

Policy-making for Human Enhancement Technologies: Scientific Description, Philosophical Prescription, and the Constraints of Law

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Abstract

Policy-making for human enhancement technologies requires forward thinking about the likely and possible responses of the law and other regulatory tools. It also requires analysis of the limits (if there are any) that should be imposed on technological development and use. Reaching conclusions about appropriate regulation requires collaboration between lawyers, philosophers and scientists, alongside the lawmakers and regulatory agencies crafting and enacting policy. However, academic disciplines take very different approaches and often pursue different questions. Whilst legal scholarship can provide answers about what the law does or would say, for policy-making for human technologies it must also confront the question of what the laws should be. Whilst scientists provide factual descriptions of the nature of mechanisms and effects of technologies, they less often make value judgments regarding the desirability or permissibility of the use of these technologies by individuals in society. Whilst philosophers make and defend normative claims regarding the value and permissibility of types of technologies, they often work at a theoretical level to some extent abstracted from the realities of the legal (and sometimes the scientific) constraints and possibilities. In this paper, I examine how these methodological differences should be reconciled, especially when the goal is to make concrete recommendations for policy. In particular, I consider (potential) professional duties to use cognitive enhancers, and student use of cognitive enhancers in universities. I argue that, where researchers want to do work that is useful for policy-making for human enhancement technologies, their collaborative research questions should be more modest in scope. However, far from limiting the impact of such research, I will suggest that this route is both more promising and ambitious.

1 Introduction

The prospect of biomedical human enhancement has captured the interest of researchers across a range of disciplines. Enhancement technologies are hard to define as a class of technology, and I will not offer a definition here. It will be

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sufficient to point to prototypical examples. Enhancement technologies will include pharmaceuticals or brain stimulation techniques for the improvement of healthy cognition; genetic technologies for selecting or even modifying non-disease traits in embryos; and the incorporation of non-biological systems into human bodies for the purpose of extending or supplementing sensory capacities – so-called cyborg technology. Such technologies are likely to have therapeutic applications as well. Without suggesting that there is a clear line between therapy and enhancement, it is nonetheless the case that well-established regulatory instruments and institutional policies govern medical uses of technologies – devices, pharmaceuticals – in clinical populations. Although such instruments and policies are always subject to revision as technologies develop, the use of the kinds of technologies for purposes beyond medicine – contexts such as schools and employment settings – requires a new policy response. This paper is intended to address the policy-making challenges generated in particular contexts where new technology is being used specifically for enhancement purposes. The regulation of medical uses of new technologies is not addressed here.

Philosophers have raised questions about fairness in the context of pharmaceuticals for studying or blood-doping for athletic performance and about the effects that such enhancements could have on the user's authenticity as well as the value of their achievements.¹ Scientists investigating the effects of various pharmaceuticals and brain stimulation techniques have moved beyond clinical populations to also examine enhancement effects on healthy participants.² Following the growing body of empirical literature showing some significant effects, lawyers and policy scholars have begun to ask how society will

¹ Rob Goodman, 'Cognitive Enhancement, Cheating, and Accomplishment' (2010) 20(2) *Kennedy Institute of Ethics Journal* 145; Filippo Santoni de Sio et al 'Why Less Praise for Enhanced Performance? Moving beyond Responsibility-Shifting, Authenticity, and Cheating to a Nature of Activities Approach' in Fabrice Jotterand and Veljko Dubljevic (eds), *Cognitive Enhancement: Ethical and Policy Implications in International Perspectives* (Oxford University Press, 2016); Lisa Forsberg, 'No Pain, No Gain? Objections to the Use of Cognitive Enhancement on the Basis of Its Potential Effects on the Value of Achievement' in Elisabeth Hildt and Andreas G Franke (eds), *Cognitive Enhancement: An Interdisciplinary Perspective* (Springer, 2013) 159; Hannah Maslen, Nadira Faulmüller and Julian Savulescu, 'Pharmacological Cognitive Enhancement – How Neuroscientific Research Could Advance Ethical Debate' (2014) 8 *Frontiers in Systems Neuroscience* 107; Julian Savulescu, Bennett Foddy and Megan Clayton, 'Why We Should Allow Performance Enhancing Drugs in Sport' (2004) 38(6) *British Journal of Sports Medicine* 666.

