Virtuous Play: The Ethics, Pleasures, and Burdens of Brain Training

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ABSTRACT

Through normative appeals of cognitive enhancement, the brain has become a site of both promise and peril. Displaying oneself as ethically sound may now include showing requisite care for cognitive capacities. Moreover, enhancing our cognitive reserves is framed as aspirational means of averting neurodegenerative disease and neoliberal precarity. Such demanding labours of self-care warrant close scrutiny. Promissory discourses proclaim our ‘neuroplasticity’, encouraging subjects to work on endlessly improvable functional capacities that hold labour market value. Yet a ‘fun morality’ is equally prevalent in today’s experiential economies. Neuro-enhancement is thus sold not as an ascetic chore, but an ecstatic potential. Hope, fear, pleasure, and ethical conduct are, therefore, all closely entwined in the ‘virtuous play’ of ‘brain training’, where commercial entities use digital platforms for game-based tasks designed to enhance cognitive abilities. These services are typically promoted through appeals to our dutiful biocitizenship. This type of virtuous play is increasingly the means by which subjects produce themselves as simultaneously pleasure-seeking, productive, and resoundingly well. However, this understanding of virtuosity is often narrowly derived—reduced to ‘active ageing’, corporate-style ‘neurohacking’, and ‘brain profiles’—that threaten to foreclose other ways of imagining well-being. In failing to recognize the neoliberal underpinnings of virtuous play we entrench burdensome attachments to emerging modes of personal enhancement. Against these seductive appeals of combining pleasure with self-improvement, we must cultivate a critical reflexivity regarding exactly how ‘enhancement’ is conceived, opening room for lines of possibility outside of currently dominant frameworks.

KEYWORDS: neuroscience, biocitizenship, prosumption, enhancement, virtue, self-tracking, cognitive enhancement

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Introduction—The Promise, Pleasure, and Peril of the Pliable Brain

In 2016, Lumos Labs—creators of the popular brain training service Lumosity—settled against charges laid by the US Federal Trade Commission, who adjudged that the company unjustly ‘preyed on consumers fears…[but] simply did not have the science to back up its ads’ (FTC, 2016). The total settlement amounted to an initial US$2m, with an additional $48m suspended on condition of committing no further breaches, along with the instruction that subscribed Lumosity customers must be informed of the findings against the company. More significantly, however, the judgement stipulated in no uncertain terms that—except in light of any new, rigourously derived scientific findings—Lumos Labs and Lumosity:

... are permanently restrained and enjoined from making any representation, expressly or by implication [that their product]... improves performance in school, at work... delays or protects against age-related decline in memory or other cognitive function, including mild cognitive impairment, dementia, or Alzheimer’s disease... or reduces cognitive impairment caused by health conditions, including Turner syndrome, post-traumatic stress disorder (PTSD), attention deficit hyperactivity disorder (ADHD), traumatic brain injury (TBI), stroke, or side effects of chemotherapy.

However, perhaps the damage was already done. At the time of judgement, Lumosity boasted ‘70 Million brain trainers in 182 countries’ and their seductive advertisements were seen by many millions more (Lumosity, 2016). Sparks of hope had already been kindled within those who suffered or feared suffering from the above conditions, or who simply sought to better themselves under the demands of late capitalism. In this way, the brain has become a site of both promise and peril. Today, ever more ethical injunctions are levied upon subjects through calls for ‘participatory biocitizenship’, the supposed ‘empowerment of the individual, at any age, to self-monitor and self-manage health and wellness’ (Swan, 2012, p. 94). Under this regime, we are urged to diligently labour upon ourselves to realize ever-improvable states of well-being.

Concurrent with extensions of self-care, rapid developments in the cognitive neurosciences has led to encroachment into areas once considered the exclusive purview of the social sciences and humanities. This ‘neuro-turn’ (Littlefield and Johnson, 2012) has, in some areas, generated discursive bubbles that foster narrow reflexivity, with urgings towards ‘neuroenhancement’ emanating from entrepreneurial authorities who aspire to determine the ideal means and ends of cultivating our ‘brainhood’ (Vidal, 2009). These anticipated ‘neurofutures’ are of potentially immense commercial value (Martin, 2015), and hence strategic advantages abound for those willing to stoke the ‘seductive allure’ of neuroscience-based insights (Weisberg et al., 2008). This allure of the neuro may then inform the manner in which we adopt means of self-care. But, if the Foucauldian ‘conduct
of conduct—which ‘not only establishes what counts as an explanation, it establishes what there is to explain’ (Rose, 2007, p. 192)—is increasingly inscribed upon the brain, there emerge significant implications for how forms of governance shape our sensibilities and subjectivities.

Accordingly, this paper traces the entanglements of hope, fear, and pleasure that coalesce into forms of ‘virtuous play’. Through this concept, I gesture to both the increasing ‘responsibilization’ (Rose, 2000, pp. 1400–1401) of the subject under neoliberalism, but also to aspirations of consuming pleasure. Late capitalist modes of ‘prosumption’ leverage our desires of producing idealized selves through knowledgeable consumption choices that we enact in conspicuous fashion, often to display ourselves to others as healthful, industrious, and always pleasure-seeking (Ritzer and Jurgenson, 2010). The recent emergence of self-tracking technologies ably captures this turn to virtuous play, combining joyful game playing with diligent lifelogging, and thereby proving ourselves both responsible and pleasurable. Indeed, brain training proves exemplary here, for, through the potent combination of pop neuroscience, self-help rhetoric, normative role expectations, and haptic satiation, we are persuasively enjoined to intervene upon our cognitive capacities.

While consumer-friendly ‘brain training’ constitutes a mild intervention relative to other neurotechnologies adopted for personal enhancement (see Brenninkmeijer, 2016), its comparatively widespread appeal threatens to inscribe narrow ethical prescriptions. These increasingly burdensome expectations may prove constraining, particularly as neurological interventions become steadily more invasive and their underlying rationales less open to contestation. Hence, it is worth stating at the outset that the actual efficacy and intensity of current brain training methods may matter far less than the discursive paths they carve. That is, we should closely consider how subjects are edged towards aspiring to intensive neurological self-fashioning, in hopes of better conditioning themselves for contemporary demands.

