Education and an open future

According to Joel Feinberg (1980/2007), an education should among other things aim to safeguard a child's right to an open future. As he puts it, an education

> […]should equip the child with the knowledge and skills that will help him choose whichever sort of life best fits his native endowment and matured disposition. It should send him out in the adult world with as many open opportunities as possible, thus maximizing his chances for self-fulfillment (Feinberg (1980/2007, 116).

Self-fulfilment, on Feinberg's view (e.g., 1980/2007; 1994, 318-19) can be understood as at least involving the development of personal talents that help humans achieve self-actualization. While Feinberg's most famous engagement with the issue of how a child's right to an open future might be violated in an educational context concerns Amish education[29] (e.g., 1980/2007), I want to conclude by connecting this topic with cognitive offloading, human nature and perfectionism[30].

Recall in §3 that the kind of perfectionist theories of well-being that philosophers such as Bradford and Hurka appeal to in order to account for what sorts of things make up a good human life (e.g., as would be specified on an objective list theory) are predicated upon some description of human nature. As Hurka (1993, 3) put it, the properties that 'constitute human nature or are definitive of humanity … [which] make humans human' are those the development of which are to be included in a specification of the good life. And here we see again, in Feinberg's articulation of self-fulfilment, as it's relevant to articulating the right to an open future, similar appeal to (as Feinberg 1994 puts it) 'the development of nature'.

Accordingly, if human nature is some fixed particular way, this will have a bearing on not just what kinds of things the human-nature perfectionist itemises on the objective list of well-being (see §3), but also on *what counts as restricting or respecting an open future*. Thus, a pressing question becomes: to what extent is the kind of scaffolding ordinarily used for cognitive offloading, including wearable and embedded intelligence augmentation technologies, a part of human nature in the sense that is relevant to a Feinberg-style right to an open future? Should we educate, for example, in a way that attempts to respect a student's right to develop the kinds of capacities they possess in part through high-tech cognitive scaffolding, or only those they possess naturally?

One strong kind of answer here is found in the literature on *transhumanism*, although some clarification is needed. 'Transhumanists' come in different stripes. Nor-

[29] Wisconsin v. Yoder, 406 U.S. 205, 92 S. Ct. 1526, 32 L. Ed. 2d 15 (1972).

[30] For related discussion, see Carter (forthcoming).

mative transhumanists (e.g., Huxley 1957; Clark 2012) embrace the thesis that we *should* try to use the latest science in order to alter the human condition, and take for granted that we can do so (viz., that human nature is alterable). Bioconservatives (e.g., Mehlman 2012) maintain that human nature is essentially fixed and so reject a key presupposition of normative transhumanism which is that we *can* alter human nature. Descriptive or weak transhumanism rejects the bioconservative thesis that the human condition is unalterable but is in principle compatible with a denial of normative transhumanism.

Even on the weak transhumanist thesis that human nature is to some extent a fluid (non-fixed) notion, an important implication is that what counts as a right to an open future will itself be non-fixed in that it will be hostage to changing descriptions of what the distinctively human capacities are. To the extent that an education aims to inculcate cognitive goods in a way that respects a child's right to an open future, educators must be vigilant that their conception of what would be involved in *violating* such a right does not become outdated[31].

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