Liberty and Neuroenhancement in Europe

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Abstract

Our identity, and the relationship we have with the outer world, is entirely mediated by the functioning of the brain. The phenomenon of human thought is not only responsible for constructing the very society we live in today, but dictates the fundamental way in which we perceive reality itself. The human brain is therefore an incredibly powerful structure – and this fact can already be utilized by modern technology, such as for the purposes of enhancing the human self.

This thesis will explore our liberty to 'neuroenhancement': the degree of liberty we have over manipulating our brains for the purposes of enhancing ourselves. The current state-of-the-art of neuroenhancement has already introduced pharmacological, electric, and surgical means of enhancing our brains and subsequently ourselves. Developments in the neurotechnology sector foreshadow a future where neuroenhancers become increasingly accessible and embedded within society, and they are beginning to demand the attention of legal systems across the world.

If authorities are to implement regulation which specifically qualifies neuroenhancement, then they must first understand the currently existing relationship that neuroenhancers have with the law and society. However, the concept of neuroenhancement has yet to be specifically mentioned within international human rights law, and understanding the current relationship between neuroenhancement and the law must therefore be guided through closer inspection and interpretation. The scope of this thesis will centre upon the case law of the European Court of Human Rights, in order to identify how the Court has decided its judgements in regard to topics which can be directly related to the definition of neuroenhancement. By forming a relatively clear definition of neuroenhancement, and applying this to the case law of the European Convention on Human Rights, this thesis will explore the current boundaries of our liberty to neuroenhancement in Europe.

Chapter 1 - Introduction

1.1. Problem Introduction

The relationship between man and technology is becoming increasingly personal and intimate - but how far may this lead us? The ever-increasing acceptance and growth of personalised devices and wearable technology used to enhance our private lives[1] foreshadows a potential future where technology is embedded even deeper within our private lives, entrenching itself within the most private sphere of them all: *our own cognition*. This timeline would be one of widespread 'neuroenhancement': the manipulation of the brain for the enhancement of the self.[2]

The relevance of neuroenhancement is not only amplified by increasingly rapid developments in neurotechnology,[3] but by socio-economic factors too. The rise of the 'mental economy',[4] for example, would only lead to a greatly increased demand for technology which enhances our brains and cognitive ability. The trajectory of current neurotechnology advancements suggests that we could face a surge of neurotechnology development which is comparable in significance to the electrification, motorization, and information booms we have faced throughout the past few centuries.[5] This century may see the biotechnology sector expand rapidly, and entrench itself as a normalized but powerful part of society – reflective of previous revolutionary sectors like electricity, automobiles, and computing.[6] Our society so far has shown not merely a tolerance of integrating technology into our private lives, but a demand for more. The industrial revolution saw man embrace technology as a tool for enhancing society as a whole, the information era soon brought man to utilise technology as a widespread tool for enhancing our individual private and social lives. Soon this trajectory may lead man to enter a new paradigm: embracing technology as a tool to enhance one's own private cognition, thus ushering in a future of widespread neuroenhancement.

In fact, neuroenhancement can be seen to have been practiced throughout history, already playing a somewhat notable role within society. Neuroenhancement via pharmacological means, for example, can be identified in many different areas of society across the world. There is a rapidly growing market of 'smart drugs' consumed by many people

[1] Popular examples include the 'Fitbit' health and fitness tracker, 'Google Glass' smart glasses, or the sleep tracking 'Oura ring'.

[2] This definition will be elaborated upon in Chapter 2.

[3] For example, see: Zach Lynch, 'Neurotechnology and society (2010-2060)' [2004]1013(1) Annals of the New York Academy of Sciences 229-33; Clark Vincent and Raja Parasuraman, 'Neuroenhancement: Enhancing brain and mind in health and in disease' [2014] 85(3) NeuroImage 889-894; Norman Claus and Mathias Berger, 'Neuroenhancement: status quo and perspectives' [2008] 258(5) European Archives of Psychiatry and Clinical Neuroscience 110-114.

[4] The 'mental economy' and its relationship with society in the context of neuroenhancement is explored by Bublitz, a scholar who's work will be referred to several times in this thesis: J Bublitz, "My Mind Is Mine!? Cognitive Liberty as a Legal Concept" [2013] Cognitive enhancement 235; J Bublitz, 'Freedom of Thought in the Age of Neuroscience' [2014] 100(1) Archiv fur Rechts- und Sozialphilosophie 16-17.

[5] Zach Lynch, 'Neurotechnology and society (2010-2060)' [2004]1013(1) Annals of the New York Academy of Sciences 229-33.

[6] Ibid.

(particularly students) who aim to enhance their cognitive capacity.[7] Prescription drugs like modafinil, as well as publicly accessible psychoactive substances like caffeine, are used by many to prevent fatigue.[8] Furthermore, well known historical controversies surrounding the use of performance enhancing drugs for sporting events illuminate the morally-charged tensions that human-enhancing technology can bring to a society.

Taking a variety of forms, ranging from precise in application (such as surgery or electric measures) to more crude and imprecise (such as pharmacological measures),[9] the definition of neuroenhancement is broad in scope. The exact qualification of neuroenhancement, as well as its relationship with the law, is therefore relatively vague. Subsequently, it may be difficult to determine the degree to which we within society have the liberty to pursue neuroenhancement in its various forms. As to be explored further in Chapter 2, a liberty to neuroenhancement would be a 'positive' liberty – meaning that it does not merely protect individuals from interference,[10] but would instead pertain to the positive and active right to manipulate the brain for the enhancement of the self. A liberty to neuroenhancement would therefore be more potently derived from positive and active obligations of a state, rather than the state merely abstaining from restricting neuroenhancement. International human rights law is an effective route to take for enforcing positive obligations upon a state – yet despite its significance, the concept of neuroenhancement has yet to be directly addressed under any international human rights framework. The consequences of this fact have not yet been severe or immediate, but if a society is legally underequipped to deal with the subject of neuroenhancement then a variety of issues may arise from the increasing technological advances and proliferation of neuroenhancers. If neuroenhancement is entrenched within society, but without specific legal qualification under law, then legal uncertainty will arise regarding the degree of liberty that individuals may have over manipulating their brain for enhancement. Current examples of existing conflicts between the law and our liberty over the brain, such as with the War on Drugs, demonstrate that our liberty to enhance ourselves via the brain will remain unclear until it is specifically qualified under law. As mentioned earlier, international human rights law would be the most appropriate medium for clarifying one's scope of liberty, and would therefore be an effective starting point for the legal qualification of neuroenhancers.

Being broad in scope, the concept of neuroenhancement is subsequently broad enough to intersect with certain things which are already subject to some form of legal framework. As mentioned earlier, pharmacology is a common vessel for the pursuit of neuroenhancement. This means that some pharmacological substances which are currently controlled by the law are substances which may be used for neuroenhancement. For example, despite its negative

[7] B. Partridge, 'Smart Drugs ''As Common As Coffee'': Media Hype about Neuroenhancement' [2011] 6(11) PloS.

[8] Norman Claus and Mathias Berger, 'Neuroenhancement: status quo and perspectives' [2008] 258(5) European Archives of Psychiatry and Clinical Neuroscience 112; Dimitris Repantis and others, 'Modafinil and methylphenidate for neuroenhancement in healthy individuals: A systematic review' [2010] 62(3) Pharmacological Research 187-206.

[9] These measures will be illustrated and discussed further in Chapter 2.

[10] For illustrative examples of what 'interference' may be in this context, see the potential problematic interventions upon ones freedom of the brain (both direct and indirect) here: J Bublitz, 'Freedom of Thought in the Age of Neuroscience' [2014] 100(1) Archiv fur Rechts- und Sozialphilosophie 9-17.; Tom Chokrevski, *Re-writing brains and minds: freedom of thought for the modifiable self: neuro-technologies, mind control, and human rights* (Universiteit van Tilburg Recht, Technologie en Samenleving 2016) 20-25.

health impacts, cocaine may still be used as a stimulant for the brain, and could therefore be utilized for some degree of neuroenhancement.[11] It is also a strictly controlled substance, for its danger to public health.[12] A huge variety of psychoactive drugs such as DMT have been used throughout history for the enhancement of one's personality, spirituality, and religion, and are used within specific rituals for such purposes.[13] Yet these are also a strictly controlled substance under international law.[14] While an interaction between some specific neuroenhancers and the law can be identified, there exists a vacuum caused by the lack of any legislation which tackles the concept neuroenhancement as a whole - rather than targeting specific substances or methods of altering the brain. Pharmacological measures are but one example of a category of potential neuroenhancers which interact frequently with the law and the public sphere. This shows that while there are no neuroenhancement-specific legal provisions under the international law, many potential neuroenhancers can still be seen to have some form of qualification under a variety of legal systems. Among other things, this has two implications: firstly, that the scope of one's legal right to pursue neuroenhancement (or lack thereof), can in some form be outlined within various current legal frameworks; secondly, that any new neuroenhancement-specific legal framework would first need to understand the current relationship between neuroenhancement and the law in order to avoid conflicting with previous legislation. The combination of these two facts calls for the current legal status of neuroenhancers to be outlined before neurotechnology becomes normalized and entrenched within society.

1.2. Neuroenhancement under the European Convention on Human Rights

To analyse the entirety of all international human rights frameworks for references to neuroenhancement would be a task far too great and unachievable for the purposes of a masters thesis. Subsequently, to narrow the scope of analysis within this thesis into something more concise, the European Convention on Human Rights (ECHR) will provide a suitable basis for research. Enforced by the powers of the European Court of Human Rights (ECtHR, or the Court), and ratified by all Council of Europe member states, the ECHR provides one of the most significant legislative frameworks for international human rights.

Considering the lack of neuroenhancement-specific legal provisions within the ECHR, the current liberty for a citizen of contracting states to pursue neuroenhancement can be potentially inferred from Article 8: Right to respect for private and family life, and Article 9: Freedom of thought, conscience and religion.

[11] I find it important to note that the relationship between the potential harms of a substance and its capacity to enhance an individual will be explored further in Chapter 2.

[12] Single Convention on Narcotic Drugs 1961, Article 2.

[13] H Sayin, 'The Consumption of Psychoactive Plants During Religious Rituals: The Roots of Common Symbols and Figures in Religions and Myths' [2014] 12(2) NeuroQuantology 276-296; Robert Gable, 'Risk assessment of ritual use of oral dimethyltryptamine (DMT) and harmala alkaloids' [2007] 102(1) Addiction 24-34; Charles Grob and others, 'Human Psychopharmacology of Hoasca, A Plant Hallucinogen Used in Ritual Context in Brazil ' [1996] 184(2) The Journal of Nervous & Mental Disease 86-94.

[14] The example here being DMT, controlled under Section 1 of the Convention on Psychotropic Substances 1971. This legislation can also be seen to control many other psychoactive substances which have seen use for the development of one's personality and religion.

1.2.1. Right to respect for private and family life, home, and correspondence

Article 8 of the ECHR goes as follows:

1. Everyone has the right to respect for his private and family life, his home and his correspondence.

2. There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others.

This right, *inter alia*, concerns situations where a private interest, or the 'private life' of an individual, has been compromised. It places a prohibition on the interference of this right, and therefore any legislation which restricts private life would first need to fulfil the requirements of paragraph 2 in order to be classified as a lawful interference. The notions of 'private and family life', 'home', and 'correspondence', are understandably broad. There is no fully exhaustive definition of 'private life' under the ECHR[15] - but what falls under the protection of these rights has been further clarified by the case law of the Court.

Via a broad scope of interpretation provided by case law, 'private life' may, for example, pertain to one's reputation,[16] physical and moral integrity,[17] and mental health.[18] Furthermore, while Article 8 serves to prevent the infringement of one's rights (*i.e.* by declaring what a state *cannot* do, rather than what an individual *can* do), the scope of this right has been increasingly extended to positive acts and positive obligations of the state. According to the ECtHR:

"it would be too restrictive to limit the notion [of private life] *to an 'inner circle' in which the individual may live his own personal life as he chooses and to exclude therefrom entirely the outside world not encompassed within that circle".*[19]

The right to private life therefore extends to some degree beyond just the private inner self, allowing for some form of interaction with the public sphere. This includes the right to establish and develop relationships with other human beings,[20] or more importantly for the concept of neuroenhancement, it also protects one's positive right to personal development.[21]

With mental health being a 'crucial' part of private life,[22] alongside the facts that 'private life' also protects personal development, and that the notion of personal autonomy is

[15] Niemietz v. Germany App no. 13710/88 (ECtHR, 16 December 1992) §29.

[16] E.g. Chauvy and Others v. France App no. 6415/01 (ECtHR, 29 June 2004) §70.

[17] E.g. X and Y v. the Netherlands App no. 8978/80 (ECtHR, 26 March 1985) §22.

[18] E.g. Bensaid v. the United Kingdom App no. 44599/9847 (ECtHR, 6 February 2001) §47.

[19] Niemietz v. Germany App no. 13710/88 (ECtHR, 16 December 1992) §29.

[20] Ibid.

[21] E.g. Pretty v. The United Kingdom App no. 2346/02 (ECtHR, 29 April 2002) §61.

[22] Bensaid v. the United Kingdom App no. 44599/9847 (ECtHR, 6 February 2001) §47.

recognised as an important principle underlying Article 8,[23] it could be interpreted that Article 8 guarantees some form of protection for one's liberty to neuroenhancement. This will be further investigated in Chapter 3.

1.2.2. Freedom of thought, conscience and religion

Article 9 of the ECHR goes as follows:

1. Everyone has the right to freedom of thought, conscience and religion; this right includes freedom to change his religion or belief and freedom, either alone or in community with others and in public or private, to manifest his religion or belief, in worship, teaching, practice and observance.

2. Freedom to manifest one's religion or beliefs shall be 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.

Like 'private life', the meaning and ambit of one's 'freedom of thought' has not been fully defined under the ECHR. This may be because the majority of cases which invoke this right have more specifically concerned the protection of one's freedom of religion. However, the ECtHR recognises the comprehensiveness of the concept of 'thought' alone,[24] allowing it a wide scope of interpretation beyond just the religious sphere.

Concerning the concept of 'freedom', this act may at first glance seem to provide a more positive and exercisable right than the (mostly) negative right to 'privacy' provided by Article 8. However, in practice, 'freedom of thought' as the protection of the 'inner sphere' (*forum internum)*[25] does not grant an individual the ability to express themselves as they please within the public and external realm, but instead prohibits any interference or coercion which would impair one's freedom over thought, consciousness, or religion. This of course opens up the important and elusive question as to what exactly may constitute 'coercion' in the context of freedom of thought, considering that we already live within a world thriving with suggestive media designed to influence and direct our thoughts.

While this is the case, the freedoms granted by Article 9 are not exclusively restricted to the *forum internum*: individuals do not just have the freedom to possess one's beliefs, but the freedom to *manifest* one's beliefs. The prohibition of certain neuroenhancers may therefore be regarded as a coercion over one's ability to manifest the mental state of his or her desire, which would potentially violate one's freedom of thought. The degree to which someone may manifest their convictions will be explored further in Chapter 4.

[23] Pretty v. The United Kingdom App no. 2346/02 (ECtHR, 29 April 2002) §61.

[24] See: Salonen v. Finland App no. 27868/95 (The European Commission of Human Rights, 2 July 1997), here the comprehensiveness of the concept of thought is seen as wide enough to encompass one's wish to give their child a certain name.

[25] The private inner sphere of an individual – the relationship between the ECHR and the *forum internum* is illuminated by: J Bublitz, "My Mind Is Mine!? Cognitive Liberty as a Legal Concept" [2013] Cognitive enhancement 245; Christoph Bublitz, 'Freedom of Thought in the Age of Neuroscience' [2014] 100(1) Archiv fur Rechts- und Sozialphilosophie 2-6. This concept will be explored further in Chapter 4.

1.3. Research question

As previously mentioned, one's liberty to neuroenhancement has not been specifically outlined or qualified under the ECHR, but can be inferred in some way from Articles 8 and 9. However, as also previously mentioned, prohibitive laws currently exist regarding certain behaviours which may in some form be qualified as neuroenhancement, which results in potential legal uncertainty surrounding the scope of one's liberty to exercise neuroenhancement. The lack of foreseeability of the scope of this liberty within contracting states of the ECHR is becoming an increasingly important subject to address as modern neurotechnology proliferates at an increasing rate. This begs for one's current liberty to neuroenhancement to be specifically outlined, and the subsequent identification of gaps in the law would be crucial for the development of neuroenhancement-specific legislation, leading to the following research question:

What is the scope of one's liberty to neuroenhancement under Articles 8 and 9 of the European Convention on Human Rights?

1.3.1. Sub-questions

In order to effectively tackle the main question of this thesis, the following sub-questions would need to be systematically addressed:

- *What exactly is neuroenhancement?*
- *What constitutes 'liberty' to neuroenhancement?*
- *Which elements of neuroenhancement are protected under Article 8 ECHR?*
- *Which limitations to neuroenhancement are provided by Article 8 ECHR?*
- *Which elements of neuroenhancement are protected under Article 9 ECHR?*
- *Which limitations to neuroenhancement are provided by Article 9 ECHR?*
- *Which elements of neuroenhancement subsequently remain entirely unqualified under the ECHR?*

1.4. Methodology

The strategy for answering these questions will be in the form of applied doctrinal research – applying the wording of the ECHR and relevant court decisions to the context of neuroenhancement. Search databases such as SSRN and Google Scholar provide access to a variety of legal texts which concern the concept of 'neuroenhancement' in a legal or ethical context. Currently there is no authoritative literature which tackles the specific challenge of defining neuroenhancement for the modern legal context, and there is no specific definition of neuroenhancement which is officially recognised or widely shared. Instead, this thesis will form a corroborated definition of 'neuroenhancement' through observing how related texts may qualify and approach the concept of neuroenhancement in a legal context. This qualification of neuroenhancement can subsequently be applied to the publicly accessible case law of Articles 8 and 9 of the ECHR to identify the relationship that the rulings of the Court may have with neuroenhancement. This will identify areas of the law which directly address topics related to neuroenhancers or acts of neuroenhancement, as well as gaps within the law which fail to substantially address these topics. Following this, the scope of one's liberty to neuroenhancement according to the ECHR can be outlined to some degree.

1.5. Order of chapters

Chapter 2: Neuroenhancement in practice.

Sub-question(s) to be addressed:

- *What is neuroenhancement?*
- *What constitutes 'liberty' to neuroenhancement?*

This chapter will look at the various examples of technology which enable the enhancement of one's cognitive capacity – illuminating the current social context and state-of-the-art of neuroenhancement, while identifying the trajectory which is leading current neurotechnology into a future where neuroenhancements may be normalized or entrenched within society. Subsequently, a definition of 'neuroenhancement' will also be identified, to apply to the ECHR within the following chapters.

Chapter 3: Right to respect for private and family life.

Sub-question(s) to be addressed:

- *Which practical elements of neuroenhancement are protected under Article 8 ECHR?*
- *Which limitations to neuroenhancement are provided by Article 8 ECHR?*

In this chapter, the function and reasoning behind Article 8 ECHR will be outlined. Following this, the practical elements of this right which can be directly linked to the liberty to neuroenhancement will be assessed, as well as the principles behind the right which may also be linked to the liberty to neuroenhancement.