Increasingly, our brains are framed as exploitable terrain, to be cultivated and harvested for its ‘mental capital’ (Slaby and Gallagher 2015). These practices are often enabled via web-based services, reflective of the turn to ‘platform capitalism’ (Srnicek, 2016). On these platforms, our day-to-day practices are funnelled through rent-extracting online entities that determine and measure what is of value and how we may display that worth to others. Under these self-tracking regimes and platform constraints, the subject is disaggregated into only those functional capacities deemed value-bearing. Thus, this paper asks: is our intensive self-fashioning folded through too narrowly conceptualized understandings of agency, well-being, and good conduct, in part due to the instrumental insistence on rushing limited technological affordances to consumer markets?

Of interest, therefore, is tracing how ‘brain training’ rhetoric leverages aspirations of ‘virtuosity’ as relief from contemporary anxiety and vulnerability (Lorey, 2015). While promising relief through self-actualization, an underlying
threat remains that—by wilfully stoking anxieties—these practices may onerously ratchet up expectations of our upkeep as dutifully productive and pleasure-seeking subjects. Furthermore, they risk perpetuating exaggerated ‘neuro-realist’ and ‘neuro-essentialist’ claims, accepted with overly generous credulity (Racine and Costa-von Aesch, 2011; O’Connor and Joffe, 2013). This considered, the paper also explores whether we are witnessing hyper-reflexive yet shallow practices of self-care, characterized by growing reliance on self-tracking technologies that claim intimate insight into our material functioning, yet constitute crude interventions. Finally, in drawing together various discursive threads around ‘human capital’, ‘participatory biocitizenship’, ‘corporate neurohacking’, ‘active ageing’, and ‘virtuous play’, the paper considers whether narrow forms of techno-mediated vitality are designed only to reinscribe what is already valued, and so hardens behind facades of fun a particular socio-historical view of the responsibilized subject.

This critical undertaking will be achieved—via a largely Foucauldian discourse analysis—by firstly establishing the context of fear, hope, and pleasure that has propelled the commercialization of ‘neuroplasticity’. Normative appeals deployed by brain training enterprises are then explored, with a particular focus on alignment with overarching neoliberal ideals; aspirations of ‘active ageing’; an ethos of corporate productivity; and other aspects of dutiful biocitizenship. Finally, the paper discusses whether these regimes hastily affix notions of the ‘ideal’ biocitizen, before alternative paths can be glimpsed. Firstly, however, some further context is required in understanding how ‘brain training’ has established a foothold in the public imagination.

**Analytical Perspectives—Neuroplasticity, Commercialization, Dread, and Pleasure**

In this first section, I briefly outline contemporary trends within which brain training has emerged, for urgent issues arise from the cognitive neurosciences’ ongoing colonization of the conscientious subject. Firstly, as Nikolas Rose (1990, 1996, 2007; with Abi-Rached, 2013) has long observed, claims of the ‘psy’ and ‘neuro’ disciplines increasingly inform ethics of self-care, generating new practices of governance that pervade, shape, and regulate conduct in liberal democratic societies. Through these claims, we may steadily come to envision ourselves as ‘neurochemical selves’ (Rose, 2003), ‘neuronal machines’, or endlessly malleable ‘molecular automatons’ (Slaby and Gallagher, 2015, p. 46). Via such growing discourses we are encouraged to labour upon our neurological constitutions as though this were a self-evidently virtuous practice. Yet, forms of this labour presuppose ‘essential’ qualities of subjectivity conveniently already embedded in dominant ideological frameworks, rendering otherwise highly contestable claims seemingly immutable.
Neuroplasticity and the Hypercognitive Ethos

For example, we can readily observe how popular rhetoric around ‘neuroplasticity’ often construes the brain as an untapped well of potential, infinitely open towards ends chosen by the individual (Malabou, 2008; Brenninkmeijer, 2010; George and Whitehouse, 2011; Ortega, 2011; Millington, 2016). Similarly, explanatory metaphors commonly frame the brain both through prevailing notions of good conduct and the dominant technologies of work and leisure (Malabou, 2008, pp. 32–54). Unsurprisingly then, the capacities brain training regimes urge us to enhance are also those deemed of greatest value under neoliberal imperatives, aspiring to render subjects ‘dynamic, multi-polar and adaptive to circumstance’ (Jeannerod, 2008, p. xi). To abide such expectations is, therefore, to commit to a perpetual labour, one where ongoing neurological self-care reflects a praiseworthy vocation. Yet these parameters of enhancement tend to be tightly bound to an ideal ‘hypercognitive’ subject, seen only through their capital-accumulating rational capacities, rather than their affective potentials (O’Neill, 1997). The concern thus emerges of inadvertently committing ourselves to rigid notions of plasticity, stuffing cognitive enhancement into narrow frames that later prove discursively difficult to even interrogate, let alone dislodge.

This hypercognitive ethos has emerged via increasing fascination with the brain, driven in part by large-scale efforts such as the 1990s ‘Decade of the Brain’ and current ‘Big Data’ brain mapping projects. Also noteworthy is the collective dread felt towards neurodegenerative diseases resulting in dementia (Zeilig, 2014). These fears are perhaps eased by reassurances that we are dedicating our best minds to save our lost brains, but it remains unsurprising that enterprising subjects seek further ways of ensuring cognitive longevity. The dread of neurodegeneration is thus both soothed and stoked through the virtuous play of brain training.

This nascent market operates under the premise that through expertly designed activities—commonly packaged as short-form video games—cognitive capacities may be enhanced in ways that generalize to everyday life (see Hardy et al., 2013). Proponents have sought to ground consumer-friendly brain training in scientific rigour, but efficacy remains hotly contested (see below).

Likewise pertinent in discussions of efficacy, risk, and enhancement is the growing popularity of nootropics and other ‘cognitive enhancement’ drugs, along with the normative aspirations and strategic practices informing their use (Vrecko, 2013). Also noteworthy are therapeutic practices of neurofeedback training (Brenninkmeijer, 2013), or the uptake among ‘neurohacking’ enthusiasts of transcranial direct current stimulation and transcranial magnetic stimulation, with studies now beginning to explore user motivations and current regulatory shortfalls (Jwa, 2015; Davis, 2016). These developments reflect how we already aspire to neuro-enhancement through increasingly invasive and potentially risky measures.

Enhancement advocates also appeal to the supposed ethical obligation to maximize cognitive capacities, thereby attaching their wares to norms of self-care. As a
result, certain ‘looping effects’ (Hacking, 1995, p. 21) may ensue, whereby ‘People classified in a certain way tend to conform to or grow into the ways that they are described; but they also evolve in their own ways, so that the classifications and descriptions have to be constantly revised.’ Brain training products exemplify this relational interplay. For example, Lumosity—discussed below—make frequent reference to how their games are designed with the expert advice of cognitive neuroscientists. This appeal to authority potentially renders the programme more persuasive in its assessments. In turn, the user brings aspirations of realizing a more healthful, productive, actualized self. Through this hopeful attachment, looping effects can abound, as users respond to classifications and adjust self-conceptions accordingly.

Neurotechnologies, Commercialization, and Human Capital

Relatedly, studies in recent years have explored broad alternating trends between the demands of ‘neuroascesis’ (Ortega, 2011, p. 27) and the play of ‘neuro-toys’ (Brenninkmeijer and Zwart, 2017). Jonna Brenninkmeijer (2010, 2016), in particular, has explored historical and emerging neurotechnologies, articulating them as Foucauldian technologies of the self through which responsible subjects attain well-being as framed by prevailing norms. Pitts-Taylor (2010) provides complementary insights, closely observing how some understandings of neuroplasticity have been co-opted by neoliberal idealizations of the infinitely malleable subject. Several studies have also measured whether claimed benefits are echoed in news media discussion and among lay subjects, finding some broad enthusiasm tempered by healthy scepticism (Thornton, 2011b; O’Connor and Joffe, 2015, Pickersgill et al., 2015, Pickersgill et al., 2017). Altogether, therefore, there emerges a strong discursive thread that connects brain training to an array of overarching ethical imperatives leveraged in its proffering.

Specifically, neuroplasticity is invoked in promissory appeals of self-enhancement, constituting another space for the fervent acquisition of ‘human capital’ (Feher, 2009). This creation and accumulation of human capital is laden with assurances of realizing latent capacities, so that willing subjects may be simultaneously more productive, fulfil their role obligations, and ward off neurodegeneration. In part, this gradual extension of responsibilization has been achieved through the discursive elevation of homo oeconomicus: ‘… an intensely constructed and governed bit of human capital tasked with improving and leveraging its competitive positioning and with enhancing its … portfolio value across all of its endeavors and venues’ (Brown, 2015). We can alternatively conceptualize this as the burden of ‘virtuosity’, where subjects must constantly work upon their productive capacities in order to be (temporarily) relieved of insecurity, risk, and vulnerability (Lorey, 2015).

However, we must also acknowledge that appeals to virtuosity—while ultimately shaped by overarching structural conditions—are typically funnelled
through the individual consumer market. Hence, the need to *entice* the consumer entails that virtuosity is packaged with promises of not just enhancing *homo oeconomicus*, but of also giving *pleasure*. Consumerist imperatives under late capitalism necessitate that achieving virtuosity need not be a chore, but rather enjoyable means of self-care. Through this assuaging regime of ‘accretive’ life building (Berlant, 2011, p. 98) the subject willingly adheres to the ‘calculated technology of subjection’ (Harvey, 2000, p. 110). In brain training, this subjection is evident in evocations that only the *right* kind of fun can allay fears of cognitive decline. An affectively and ethically complex relation thus emerges.

More broadly, brain training constitutes part of the growing ‘brain-industrial complex’, driven in part by ‘soft’ commercialization trends (Giordano, 2011; Thornton, 2011a; Martin, 2015). Attached claims to ‘soft’, consumer-friendly applications come with wildly varying degrees of plausibility, generating new areas where regulatory oversight is required (Caulfield and Ogbogu, 2008; Maslen et al., 2014). In turn, some laypersons take interest in cognitive neuroscience as something ‘exciting’ and ‘consumable’, while others remain circumspect or dismissive (O’Connor and Joffe, 2015, Pickersgill et al., 2015). Especially noteworthy is the response of one interviewee in a study conducted by Martyn Pickersgill, Paul Martin and Sarah Cunningham-Burley (2015, p. 884), who sharply disparaged much commercial output as seductively ‘evangelical’. Concurrent with this are numerous critical reports from popular news outlets, some suspicious (see Cook 2013; Hambrick, 2014; Yong, 2016), while others more generously observe that not all ‘brain training’ services are created equal (Etchells, 2016; Shah, 2017). Nonetheless, the quasi-evangelistic rhetoric of brain training may be attributable to moral hazards that often accompany commercialization, with ‘inflated claims as to the translational potential of research findings’ leading to exaggerations of how we might incorporate the ‘neuro’ into everyday life (Rose and Abi-Rached, 2013, p. 20).

**Ethical Incompleteness and Self-governing Through the Brain**

By exploiting contemporary imperatives, commercial claims encourage ‘endless projects of self-optimization in which individuals are responsible for continuously working on their own brains to produce themselves as better parents, workers, and citizens’ (Thornton, 2011b, p. 2). Such self-governance is likewise inscribed in policy outputs, through which care for one’s brain and those of dependents are seen as requisite practices of citizenship (Broer and Pickersgill, 2015). Habits of living well are thus gradually relocated to neuroplastic terrain. Brain training also reflects how adeptly self-tracking prosthetics have been incorporated into expectations of healthfulness. Popular self-tracking prosthetics leverage a ‘notion of ethical incompleteness’, a sense of always lacking relative to the potential of our value-bearing capacities (Lupton, 2016, p. 68). Often left unquestioned, however, is the ‘belief that we can precisely know “in advance” what will
improve people’s lives’ (Ahmed, 2010, p. 8). Such assumptions instead come prescribed through the mediating artefacts of virtuous play, permitting no room to interrogate these scripts of good conduct.

Moreover, the coupling of self-tracking with game-playing produces entanglements of volitional pleasure with ethical measure; an attempt at a ‘utopia of games’ (Suits, 2014). Consequently, as Brad Millington (2012a, p. 493) observes, care for oneself ‘is now shot-through with the promise of uninhibited amusement’, so that we may ‘amuse ourselves to life’. A distinct ‘fun morality’ (Wolfenstein, 1951) pervades throughout, for self-enhancement affordances are ultimately competing with one another in the consumer market, with ‘fun’ proving one persuasive method by which to edge out competitors. Altogether, the pleasure of play, the fear of decline, and the promise of vitality make for assusive modes of producing oneself, and this judicious leisure keeps mortality at bay and morality upheld.

Hence, while most consumer-friendly ‘brain training’ products are of comparatively low intensity, even here abound ethical appeals that ‘divides, imposes burdens, and thrives upon the anxieties and disappointments generated by its own promises’ (Rose, 1996, p. 3). These trends, in part, explain the current proliferation of brain training products, serving as performative displays of one’s vitality. Examples include Elevate™, Peak™, BrainHQ™, Cogniti™, My Brain Trainer™, Dakim™, Nintendo’s Brain Age™, Cogmed™, SenseLabs™, Active Memory™, HAPPYneuron™, and LearningRx™, among others. These products typically offer haptic pleasures through game-based assessments. For the sake of both brevity and depth, the following discussion will primarily address the most popular product within the industry, the web-based subscription service Lumosity™.

The Promises and Obligations of Aspirational Biocitizenship

Lumosity’s Popularity as Mediated Self-enhancement

Using Lumosity as a peg upon which to hang the concept of virtuous play, I will now unpack how popular brain training and related self-tracking practices lean on contemporary aspirations and anxieties. Firstly, it must be noted that Lumosity is designed to be routine yet fun, enabling virtuous play within milieus that praise the high-functioning subject and fear the degenerating one. This routine fun is achieved through short, aesthetically pleasing video games, usually played on personal computers, tablets, or smartphone devices. These games purport to target, assess, and enhance cognitive capacities. As of this writing, Lumosity offers 63 different games, each designed to focus on faculties of memory, attention, speed, flexibility, problem solving, language proficiency, and reading comprehension. Specific capacities Lumosity claims to measure include planning, logical reasoning, spatial reasoning, information processing, visualization, working memory, field of view, divided attention, selective attention, task switching,
response inhibition, quantitative reasoning, vocabulary, and verbal fluency. Many of these games draw upon classic experimental designs within psychology and neuroscience, such as measuring response inhibition through the well-known ‘Stroop effect’ (Stroop, 1935).

Brain training enterprises have thrived in response to the current ‘therapeutic void’ of clinical treatments for neurodegeneration, where ‘the brain is perceived as a separate privileged entity that healthy individuals must constantly stimulate, rewire, rebuild, nurture, and attend to if they are to maintain soundness of mind and selfhood’ (George and Whitehouse, 2011, p. 591). Their appeals promise to unleash dormant potential, generating for subjects an anticipatory ethic of ‘perfecting themselves from the molecular level outwards’ (George and Whitehouse, 2011, p. 592).

In response, and perhaps unsurprisingly, Lumosity’s claims have been widely questioned in both academic and popular outlets (Cook, 2013; Redick et al., 2013). In turn, Lumosity has sought to further establish credibility through their ‘Lumos Labs’—where ‘in-house scientists refine and improve the product’ (Lumosity, 2014a)—and the ‘Human Cognition Project’, where collaboration is sought with research institutions seeking to make use of the Lumosity platform and accumulated data. Lumosity (2015b) has heavily promoted research conducted using their platform, and marketing copy situates their efforts at the very forefront of neuroscientific endeavour (Lumosity, 2015a). Currently, Lumosity boasts 85 million registered users and their games have been played over three billion times (Lumosity, 2017).

Admittedly, it may be tempting to dismiss Lumosity as pseudoscience packaged in exaggerative marketing, not worthy of our scholarly attention. But such dismissals neglect how we are constituted as subjects by such popular rhetoric and practice, for it is:

… at this vulgar, pragmatic, quotidian and minor level that one can see the languages and techniques being invented that will reshape understandings of the subjects and objects of government, and hence reshape the very presuppositions upon which government rests. (Rose, 1999, p. 31)

Moreover, brain training is reflective of wider trends around the turn to technomediated self-enhancement. This turn has been variously enacted through an ethos of ‘healthism’ over an expanding terrain of self-care (Crawford, 1980), novel forms of ‘reflexive hermeneutics’ in assessing well-being (Rose, 1996, pp. 32, 77), and the overall ‘valorization of self-control’ (O’Connor and Joffe, 2015, p. 727). One further trend worth noting are emerging ‘hard’ transhumanist perspectives, urging a ‘culture of [neurological] enhancement’ (Sandberg and Savulescu, 2011, p. 106). These views stress the imperative need to engineer ethically upright citizens against escalating global risk (Buchanan, 2011; Persson and Savulescu, 2012). Envisioned here is the ‘active citizen’ as an ‘entrepreneur of him- or
herself” (Rose, 1999, p. 164). Guided by scientific expertise, the purportedly ideal enterprising subject adopts all available means of enhancing biological, neurological, physiological, and psychological capacities, in hope of emancipation from supposed inadequacies.

Ethical Obligations of Brain Training

As such, Lumosity warrants further investigation, for its success, has been closely followed by interests touting far more invasive means of self-enhancement. Therefore, with this need to better understand prevailing rationales of neuro-enhancement, observe here how Lumosity pitched itself to consumers in 2014:

Lumosity is a personal trainer that helps you exercise your brain. We’ll help create a training program that’s right for you, based on neuroscience research from top universities around the world… Lumosity scientists have taken common neuropsychological tasks out of the lab, designed some new ones, and transformed these scientific tasks into over forty fun games. You’ll play five games in each of your daily work outs. Every game targets an ability important to you, like memory, attention, problem solving, and more. Train 15 minutes a day, three to five times a week, to challenge and exercise your brain. Then track your progress over time, see how you compare to people like you, and enjoy your brain training journey. Start a workout right now and discover what your brain can do.

Several appeals emerge here, most prevalent being the equating of brain training with other forms of personal ‘fitness’. Also noteworthy is the offer of a tailored service, for this ‘personal trainer’ enables focusing on what is ‘important to you’. This implies the smooth domestication of Lumosity into daily routines and permits the absolving comfort of giving oneself over to the authority of the programme. Appeals to scientific rigour are also evident, with users encouraged to closely monitor their progress and compare themselves against respective cohorts. The ‘fun’ of brain training is also duly noted. Finally, there is an earnest petition of potential, for with Lumosity you will ‘discover what your brain can do’. Similar appeals are more subtly embedded in other promotional material. Archived examples of Lumosity’s (2014b) homepage, for example, display a resounding emphasis on young, physically active users, generating an aspirational ethos by equating brain training with youth, vitality, and an adventurous spirit. Moreover, we are told, ‘no matter where they come from or what they do, they can challenge their brains with Lumosity’. Such rhetoric foments an egalitarian ethos, open to all willing to accord themselves to neurological self-fashioning.

The brain training industry has thrived within this context of reflexive self-enterprise, seeking to crack ‘the brain fitness puzzle’ and ‘the key to self-empowered aging’ (Fernandez, 2015). Brain training offers means of ‘controlling the vagaries
of fate’ through mediating devices offering ‘certainty’ otherwise unattainable (Lupton, 2016, pp. 76–77). To be considered astutely self-governing today ‘is to be condemned to seek an authority for one’s authority’ (Rose, 1999, p. 27). However, this ‘authority’ must first be recognized as such, hence why Lumosity and other proponents of brain training have striven to assert their scientific legitimacy. Compelling evidence of efficacy remains elusive though, with some studies suggesting moderate improvement in cognitive function (Smith et al. 2009; Au et al. 2015; Corbett et al., 2015), while others find no evidence of generalizable benefit (Owen et al., 2010; Melby-Lervag and Hulme, 2013; Simons et al., 2016).

Yet, while efficacy remains difficult to prove, there does appear a promissory imbalance given that the ‘popularity of products designed to slow brain aging might have outpaced credible scientific data to show that these interventions are effective’ (Papp et al., 2009). Amid the rush-to-market, many looping effects threaten, for the popular uptake of brain training has arisen by ramping up ethical obligations placed upon the individual. Such rationales are aptly captured by ‘Sharp Brains’ (Fernandez, 2015, p. 37), an entity that proclaims itself ‘an independent market research firm tracking health and performance applications of neuroscience’:

When we conducted in-depth focus groups and interviews with [lay subject] respondents, the main question many had was not what has perfect science behind it, but what has better science than the other things people are doing—solving crossword puzzle number one million and one, taking ‘brain supplements’ or doing nothing at all until depression or dementia hits home.

The implication—conveniently endorsed by Sharp Brains—is that although efficacy remains unproven this does not absolve individual responsibility. Rather, something must still be done, lest one would be seeming to adopt an indolent, defeatist lifestyle, sullenly waiting for depression or dementia to ‘hit home’. In this way, ‘sculpting the brain’ has become ‘a form of moral practice’ (Thiele, 2012, p. 119), often infused with evolutionary analogies advising us to hone a ‘synaptic survival’ ethic (p. 124). This ethos of wrangling one’s neuroplastic capacities has gained traction among some lay subjects, with brain training viewed as a ‘virtuous, admirable objective’, while those ‘who flouted this norm sometimes attracted disapproval’ (O’Connor and Joffe, 2015, p. 728). Such sentiments have certainly been fostered by slickly packaged appeals, to which we now turn.

**Valorization, Emulation, and the Ideal ‘Brain Profile’**

‘Why I Play’ and the Ethic-Fetish of the Brain

In 2012, Lumosity launched a highly successful campaign designed to normalize brain training as an everyday practice. The ‘Why I play’ campaign remained
active for several years across television and online markets, reaching a massive
global audience (including YouTube views in the tens of millions). The campaign
combined enticing elements of aspiration and emulation, primarily through a series
of commercials. Each ‘Why I play’ commercial adheres to a shared template: an
actor portraying a happy Lumosity user speaks of the imperative need to
enhance his/her cognition, while also emphasizing the pleasures of brain training.
Each vignette occurs in a public setting, with the actor appearing to address an
interviewer off screen, creating the impression of an impromptu vox pop endorse-
ment. As the actors speak, lively animations play around their heads to signify
buzzing cognition, with imagery matched to their respective motivations for train-
ing. One commercial, for example, features a young, robust male, speaking of the
desire to give his brain a ‘workout’. Meanwhile, animated arms sprout from his
head, flexing their biceps of cognition to further drive home this association (Lum-
osity, 2013b). All the actors featured are, of course, impossibly attractive, and
appear the perfect embodiment of the late capitalist subject. They serve as
avatars of virtuosity, possessing unending drives for both self-improvement and
pleasure.

Each ‘Why I play’ commercial ends with this voiceover:

Any brain can get better, and Lumosity can help, it’s like a personal trainer for
your brain, improving your performance with the science of neuroplasticity,
but in a way that just feels like games. Start training with lumosity.com right
now, and discover what your brain can do.

As George and Whitehouse (2011, p. 591) observe, this simultaneously disciplined,
pleasurable, intimate, and yet distant framing creates a peculiar “fetishization” of
the brain’, rendering it ‘both an object of alterity and veneration’. Indeed, this
fetish-ethic is explicitly encouraged in Lumosity advertising. Devoted advocates
speak of their desire to ‘stay sharp’, and with Lumosity ‘I am happier with my
brain’ or ‘my brain feels great’.

The ‘Why I play’ actor-enthusiasts also praise ‘the science behind the games’,
and highlight hopes to maintain cognitive capacities as they age (evoking the
underlying dread of neurodegeneration). This none-too-subtle injunction to vigilant
self-care resonates with Foucault’s observation that subjects operate under a regime
of ‘permanent medical care’, a vocation where they ‘must become the doctor of
oneself’ towards ‘a certain complete achievement of life’ (1988, p. 31).
However, this ‘achievement’—to make an obvious but important point—is
always bound within shifting discursive frames of what actually constitutes praise-
worthy attainment. In recognizing such contextual nuances, another ‘Why I play’
commercial leans directly on burdensome expectations placed upon subjects today:

I’ve got emails, phone calls, news to stay up on, it’s like my brain’s under
siege out there! I just needed an edge, and Lumosity has all these games
based on neuroscience, and my brain can really tell the difference. I’m still under siege, I’m just better armed. (Lumosity, 2013e)

Note, again, the insistent ethic-fetish of both being and having a brain, a property to be tailored so that it ‘can really tell the difference’ and give you an ‘edge’ within the siege warfare of late capitalism. Another variant of the ‘Why I play’ campaign even implies that brain training may be obligatory for those who aspire to be the kindest persons they can be:

I started Lumosity for me, but it’s been pretty good for the people around me too. I remembered my friend’s birthday, which is good, but I also remembered this bag she liked and I remembered the store where we saw it. Better friendship through neuroscience, who’d a guessed? (Lumosity, 2013a)

Similarly, a mother expresses relief that ‘it’s not just random games, it’s all based on neuroscience’, reassuring her that ‘every brain in the house gets a little better every day’ (Lumosity, 2013c). To care for children, it would seem, includes caring for their brains, testifying to expectations of ‘neuro-parenting’ increasingly evident in child caring discourses (Macvarish, 2016). Such rhetoric of care through neuroscience also evinces the ‘generosity’ of psy and neuro discourses in shaping lay understandings of selfhood (Rose, 1996, pp. 33–34). This ‘generous’ translation is especially apparent in the visual imagery of Lumosity advertisements, where, for example, animated hearts stand in for neurons as firing synapses of affection (see Lumosity, 2013a). Training one’s brain is thereby framed as an admirable practice for those who seek to be a source of joy, comfort, and care for others.

Journeys, Profiles, Indexes

Upon commencing their ‘brain training journey’ Lumosity users must ‘build your personalized training program!’. Members are asked probing questions around when they feel most productive, their sleeping patterns, general mood, exercise habits, age, and more. A competitive drive is also stoked, a common strategy for incentivising habitual self-tracking (Lupton, 2013, pp. 398–399). Lumosity urges users to ‘See how you stack up… What percentage of Lumosity members do you outrank?… Come back weekly to see how many people you’ve surpassed.’ Such encouragement is then reflected in precise rankings of users in their various cognitive capacities. Elevate (2014)—another brain training service, discussed below—likewise emphasizes this competitive appeal, with an actor in one advertisement effusively noting ‘I really like the scores, and the rankings. I would say that I am a competitive person.’ Lumosity also enables integration of data from ‘Fitbit’ self-tracking devices, further entrenching associations between brain fitness and aerobic fitness.
After completing a prescribed number of training sessions the user will receive a ‘Performance Report’. This report includes comparisons with other users according to occupation group, implying which line of work their particular brain may best be suited. This report can then be shared on social media, further fuelling displays of virtuosity. Users can also consult their ‘Brain Profile’, and here the threat of crude looping effects is especially apparent. In the schema given by Lumosity, the ‘brain’ is divided into five functions of ‘Attention’, ‘Flexibility’, ‘Speed’, ‘Problem Solving’, and ‘Memory’. That these happen to be the ideal capacities of today’s productive subject hardly needs pointing out, yet, as Kean Birch (2006, 2017) has observed, the neoliberal underpinnings of what exactly is deemed ‘valuable’ within emerging bio-economies is too often neglected. This results in failures to grasp how disciplining mechanisms of the body pervade all aspects of social, cultural, and economic life. Furthermore, Birch notes how this all-pervasive disciplining is heightened by imperatives of producing only that which will thrive in the cutthroat immediacy of the market, looping into practice restrictive possibilities of what is seen as efficacious and innovative.

Therefore, considering Lumosity’s ‘Brain Profile’ in light of narrow outputs generated by the rush-to-market, what proves especially troubling is the implied reframing of the aforementioned five functions as all-encompassing instantiations of the brain itself. That is, the five measures generate the user’s entire ‘Brain Profile’, while the ‘Brain Performance Index’ ensures that ‘users know where they fall with respect to their own performance using a single number’ (Hardy et al., 2013, p. 10). Nothing else can be accommodated within these parameters, and everything must ultimately be reducible to a single figure of worth. As a result, our wondrous cognitive makeup collapses into a narrow ‘profile’ of functions, percentages, and indexes, all framed through the buzzwords and mantras of corporate-speak.

So, while it remains contentious whether such practices materially ‘train’ a brain, these claims nonetheless certainly contribute to entraining and championing a particular kind of subject. This ideally enterprising biocitizen measures themselves against always improvable capacities of attention, flexibility, speed, problem solving, and memory, and turns over the authority to assess these flattened properties to the cool gaze of purportedly lab-developed programmes. Within these prescriptions, Lumosity users are ranked against their peers (all 85 million of them). Care of the self thus extends to habitually comparing oneself against the relevant cohort, overseen by mediating authorities that purport to hold objective ledgers of cognitive capital.

Yet the range of qualities measurable is clearly restricted by prevailing technological capabilities, including how these qualities are themselves refashioned to fit available affordances. For example, Lumosity’s aforementioned claim of ‘better friendship through neuroscience’ is only instantiated by insisting on memory (remembering a birthday) and consumption (buying an appropriate gift) as far-reaching proofs for the elusive ideal of ‘friendship’. Nevertheless, a comforting
subjugation may be found in giving in to the promise of fun and giving oneself over to expertise, turning the haptic pleasures of clicks, taps, and swipes into a complete ‘Brain Profile’. In their capacious allowance for both pleasure and duty, these games serve as tolerable acts of ‘confession’ (Foucault, 1978, pp. 59–67). However, this fetish-ethic may, in time, become a burdensome labour, adding supposed precision to notions of ‘brainhood’ that, in reality, are merely reflective of current idealizations. With this contention in mind, the following section re-contextualizes the ethical appeals embedded in brain training, situating them within broader trends of techno-mediated well-being and the corporatization of cognitive capacities.

Active Ageing, Corporate Neurohacking, and Techno-Mediated Vitality

Active Ageing and Third Age Vitality

The fetish-ethic of cognitive enhancement is particularly evident in the neuro-logic of ‘active ageing’. Through active ageing, no longer is cognitive decline assumed an unalterable state of affairs, but rather arable terrain for ongoing enhancement (Katz and Peters, 2008). Brain training products are thus often directly marketed to persons in the ‘Third Age’. Such persons are perhaps retired, but not yet dependent upon others, and so seek to extract the most from post-work years before entering the ‘Fourth Age’ of dependency (Gilleard and Higgs, 2005). As Williams et al. (2012, p. 68) observe, the longevity of the Third Age has recently been tied to anti-ageing strategies that bemoan passive acceptance of ‘natural’ ageing, and instead urge Third Agers to undertake practices designed to lengthen this twilight of life.

This appeal to Third Age longevity is strikingly apparent in Lumosity’s strategic appeals. The ‘Why I play’ actors, for instance, expressly endorse active ageing through statements such as ‘There’s a lot going on in here [pointing to head], and I want to keep it that way.’ Another actor speaks directly to Third Age virtues of the ‘will to health’ (Higgs et al. 2009):

I worked hard to retire early, but I didn’t want my brain to retire too. I mean, I stay active, but it’s just not the same. Lumosity is real science disguised as games, so I enjoy doing it, it’s a fun part of my day. My brain feels as good as ever and it’s way better than work. (Lumosity, 2012)

Here, the extended Third Age is embodied in a handsome and (improbably) young retiree; a figure of privilege carrying a message that is clearly aspirational. In this manner, Lumosity ties active ageing to diligent brain training, presenting it as the rational consumer choice through an agent framed as the very embodiment of success.

Through these appeals, Third Age aspirations are expressed in the desire to retain hard-earned capacities, so that an ‘agentic, self-fulfilled’ way of living may be
maintained (Higgs et al., 2009, p. 690). Millington (2012b) likewise notes escalating ethical obligations to wrestle control over the ‘undisciplined brain’ and duly accord oneself to active ageing, for today ‘infirmitiy is a matter of personal, rather than collective, vigilance’ (p. 440). In recent years, these preventative practices against infirmitiy have incorporated new socio-technical affordances, including the development of therapeutic video gaming tailored for older demographics (De Schutter and Vanden Abeele, 2008). It is, therefore, unsurprising that brain training purveyors would enthusiastically insert themselves within emergent ideals of active ageing.

Similarly, brain training is concurrent with the ‘second fitness boom’, characterized by the rapid incorporation of sophisticated socio-technical relations into quotidian habits (Millington, 2016). The result is a growing wealth of interactive, networked, and commodified data made available to the diligent subject. These self-tracking practices prove persuasive means by which neoliberal imperatives shift the burden of healthfulness onto the consuming subject (French and Smith, 2013). A new actuarialism thus emerges, managing population-level risks through the pleasurable consumption of self-care. Indeed, contemporary strategies of liberal governance entail that part of this pleasure is the display of virtuosity itself, encouraged through social media-friendly affordances of self-tracking technologies.

On the Use of Time and the ‘Right’ Kind of Play

However, virtuous play also requires justifying the use of one’s time, an exceedingly finite commodity for today’s professional subject (Wajcman, 2015). For this perpetually harried subject, the maximal utility of time can be squeezed by blurring the distinction between labour and leisure. In this way, recreation is tied with self-perfection, shielding the user against the demands of neoliberal life without sacrificing participation in the experiential economy (Till, 2014; Moore and Robinson, 2015). This strategy of ‘instrumentalizing pleasure as a means of legitimizing it’ (Pickersgill et al. 2017, p. 99) is especially evident in the way another brain training product—Elevate—pitches itself to consumers. Elevate launched in 2014 and has since been downloaded over 10 million times. This popularity has been realized via slick appeals that broadly mirror Lumosity’s approach, including offering Elevate as ‘your personal brain trainer’.

One difference, though, is the resounding emphasis placed on the judicious use of time. Elevate (2014) advertisements feature actors discussing the product’s benefits, noting, in particular, the satisfaction of time well spent:

I know that I’m playing a game, but I also know that I’m doing something that’s good for me.
This style of virtuous play promises to undo common dilemmas between ‘idle pleasures’ and ‘productive measures’:

At any given time I can kind of challenge myself, and I really like that idea: Using my idle time productively.

Indeed, these Elevate ‘users’ suggest that the right play is actually the most effective and rational means of enhancing productivity:

Sometimes in the day when I’m staring at the screen I read something two or three times and not process it, and so even if I do a quick comprehension exercise it makes it a little bit easier to refocus myself, and really pay attention to what I’m reading so I can do my job better.

Of course, we should not conflate seductive marketing with actual practices and rationales, especially given the aforementioned resistance among some lay subjects. That said, the sheer number of persons willing to try brain training—85 million through Lumosity alone—indicates strong underlying motivations.

The Corporate Mind Hack, Sensory Distrust, and Haptic Pleasures

Moving beyond consumerist popularity, Jan Slaby (2016) has characterized the likes of Elevate’s emphasis on personal productivity as part of a broader ‘corporate mind hack’ trend. Under this regime, the labouring subject is a ‘resource’ disaggregated into various functions pre-determined as valuable. The subject is then incentivized to improve these select functions, enhancing value-bearing capacities in ways precisely monitored. Consequently, the attributes to be enhanced (i.e. productive capacities as determined by labour markets), the target of intervention (i.e. self-disciplining individuals), and what can be measured (i.e. what is amenable to hard metrics) are all presupposed in ways that flatten complex variables into preset paths.

This ‘corporate mind hack’ is sometimes put into practice by drawing upon previously highlighted competitive drives, which advocates suggest can prove ‘socially connective with the self and co-workers in just the right lightweight competitive way’ (Swan, 2013, p. 93). Furthermore, this style of ‘biohacking’ through self-tracking is often driven by simmering distrust of more intuitive and holistic assessments of one’s well-being (Smith and Vonthethoff, 2017). Instead, ‘hard’ data are sought with the cognitive and corporeal disaggregated into discrete functions to be parsed by a mediating authority. Rigorous self-appraisal is increasingly funnelled through such devices and agents, relocating means of reading oneself ‘away from … the embodied sensorium toward a technical sensing apparatus that uses algorithmic analytics’ (Smith and Vonthethoff, 2017, pp. 104–105).
Yet, while Smith and Vonthethoff astutely observe that many ‘feeling representations’ (p. 9) have now been displaced by ‘digitised sensemaking infrastructures’ (p. 10), it remains noteworthy that brain training still retains an appeal of embodied volition. Note, for instance, how brain training programmes are typically offered through mobile devices imbued with haptic feedback capabilities, enabling a pleasurable experience through the sensory bleed between mind, body, device, and the virtual world presented within it (Cranny-Francis, 2013). We should, therefore, not discount the ‘doubly digital’, haptic pleasures of brain training, where cognitive performance is assessed via fleshly digits navigating their way through virtual spaces (Moores, 2014). Through the current affordances on offer, brain training proves simultaneously habituated, haptic, and discursive.

Nonetheless, the expectation is that we must circumvent any biasing tendencies of our sensing apparatuses. Instead, we should seek data neatly cleaved from its referent, then collected, assessed, and repackaged by mediating authorities as hard substantiations of our well-being. In this way, these mediated outputs can offer reassuring, purportedly objective markers of our accumulated human capital. Yet, human capital, of course, is determined only by what counts as worth counting in any particular social context (Moore and Robinson, 2015, see also Beer, 2016). Hence a circular pedagogy emerges, for as Foucault (1998, p. 255) noted, one cannot ‘know’ without transforming that which is observed, and to ‘know’ oneself requires first abiding that which is deemed of value to know.

Via these Foucauldian technologies of the self, persons labour within given prescriptions ‘so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection, or immortality’ (Foucault, 1988, p. 18). In contemporary settings, this labour takes on a prudential, anticipatory, pleasure-seeking ethos. However, our states of ‘perfection’ are rendered visible through gazes predicated only on re-affirming what is already valued, and it is through this reinscribing, self-fulfilling logic that we come to understand ourselves (Foucault, 1988, p. 25). The Lumosity ‘index’ may prove a precedent-establishing example of this vortex-like ‘commensuration’ (Espeland and Stevens, 1998), rendering ‘well-being’ down to a discrete, hard, competitive metrics.

Conclusion

This paper, through an analysis of the promissory appeals in brain training, has traced the entwining of dutiful self-care with seductive pleasure, creating an ethos of virtuous play. Yet hidden within this potent combination of virtuosity and leisure are potentially burdensome expectations, imposed by techno-mediating authorities and girded by neoliberal aversions to the unproductive, neurodegenerative, and insufficiently ‘well’ subject. By leveraging popular understandings of neuroplasticity and aspirations of ‘prosumption’—that is, producing ourselves as ideal subjects through conspicuous, self-fashioning consumption practices—brain training serves to generate new ethical obligations, offering digital platforms...
by which we labour to perpetually improve or retain cognitive abilities. These appeals are often tied to contemporary valorizations around active ageing, corporate neurohacking, the judicious use of time, and combining self-improvement with leisure. This is the kind of unending virtuosity expected of contemporary subjects; the willingness to shoulder an increasing scope of personal responsibility against prevailing threats practiced through the hyper-reflexive cultivation of valued attributes.

However, virtuosity through this fetish-ethic of neuro-enhancement often results in narrowly derived brain ‘profiles’ and ‘indexes’, reducing the staggering complexity of our neurological makeup to measures that ultimately prescribe far more than they reveal. The offer of virtuous play is thus a discursive veil by which expectations are increasingly heaped upon dutiful biocitizens. Further research could, therefore, profitably apply this concept to comparable developments, tracing the extent to which expectations of self-care are now entangled with play, pleasure, prosumption, and public displays of one’s virtuosity.

The FTC’s successful prosecution of Lumosity suggests that perhaps we are now witnessing cautionary reaction to the inflated optimism of cognitive enhancement. Continuing oversight will be needed, particularly as neuro-enhancement interventions become more invasive while promising ever more expansive outcomes. However, we cannot wholly rely on regulatory levers to protect us from unjust ethical burdens or hasty reductionism. Indeed, reliance on bureaucratic intervention may well invite these burdensome attachments, for regulatory functions typically restrict their mandate to monitoring expressly false or misleading claims, rather than interrogating the underlying assumptions of what is actually deemed efficacious, enhancing, or otherwise therapeutic. In this way, judicial bodies—though certainly necessary—serve prevailing cultural logics, and so may inadvertently reinscribe the assumed value of claimed enhancements by taking punitive action on those who fail to deliver.

This critical impasse is further compounded by the hasty rush-to-market accompanying the ‘happiness turn’ (Ahmed, 2010, see also Davies, 2015). Emerging products looking to cash in on contemporary hopes and anxieties are limited by available practical applications, while also laden with presuppositions that generate constraining ontological frames. This proves worrisome given the still exploratory potential of neuro-enhancement prospects. Given these trends, we—including scientists working across both industry and academia, in conjunction with platform developers, entrepreneurs, critical scholars, regulators, employers, and also consumers—should aspire to foster discursive spaces where ‘enhancement’ can be reimagined. Better yet, perhaps we can elide the insistence on ‘enhancement’ in itself, along with atomistic aspirations of hyper-reflexively parsing ourselves into endlessly improvable higher cognitive functions.

Alternatively—if we insist on retaining some socio-technical mediations of well-being—perhaps we may better take advantage of the flexible affordances of digital platforms. Could we find more ways of turning our hopes, fears, anxieties, and
desires for pleasure not to high scores and top rankings for sole virtuosos—accruing hard metrics that confer worth only to oneself—and more towards enhancing social capacities to soothe fears and anxieties (and, perhaps, even be a source of pleasure) for others? This is not necessarily to advocate for the metricizing of intimacy, as now emergent in debates around the ‘quantified relationship’ (Danaher et al., 2018). Instead, perhaps we can reimagine self-fashioning in ways less tethered to rigid contemporary imperatives that advocate narrow disaggregation for pre-determined, instrumental ends (even if those ends are to be a better friend or marital partner). To metricize good conduct—and give authority over these measures to mediators that cannot accommodate the creative ruptures that characterize free ‘play’—is to willfully foreclose potentials of the very things we are striving to attain. Admittedly, resisting the comforts of metricized virtuous play may prove discomfitting, for it requires ‘thinking without a banister’ (Arendt, 1979, pp. 336–337); eschewing yardsticks that do not necessarily capture and give form to ‘well-being’, but obscure alternative possibilities.

Meanwhile, we should remain acutely cognizant of how ‘our lifeworlds, language, and habits are already being subtly transformed by findings from neuroscience’ (Choudhury and Slaby, 2011, pp. 2–3). Hence, we must further hone critical means of interrogating the present, tamping down overblown and laden appeals that ‘invest people with an understanding of their own brains and emotions as manageable material to be transformed’ (Murison, 2012, p. 30). Too often, promissory rhetoric of the brain as a site for re-invention ‘overdetermines our modes of self-understanding’ (Gotman, 2012, p. 85), resulting in reductive measures shoehorned into still crude technological affordances.

In response, this paper’s contention has been that brain training—both despite and because of its packaging as low intensity, virtuous play—generates ethical obligations that may prove burdensome, and forecloses alternative ways of conceptualizing well-being. Increasingly, neurological self-fashioning is advocated for by authorities who deem us ‘unfit for the future’ (Persson and Savulescu, 2012). This somewhat apocalyptic fear is driven by what Foucault described as the ‘dread of unreasonable subjects, who through their psychical atypicality prove difficult to govern’ (2006, p. 362). We should, therefore, consider whether avenues of intellectual inquiry and ontological possibility are lost due to incommensurability with current imperatives. Finally, we must resist narrow epistemological capture and co-optation, particularly by profit-oriented interests that threaten to affix blinkered notions of the elusive qualities that comprise our neurological well-being.

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