² M Elizabeth Smith and Martha J Farah, 'Are Prescription Stimulants "Smart Pills"? The Epidemiology and Cognitive Neuroscience of Prescription Stimulant Use by Normal Healthy Individuals' (2011) 137(5) *Psychological Bulletin* 717; R M Battleday and A-K Brem, 'Modafinil for Cognitive Neuroenhancement in Healthy Non-Sleep-Deprived Subjects: A Systematic Review' (2015) 25(11) *European Neuropsychopharmacology* 1865; Emiliano Santarnecchi et al, 'Enhancing Cognition Using Transcranial Electrical Stimulation' (2015) 4 *Current Opinion in Behavioral Sciences* 4 (2015) 171.

and could regulate the use of enhancement technologies.³ Stakeholder groups are considering whether or not particular enhancement technologies could be encouraged or even required in certain instances,⁴ and institutions are establishing hard and fast rules.⁵

Policymaking for human enhancement technologies is increasingly necessary. How, for example, universities and employers do or do not respond to the use of various biomedical enhancements will shape institutional cultures, professional obligations, and individuals' practices, with knock-on effects from the use (or non-use) of the technologies themselves. A whole host of other stakeholders, from drug and device regulators to child protection agencies, will face questions about how to respond to the development and use of products that do not fall clearly within existing frameworks such as medical devices regulation and associated safeguards protecting children because of their intended non-therapeutic uses.⁶

The empirical, philosophical, and legal work that has been completed to-date is clearly of acute relevance to this policy-making exercise. However, decisions about how to regulate do not follow from the cluster of existing academic work sitting in any given field of research. The task of working out what should be done in response to the emergence and use of human enhancement technologies can only be achieved collaboratively. It is very difficult, perhaps even impossible, for one discipline to provide the answers in isolation.

Human enhancement is not unique in this regard. Policymaking in all areas must draw on empirical data, consider the realities of the legal frameworks in which policies will sit, and weigh up competing values. However, academic work explicitly intended to address 'big picture questions' – eg whether enhancement should be required or banned in the workplace and how, if at all, its development should be limited – even when attempted in an interdisciplinary way, has often not succeeded in being maximally useful to policymakers, since the questions

³ Imogen Goold and Hannah Maslen, 'Must the Surgeon Take the Pill? Negligence Duty in the Context of Cognitive Enhancement' (2014) 77 *Modern Law Review* 60; Jennifer A Chandler, 'Autonomy and the Unintended Legal Consequences of Emerging Neurotherapies' (2013) 6(2) *Neuroethics* 249.

⁴ Academy of Medical Sciences et al, *Human Enhancement and the Future of Work* (Report, Academy of Medical Sciences, November 2012) (2012) <<https://acmedsci.ac.uk/file-download/34506-12308aca.pdf>>; Oliver J Warren et al, 'The Neurocognitive Enhancement of Surgeons: An Ethical Perspective' (2009) 152(1) *Journal of Surgical Research* 167.

⁵ Duke University, 'Academic Dishonesty', *Duke University*, (Web Page, 2017) <<https://studentaffairs.duke.edu/conduct/z-policies/academic-dishonesty>>.

⁶ Hannah Maslen et al, 'The Regulation of Cognitive Enhancement Devices: Extending the Medical Model' (2014) 1(1) *Journal of Law and the Biosciences* 68; Nick J Davis, 'Transcranial Stimulation of the Developing Brain: A Plea for Extreme Caution' (2014) 8 *Frontiers in Human Neuroscience* 600.

have thus far been pitched in too general terms and, more importantly, in terms that leave researchers from different disciplines essentially addressing different questions.

For example, discussion of cognitive enhancement in the workplace at interdisciplinary conferences has addressed the question whether the use of cognitive enhancement in a range of professions would be a good societal development, or even one that should be encouraged. Ethicists have tended to interpret this question broadly, citing possible examples of enhancers, and then proceeding to consider whether, as a category of biotechnology, cognitive enhancement would be permissible and desirable. Sometimes, to focus on questions of value, considerations of safety and effectiveness have been explicitly put aside, for the sake of discussion. Scientists at the same conferences, however, have often presented data on very specific, and often non-uniform effects of a particular pharmaceutical or stimulation technique, and highlighted safety concerns. The coarse-grained and fine-grained perspectives will not assist policymakers in particular decision-making contexts unless the broad evaluation of the value of bioenhancement and data on particular instances of the technology are better reconciled. Even explicit consideration of policy implications has, so far followed this sort of approach. In part this is because identifying the full gamut of issues is an important first step. Indeed, the express purpose of the Joint Academies report on human enhancement and the future of work was to represent 'the very start of the debate on the implications of human enhancement in the workplace'.⁷ However, further work will not build on these early investigations unless the questions are made more particular. For example, the Joint Academies report concluded with statements such as the following:

[i]t was proposed that some element of 'top-down' regulation of enhancements in the workplace would be required to protect the public interest. However, it was clear that there would be pressure to permit, encourage or even obligate the use of enhancements if they could be shown to increase the safety of others, for example in the context of medical practitioners or transport workers.⁸

In order to provide helpful input for policymakers here, particular enhancements would need to be considered in specific professional contexts alongside the data on these enhancements' effectiveness, implications for the safety of others and side effects, and alongside analysis of employment law and employee rights, as they apply in these specific professions.

I will argue that, where researchers want to do work that is useful for policy-making for human enhancement technologies, their questions should be more modest in scope. By more modest, I mean more narrowly defined, in a particular

⁷ Academy of Medical Sciences et al (n 4) 54.

⁸ Ibid 53-4.

context, for a specified technology. However, far from limiting the impact of such research, I will suggest that this route is far more promising and ambitious.

2 *Fields of Human Enhancement Research*

As noted, human enhancement technologies have been the subject of research for a number of disciplines. Neuroscientists have examined the effects of different interventions on 'healthy' cognitive capacities and mood, the prospects for genetic enhancements, and prosthetic devices that might take human senses and physical capabilities beyond current limits. Philosophers have tried to determine whether enhancements are morally permissible in certain contexts and how likely they are to contribute to human flourishing. Lawyers and regulatory experts are identifying how current frameworks will be or are already being challenged by the development, sale, and use of various enhancement technologies, such as direct-to-consumer transcranial direct current stimulation devices,⁹ and drugs such as modafinil (which, for example, is not currently illegal to buy and use in England and Wales).¹⁰

Other disciplines are clearly also stakeholders in these discussions: sociology, political science, and economics, for example, will have important contributions. Further, the policymakers, institutions, and individuals affected are all foremost stakeholders of research intended to motivate and assist policymaking. I focus here on science, law, and philosophy as the branches of academic research across the sciences, humanities and the arts that have, to date, most actively and prolifically included human enhancement technologies on their respective research agendas.

All of this work is useful and necessary. However, when such work proceeds in a relatively disparate way – and I do not to suggest that it always does – the prospects of it being suited to making recommendations for policy are limited. Good academic work in separate disciplines is important in itself, and provides valuable background against which to formulate questions for policymaking, but the respective goals pursued by scientists, philosophers and lawyers in isolation are unlikely to converge in a way necessary for robust, practicable recommendations.

To illustrate this point, it is helpful to remind ourselves of the nature of the goals that the distinct fields of research have tended to pursue in work on human enhancement technologies. Of course, no academic field is homogeneous in the approach its practitioners take to research. Further, there are places of overlap, in

⁹ Anna Wexler, 'A Pragmatic Analysis of the Regulation of Consumer Transcranial Direct Current Stimulation (TDCS) Devices in the United States' (2016) 2(3) *Journal of Law and the Biosciences* 669.

¹⁰ Jennifer A Chandler, 'Autonomy and the Unintended Legal Consequences of Emerging Neurotherapies' (2013) 6(2) *Neuroethics* 249.

legal philosophy and neuroscientifically-informed neuroethics, for example. Such overlap already heads in the right direction, and I do not wish to suggest that research only occurs in disparate silos. The following characterisations are intended to be representative of the modes of engaging with human enhancement technology that have limited utility when it comes to answering policymaking questions; that is, approaches that should be avoided.

Broadly speaking, scientists are mostly in the business of description – describing and explaining the world around us. Academic lawyers analyse existing laws and regulatory instruments, and how they apply. Philosophers, again, very broadly speaking, tend to mostly be engaged in conceptual and normative analysis.