Chapter 4: Freedom of thought, conscience and religion.

Sub-question(s) to be addressed:

- *Which practical elements of neuroenhancement are protected under Article 9 ECHR?*
- *Which limitations to neuroenhancement are provided by Article 9 ECHR?*

This chapter will follow the same structure of Chapter 3, but will instead regard Article 9 ECHR.

Chapter 5: Conclusion.

Sub-question(s) to be addressed:

- *Which elements of neuroenhancement subsequently remain entirely unqualified under the ECHR?*

In this chapter, the research question will be ultimately answered. It will provide a summary of the scope of one's liberty to neuroenhancement according to ECHR. Further, it will also assess the potential implications that this scope may have within the context of neuroenhancers/neuroenhancement as established in Chapter 1.

Chapter 2 - Neuroenhancement

2.1. Introduction

One could attain a general idea of the concept of 'neuroenhancement' by simply deconstructing the term into its two parts – 1: that it concerns enhancement, 2: of one's neurobiology. Currently, this general way of conceptualising neuroenhancement has not caused humanity any significant problems; the more specific nuances of what constitutes neuroenhancement have not been important to interrogate for the purposes of our day to day to day lives so far. At the surface level, the basic combination of the concepts of 'neuro' and 'enhancement' may seem clear enough, but like a fractal these concepts can develop and extend infinitely upon closer inspection and more rigorous questioning. What exactly is 'enhancement' within the context of the brain and the individual self? What specific components of the nervous system constitute the 'neuro' subject of neuroenhancement, and which parts of the body do not? What basis can be used for measuring the extent of these forms of enhancement? These are but some examples of questions which develop upon deeper examination of the topic. For the sake of avoiding an overabundance of philosophical tangents, it is important not to delve excessively into these questions. On the flip side, however, the definition of neuroenhancement must be sufficiently precise if one hopes to construct a relevant legal analysis of the concept. An overly-general interpretation of 'neuroenhancement' would allow for it to be overenthusiastically extended to cover almost anything which influences the brain. To give a rather extreme example, merely *experiencing anything* can theoretically 'enhance' an individual, and can be physically identified as doing such. This is because of the fact that experiencing something helps facilitate learning via the long-term potentiation of neural connections[26] – enhancing the strength of synapses in order to subsequently enhance the memory of the individual. In this way, even the phenomenon of memory could be seen as a manipulation of one's neurobiology for the enhancement of the self. This shows that it is important, for the sake of clarity and application, for the definition of neuroenhancement to be sufficiently precise as to not contain vaguely intersecting concepts, such as memory attainment. That being said, a perfectly precise definition of neuroenhancement is also impossible to achieve, due to our current limits of knowledge of the functioning of the brain. The difficulty of philosophical questions which regard neuroenhancement is additionally amplified by the current gaps of scientific knowledge that we have in relation to the functioning of the brain. The philosophical questions posed by substance dualism, for example, have answers which are currently unknown yet fundamentally important for our understanding of the relationship between the mind and the brain.[27] This is problematic, since it is impossible to precisely qualify the impacts of something upon the mind and the brain without first being able to understand what the mind and brain actually are. Forming a definition of neuroenhancement must therefore strike a balance between resisting rapid and potentially unpredictable future technological developments, while also being sufficiently precise.

Applying the concept of neuroenhancement directly to current ECHR law in a meaningful way would therefore demand a clear set of rules to determine the specific constitution of neuroenhancement, without prying too intensely at relevant but ultimately distracting philosophical questions (for the time being). Consequently, the objective of this

[26] T. Bliss and G. Collingridge, "A Synaptic Model of Memory: Long-Term Potentiation in the Hippocampus" (1993) 361 Nature 31.

[27] Modern dualism, posing what is known as the 'mind-body problem', questions if the mind and brain are two different substances – the brain being comprised of physical matter, and the mind being a non-material 'thinking' substance; S. Guttenplan, *A companion to the philosophy of mind* (Blackwell 1995) 265-269.

chapter is not to create a perfectly precise and all-encompassing definition of neuroenhancement, but to instead create a set of rules for identifying neuroenhancement when applied practically to the ECHR and its case law. This ruleset would need to be precise enough for comprehensive and meaningful application to the ECHR, while also being flexible enough to be resilient to technological turbulence and the rapidly developing technological sphere of neuroscience. To do so, this chapter will systematically address: 1, the specific neurobiological aspects which comprise the 'neuro' element of neuroenhancement; *2*, the definition of 'enhancement' in this context; and 3, what 'liberty' means in the context of neuroenhancement. Firstly, however, a more overarching question needs to be solved: exactly *why* the legal qualification of neuroenhancement is becoming something of substantial importance to address.

2.2. A future of neuroenhancement

Why does the current state-of-the-art suggest a future of neuroenhancement which is potent enough to command the attention of our legal institutions? It is important to underline the specific reasons for why neuroenhancement may become a large part of our lives, without lazily assuming that this will be the case. Neuroenhancement will not necessarily become a large part of our future simply by virtue of the fact that it benefits people – many social groups have resisted beneficial technologies in the past, and will again, for various reasons.[28] There therefore needs to be a greater justification of the reasons why neuroenhancement will play a role in society which is significant enough to demand legal qualification. Many such reasons, technological, sociological, and economic, can be identified as setting the trajectory of neuroenhancement towards a future where the practice is widespread and normalized. This section will examine these reasons in order to illustrate a potential future of neuroenhancement, and therefore the demand that this brings for lawmakers to address.

2.2.1. Technological grounds

The practice of intentionally using technology for the modification of neurobiology can be identified as far back in our history as the Neolithic period.[29] Since then, our understanding of neuroscience has taken significant strides forward,[30] and our continuously growing knowledge of the nervous system has allowed us to develop increasingly precise neurotechnology. While this is the case, our full understanding of the brain remains quite limited, suggesting that we have yet much more to learn about the functioning of our neurobiological structures. Nevertheless, for many years we have had the technical capacity to manipulate our brains for (supposedly) beneficial outcomes. Currently the majority of these measures are either pharmacological, surgical, or electrically stimulated. As we continue to develop our understanding of the brain, this will allow for the development of more possible

[28] The social acceptance and viability of innovative technologies, for example, are often greatly influenced by the public perception of risk: B. Wynne, 'Redefining the issues of risk and public acceptance: The social viability of technology' [1983] 15(1) Futures 13-32.

[29] 'Trepanation' is a crude form of surgical intervention in which pieces of the skull are removed to treat the individual, and has been found to have been practiced upon many skulls discovered across the world: J. Weber and J. Wahl, 'Neurosurgical Aspects of Trepanations from Neolithic Times' [2006] 16(6) International Journal of Osteoarchaeology 536–545.

[30] Consider the fact that the previous example of trepanation would only be seen as ludicrous by any reasonable person in the current day – this viewpoint may seem like common sense, but is the result of neuroscientific developments embedding themselves within our common understanding of the brain.

neuroenhancement technology. In fact, we have already developed non-intrusive ways to electromagnetically stimulate various regions of the brain to enhance cognitive functioning,[31] and the state-of-the-art of such technologies will only broaden as time goes on. The continuing progression of our biotechnology sphere could technically allow for a future where neuroenhancement is entrenched within society, but this doesn't necessarily guarantee such a future. Further social and economic reasons would need to exist in order to facilitate such a future of neuroenhancement.

2.2.2. Social acceptance and demand

Neuroenhancement is not some sort of technologically fantastical idea which can only exist within an advanced future. In fact, neuroenhancement practices can be seen throughout our social history. Pharmacological measures for neuroenhancement have already played a significant role in society,[32] enough to warrant many attempts of regulation. Examples of such would be the great 'War on Drugs', in which a legal and social war against many different brain-altering substances has been fought, an effort with vast social implications. Less substantial examples may include controversies regarding sports 'doping' and the unfair enhancement of an individual in competitive contexts, or the controversial rise of students using prescription drugs in attempts to enhance focus and memory.[33] The market of 'smart drugs' has been growing rapidly, especially among those looking to enhance their capabilities as students, and they benefit the user's cognition significantly enough to have been banned in professional chess matches.[34] The current prevalence of pharmacological measures of enhancing the self can be partly attributed to the relative accessibility of drugs when compared to surgical or electric interventions on the brain. Surgical or electric measures may simply have less economic viability for the average consumer when compared to more accessible drugs in the current state-of-the-art of neurotechnology. These non-pharmacological neuroenhancement practices have still already seen frequent use and acceptance, especially via the medical sphere. Increased use of deep brain stimulation and electroconvulsive therapy demonstrate that we are more and more willing to use direct interventions upon the brain in order to benefit an individual.[35] As found within Chapter 2.2.1, these neurotechnologies will continue to develop, which may result in the increasing accessibility, safety, and economic viability of surgical or electrically stimulated neuroenhancement.

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[31] F. Fregni and others, 'Anodal transcranial direct current stimulation of prefrontal cortex enhances working memory' [2005] 166(1) Experimental brain research 23-30.

[32] B. Partridge, 'Smart Drugs ''As Common As Coffee'': Media Hype about Neuroenhancement' [2011] 6(11) PloS.

[33] H. Greely and others, 'Towards responsible use of cognitive-enhancing drugs by the healthy' [2008] 456(7223) Nature 702-705; B. Partridge, 'Smart Drugs ''As Common As Coffee'': Media Hype about Neuroenhancement' [2011] 6(11) PloS; C. Forlini and E. Racine, 'Disagreements with implications: diverging discourses on the ethics of non-medical use of methylphenidate for performance enhancement' [2009] 10(1) BMC Medical Ethics.

[34] K Chinthapalli, 'The billion dollar business of being smart' [2015] 351 Bmj.

[35] H. Mayberg and others, 'Deep Brain Stimulation for Treatment-Resistant Depression' [2005] 45(5) Neuron 651-650; J Perlmutter and J Mink, 'Deep Brain Stimulation' [2006] 29 Annual Review of Neuroscience 229-257; D Rose et al, 'Patients' perspectives on electroconvulsive therapy: systematic review' [2003] 326(7403) Bmj.

It can be seen that neuroenhancement has already embedded itself somewhat within society, and the development of more precise and reliable neuroenhancement practices should only lead to increased use and acceptance. The viability of life-altering and invasive technologies would obviously be challenging to predict, but a trending acceptance that society has developed for personalised devices is clear. Devices such as smartphones, fitness trackers, and smart watches, which are personalized and fine-tuned to their user's individual needs/preferences, are used widely to enhance our private and public lives. There is an increasing intimacy between technology and its user. Generation by generation, these devices have been converging with our private lives and interacting with more of our sensitive personal data – and the economic success of these devices show that we seem to be tolerant of this so far, even demanding more.

2.2.3. The economic sphere

The value of cognitive performance is increasing alongside the growth of the 'mental economy', where physical and industrial labour become replaced by mental labour as a main source for accumulating wealth.[36] In an economy which is escalating the value of innovation, intellectual property, and culture/media production, the benefits of enhancing one's cognitive performance are greater than ever. It is for this reason among others that some scholars predict the neurotechnology sector to soon bring a wave of techno-economic progression which would comparable in size to the strides made by the electrification, motorization, and information developments seen throughout the past few centuries.[37] The biotechnology sector may therefore have the potential to revolutionise society at a scale similar that of the electricity, automobiles, and computing sectors.[38] The foreseeable size of the neurotechnology industry provides a great incentive for rallying innovators and for whetting the appetite of new investors. This would stimulate technological developments to increase the accessibility, safety, and economic viability neuroenhancement procedures.

To conclude this section regarding a 'future of neuroenhancement': The prospects of the biotechnology sector is a substantial incentive for investment, which would further stimulate technological development, which in turn would overcome obstacles of social acceptance and demand - by increasing the accessibility of pharmacological, electric, and surgical forms of neuroenhancement. These factors, technical, social, and economic, together form a trajectory for the development of neuroenhancement to suggest a future where neuroenhancement is at least significant enough to require legal qualification, if not to become a fundamental part of society. The potential technological, social, and economic future of neuroenhancement demands the attention of lawmakers, and this is not only to solve the incredibly important problem of legal uncertainty which will arise if neuroenhancement continues to develop without any legal recognition. Above this, identifying the current relationship between neuroenhancement and human rights law is relevant for much more than just this thesis. Neuroenhancement can be seen as a technological case study which illuminates

[36] J. Bublitz, "My Mind Is Mine!? Cognitive Liberty as a Legal Concept" [2013] Cognitive enhancement 235.

[37] Zach Lynch, 'Neurotechnology and society (2010-2060)' [2004]1013(1) Annals of the New York Academy of Sciences 229-33.

[38] Ibid.

the modern-day relevance of cognitive liberty,[39] and challenges our current paradigm of self-determination over the brain. As can be seen with the War on Drugs, the current potential danger to public health that many interventions on the brain may have has lead society to form a paradigm of prohibition when it comes to liberty over the brain. However, modern neuroenhancement and developments in neuroscience now show that we can manipulate the brain for the purposes of socio-economic utility rather than pleasure or addiction. The private and public benefits that neuroenhancement is capable of bringing demonstrate that we may be incredibly disadvantaged by restricting liberty over the brain, and neuroenhancement may therefore be a catalyst for changing our very perception of the brain and its role within society.

2.3. Neuro (enhancement)

To form a ruleset for identifying neuroenhancement, I will first attempt to provide criteria for identifying what exactly falls under the 'neuro' aspect of neuroenhancement. More specifically, I will identify the specific neurobiological components which must be intervened upon by a tool in order for such tool to constitute a neuroenhancer (provided that it results in enhancing the individual).[40] With the scientific nature of neurobiology and its accompanying body of literature, this should be a somewhat straightforward task, however there are important factors to address, such as the notion of indirect interventions on the brain.

Indirect interventions upon the brain influence an individual via one's psychological functioning, rather than with direct physical alterations to one's brain. Many examples of indirect interventions upon the brain can be argued to enhance the individual: 'education' being possibly the most prominent example, which is often seen as the foundation for the progression of society and the enhancement of its members. Being that which is widely used for individual enhancement, and which does so via its influence upon the brain, how could education be distinguished from neuroenhancement?[41] As mentioned earlier, memory retention and consolidation have a directly physical association with our neural pathways, therefore directly 'enhancing' the brain through the improvement of its structures. More specific examples of indirect interventions upon the brain which are commonly pursued for the purposes of personal enhancement may include hypnosis and hypnotherapy, and reading. Pursuing activities which induce a positive and elated mood can also indirectly result in increased cognitive performance.[42] I do not consider non-physical interventions to be neuroenhancers, for several reasons. Firstly, as will be elaborated upon In section 2.5, neuroenhancement must be a positive action of the individual – this immediately excludes many interventions upon the brain which are not subject to the consent or even awareness of the individual, which includes many indirect interventions.[43] Secondly, when an indirect intervention upon the brain is imposed by positive action, it ultimately ends up being the brain

[39] J. Bublitz, "My Mind Is Mine!? Cognitive Liberty as a Legal Concept" [2013] Cognitive enhancement 233-264.

[40] A key component which will be elaborated upon in section 2.4.

[41] By using the general term of 'education', I am also avoiding philosophical discussions regarding how beneficial or detrimental indirect interventions such as indoctrination and propaganda may be upon an individual. While highly interesting, such ethical questions have far too much depth to explore for the purposes of this thesis.

[42] D. Hale and B. Strickland, 'Induction of Mood States and Their Effect on Cognitive and Social Behaviors' [1976] 44(1) Journal of Consulting and Clinical Psychology 155.

[43] 'Nudges' and micropowers are a great example of prominent influencers of the individual, which are widely unknown yet can be identified almost everywhere in society.

improving itself via its own normal and natural processes. The long-term potentiation of neural pathways, for example, is a normal and natural function of the brain improving itself after being exposed to an indirect intervention. Neuroenhancers must go beyond this. Many definitions of neuroenhancement distinguish it as advancing the individual beyond the normal functioning of the brain. Indirect interventions do not advance individuals *beyond* the normal functioning of their brains, but *via* the normal functioning of their brains. Therefore, only physical and direct alterations of the brain may constitute neuroenhancement.

I have previously mentioned examples of physical interventions on the brain which enhance individuals, such as deep brain stimulation, electroshock therapy, and various pharmacological methods. To be able to qualify a direct intervention as a neuroenhancer, it must intervene upon one's neurobiology. Specifically, this must be any intervention upon the nervous system, both central and peripheral. This is still ultimately a rather broad category of biology. For example, the manipulation of one's hormones to enhance an individual may not initially seem to be a neuroenhancement, since hormones are not directly a part of the central nervous system. However, while the pituitary gland (which regulates the release of hormones) is not a component of the central nervous system, it is directly connected to the hypothalamus, which in turn controls the release of substances from the pituitary gland. Since the hypothalamus is a part of the central nervous system, tools which compel hormone release for the enhancement of an individual may still constitute neuroenhancers since the central nervous system is still the primary subject of manipulation in that case.

Any technology which directly modifies the central or peripheral nervous system for the purposes of enhancing an individual will satisfy the requirements needed to be a neuroenhancer. However, in order to complete this definition, one must also outline what exactly 'enhancement' means in this context.

2.4. (Neuro) Enhancement

There is no objective and universal scale for 'enhancement' or for mental performance,[44] however the general notion of enhancement is clear in that it regards some level of improvement. Various tools have been developed and used within the scientific community for testing cognitive capacity: the 'CDR computerised assessment battery', for example, is often used to detect variations in the cognitive performance of drug trial subjects,[45] and is sensitive to acute changes. These methods are focussed upon identifying cognitive ability, however neuroenhancement does not exclusively pertain to enhancing the cognitive ability of the subject, but also the subject's subsequent affective ability.[46] It does not simply suggest that the brain has gained more neural connections or grey matter, but that the subsequent performance of the individual is more effective, such as by possessing a decreased reaction time. 'Enhancement' in this context is therefore broader than simply identifying whether or not the structures of the brain have been improved. Neuroenhancement is not merely limited to the brain on its own accord, separate from the individual who pilots it, but instead must consider the enhancement of the individual as a whole. It is not an enhancement of the brain,

[44] Despite well-known attempts, such as the IQ scale.

[45] D. Kennedy and B. Strickland, 'Modulation of mood and cognitive performance following acute administration of Melissa officinalis (lemon balm)' [2002] 72(4) Harmacology Biochemistry and Behavior 955-957.

[46] R. Battleday and A. Brem, 'Modafinil for cognitive neuroenhancement in healthy non-sleep-deprived subjects: A systematic review' [2015] 25(11) European Neuropsychopharmacology 1866.

but an enhancement of the self via the brain. To illustrate this point further, one may potentially enhance themselves by *limiting* the structures of their brain. This includes a victim of a traumatic event subduing their distressing memory in order to reduce anxiety and enhance performative functioning,[47] or a paedophile rapist being chemically castrated in order to biologically inhibit their criminal urges and enhance their social functioning.[48] The second example also poses another important question, which asks exactly *who* must be the subject of enhancement. One could argue that chemical castration only benefits a paedophile rapist inasmuch as it benefits society as a whole, by compelling the paedophile to conform more easily to the socially constructed laws and norms which demonize his compulsions. Obviously in this example such a thing doesn't seem too bad, however it lies upon a pathway towards neurotechnology being coerced upon individual citizens for the enhancement of society as a whole. Who exactly is enhanced when a paedophile is chemically castrated? The paedophile, or the society he lives within? For various reasons I interpret the scope of 'enhancement' in the context of neuroenhancement to be entirely dependent upon how it benefits its individual users, rather than society or a group of people. Firstly, the ultimate aim of this thesis is to identify the scope of one's liberty to neuroenhancement. Within the investigation of one's positive right to pursue neuroenhancement, it would be irrelevant to include coerced neuroenhancement, as that would obviously not be an example of positive liberty, and would therefore not be included in the scope of my study. Secondly, as previously discussed, the subject of enhancement must be one's cognitive and/or affective abilities, which are obviously individual traits that are not socially shared. Ultimately, for there to be 'enhancement' in this context we must find that specific user of the neuroenhancer is benefitted, rather than 'society' or a group of other people. The subject of the neurobiological intervention must also be the subject of the enhancement. Therefore, if a paedophile is chemically castrated for the benefit of society, this does not necessarily constitute a neuroenhancement, since it is inflicted without will for the benefit of a collective group and not for the benefit of an individual self.

A distinction must also be made between the use of neuroenhancers for enhancement or for medicinal purposes, since this indicates what the 'enhancement' in question must be relative to. It could be argued that curing or alleviating an illness which negatively impacts cognitive performance can itself constitute an enhancement of the individual relative to the ill state that they were in. Essentially the question is this: whether 'enhancement' is defined relative to the functioning of the brain immediately prior to using the neuroenhancer, or relative to the 'normal' functioning of the brain in general. A significant number of definitions of biological enhancement seem to take the latter view, by making a distinction between the enhancement of an individual and the medical restoration or regulation of an individual.[49] They use terms for neuroenhancement such as 'improving functioning in normal persons'[50] or

[47] A. Kolber, 'Therapeutic Forgetting: The Legal and Ethical Implications of Memory Dampening' [2006] 59 Vanderbilt Law Review.

[48] E. Fitzgerald, 'Chemical castration: MPA treatment of the sexual offender.' [1990] 18(1) Am J Crim L.

[49] Partridge, for example refers to modafinil, a medicine which is frequently used for neuroenhancement. With this, he refers to such use of modafinil as 'non-medicinal use', making a clear distinction and suggesting the 'enhancement' to be that of a healthy individual: B. Partridge, 'Smart Drugs ''As Common As Coffee'': Media Hype about Neuroenhancement' [2011] 6(11) PloS.

[50] Ibid.

'enhancement of cognitive function in healthy individuals beyond normal human capacity'.[51] This established distinction between measures which are medicinal and which enhance the individual would be suitably applied to this thesis' conception of neuroenhancement. Additionally, holding restorative medicine under the definition of neuroenhancement may not provide any more insights for the purposes of this thesis, since one's liberty to take restorative medicine is generally clearer and understood in society. This distinction may not ultimately change much though; the definition of a neuroenhancer is not only based upon the results of its enhancement, but also its *potential* use,[52] meaning that many neuroenhancers may still be used for other purposes (e.g. as a medicine) while still maintaining their qualification as neuroenhancers. The fact that a neuroenhancer is based upon its potential use is important for other factors too. There are many procedures and substances which can potentially be used for neuroenhancement, which may also cause significant harm to the individual. Cocaine, for example, while being capable of stimulating neurological activity, is well known for its damaging effects upon its user, and is highly illegal for such reasons.[53] Some would argue that the damaging impacts of a so called 'neuroenhancer' could undermine its very ability to enhance the individual, but being defined by its *potential* to enhance means that the definition of a neuroenhancer is not discriminated against by the fact that it might also disadvantage the user in other ways. Neuroenhancers in this context are therefore not only defined by their actual results on a case by case basis, but also by their potential results.

2.5. The 'liberty' to neuroenhancement

'Liberty' in the law is often constructed as one of two categories: negative liberty, and positive liberty.[54] Negative liberty entails the freedom *from* interference, while positive liberty is the active freedom *to* pursue certain acts.[55] Since the direct alteration of one's own neurobiology constitutes a positive act, the liberty to neuroenhancement will be in specific reference to the positive account of liberty. It is this reason, for example, that I do not consider coerced neuroenhancement to be qualified as neuroenhancement.

2.6. Conclusion

To summarise, neuroenhancement for the purposes of this thesis can be defined as follows:

1: A positive act,

2: of intervening physically and directly upon one's own nervous system,

[51] C. Forlini and E. Racine, 'Disagreements with implications: diverging discourses on the ethics of non-medical use of methylphenidate for performance enhancement' [2009] 10(1) BMC Medical Ethics.

[52] Contained within the definition of 'biotechnology', a category which contains neuroenhancers: The president's council on bioethics, *Beyond Therapy: Biotechnology and the Pursuit of Happiness* (Washington D.C., 2003).

[53] Single Convention on Narcotic Drugs 1961, Article 2.

[54] I. Berlin, *Two concepts of liberty* (Oxford University Press 1958).

[55] Ibid.

3: for the potential improvement, beyond normal[56] capability,

4: of one's own cognitive and/or affective ability.

Naturally, this definition is reminiscent of the various definitions already suggested by academic literature.[57] What is important is the reasoning which is provided behind this set of rules, which can be used for application to the ECHR and its relevant case law. Overall, the reasoning provided by this chapter is sufficient in providing a ruleset for qualifying neuroenhancement, which is flexible enough to endure the technological changes that neuroenhancement may see in the future, while specific enough for application in Chapters 3 and 4.

[56] I must also clarify the position of 'normal' that I take. In line with the individual-oriented notion of enhancement that I hold, the concept of 'normal' shall not be applied relatively to what is considered normal among society, but what is normal for the individual concerned. While it is impossible to precisely and objectively apply the concept of 'normal', especially concerning one's cognitive functioning, I shall consider the 'normal' functioning of the brain to be the default capacity of one's brain in a relatively healthy state.

[57] Such as the specific literature referred to in Chapter 2.4 in order to formulate this thesis' definition of neuroenhancement.

Chapter 3 - Right to respect for private life

ARTICLE 8

Right to respect for private and family life

1. Everyone has the right to respect for his private and family life, his home and his correspondence.

2. There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others.

3.1. Introduction

By analysing the ways in which this Article protects one's right to respect for private life, this chapter will investigate the degree to which Article 8 may also secure liberty to neuroenhancement. The general essence of Article 8 is to ensure that individuals are able to exercise their private life to its fullest extent without unnecessary, unlawful, or undemocratic interference. The scope of 'private life' in this context is rather broad, extending to various different topics such as data protection,[58] relationships[59] with others, and one's sexuality.[60] As will be explored, perhaps one could also theoretically extend the notion of private life to cover different aspects of neuroenhancement.

While Article 8 concerns a wide variety of topics contained under the notion of private life, these are not specifically or exhaustively listed within the Article itself. Instead, the European Court of Human Rights ensures that contracting states abide by the Convention,[61] and in doing so has formed a body of case law which elucidate the more nuanced opinions that the Court possesses regarding the nature of private life. The Court does not merely serve to decide the cases brought before it, but also functions to further develop and explain the rules of the Convention in order to contribute to the ability of member states to conform to the Articles contained therein.[62] This allows for foreseeability in how the Court may regard certain issues, even if these issues have not yet been specifically mentioned in previous case law, by evaluating how the court has previously assessed similar or coinciding concepts. Considering this, some elements of Article 8 as elucidated by case law are directly related to the definition of neuroenhancement provided by Chapter 2: specifically, the degree of self-determination that individuals have over themselves and their mental and physical integrity, as well as the degree

[58] E.g. Rotaru v. Romania App no. 28341/95 (ECtHR, 4 May 2000), which concerns a public authority interfering with the applicant's private life by storing their private information unnecessarily.

[59] Niemietz v. Germany App no. 13710/88 (ECtHR, 16 December 1992) §29.

[60] For example, legislation which criminalizes consensual homosexual sex is a violation of Article 8: A.D.T. v. the United Kingdom App no. 35765/97 (ECtHR, 31 July 2000) §36-39.

[61] European Convention on Human Rights, Article 19.

[62] Ireland v. the United Kingdom App no. 5310/71 (ECtHR, 18 January 1978) §154.

to which private life may still have relations with the public world.[63] These topics are addressed by the ECtHR in its case law, and provide a framework for identifying how the court's rulings may be applied to neuroenhancement. Since the term 'neuroenhancement' has yet to be specifically mentioned by the Court in any of its case law, the most effective way to outline one's liberty to neuroenhancement as protected under the ECHR is to refer to the Court's opinion on topics which are fundamentally related to the definition of neuroenhancement as provided in Chapter 2. Analysing the ECtHR's current stance on mental and physical integrity, as well as self-determination, and how these may relate with the outside world, would provide insight into the current positive obligations provided by Article 8 which are related to neuroenhancement. These key elements under Article 8 which have a strong relation to the definition of neuroenhancement as 'a positive act' (therefore mediated by self-determination) 'of intervening physically and directly upon one's own nervous system' (therefore manipulating one's mental and physical integrity). While Article 8 concerns a variety of topics related to private life, these topics should be the most revealing of the scope of our liberty to neuroenhancement under Article 8 as it currently stands.

3.2. Personal development - Positive obligations and balancing the private and public sphere

Before delving deep into the flesh of Article 8, it is important to illuminate the general role of positive obligations within Article 8 and how they may relate to one's liberty within the public sphere. Since neuroenhancement is a positive act, I take the positive notion of liberty in this context, meaning that such a liberty to neuroenhancement would be most effectively granted through the positive obligations of a state, rather than from the state merely abstaining from infringing upon one's rights. However, as will be explored in this chapter, Article 8 has historically been a private right which protects one's private life from interference, rather than providing liberties to the individual.

While it is true that Article 8 is primarily protective, it is important to remember that it does not concern one's private life being protected, but respected – and the effective respect for private life contains inherent positive obligations which compel states to actively secure such respect.[64] In fact, it is the demand for 'respect' of private life which has led to the formation of positive obligations under Article 8 in the first place.[65] The distinction between protecting private life and *respecting* private life is very significant. The notion of securing respect for private life, as opposed to merely protecting private life, opens doorways into protecting the positive liberties of an individual. To reinforce this, some positive obligations ensure that the respect for private life may even still exist in matters which concern relationships between one's self, the outside world, and other individuals, and private life is therefore not restricted to the exclusively private 'inner sphere' of someone.[66] These positive obligations manage to secure a degree of positive liberty – such as by how they protect the right to personal development, and the right to establish and develop relationships with other

[63] While neuroenhancement practices may occur privately, neuroenhancers do not exist within an entirely private sphere, especially since they require production and dissemination in order to be used.

[64] Marckx v. Belgium App no. 2833/74 (ECtHR, 13 June 1979) §31; Lozovyye v. Russia App no. 4587/09 (ECtHR, 24th December 2018) §36.

[65] As identified in Marckx v. Belgium App no. 2833/74 (ECtHR, 13 June 1979) §31.

[66] Niemietz v. Germany App no. 13710/88 (ECtHR, 16 December 1992) §29.

human beings and the outside world.[67] Therefore, instead of exclusively protecting an individual from external threats, Article 8 can also be seen in some ways to provide individuals the liberty to 'develop' themselves. In practice, these obligations may involve specific measures to provide an effective and accessible means of protecting respect for private life, such as with the provision of an appropriate regulatory framework.[68]

It seems that our liberty to neuroenhancement under Article 8 could therefore be uncovered by identifying the extent to which personal development is protected under positive obligations. The boundaries between the positive and negative obligations under Article 8 may seem difficult to distinguish, since they share similar applicable principles.[69] Also, these positive obligations have yet to be exhaustively defined, while the Court continues to develop its case law – but it is still possible to form a general outline of these obligations as they currently stand. In this respect, the Court suggests that in determining the existence of a positive obligation under Article 8, regard must be had to striking a fair balance between the competing interests of the individual and the community as a whole, and states may enjoy a wide margin of appreciation in doing this.[70] This balance can be seen as a crucial element of Article 8: that private life must be protected insofar as it doesn't threaten the interests of society and/or private individuals. While this takes the form of a vague rule of thumb, it provides insight into how the court views personal development in a general sense, as it shows that the level of protection that is demanded for personal development is highly dependent on how such development may impact the interests of others. The Court recognises that the notion of 'respect' can be unclear in terms of positive obligations, and therefore guides states to consider certain relevant factors: notably whether the 'essential aspects' or 'fundamental values' of the applicant are at stake, and the extent of any burden the obligation would impose upon the state.[71] An example of how this tug-of-war actually operates between the interests of society and the individual can be seen in the positive obligation to protect an individual's legitimate interest in accessing information if there is no countervailing public interest in retaining it.[72] The 'interest' of the applicant is not subjectively identified by the individual themselves, but 'interest' here is instead determined based upon the existence of potential harms,[73] or on matters fundamental to discovering the truth about one's personal identity.[74] Could such a right of access be extend to neuroenhancement? This doesn't seem to be the case, according to the current reasoning of the Court. