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Freedom of Thought at the Ethical Frontier of Law & Science

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ABSTRACT

Some of the most compelling contemporary ethical questions surround 21st Century neuroscientific technologies. Among these, neurocognitive intervention technologies allow an unprecedented ability to alter thought. Concerns exist about their impact on individual freedom, behavior and personhood. They could also distort society, eroding core values of dignity, equality, and diversity. Potent laws are needed to anchor regulation in this rising field. The article explores how the long-neglected human right of Freedom of Thought might protect the integrity of the mind at the legal system's highest level. Sample cases illustrate how it could be given effect ethically and legally to set boundaries for neurocognitive intervention.

KEYWORDS

Neuroethics; neuroscience; neurolaw; freedom of thought

The ethics of neuroscience is emerging as one of the most compelling, confounding and contentious areas of ethical concern in contemporary technology-dominated society. This is hardly surprising, given that neuroscience reaches beyond the biology of the brain to understanding and altering human behavior and mental experience. Neurotechnological interventions that alter human thought and behavior call particularly for careful ethical scrutiny and innovative ideas about how to regulate them. Within the fields of neuroethics and neurolaw, there is an ongoing need for policies that can anchor regulation of the ethical use of new neurotechnologies. This need distinguishes itself from the converse issue of neuroscience-based reform of ethical and legal processes, occurring within inherited frameworks that (up to a point) can still be relied on.

Perhaps the most invasive neurotechnologies are those that alter cognition, given the mind's association with personhood, its identification as a source of freedom and responsibility, and its motivation of behavior. Such technologies are also potentially among the ones with the greatest potential to distort social relations, by eroding the value of human dignity and overriding the natural assumption of equality among persons. Presently existing technologies that fall in this category range from psychopharmacology, to psychosurgery, to brain implants and brain-computer interfaces. Neurocognitive interventions such as these constitute a critical area for moral reflection and regulatory strategizing. In the meantime, ethical and legal constraints increasingly lag behind fast-accelerating technological advances.

In this article, I pursue a preliminary exploration of whether and how existing human rights provisions on Freedom of Thought could be used to constrain neurocognitive interventions within individually assured and socially acceptable limits. The promised protection of Freedom of Thought has long been part of the canon of human rights, reproduced in many national constitutions and in international conventions. Historically, however, it has not been given freestanding content. As there was then no way of directly intervening in thought, and it could only be interfered with indirectly through censorship, legal systems assumed that protecting Freedom of Expression sufficed in practice to protect Freedom of Thought. That assumption – and practice – is unsustainable in light of modern neurocognitive technologies.

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The article explores three realistic case-studies: medical use of brain implants to treat refractory depression; individual resort to pharmaceuticals for non-medical neuroenhancement; and military neuroaugmentation of soldiers through a brain-computer interface. Analysis of the cases demonstrates how Freedom of Thought could be given effect ethically and legally, and used to draw boundaries of permissible and impermissible neurocognitive interventions. Recognizing Freedom of Thought as having content of its own also accords with basic principles of legal interpretation, and as a regulatory measure would provide legal protection to the integrity of the human mind at the highest level of the system: constitutional/human rights.

The paper's discussion is organized in four parts: Part I provides necessary background on neuroscience, neuroethics and neurolaw, in introducing the problem of neurocognitive intervention technologies. Part II examines the legal status of Freedom of Thought, including provisions for it, their in-practice neglect, and the reasons why that is improper and unsustainable. Part III then considers how Freedom of Thought could be put to use to help regulate neurocognitive interventions, including how Freedom of Thought might be interpreted by courts, and how human rights claims based on it could be ethically and legally analyzed. Part IV tests these preliminary suggestions by investigating the three sample cases, which represent differing realistic scenarios of neurocognitive interventions and their relationship to thought. These scenarios illustrate how the overarching approach suggested in Part III would apply in concrete cases, and help flesh out its details. A brief conclusion winds up the discussion.

THE ETHICAL FRONTIER OF LAW & SCIENCE: NEUROTECHNOLOGY

Background: neuroscience, neuroethics, and neurolaw

Neuroscience

In the 21st century's technology-dominated society, the field of neuroscience and associated technologies has flagged itself as an important, astounding and controversial domain of new research and applications. Its significance is only likely to increase in years to come, given that neuroscience transcends anatomical study of the brain to include, for instance, diverse means of apprehending and altering human behavior and mental experience.[1] Indeed, Martha Farah (2010b) has predicted that neuroscience "might well shape history as powerfully as the development of metallurgy in the Iron Age, mechanization in the Industrial Revolution, or genetics in the . . . twentieth century" (p. 30).

Neuroscience has been defined as "an interdisciplinary field of study concerned with the anatomy, physiology, and biochemistry of the nervous system and its effects on behaviour and mental experience" (Oxford University Press, 2015a). It spans the brain sciences of neurology, psychiatry and psychology; other scientific specialties including radiology and genetics also figure prominently in present-day neuroscience. As bioethicist and lawyer Margaret Somerville (2006) encapsulates in her book *The Ethical Imagination*, neuroscience aspires "to solve the puzzle of human consciousness and unravel the secrets of an organ described as the most complex in the universe" – the human brain" (p. 184). Neuroscientific applications are as diverse as the range of human mental activity, and include interventions that make it possible to "redesign our minds. Probably no other possibility for redesigning ourselves raises such serious ethical questions" (*Id.*).

Neuroethics & neurolaw

Indeed, the breadth and depth of possible ramifications of neuroscientific research and practice call for careful consideration from ethical and regulatory points of view.

Ethical questions are the terrain of neuroethics, which "lies at the intersection of the empirical brain sciences, normative ethics, the philosophy of mind, law, and the social sciences" (Glannon, 2007, p. 4).

[1]Neuroscientific study is also broader than the human brain: e.g., it covers the brains of other animals, and human nerve tissues outside the brain. However, the scope of this paper is limited to the human brain.

The field of neuroethics in fact encompasses both the neuroscience of ethics (scientific questions concerning the role of genetic and experiential influences on ethical thinking) as well as the converse which is the focus here, the ethics of neuroscience (ethical questions concerning neuroscientific practices). Neuroethics is among this century's fast-rising fields (Farah & Wolpe, 2007; Goodenough & Tucker, 2011).

As new scientific discoveries are made and new technologies developed with the potential to affect individuals and society in important ways, ethical evaluation is essential to formulating legal policies that will appropriately manage the impacts. The origins of neurolaw were in medico-legal debates in the 1960s, when the invention of heart transplants and ventilators required a new definition of death not based on heart-and-lung function but on brain function. Debates today focus on the brain in living people (Freeman & Goodenough, 2009). It is only since 2000, law professor Michael Freeman (Freeman & Goodenough, 2009) assesses, that there has truly been "the emergence of a neurolaw" (pp. 1–3). Compared to other legal fields developed centuries ago, neurolaw remains in its infancy.

Hence, a search is still ongoing for policies that can anchor regulation of this emerging field. This is especially so on the side of ethical use of new neurotechnologies, as opposed to the flipside of neuroscientific reform of established ethical and legal approaches whose broader structures (for example, crime and punishment) might still be significantly relied on (Houston & Vierboom, 2012; Meynen, 2014).

The ethical and legal challenge of neurocognitive intervention technologies

Within the spectrum of neuroscientific applications, neurotechnological interventions that alter human thought and behavior call particularly for ethical scrutiny and strategic approaches to regulation. These neurotechnologies take various forms, including psychopharmacology, psychosurgery, brain implants, and brain-computer interfaces. Interventions can be further subdivided by whether they aim at physical conditions, behavior, cognition, or a combination. Arguably the most invasive are those that alter cognition, as "one's thoughts and thought processes are the very core of one's individuality and the root of both freedom and responsibility" as well as motivating behavior (Boire, 2010, p. 289). Thought-altering technologies are also potentially among those at the highest risk of distorting social relations, by eroding the value of human dignity and overriding the natural assumption of equality among persons (Somerville, 2006). This is an area where "science moves faster than moral understanding," and people "struggle to articulate their unease" (Sandel, 2004). Neurocognitive interventions hence call both critically and urgently for moral reflection and regulatory strategizing over suitable restraints of these fast-advancing technologies.

Episodes in the history of neurocognitive intervention: a cautionary tale

The relatively short modern history of neurocognitive intervention reveals ample reason for cautionary regulation of the field. In the mid-20th century, neurologist Egas Moniz was awarded the Nobel Prize in Medicine for treating impulsive behavior by drilling holes into the side of patients' skulls, pouring in ethanol to destroy brain tissue, and cutting holes out of the forebrain (Tan & Yip, 2014); for this, he used a surgical device called a leucotome invented by Canadian physician Kenneth McKenzie (Todkill, 1999). For decades thereafter, the similar prefrontal lobotomy promoted by American neurologist Walter Freeman gained widespread use: a tool modeled after an ice-pick was inserted through the top of the eyelid and hammered into the brain where it was twisted around to cut away brain tissue until the patient became incoherent (Caruso & Sheehan, 2017); the elite classes of society were among those tempted by this neurocognitive intervention – John F. Kennedy's sister Rosemary was institutionalized for life as a result of this "treatment".

At McGill University in the 1950s and 1960s, Dr. Ewen Cameron, Chairman of the World Psychiatric Association and President of the Canadian and American Psychiatric Associations, developed a neurocognitive intervention which he said would cure schizophrenia and mild mood disorders (Bhambra, 2019). The CIA, which secretly helped fund the work under the codename Project

MKULTRA, hoped the intervention would also reverse the effect of communist brainwashing. Patients of Cameron, including physician-colleagues and prominent Montrealers, underwent this procedure, during which, among other things, they were kept in long-term drug induced comas and given high voltage electroshocks to the brain (McCoy, 2006; see also *Orlikow v. United States*, 1988; *Royal Victoria Hospital et al v. Morrow*, 1974). The procedure proved of no use for either its public purpose or its covert purpose, but *was* found to be an effective form of torture – still in use in US counterintelligence interrogation, summarized in the KUBARK manual (McCoy, 2006).

Present and emerging neurocognitive technologies: clear cause for concern

Today, means and ends of neurocognitive intervention have proliferated. Psychopharmacological interventions are available to enhance cognitive executive function and improve memory (Farah, 2010b), or alternatively to erase memory, for example, of traumatic events (Glannon, 2011). Transcranial magnetic stimulation is employed to try to relieve depression and hallucinations. Cranial electrotherapeutic microcurrents are applied to attempt to counter anxiety and insomnia. And brain and neural prostheses are being implanted with the aim of repairing or replacing damaged brain tissue (Gordijn & Buyx, 2010). In addition, brain-computer interfaces are being developed that will, for example, "enable us to [mentally] download the Oxford English Dictionary" (President's Council on Bioethics, 2003, p. 284). Meanwhile, over recent decades, the world's industrial robot population has grown exponentially (Perkowitz, 2010) – leading "transhumanist" researchers such as MIT's Rodney Brooks to aspire to create robot-human cyborgs whose "mental, emotional and even moral capacities . . . far outstrip those of unmodified humans". In short, new neurocognitive intervention technologies raise "divisive issues going to the heart of some of our most important human values" (Somerville, 2006, pp. 161, 6). Their scope and ambition underscore the need for new ethical analyses and legal policies to ensure that fundamental values are not damaged or destroyed by reckless development and deployment of new neurocognitive technologies. "The question is therefore not whether we need policies . . . but rather what kind of policies we need" (Farah, 2010b, p. 38).

THE LEGAL STATUS OF FREEDOM OF THOUGHT

Rationales for investigation as a potential legal restraint on neurocognitive intervention

Among actual and potential legal bases for regulating new neurocognitive intervention technologies, this article investigates how existing provisions on Freedom of Thought might be used to help keep interventions within individually assured and socially acceptable limits. Freedom of Thought has long been part of the canon of human rights, protected in many national constitutions and in international conventions. However, as will be discussed later, historically it has been neglected in practice due to the assumption that there was no way to infringe it, except by censorship, which was dealt with by Freedom of Expression. New neurocognitive technologies render obsolete that assumption.

This paper's investigation of Freedom of Thought's potential utility in constraining neurocognitive interventions within ethically acceptable limits is exploratory, and the conclusions to be drawn from it tentative. That said, it is hoped that broad outlines can be sketched of content that could be given to existing provisions on Freedom of Thought in order to make them practically available as one notable legal tool for regulating neurocognitive interventions. From a technical legal perspective, as will be explained in the section on why Freedom of Thought provisions must be given content, principles of legal interpretation call for this to be done. Doing so would then result in the integrity of the human mind being protected at the highest level of the legal system – constitutional/human rights – and without having to campaign for legislative attention let alone try to muster constitutional amendment.

At a more general level, adjudication of constitutional rights claims is a forum for ethical analysis and decision-making that complements other fora that have dominated in the field of neuroscience to date. Regulatory authorities in the areas of health and safety have tended, for instance, to defer heavily to research scientists and physicians on ethical issues of neuroscience (Greely, 2008). The scientific

community in turn has tended to be hostile to legal input (Greely, 2008). However, Somerville (2006) suggests that an important aspect of ethical decision-making is who is permitted to participate in that decision-making. Given that new neuroscientific technologies have perhaps the greatest potential to fundamentally alter the nature of persons and of society of any technology in human history, opportunities to participate in ethical decision-making in this area should be broad. As advocates, lawyers can and do assist people from all walks of life in representing their views.[2] Constitutional rights cases in particular tend to also incorporate the perspectives of a wide spectrum of interest groups, as interveners. In giving consideration to the various arguments to be made for and against a neurotechnological intervention, the adjudicative process is balanced in its very structure, and founded on the principle "hear both sides" (*audi alterem partem*). Because contexts like this necessarily involve moral arguments, there is a need for an independent forum (Raz, 1994, p. 335). As Dworkin (1985) put it, courts are, through the rule of law, an "independent forum of principle" (p. 32). It is true, as Jeremy Waldron has argued, that we cannot assume that judges in themselves are superior moral reasoners (Waldron, 2009, pp. 14, 22). Nonetheless, they preside over a system which, as mentioned, has several important features that protect the opportunity of various community members to have their views taken into account. Judges' defining skill – supported by these features of the institutional design of adjudication, and informed by the diverse viewpoints heard, including scientists as expert witnesses – is in deliberating on the merits of arguments, weighing incommensurables, and arriving at wise judgments. The scales of balance held by Lady Justice have long-symbolized this function. In terms of participation in ethical decision-making, it is true that courts are a less conventionally democratic institution than legislatures. However one of the aims of protecting fundamental freedoms as human rights is to shelter them from the risk of majoritarian tyranny. This certainly includes Freedom of Thought. Indeed, had provisions for it not been neglected at the time, they might have prevented the horrific subjection of persons viewed as exhibiting impulsive behavior to frontal lobotomies. Human rights also represent a widely-recognized "shared ethics," needed in order to bridge the diverse personal moral viewpoints in contemporary society, in deliberating how to deal with controversies as profound as those raised by the new neurotechnologies (Somerville, 2006). And they are a shared ethics that already includes a principle seemingly well-suited to the ethical problems of neurocognitive intervention technologies: Freedom of Thought.

Existing provisions on freedom of thought

This section surveys existing provisions on Freedom of Thought under several legal regimes in order to show its on-paper potential for use in regulating neurocognitive intervention technologies.

Canada

In Canada, Freedom of Thought has on-paper the strongest possible form of legal protection: constitutional entrenchment. It is found within Section 2 of the Fundamental Freedoms listed by the *Canadian Charter of Rights and Freedoms* ("Charter"): "Everyone has the following fundamental freedoms: [. . .] (b) *freedom of thought* [emphasis added], belief, opinion and expression" (Canadian Charter of Rights and Freedoms, 1982, § 2(b)).

Section 1 of the Charter "guarantees" this Freedom "subject only to such reasonable limits prescribed by law as can be demonstrably justified in a free and democratic society." (*id.* § 1)

Europe

A similar provision exists in Europe under the *European Convention on Human Rights* ("ECHR"), which applies to all member-states of the EU. Article 9 ECHR states that "[*e*]*veryone has the right to freedom of thought* [emphasis added], conscience and religion . . . ".

[2]Including a wide range of nonprofits that provide legal aid to members of underprivileged groups.

Article 1 ECHR provides that the member-states "shall secure to everyone within their jurisdiction the rights and freedoms defined in . . . the Convention". Permissible limits on Freedom of Thought are defined by art. 9(2) which indicate that it is:

> subject only to such limitations as are prescribed by law and are necessary in a democratic society in the interests of public safety, for the protection of public order, health or morals, or for the protection of the rights and freedoms of others. (Convention for the Protection of Human Rights and Fundamental Freedoms, 1950)

United States

In the USA, although not explicitly mentioned in the text of the Constitution, Freedom of Thought is considered implicit (Boire, 2010) in the Constitution's First Amendment (US Const amend I., n.d.) As the renowned Supreme Court Justice Benjamin Cardozo explained:

> Freedom of thought . . . is the matrix, the indispensable condition, of nearly every other form of freedom. With rare aberrations a pervasive recognition of this truth can be traced in our history, political and legal. (*Palko v. State of Connecticut*, 1937, p. 327)

Given the "absolutist" scope the First Amendment enjoys under prevailing US constitutional interpretation (Weinrib, 2006, p. 85), Freedom of Thought might be subject to even narrower permissible limitation in the US than in Canada or Europe. For example, it is not apparent how the well-known "clear and present danger" limit on Free Speech under the First Amendment (*Craig v Harney*, 1947, pp. 371–378) could apply to Freedom of Thought.

International

Freedom of Thought is also protected in the *International Covenant on Civil and Political Rights* ("ICCPR"). Article 18(1) of this international treaty, which is legally binding on 173 countries that are party to it (ICCPR, 999 U.N.T.S. 171, 1966), states that: *"[e]veryone shall have the right to freedom of thought* [emphasis added], conscience and religion. (*Id.*)

The UN Human Rights Committee ("UNHRC") has gone so far as to say that art. 18(1) "does not permit any limitations whatsoever . . . These freedoms are protected unconditionally . . . This provision cannot be derogated from, even in time of public emergency" (United Nations, 2006, p. 195) . In reality, the UNHRC Comment is overstated. For example, the full text of art. 18(1) includes the "freedom, either individually or in community with others and in public or private, to manifest his religion or belief in worship, observance, [or] practice" (*Id.*). However, at the time of this writing, as a result of the raging Covid-19 pandemic, numerous jurisdictions have imposed severe restrictions on communal religious worship, observance and practice. These have apparently survived legal challenge in nations that are party to the ICCPR (Hill, 2020). Thus, in the same context, one can imagine public interest regulation making vaccines mandatory or a condition of exercise of civic freedoms such as Mobility or Assembly although a vaccine might conceivably cause a few days of severe drowsiness that impairs Freedom of Thought. In general, the legal community accepts that freedoms are subject to potential limit where multiple core values conflict.

An unfulfilled promise: neglect of freedom of thought in practice

Although provisions for Freedom of Thought have been made in the form of constitutional/human rights, historically these provisions have been neglected by the courts. As the late and greatly missed law professor Peter Hogg (1998) explained, it was assumed that there was no way of directly intervening in thought; it could only be impaired indirectly, through censorship. Thus, following the lead of classical philosophers such as John Milton (1644) and John Stuart Mill (1859), judges assumed that they protected Freedom of Thought through fierce protection of Freedom of Expression

(Moore, 2012). Not perceiving any need to invoke Freedom of Thought itself, judges neglected it, failing to give it in practice any content of its own.

The situation in the US may require added explanation. As Freedom of Thought is not mentioned by the text of the Constitution, it was the courts that recognized it as inhering in the First Amendment (indeed an "indispensable condition" of other freedoms (*Palko v. State of Connecticut*, 1937, p. 327). However, the cases actually concern interference with expression. For instance, *West Virginia State Board of Education v. Barnette* (1943) recognized "individual freedom of mind" (p. 1185), but at issue was an expressive act: compulsory flag salutes. Likewise, *Wooley v. Maynard plates* (1977) acknowledged "the right of freedom of thought protected by the First Amendment" (p. 1435) but the case was one of compelled speech on license plates. In *United States v. Reidel* (1971), where Justice Harlan spoke of "the First Amendment right of the individual to be free from government programs of thought control" as well as "freedom from governmental manipulation of the content of a man's mind," the dispute was about a regulation that banned pornographic materials' dissemination (p. 1414). And in *Stanley v. Georgia* (1969), where Justice Marshall said "our whole constitutional heritage rebels at the thought of giving government the power to control men's minds," the issue was (private) access to obscene media (p. 565). In short, the cases have not called for distinguishing protection of thought from protection of expression, as neurocognitive intervention technologies proliferating in present-day society so obviously do.

Why freedom of thought provisions must be given content

Judges' omission thus far to give independent content to Freedom of Thought in interpreting the provisions for it in constitutions and international covenants is improper from a technical legal perspective. A basic precept of legal interpretation is the presumption against tautology, which includes the rule that provisions are to be read in such a way as to give intrinsic content to each element (Sullivan, 2014, sec. 8.23–8.27.). As Viscount Simons explained, "The rule that a meaning should, if possible, be given to every word in the statute implies that, unless there is good reason to the contrary, the words add something which would not be there if the words were left out" (*Hill v. William Hill (Park Lane) Ltd.*, 1949, at 546). That would include the word "thought" in provisions of constitutions and quasi-constitutional international treaties on human rights (Sullivan, 2014, § 8.24).

A similar example was the case *Blencoe v. British Columbia* (2000), in which the Supreme Court of Canada faulted the British Columbia Court of Appeal for having "collapsed the s. 7 [Charter] interests of 'liberty' and 'security of the person' into a single right" (p. 48). They are provided for as "distinct interests, and . . . it is incumbent on the Court to give meaning to each of these elements" (*Id.*). One can compare that part of s. 7, which says "Everyone has the right to life, liberty and security of the person" to s. 2(b) which, as noted earlier, provides: "2. Everyone has the following fundamental freedoms: . . . (b) freedom of thought, belief, opinion and expression . . . " (Canadian Charter of Rights and Freedoms, § 7, 2(b)). The same conclusions follow for Freedom of Thought as provided for in art. 9(1) ECHR, art. 18(1) ICCPR. The argument is a bit more complicated in the United States due to the fact that Freedom of Thought is not explicitly mentioned in the text of the Constitution, but is considered implicit in the US First Amendment. To be sure, this presents an additional challenge. However, the jurisprudence has repeatedly recognized Freedom of Thought in distinct language and as a distinct idea from speech (*Ashcroft v. Free Speech Coalition*, 2002; *Griswold v. Connecticut*, 1965; *Olmstead v. United States*, 1928; *Paris Adult Theatre I v. Slaton*, 1973; *Stanley v. Georgia*, 1969; *United States v. Reidel*, 1971; *United States v. Schwimmer*, 1929; *Wooley v. Maynard*, 1977). Having gone that far, it makes sense that the courts should go the final step of giving to Freedom of Thought content that distinguishes it from speech, and justifies courts' distinct recognition of thought already. While it is unclear how the jurisprudence will develop, it does not seem necessary to separate Freedom of Thought from the First Amendment to do this, as the First Amendment already contains multiple rights (e.g., religion, assembly) whose content is

distinct from what is protected by speech). Thus, under the various human rights regimes where Freedom of Thought is recognized but has not been truly relied on in practice, it is incumbent on courts to give content to it, as a distinct element from Freedom of Expression. That being so, what more clearly demonstrates the distinctness of Freedom of Thought as a concern from concern for Freedom of Expression than neurotechnologies that directly intervene in thought, not relying on censorship or other expressive pathways?

Although for these reasons it is necessary for courts to give Freedom of Thought provisions their own content, a given judge might wonder whether incremental development of the law would be served by initially relying on other rights that have already been given content such as Security of the Person to protect thought against interference by neurocognitive technologies. However, this would be unwise. As the caselaw's history of relying on Freedom of Expression shows, focusing on other interests risks blinding the law to the full range of threats to Freedom of Thought. Moreover, a neurocognitive intervention may have diverging impacts on the two rights. Take for example, the technology mentioned earlier that erases traumatic memories: arguably, it promotes Personal Security by relieving a source of trauma, but impedes Freedom of Thought by also removing from the person's consciousness the enlightening aspect of the impressions taken from the personal experience of the event in question. If so, conflating the diverging thought and security interests would avoid the essential controversy that calls for ethical and policy consideration in that context. Similar problems would be encountered if the judge were to rely for instance, on Autonomy, another fundamental value that enjoys broad legal protection. Using the same example of traumatic memory erasure, if the subject wishes to avail themselves of the technology, doing so would promote Autonomy, but again could have a deleterious impact on the person's Freedom of Thought that is permanent and irreversible. Keeping the two interests separate helps ensure that judges recognize and reflect on contrasting impacts such as these, in shaping legal policies that will govern use of a neurotechnology. Further, it is especially important that courts not leave Freedom of Thought dependent on "other forms of freedom" of which it has itself been recognized by the courts as an "indispensable condition" (*Palko v. State of Connecticut*, 1937, p. 327).

OPERATIONALIZING FREEDOM OF THOUGHT AS A LEGAL RESTRAINT ON NEUROCOGNITIVE INTERVENTIONS: PRELIMINARY SUGGESTIONS

A preliminary legal conception of freedom of thought for use in adjudication

In order to put the existing legal provisions on Freedom of Thought to use in practice in regulating neurocognitive interventions, a preliminary conception is needed of what these provisions should be interpreted as encompassing.

What is proposed is only a preliminary conception for two reasons. First, approaches to constitutional interpretation vary among jurisdictions. Indeed, within the US alone, different schools espouse profoundly different approaches as being proper. As a result, the meaning of Freedom of Thought in these provisions will not be dealt with here as a full-blown technical question, strictly applying the techniques of legal interpretation. That will have to be done by the courts, jurisdiction by jurisdiction; and in each of them, it represents no small task. Nonetheless, the question here is a legal one, not a scientific or philosophical one. We are concerned with the meaning courts may ascribe to Freedom of Thought, in operationalizing provisions on it for use in adjudicating legal claims that a person's subjection to a particular neurocognitive intervention infringes Freedom of Thought. I will therefore focus on factors such as the text and (internal) legislative context of provisions on Freedom of Thought, that would be a start point for legal interpretation under any widely-recognized approach (Sullivan, 2014, § 1.12).

The second reason the proposed conception is only preliminary is that what is comprised by a constitutional right is something that fully emerges gradually and progressively via working conceptions being repeatedly challenged by real disputes and the need to resolve them. The realistic case-

studies examined in Part IV will offer an initial chance to test the preliminary conception proposed here, and adjust it based on factors that might only emerge in concrete applications.

With that said, what might provisions on Freedom of Thought cover? As the immediate legislative context separately mentions freedoms of belief and opinion (Canadian Charter of Rights and Freedoms, § 2(b)), thought might be understood to refer to the thinking process. Thinking has been defined as "the act or process of having ideas or thoughts" (Oxford University Press, 2015b). Thought also suggests a distinction from purely passive mental experience. As the provisions are part of a set of protections of individual rights, the freedom element reveals the concern as being with thought that is autonomous as opposed to thought which is otherwise directed or controlled. While freedom in the ECHR and ICCPR has been interpreted as capable of encompassing a "positive" dimension, in many other places including the Canadian Charter and US First Amendment it has been interpreted as having a predominantly or wholly "negative" meaning as freedom from interference by others (Hirschl, 2000; Joseph, 2015; Mowbray, 2004).[3] For our purposes, the negative conception suffices to consider what should be covered by Freedom of Thought in any of these jurisdictions, even if jurisdictions where it may have a positive dimension might go further. Lastly, the protection should apply, as with other rights, against actions which would infringe the freedom either in their purpose or their effects (*R. v. Big M Drug Mart Ltd.*, 1985). Putting these various elements together, then, a preliminary conception of Freedom of Thought might be something along the lines of a right to freely engage in ideation of the mind, by the mind, without interference.

By this conception, a real-life example of conduct that would violate Freedom of Thought would be the clinic at McGill University overseen by Dr. Cameron, working with the CIA, discussed earlier: The purpose of mental (de)programming violates Freedom of Thought (even though it failed). Additionally, the forced or deceptive administration of hallucinogenic drugs and high-powered electroshocks had cognition-altering effects, again violating Freedom of Thought. Whether a course of conduct falls within or outside the scope permitted by Freedom of Thought is not always as clear as in that example. Part IV will examine three scenarios that call for closer consideration.

A proposed legal and ethical framework for analyzing freedom of thought claims

The enshrining of Freedom of Thought among the fundamental freedoms found in constitutions and international covenants reflects its status as among the core ethical values of a community. As surveyed earlier in the section on existing provisions on Freedom of Thought, freedoms may be subject to limits where these are justified based on other ethical values embodied, for instance, in another protected freedom or overarching community needs that stand in conflict. This subdivision of the ethical values at stake is reflected in the analytical framework used by judges to legally evaluate a claim based on a fundamental right such as Freedom of Thought. It may be conceptualized as involving two steps: (a) asking whether the neurocognitive intervention at issue, in purpose or effect, threatens an interest falling within what Freedom of Thought should generally be understood to cover?; and if so, (b) asking whether countervailing considerations that should legitimately be balanced against the protected interest are sufficient to justify limiting Freedom of Thought in that context in order to permit that neurocognitive intervention?

Because both of these steps entail the exercise of judicial discretion, working out the law as guided by broad principles, rather than mechanistically identifying and applying bright-line rules, the exercise involves an element of legal policy-making. This element is particularly significant where the jurisprudence on a given subject is in its infancy, as compared to subjects on which the jurisprudence has matured and offers a wealth of similar-case precedents that can guide decisions through more fact-based analogical reasoning (Sunstein, 1992).

[3]Negative freedom is typically understood as noninterference by others, while positive freedom entails state obligations to help fulfill rights (see Berlin, 2002).

As the preceding discussion suggests, the legal policy-making to be done in resolving claims based on fundamental rights is principally informed by the ethical values at stake, as opposed to more pragmatic considerations such as legal certainty (Fuller, 1969) or the minimization of related future litigation (Ultramares Corporation v. Touche, 1932). In such cases, "ethics and law are two sides of the same coin that often overlap" (Somerville, 2006, p. 34).

Because ethical analysis is central to the resolution of these types of claims, and particularly because the jurisprudence on Freedom of Thought is not even at an infancy stage yet – the case-studies that follow in Part IV represent an *in utero* exploration of how that jurisprudence might take shape – it may be useful at this stage and for purposes of this paper to make that ethical analysis more explicit than is typical in a real-life judgment delivered by a court. Here, this will be done using a modified version of the ethical analysis framework suggested by Somerville in *The Ethical Imagination* (2006). This ethical framework appears to fit well with the framework of legal analysis employed by judges (described above) in which would be housed the ethical analysis recommended here for the initial case-studies to be explored.

This ethical framework, which is principle-based, first considers whether an activity is inherently wrong to engage in. This is considered to be the case, for example, of crimes *malum in se* (such as murder, rape, or kidnapping) and not merely *malum prohibitum*, in criminal law (Dimock, 2016). Only if the activity is not inherently wrong does the ethical analysis proceed secondarily to consider its consequences. As modified for use in the context here, a neurocognitive intervention will be considered to be inherently wrong where its very purpose is to violate Freedom of Thought, as courts have accepted that where an act's very purpose is to violate human rights, nothing can justify it (see e.g., *Big M Drug Mart Ltd*., 1985). An example of activity that would be judged inherently wrong (and unjustifiable regardless of its consequences) at this first step is the project at McGill under Dr. Cameron, working with the CIA, since forcible or deceptive mental (de)programming of people was one of its purposes. For activities that are not inherently wrong to engage in, the ethical analysis would in a second step weigh the activity's "risks and benefits" (Somerville, 2006). This fits well with the balancing that courts do in assessing whether a limited infringement of an individual right is justifiable based on countervailing ethical concerns such as giving effect to another protected freedom (e.g., Personal Security in the traumatic memory-erasure example) or overarching community needs. Here, the second stage of analysis would be called for if a limited interference with Freedom of Thought was among the effects of a neurocognitive intervention pursuing some ethically valuable aim. An example would be the vaccine whose side effects include a few days of severe drowsiness which impairs Freedom of Thought, mandated as part of a community effort to eradicate a pandemic.

Three case-studies of freedom of thought's potential utility in regulating neurocognitive interventions

The article now looks at how courts might apply Freedom of Thought provisions in hypothetical cases meant to embody realistic scenarios involving neurocognitive interventions. Three test cases are explored, of disparate categories of neurocognitive technology, used for varying purposes, and in different contexts – thus providing a creditable scope and diversity of sample applications. Altogether, they illustrate how the overarching approach suggested in Part III would apply in concrete cases, and help flesh out its details. In so doing, they also provide an initial opportunity to test and refine the model prior to its use in live litigation.

Case 1: neurocognitive treatment for a thought-impairing disorder

Scenario

This first case explores whether a person could, in certain circumstances, invoke Freedom of Thought to quash as unconstitutional an administrative decision barring access to a neurocognitive treatment for a disease the person has that affects cognition.

Specifically, the case-study involves a patient suffering from Major Depressive Disorder ("MDD") who seeks access to the neuroscience treatment Deep-Brain Stimulation ("DBS"). The background to the Freedom of Thought claim is that regulators in the patient's jurisdiction have declined to approve DBS for use in treating MDD, citing it as too costly.

Facts & background

DBS involves neurosurgical implantation of electrodes that stimulate select areas of the brain (Gordijn & Buyx, 2010). Its purpose is to "modulate underactive or overactive neural circuits mediating motor functions and mental states associated with conation, cognition, and emotion" (Glannon, 2011, p. 175). The patient in this case suffers from refractory MDD: a "mood disorder often accompanied by the impairment of cognitive functions" (Mao et al., 2005, p. 9). Clinical studies have shown DBS to be beneficial as a treatment for MDD, including in cases where other types of treatments have failed (Glannon, 2011; see also Mayberg et al., 2005). The patient is legally capable,[4] wishes to access DBS, and is willing to pay for it. However, DBS is not approved as a treatment for MDD by the regulatory authority, due to its costliness. This case scenario is realistic, as there have been cases presenting similar clinical issues. For example, *Aden v. Younger* (1976) dealt with state restrictions on electro-convulsive therapy (which, like DBS in this example, was used to treat MDD) and psychosurgery (an example being the frontal lobotomy, discussed earlier) for patients competent to consent as in our patient's case, as well as incompetent patients. While the restrictions in *Aden* were premised on safety concerns, the economic rationale for the treatment restriction here is also realistic, as according to Walter Glannon (2011), "DBS may be too costly for some healthcare systems . . . The implant costs approximately US 50,000 USD and the expensive batteries need to be replaced every two years" (p. 175). The regulator is concerned that approval of DBS, even for refractory cases of MDD, will lead to its frequent use due to the prevalence of MDD within the population and the superior side-effect profile of DBS as compared to pharmaceuticals. Insurers have persuaded the regulator that, notwithstanding the willingness of this patient (and likely others) to pay for the treatment themselves, in the end insurers will end up paying for the treatment's use in the population once available, and that they will have to cut corners elsewhere in health insurance coverage, unless everyone is to bear a significant increase in health insurance premiums (See e.g., *Report of the Standing Committee on Health: Opening the Medicine Cabinet – First Report on Health Aspects of Prescription Drugs*, 2004; Silversides, 2005). Anxious to avoid that outcome, the regulatory authority rejected approval of the treatment.

Given the success of the patient in the *Swindon* case in Britain in overturning an administrative drug approval decision, the patient considered applying for ordinary judicial review of the decision barring DBS' approval for MDD. However, the patient's lawyer felt that the success in *Swindon* had much to do with the aggressive cancer involved in that case, which posed a high risk to life (*On the application of Rogers) v. Swindon NHS Primary Care Trust*, 2006). The lawyer contemplated a human rights claim based on the right to Security of the Person, but ruled that out because unlike in the *Chaoulli* case, the patient here's claim is not against sweeping legislation that creates system-wide threats to rights of Security (and Life) (*Chaoulli v. Quebec*, 2005). The claim has therefore been made based on Freedom of Thought as the right which the patient asserts is breached by the ruling of the regulatory authority barring approval of DBS for treatment of MDD. The claim asks the Court to quash that ruling as unconstitutional, allowing the patient to access DBS treatment.

Court ethical & legal policy analysis

Given the nature of the proceedings as a constitutional rights claim based on Freedom of Thought, the interest in that implicated by this fact-scenario is the value that must be the start point of the ethical and legal analysis of the case, as discussed in the earlier section on that. The facts of the case are clear that MDD impairs cognitive function. DBS would cure that impairment. But the decision by the regulatory authority prevents the person from accessing the cure. The regulator's decision therefore

[4]That is, the patient in this case is legally recognized as able to give informed consent to the treatment.

has the effect of prolonging the impairment of the patient's cognitive function. Indeed, given that it is a refractory case, it could even condemn the person to lifelong cognitive dysfunction. As in *Aden*, "their freedom of thought remains impaired because they cannot get treatment" (p. 546). Thus, consistent with the preliminary conception of Freedom of Thought as a human right, proposed above for general use in adjudication of rights claims (in the earlier section on that), there is in this case an interference with Freedom of Thought.

It is true that the depression arose within the patient's own bodily processes, while it is the treatment that is an external intervention. However, as Glannon explains, "Depression is a manifestation of a dysfunctional brain and disordered mind"; a person "doesn't identify with the state of depression". The treatment allows the mind "to be restored to a functional and ordered state" (2011, p. 196).

As interference with Freedom of Thought was not the purpose of the regulatory decision, but an effect of its aim of keeping costs down to manage the financial burden of the healthcare system, the decision is not inherently wrong according to the ethical and legal framework set out earlier. And hence, per that framework, we must secondarily assess whether the decision's interference with the freedom is justifiable based on other legitimate considerations.

The costliness rationale cited by the regulator is tied to important values of efficient and egalitarian resource allocation. The arguments by which the healthcare and health insurance industries influenced the regulator also suggest a reasonable interest in protecting vital industries. Because jurisdiction to decide on approval of treatments belongs primarily to the regulatory agency, it could be argued on administrative policy grounds that deferring to the agency's decision supports the system in place for public-interest decision-making in that context and validates the reasons for that, such as expertise and expediency. On the other hand, the possibility of constitutional review is also part of those arrangements, and includes review of administrative decisions. Moreover, there was no suggestion by the regulator of concerns about the safety, quality, or efficacy of DBS treatment of MDD. Lastly, with respect to the cost concerns, while a financial impact will be felt, it is unlikely to bankrupt the healthcare system. In addition, the willingness of the patient to pay for the treatment highlights the fact that there are many other health treatments approved for use but not covered (or not fully covered) by insurance. From that perspective, it is not so much the decision to approve the treatment that determines the financial impact, but other administrative decisions taken or not taken with respect to addressing the efficiency and egalitarianism concerns. As one example, the authority could tailor treatment subsidies based on ability to pay. In addition, if approval for treatment of MDD results in significant increased use of DBS as expected, this could reasonably be expected to attract competition in supply that would drive treatment costs down over time.

In consideration of all of the values at stake, it is submitted that the ruling's interference with Freedom of Thought is not justified. The value of Freedom of Thought is underscored by the statement of the UNHRC that even public emergencies might not justify its violation. While that statement may (as noted) be an exaggeration or oversimplification, it properly signals that the bar must be set high for justifying interference with Freedom of Thought. The interference with it in this case is significant and not trivial: as discussed, the result of the ruling is to indefinitely prolong or permanently condemn a person to a state of dysfunctional and disordered cognition. The noted prevalence of MDD in the population does not diminish, but enhances, this concern. The opposing values at stake, while valid and relevant, do not outweigh the concern for this violation of Freedom of Thought.

Decision

As the conclusion in this first sample case, it is proposed that the Freedom of Thought claim should succeed, quashing as unconstitutional the ruling that barred DBS as a treatment for MDD, for the reasons given.

Case 2: neurocognitive enhancement in a person of healthy mind

Scenario

The second case explored here considers whether Freedom of Thought should be understood to give a person of healthy mind a right to use neurotechnology for the purpose of cognitive enhancement.

Specifically, this case-study concerns a fully healthy medical school student who wishes to use the prescription medication Ritalin in order to improve academic performance. In this case-scenario, regulations in place restrict access to it only to persons suffering from mental disease, disorder, or damage.

Facts & background

Methylphenidate, better known by the brand name Ritalin, is among a group of medications "classified as stimulant drugs, in that their effect on dopamine and other neurotransmitters have the effect of increasing people's arousal, energy level, and attentional focus" (Farah, 2010a, p. 11).[5] For these reasons, it is widely prescribed for persons suffering from Attention Deficit Hyperactivity Disorder ("ADHD").[6] However, illicit use by healthy persons is also prevalent. This case-scenario is realistic in that studies have shown that it is "increasingly used to enhance schoolwork by healthy normal college students" during study-sessions and exams (Farah, 2010a, p. 11). Beyond students, a survey by *Nature* magazine found that 20% of subscribers had taken Ritalin or other prescription drugs for non-medical cognitive performance purposes (Glannon, 2011). Additionally, athletes have used ephedrine and other substances for cognitive enhancement purposes in sports performance (Avois et al., 2006; Mehlman, 2004). Experts are concerned about even wider non-medical use by *healthy* older adults of prescription drugs intended for elderly patients with mild dementia (Farah, 2010a, p. 12). The drug use described in the foregoing examples is known as enhancement.[7] The term "enhancement" refers to "any intervention designed to improve human . . . functioning beyond what is necessary to sustain or restore good health." By contrast, use that is necessary to sustain or restore health is differentiated by the term "therapy" (Glannon, 2011). Supporters of enhancement criticize this distinction, arguing that neurocognitive interventions can be seen as operating on a "continuum from treating dysfunction to enhancing function", with the line demarcating dysfunction being of little usefulness (Glannon, 2011, p. 115).

The medical student in this case subscribes to this view, and as a consenting adult, feels that universal access to Ritalin within safe dosing limits should be lawful. The medical student wanted to pursue a claim based on Autonomy, but the student's legal counsel advised the student that restrictions on many prescription drugs have been upheld around the world in spite of individuals' Autonomy interest. Given the medical student's doubt of the validity of the distinction between cognitive enhancement and therapy, legal counsel suggested that maybe Freedom of Thought – finally given content recently in being used to quash a prohibition on DBS use by depression sufferers – would be fertile ground for the student's claim.

Court ethical & legal policy analysis

Thought is certainly implicated by the intervention in this case, as "what chemicals can or cannot reach a person's brain synapses directly affects how that person thinks" (Boire, 2010, p. 288). But do the regulations restricting access to Ritalin infringe *freedom* of thought?

[5]Other common ones include Adderall (amphetamine) and Provigil (modafinil).
[6]Controversially, some have questioned ADHD's classification as a disability (see e.g., Diller, 2010, p. 47).
[7]A separate concern is potential use of neurotechnology for the purpose of human disenhancement: see e.g., Kolber, 2009. Similar concerns have arisen in genetics, including use of disenhanced persons to fill undesirable jobs (Somerville, 2006, p. 185).

Does freedom of thought cover cognitive enhancement?

This case typifies one of the most controversial areas of debate in the ethics of neuroscience, and the arguments that have been raised in connection with it necessitate digging deeper into what Freedom of Thought means.

Cognitive continuum vs. treatment-enhancement distinction

The student-enhancer challenges the conception of Freedom of Thought preliminarily set out earlier in the section on that here, and used in the DBS case, arguing that it is misconceived in being predicated on interference with thought. Cognitive restraints are just the inverse of cognitive function, the medical student submits, and function is on a continuum. Thus, Freedom of Thought should prevent any restriction on enhancing cognitive function.

This view is not supported by the treatment-enhancement distinction. The student acknowledges that this distinction is widely relied on in "medical practice and medical insurance contexts, as well as in our everyday thinking", and that it is "largely free from controversy" within the "relatively objective and nonevaluative" realms of science and everyday life (Daniels, 2000, p. 315). However, the student disputes Norman Daniels' view that this means that it is an objective reality and not "a social construct" (2000, p. 313). As the student rhetorically asks, "who's to say where sickness ends and health begins" (Caplan & McHugh, 2007, p. 277)?

In addition, the student notes that scientific distinctions are not determinative of ethical and legal questions. For example, criminal law, for ethical and policy reasons, draws the line of mental disorder in a different place than medicine (see e.g., *R v Stone*, 1999). What, the student asks, would *justify* the law adhering to the treatment-enhancement distinction in deciding the scope of Freedom of Thought?

The nature of personhood & human dignity

[8] One answer to that question, given by the President's Council on Bioethics's (2003) centers on the nature of human dignity and personhood. Legal systems view human rights (including Freedom of Thought) as based on human dignity (Moka-Mubelo, 2017). In that regard, the argument for enhancement mistakes a proper "intrinsic" understanding of human dignity for an "extrinsic" one that disembodies and commodifies intellectual abilities (Somerville, 2006, p. 163). Further, "to be human is to be someone, not anyone"; hence, "in seeking by these means to be better than we are . . . we risk turning into someone else" (President's Council on Bioethics, 2003, p. 298).This self-alienation or loss of sense of personal "authenticity" (Glannon, 2011, p. 141) does not preserve but undermines the human dignity that animates human rights.

The medical student questions the significance of altered mental states, arguing that: "if we are not the same person on Ritalin as off, neither are we the same person after a glass of wine as before" (Farah, 2010b, p. 37), or for that matter, "coffee, tea and colas" (Caplan & McHugh, 2007, p. 273). The medical student also notes that the alteration is foreseen, arguing that "Jekyll realizes he creates Hyde" (Glannon, 2011, p. 142). Citing David DeGrazia (2005), the student suggests that mind alterations may even increase authenticity by helping fulfill the individual's desired self.

However, the argument based on human dignity and the nature of personhood is a forceful one against cognitive enhancement being protected by the human right to Freedom of Thought. After all, the notion of human rights based on human dignity rests on acceptance of there being some "human essence" and on that essence being salient to what the rights protect (Somerville, 2006, p. 168). Human rights cannot be understood to protect thought as a disembodied function contained in a pill, or for that matter exhibited by a computer. Further, human rights are individual rights. Hence, Freedom of

[8] A leading case against enhancement is presented by the President's Council on Bioethics's (2003) and Michael Sandel (2004). Their approach has been much commented on and a source of confusion. With a view to practical application by a court as envisaged here, those arguments are simplified and reorganized for use here: this section distills key arguments against its interpretation as included in Freedom of Thought; if it were held to be included, other arguments nonetheless justifying its restriction are considered in the next section which considers countervailing interests.

Thought should be construed as protecting the thought of each "someone," and not as protecting some impersonal cognitive capacity.

It is true that human nature and personhood "also includes disease, aging, death, and inequality," which society can and should intervene against, as the President's Council recognizes (2003, p. 60). However, that is consistent with the preliminary conception of Freedom of Thought suggested for use in adjudication (in the earlier section on that) and the decision in the DBS case: as noted in that case, a disorder is not part of the human essence, and not something the individual identifies with (Glannon, 2011).

The DBS intervention was also inherently limited by its purpose of relieving MDD. By contrast, to protect enhancement would entail the complication that "improvement beyond therapy does not know any natural limits" (Gordijn & Buyx, 2010, p. 293). Indeed, the argument for enhancement was about rejecting limits. Limitless enhancement necessarily reaches a point of changing the nature of a thing. In the present context, to say that enhancement of the mind is protected would therefore be to protect the transformation of the individual into an effectively different person and still further the alteration of whatever is essentially human about the human mind. This is fundamentally inconsistent with the status of the protection as a human right.

Although the student correctly notes that the law allows people to enhance through non-prescription drugs such as caffeine (and to alter their mental states in other ways through alcohol), it does not follow that there is a human right to do so. In fact, there have been laws that prohibited alcohol and caffeine consumption (see e.g., Canada Temperance Act, 1927; The Pure Food and Drug Act of 190, n.d. as amended in 1912 following; *United States v Forty Barrels and Twenty Kegs of Coca-Cola*, 1916); and still today their use is regulated in various ways. Even if that were not so, laws can and do validly permit individuals to access some thought-affecting substances and not others. The question here is not whether the law could permit people to access Ritalin for non-medical purposes. It could. But here it has not: the regulations restricted it to use that is medically prescribed. The question is whether that restriction violates the constitutional right to Freedom of Thought. The student's remaining arguments for why it should be seen as doing so are best addressed as a matter of distinguishing Freedom of Thought from Autonomy.

Freedom of thought vs autonomy

The suggestion that the altered mental state produced by enhancement is foreseen and consented to by the individual is not an argument for Freedom of Thought, but for a freedom to alter thought: that is, an argument for Autonomy. Attorney Richard Boire and the Center for Cognitive Liberty & Ethics ("CCLE") dispute this, contending that the freedom to determine one's future mental states is contained in Freedom of Thought (2010; see generally The Center for Cognitive Liberty & Ethics., n.d.). One is assuredly free to think that one wishes to enhance. But Freedom of Thought can only protect the right to determine one's future mental states *via thought*. Here, the enhanced mental state is not determined through a cognitive process such as study or meditation, but by taking Ritalin. The freedom to obtain and ingest a substance (in this case Ritalin) is not thought but action. Use of the word "determine" discloses the interest contemplated as actually being the right to self-determination: Autonomy. The conception of authenticity of DeGrazia, cited by the student, is also manifestly an issue of self-determination, not thought. Here, the student considered but declined to pursue a claim based on Autonomy, as restricted access to other drugs had often been upheld as constitutional.

For all the reasons discussed above, it is submitted that Freedom of Thought does not protect access to Ritalin for enhancement purposes.

Nonetheless, the discussion will go on to consider (as courts often do) – in the alternative that enhancement *were* protected by Freedom of Thought – whether the regulations restricting its use represent a justifiable limit on that right based on important conflicting interests.

In the event enhancement is covered by freedom of thought, do countervailing interests justify its limitation?

Pressure to keep up & the arms race risk: concerns about safety, autonomy (of others), equality and diversity

A prominent concern with respect to enhancement is that "once a certain number of people have undergone enhancing interventions, others would feel under increasing pressure to do likewise . . . to keep up. [Unenhanced] abilities could become almost akin to defects" (Gordijn & Buyx, 2010, pp. 292–293). Ethicist Bert Gordijn (Gordijn & Buyx, 2010) notes that this is already occurring, especially acutely in competitive fields, to the point that "doubts as to the voluntariness of these decisions are warranted" (p. 293). This impairs the autonomy of others, effectively placing them under duress in making their own decisions of whether to enhance.

Further, it creates the risk of an arms race in which competition induces progressively greater enhancement – beyond the safe dosage limits that even the claimant student had wanted to stay within (Foster, 2013; Garasic & Lavazza, 2016; Mehlman, 2004). The regulations could be amended to permit non-medical use within safe dosage limits. However, once the drug is available for non-medical use, it might be more difficult to ensure that use of an enhancing drug stays within those limits (Sahakian & Morein-Zamir, 2011).

Another fundamental concern is that existing inequalities and social injustice in society could be exacerbated through unequal access to enhancement (Greely, 2008). As Somerville (2006) notes, normalizing enhancement is also disquieting through its devaluing of persons with disabilities, and discounting of what they contribute to communities by their personal tribulations and triumphs (pp. 187–192). As a result, the existing marginalization of persons with disabilities may be worsened, depriving society of the enriching diversity of their atypical experiences (Jaeger & Bowman, 2005). Indeed, the normativity implicit in enhancement of certain cognitive characteristics risks homogenizing mental experience at the expense of diversity more generally (Veit, 2018).

The nature and meaning of life in a distorted society

Acceptance and commonplace use of cognitive enhancement would also give rise to important concerns about society members' experience of the nature and meaning of life. For instance, the risks discussed in the preceding section create apprehension about "an anti-humanistic, competitive environment" (Diller, 2010, p. 54). There is also worry that the implicit message that we need to "become more than we are" is inherently damaging to human self-esteem (President's Council on Bioethics, 2003, p. 70). This could detract from happiness more generally, and success by external measures would not make up for that (President's Council on Bioethics, 2003). Further, the meaning of human achievement would be diminished by the role of enhancing drugs (Faber et al., 2016). That is in fact only part of a broader unease about the impact on humans' sense of personal agency in life (President's Council on Bioethics, 2003). The President's Council on Bioethics also cites a concern of "cheating ourselves of the opportunity to learn character by its necessity, to deal with problems, and develop virtues" (2003, p. 60). Among these virtues are humility, in recognizing and accepting our limitations, along with appreciation of what Michael Sandel describes as "the gifted nature of life" (2004). In short, a societal ethos of enhancement could fundamentally distort the "human experience," engender a "false understanding" of life, and deprive citizens' lives of multiple dimensions of meaning (Farah & Wolpe, 2007, p. 53).

This set of concerns has been criticized on the basis that there are aspects of human nature and life such as disease and dysfunction that we do not accept and do try to change, and that cognitive enhancement would be a helpful change. However, this essentially reprises the attack on the treatment-enhancement distinction that was rejected at the prior stage of whether Freedom of Thought covers cognitive enhancement. In part, it was rejected because the risk of unlimited enhancement is of altering human nature and life in ways that are fundamental, not mere "aspects" that it could be helpful to change within any continuous meaning of human nature and life.

All in all, a right to cognitive enhancement would give rise to sweeping concerns ranging from safety, the autonomy of others, equality, social justice, and diversity to the nature and meaning of human life. Thus, even if (contrary to the conclusion at the prior stage), a court *were* to consider enhancement to be covered by Freedom of Thought, it is submitted that the Court should judge this to be outweighed by the countervailing considerations discussed.

Decision

The conclusion in this second test case is that Freedom of Thought does not protect use of Ritalin for non-medical cognitive enhancement.

Case 3: neurocognitive augmentation & remote control of an individual's mind

Scenario

Our third and final case considers whether Freedom of Thought should bar neurocognitive interventions that allow transfer of extensive control over a person's thoughts to a computer or to other persons.

More precisely, this hypothetical case concerns a military policy requiring prospective soldiers to undergo brain surgery to create a brain-computer interface (BCI) which will augment their capabilities in conflict situations. In this case, the soldiers-to-be consented to the intervention as a precondition of appointment to their jobs. However, the staff neurosurgeon tasked with implanting the BCIs refused to do so. The surgeon now challenges a labor tribunal's order to comply, arguing that this violates the soldiers' Freedom of Thought. The court hearing the application has accepted that the surgeon has standing to make the claim, as it attacks the constitutionality of the tribunal's order compelling the surgeon to perform the BCI implantation.

Facts and background

BCI neurotechnology allows for integrating the functioning of the human brain and computers. The case here involves a version of BCI technology where certain areas of soldiers' brains will be surgically deactivated, and neural prostheses implanted and connected to a BCI. The BCI will allow for extensive remote control of the solider by a military computer as well as by superior officers using the computer. BCIs have been developed to, among other things, control movement (Huang, 2003) and augment senses (Somerville, 2006). But our case concerns a BCI which aims to augment "decision-making, upgrade memory and cognitive skills, and even allow one person's brain to communicate wirelessly with another's" (Gordijn & Buyx, 2010, p. 286). The BCI here allows subliminal control of the soldier's thought-processes by a superior officer at a remote location.

The reason this is called "augmentation" rather than "enhancement" is that the stated objective of the US Defense Advanced Research Projects Agency is to create non-human (superhuman) capabilities (Gordijn & Buyx, 2010). Indeed, future goals extend to "mind-merging . . . integrating minds of several individuals . . . to achieve super-intelligence" (Gordijn & Buyx, 2010, p. 289), and creating cyborgs, as discussed in the earlier section on emerging neurocognitive technologies. While the military is an obvious locus for BCI-use, concerns also exist about its use in athletics and the regular workforce (Gordijn & Buyx, 2010). Beyond the augmenting effect of this neurotechnology, a key feature of it that distinguishes it from the sorts of concerns already addressed in the Ritalin case is the transfer here of extensive control over thought (augmented or not) to the computer and/or superior officers.

Court ethical & legal policy analysis

In the instant case, it seems clear that the soldiers' Freedom of Thought is at stake. The BCIs alter their thought-processes and subject them to external control by computers and by other people (superior officers). Conversely, the soldiers' consent to this is not covered by Freedom of Thought. As held in the Ritalin case, the willingness to submit to a neurocognitive intervention implicates a person's interest in

Autonomy, not Freedom of Thought. The installation of the BCIs is thus *prima facie* a violation of Freedom of Thought.

Based on the scheme of ethical and legal policy analysis outlined previously in the section on that, the intervention is not inherently wrong, in that the purpose was not to violate this Freedom, but to improve military capabilities. Nonetheless, the intervention has the effect of interfering with Freedom of Thought. Hence, following the prescribed scheme of analysis, it must now be considered whether this infringement is justifiable on the basis of other legitimate values.

As mentioned, the soldiers have exercised Autonomy in consenting to the installation of the BCIs. As this was a precondition of appointment to their jobs, installation of the BCIs also advances their economic interests by allowing them to procure employment. On the other hand, because it was a mandatory condition of their employment, the value of the soldiers' consent as promoting their interest in Autonomy is reduced. As with enhancement in the Ritalin case, the consent here of each aspiring soldier is one obtained under the pressure that, without it, they cannot take up the job, and will be denied employment. If they do not submit to installation of the BCI, their job will go to someone else who does submit to it.

The military counters that soldiers consent to installation of the BCIs *is* free, as it is motivated by the lesser chance of injury or death the soldiers have in conflict situations after augmentation by the BCI. However, it is submitted that the Court should reject that contention; in order for weight to be given to that claim, the choice would have to be made independent of its requirement as a condition of employment.

Nevertheless, it is significant to the Personal Security interest of the soldier that the purported object of the BCI is to augment the soldier's capabilities in conflict situations, which should diminish the soldier's chances of injury or death. Assuming that it does in fact reduce the likelihood of death or injury, the installation of the BCI is valuable in promoting the Personal Security of the soldier.

Relatedly – and the argument relied on most vehemently by the military – national security is involved, and the BCI technology augments the military's capabilities in protecting society, thus furthering the Security of all citizens.

Despite the importance of the interests in the personal security of soldiers and national security of citizens, it is submitted that they do not justify the invasion of Freedom of Thought effectuated by the installation of BCIs to give soldiers superhuman capabilities in conflict situations and remote control them by computers and/or commanding officers.

As discussed throughout this paper, Freedom of Thought is one which lies at the core of human rights. And the intervention contemplated in this case violates it at a profound level. As Boire summarizes, "controlling brain states grants the state the ultimate power over the individual" (2010, p. 289). The intervention here is an example of national security measures that go too far according to the principle that they must not themselves unduly invade the human freedoms that underlie the interest in national security (McLachlin, 2009). In addition, control of human minds by computers or other people offends human dignity, which has been recognized as imposing limits on national security measures, as evinced by humanitarian war conventions (see e.g., Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, 1949).

Moreover, beyond the violation that is foreseen, there is uncertainty presenting enormous risk in technologies such as this, which would disable thought-based human self-control and instill automatistic servitude to machines or other persons (Jonas, 1984). Uncertainties with even greater risks are entailed in the technological integration of human and machine into something no longer human – cognitively more powerful than its creators (Human Rights Watch, 2014). These uncertainties and risks weaken the force of the argument for national security. If enemy militaries use the same technology, the superhuman capabilities of the BCI-augmented soldier as a defender of security then re-present themselves as a threat to security. The law has imposed limits on measures of national security (including biological, chemical, and nuclear weapons) that, in the name of protecting individual nations, endanger the entire species (Biological Weapons Convention, 1975; Chemical Weapons Convention, 1993; Treaty on the Non-Proliferation of Nuclear Weapons, 1968). Armed

forces comprised of superhuman soldiers controlled in few human hands, or by machines, constitute a risk of that kind (Docherty, 2016; Lin, 2013). Arguably, part of that is done by the "friendly fire" of a technology that strips soldiers of their humanity by overriding the Freedom of Thought that lies at the core of the human essence.

Decision

To conclude this third case, the Freedom of Thought claim by the neurosurgeon should succeed, quashing as unconstitutional the order of the labor tribunal to implant the BCI in soldiers' brains.

CONCLUSION

The preceding case-studies provide initial support for the potential utility of existing but thus far neglected legal protections on Freedom of Thought in delimiting bounds of acceptable and unacceptable use of neurocognitive intervention technologies. They reinforce and refine a suggested conception of the meaning and content of Freedom of Thought as protecting people's opportunity to think freely from interference, subject only to reasonable limits called for by the rights of others or legitimately overriding needs of society. As the case-studies showed, this conception was able to differentiate therapeutic interventions which appropriately allow the mind to think in a healthy way free of disease or dysfunction from interventions intended to enhance individual cognitive abilities or augment human cognitive capabilities beyond the natural limits that inhere in the status of Freedom of Thought as a human rights protection. The case-studies also deepen our understanding of the value of Freedom of Thought, hence suggesting that interventions which propose to limit it should face a high bar of ethical and legal justification. While these conclusions are presented only tentatively in light of the need for further testing in live litigation, they emerge from deliberation on the realistic scenarios here as showing promise in guiding the potential application of existing provisions on Freedom of Thought to help assure appropriate use of new and developing neurocognitive intervention technologies.

The fate of Icarus in Greek mythology symbolizes the danger of heedless use of technology. At the ethical frontier is the new neuroscience, whose ambition and powers urgently require justifiable legal restraints. Francis Fukuyama has said "it is time to move from recommending to legislating. We need institutions with real enforcement powers" (2002, p. 204). However, a cornerstone of the needed regulation of neurocognitive technologies may already be in place, albeit neglected in practice. As this paper has argued, Freedom of Thought is a long-recognized human right, expressly provided for in constitutions and international covenants. Legal principles call for it to be accorded its own content. New neurocognitive intervention technologies make the delay in doing so henceforward unsustainable.

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DISCLOSURE OF POTENTIAL CONFLICTS OF INTEREST

The author is a person with disabilities.

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