These divergent modes and goals of enquiry can be illustrated further when we think of the questions respective disciplines tend to ask about human enhancement technologies. As one approach, lawyers might examine the way in which existing law and other regulatory tools are likely to govern the use of new enhancement technologies, and identify any regulatory gaps, perhaps suggesting models for how they could be addressed. Their principle questions will be something like ‘what does the law say?’, ‘what would the law say?’ or even ‘what could the law say?’. An example would be whether current negligence law would hold a professional in a high-risk job, such as a pilot, liable for failing to use an available cognitive enhancer when harm was caused by a fatigue-related error. Such an enquiry is an important starting point, but this sort of question will not tell us what the outcome of civil litigation regarding professional enhancement should be. Of course, there are branches of legal scholarship that move towards normative questions. Socio-legal studies research may consider which legal frameworks are good for society, and jurisprudential scholarship may be concerned with the defensible limits of paternalist coercion, or whether human rights can be postulated that would restrict various forms of interference in citizen’s mental lives.¹¹ The core, however, engages in interpretation and application of existing law.

Scientists, most paradigmatically, contribute factual detail and explanation of the realities of human enhancement technologies, especially in terms of mechanisms, risks and benefits. They can tell us what interventions and technologies for human enhancement exist and what interventions and technologies there could possibly be. Scientists also engage in commenting on safety and other ethical issues, and their participation in such discussions is precisely the sort of engagement that I will argue is important to good policy-making. However, the empirical research itself does not provide answers to normative questions at stake in policy decisions.

¹¹ Jan Christoph Bublitz and Reinhard Merkel, ‘Crimes against Minds: On Mental Manipulations, Harms and a Human Right to Mental Self-Determination’ (2014) 8(1) *Criminal Law and Philosophy* 51.

Philosophers can assess the extent to which the uses of human enhancement technologies cohere or conflict with different values – such as justice or rights – and the extent to which such technologies contribute to human flourishing. For example, they have examined the possible conflicts between autonomy, wellbeing, and justice in the use of a variety of forms of enhancement:¹² if drugs are available to enhance cognition, might this lead to further advantages being conferred on those who are able to afford them? How should individuals' freedom to use technology to improve themselves be weighed us against this social harm? If the use of cognitive enhancement had a net benefit for the economy, would this counter the individual injustice?

As well as identifying the values at stake, philosophers can try, most ambitiously, to tell us what we should do with respect to these technologies: given competing values, on which should we place more weight? As I will argue below, there are more and less helpful approaches to such questions in the context of policy-making. Part of the philosophical task is to identify precisely what answering the question in a particular policymaking context turns on, and providing reasons for the adoption of one strategy over others.

All of these perspectives are clearly indispensable to making policy for human enhancement technologies. However, research questions that are not articulated at the right level, and are not pursued in a well-integrated way, are not going to succeed in being maximally useful for policymaking. I will argue that the most useful research questions will be devised collaboratively, with a view to addressing a particular technology in a particular context, for particular purposes, with explicit awareness of as much of the scientific detail as possible. Parallel questions asked at a more general level are less helpful.

3 *Some Exemplary Questions in Human Enhancement Research*

Philosophers and ethicists have tended to lead the explicit discussion of the role that human enhancement should or should not play in society. Principal examples include drugs or devices that enhance cognition for educational advantage, and genetic screening and engineering techniques to select or modify embryos for non-disease traits.¹³ This is in part because technologies that are seen

¹² Nick Bostrom and Rebecca Roache, 'Smart Policy: Cognitive Enhancement and the Public Interest' (2010) 2(1) *Contemporary Readings in Law and Social Justice* 68.

¹³ See Leon R Kass, 'Ageless Bodies, Happy Souls: Biotechnology and the Pursuit of Perfection' (2003) 1 *New Atlantis* 9; Henry T Greely, 'Remarks on Human Biological Enhancement' (2007) 56(5) *University of Kansas Law Review* 1139; Carl Elliott, 'The Tyranny of Happiness: Ethics and Cosmetic Psychopharmacology' [1998] *Enhancing Human Traits: Ethical and Social Implications* 177; Erik Parens, *Enhancing Human Traits: Ethical and Social Implications* (Georgetown University Press, 1998); E T Juengst, 'What Does Enhancement Mean?' in Erik Parens (ed), *Enhancing Human Traits: Ethical and Social Implications* (Georgetown University Press, 2000) 29; Russell Powell, Guy Kahane and Julian Savulescu, 'Evolution, Genetic Engineering, and Human Enhancement'

as having the potential to radically change the 'human condition' are of significant interest to philosophers, and because ethicists have a particular interest in trying to work out what is permissible and impermissible, and what should and should not be done.

Originating in these normative domains of enquiry, the questions that have been articulated and examined have tended to take quite an abstract form. The following question is representative:

Surgeon question: Imagine that cognitive enhancer Y is completely safe, and effective at remedying fatigue-related impairment. Should the surgeon be required to take cognitive enhancer Y?

Another familiar sort of question in the philosophical literature is as follows:

Student question: Imagine that cognitive enhancer X improves a student's performance to a level that would be achieved through having extra private tutorials. Does her use of cognitive enhancer X constitute cheating?

Philosophers pose these sorts of questions in part because they are interesting per se, but also because the assumption is that they might generate conclusions that will be useful for working out what should or should not be permitted or required with respect to human enhancement – ie the answers to these questions might be relevant to policy-making and regulation.

Alongside scrutiny of restrictions or guidance provided by bodies such as the European Medicines Agency and the Food and Drug Administration, the surgeon question might be asked in the context of potential revisions to publications which could inform or represent policy on the use of cognitive enhancers by surgeons; official publications such as *Good Surgical Practice*, for example.¹⁴ Indeed, surgeons themselves do not think that such policy moves are merely fanciful.¹⁵ Although *Good Surgical Practice* is not a statutory code, it is likely that directions on the use of enhancers would form so-called 'soft law', such that it would be harder for a defendant to argue that taking enhancers is not something the responsible surgeon would standardly do, if it were recommended here. So articulating the surgeon question might be thought to have utility in this policymaking context.

(2012) 25(4) *Philosophy & Technology* 439; S Matthew Liao, 'The Ethics of Using Genetic Engineering for Sex Selection' (2015) 31(2) *Journal of Medical Ethics* 116; Julian Savulescu, Ruud ter Meulen and Guy Kahane, *Enhancing Human Capacities* (Wiley-Blackwell, 2011).

¹⁴ The Royal College of Surgeons of England, *Good Surgical Practice* (Guide, September 2014) <<https://www.rcseng.ac.uk/standards-and-research/gsp/>>.

¹⁵ Oliver J Warren et al, 'The Neurocognitive Enhancement of Surgeons: An Ethical Perspective' (2009) 152(1) *Journal of Surgical Research* 167.

In relation to the student question, those who ask it might be trying to work out whether a University like Duke University has the right policy on enhancement when it describes the unauthorised use of prescription medication to enhance performance as a species of academic dishonesty, akin to cheating.¹⁶ Thus, the student question might be thought to have utility in this practical discussion.

4 The Limited Interdisciplinary Approach to the Exemplary Questions

However, the limits to the utility of these questions for policy-making are revealed when we examine the nature of conclusions they can generate, especially when we note their lack of attention to scientific description and the realities of law.

If you were to ask a lawyer the surgeon question, it is likely that their first response would be to translate it into something approximating the following. 'Would the surgeon be required to take cognitive enhancer Y (i.e. would they (or in some cases more limited cases could they) be liable for not taking an enhancer). What precedent is there?' The lawyer might also ask what possible legal mechanisms might result in increasing the likelihood of a successful claim in negligence, such as through soft law.

Thus, the lawyer will tell us whether the law will oblige the surgeon to take cognitive enhancer Y. But the lawyer will not usually say whether the law should be such that it requires the surgeon to take cognitive enhancer Y. The question asked is not the question answered.

The philosopher asked the surgeon question, on the other hand, will tackle? the prescriptive slant of the question head on. On the basis of the question (and, probably, iterative variants) the philosopher helps us come to interesting conclusions about the limits of professional obligations, or perhaps about the relationship between cognitive capacities and responsibility. The philosopher will try to say yes or no, or delimit the circumstances under which, the surgeon should take cognitive enhancer Y.

The scientist, however, is likely to see the surgeon question at best as drastically underspecified, and at worst as an empirical fiction. Even if the scientist is interested in the normative question, the immediate stumbling block would be in identifying what existing or possible technology could fill the black box of cognitive enhancer Y.

An interdisciplinary approach to the student question generates a similar problem of untranslatability. Lawyers would likely be interested in whether a punitive sanction such as expulsion from university, imposed as a result of a

¹⁶ Duke University (n 5).

student taking enhancers in an exam, would withstand a lawsuit claiming, for example, that it was not clear that enhancers were against the university codes, or that an interpretation of enhancer use as cheating was not defensible. For example, there have been cases in the US where the claimant - dismissed from university on the grounds of plagiarism - argued that the dismissal violated due process rights and harmed future job prospects.¹⁷

So lawyers can provide answers about what would need to be the case (in terms of explicit codes of conduct and student contractual agreements) for a university to be able to dismiss a student due to their use of enhancers.¹⁸ Lawyers are unlikely, however, to say whether codes should identify cognitive enhancer X use as a species of cheating.

Philosophers, reflecting on the student question and associated iterations, might get clearer on what cheating precisely amounts to, and perhaps which sorts of advantages are unfair in an educational setting.

However, as with the surgeon question, scientists again are likely to be perplexed by the scope of possibilities for a technology that satisfies all and only the characteristics of cognitive enhancer Y?

5 What Can Thought Experiments Contribute to Practical Human Enhancement Debates?

Can these questions, articulated by philosophers, say anything useful for policymaking? The first thing is to get clear on why we ask questions like this in the first place. The broad answer is that in philosophy, this is the way we achieve conceptual and theoretical clarity.

To some extent, conducting the sort of thought experiments involving cognitive enhancer X and Y requires that we strip away the messiness of the details of the technologies.

This allows philosophers to carefully isolate and vary the features we think will be morally relevant to see how they affect our intuitions and reasoning. If there are too many factors, it's not always easy to see what is doing the moral work.

Accordingly, the principal consideration in the surgeon question must be the fact that the drug remedies fatigue and reduces error.

¹⁷ See, eg, *Gamage v State of Nevada* (9th Cir, No. 14-15292, 7 April 2016).

¹⁸ See Robert Berry, 'Plagiarism: The Legal Landscape' in Vibiana Bowman Cvetkovic and Katie Elson Anderson (eds), *Stop Plagiarism: A Guide to Understanding and Prevention* (Neal Schuman, 2010) 119.

Stripping away the particularities of the mechanism and effects of a specific drug or device also makes the case sufficiently abstract so as to be generalisable to a whole category of cognitive enhancers – there may be different drugs with a variety of properties that all share the impairment-reducing effect. The example might also extrapolate to near-future possible pharmaceuticals. We might not have such a drug now, but what if we did?

However, for all this conceptual utility, articulating abstract questions about human enhancement technologies is a less useful approach when it comes to making recommendations for regulation and policy. This is because many of the details that are stripped away to enable the philosophical question to be carefully defined and delineated are hugely relevant to determining what we should do; but we cannot add all this ethically significant detail back in after reaching our conclusions and expect them to remain the same.

In relation to professional duties, it is going to matter that a drug like modafinil is not without side effects (for example, it can cause gastrointestinal upset and palpitations amongst other undesirable side effects),¹⁹ that individuals can perceive themselves as functioning better than they in fact are, and so on.²⁰ These features bear, amongst other things, on effectiveness, permissibility of professional coercion, and also on whether reasonable policy options might sit somewhere between a blanket requirement and a blanket ban. There will not be a one-size-fits all policy for cognitive enhancement in surgery.

In relation to a university's policy on enhancers, the reality is that different drugs affect different people differently. They may simultaneously enhance one cognitive capacity whilst impairing another, and some drugs might have their principal effects on working memory, whilst others enhance wakefulness and task enjoyment.²¹ All these features and many others are relevant to the question of fairness and what our policy for particular drugs should be. Importantly, the specific features of different drugs might lead to different conclusions. Again, there will not be a one-size-fits-all policy for cognitive enhancement in schools and universities.

¹⁹ Dimitris Repantis et al, 'Modafinil and Methylphenidate for Neuroenhancement in Healthy Individuals: A Systematic Review' (2010) 62(3) *Pharmacological Research: The Official Journal of the Italian Pharmacological Society* 187.

²⁰ Katherine Drabiak-Syed, 'Sleep Deprived Physicians Considering Modafinil: Using a Controlled Substance for Cognitive Enhancement Gambles with Differential Drug Responses and Violates Ethical and Legal Duties Against Physician Impairment' (2010) 13(3) *DePaul Journal of Health Care Law* 339.

²¹ Masud Husain and Mitul A Mehta, 'Cognitive Enhancement by Drugs in Health and Disease' (2011) 15 *Trends in Cognitive Sciences* 28; Reinoud de Jongh et al, 'Botox for the Brain: Enhancement of Cognition, Mood and Pro-Social Behavior and Blunting of Unwanted Memories' (2008) 32(4) *Neuroscience and Biobehavioral Reviews* 760.

6 *The Practical Utility of Asking Narrower Questions*

Making recommendations for policy requires us to ask questions at the right level of specificity. Questions must be specific enough to have clear implications for a particular domain of policy, and maximise the possibility for researchers in different disciplines to work directly on the same question.

This is compatible with there being more exploratory, coarse-grained questions that philosophers, lawyers and scientists tackle independently, but when it comes to assisting policy-making, questions must be pitched at the level that makes sense for all disciplines. Although the normative questions concerning what should be the case will often be the focus of enquiry, they should be informed by the empirical realities of the technologies and constrained by the realities of legal and regulatory instruments. Indeed, a regulatory agency may only act in a specific way if it is vested with the necessary authority to do so.

I do not claim that more abstract philosophical enquiry — the thought experiments that ‘black box’ categories of existing or potential enhancement technologies — is without value. Indeed, as argued above, it is precisely through careful construction of the possible features of technologies that we can learn more about the socially important dimensions for which they have significance. If we want to get clearer on the boundaries of what we can and cannot require a surgeon to do, we need to consider many possibilities sitting just before and beyond the boundary: at some point, perhaps, a requirement would encroach too much into the surgeon’s life beyond her professional role, or would just be too burdensome, to be justifiable. The degree of burdensomeness would have to be varied very slightly (almost certainly artificially) until we get to the point somewhere along the line from hand-washing to heroics where we identify the boundary. Once we have the boundary, we can then think about where real technologies sit in relation to it.

Rather, my suggestion is that those conducting normative work on human enhancement technologies must be clear when they start their philosophical or ethical analysis about whether they are pursuing conceptual work, or whether they intend to make a statement about what should be done in a particular situation. And when they want to do this, questions need to be well-specified and pursued in collaboration with lawyers and scientists.

Law sets the background and places constraints on the possibilities. There might be a regulatory gap, or there might be scope for change, but not everything is feasible. Of course, what is morally permissible or required might be very different from what can be legally enforced. Consideration of the moral ‘ought’ in this context has, to some extent, to be constrained by the legal ‘can’. That said, discussions about the regulation of enhancement technologies are not simply questions about what the law currently says; laws can of course be unjustified or outdated, and the law’s recurrent challenge to keep up with the pace of new

technology is widely acknowledged.²² However, this does not mean that particular laws can or should be immediately changed with each new patent filed. Laws and regulatory instruments operate to some extent in a coordinated system, and certain constraints, such as economic and institutional limitations, will shape and set the pace for proposed modifications to policy.

Finally, when making a statement about what should be done in a particular situation, researchers of human enhancement technologies have to make sure that they work with as much of the scientific detail as possible. Black boxes and generalisations across categories of technologies should be kept to a minimum. This requires philosophers and ethicists to engage with scientific papers to make sure their arguments retain the detail necessary to offer a practical recommendation. Ideally, such work would be completed in collaboration with scientists, or at least subjected to their scrutiny, in order to ensure accuracy.

As a consequence, the sort of questions to pursue will be more modest in scope, but the trade-off is that the answers will be much more useful for policymaking. For example, clusters of research questions should be formulated at the following sort of level:

Is it desirable and permissible to incorporate into plausible soft law mechanisms (such as official medical council guidance) a recommendation for surgeons in particular circumstances to take the drug modafinil, taking into account all its various effects and side effects?

Does a particular tDCS montage give a 16-year-old meaningful enhancement in numerical reasoning, such that it constitutes an unfair advantage in maths GCSE that should be prohibited via a plausible legal mechanism (such as legally enforceable school exclusion criteria or fines for parents)?

Such questions ‘make sense’ as a starting point for scientists, lawyers and philosophers, and include enough detail to motivate research and discussion with the potential to produce meaningful recommendations. Part of the legal research will involve enumerating and analysing potential legal mechanisms signposted by the questions.

Whilst there is a need not to have a fractured approach to regulation, starting with research questions that contain little detail will not produce appropriate solutions for particular instances of use of a technology in a given context, especially when the technologies are very new.

²² Lyria Bennett Moses, ‘Recurring Dilemmas: The Law’s Race to Keep Up with Technological Change’ (2007) 2 *University of Illinois Journal of Law, Technology and Policy* 239.

7 Conclusion

As a research approach, formulating clusters of precise questions about human enhancement technologies is more suited to facilitating collaboration between lawyers, philosophers and scientists, and more effectively permits concrete policy recommendations to be made. I suggest that despite such questions being more modest in scope, their utility for policy-making is much greater; in this way at least, they are more ambitious and their pursuit is more desirable.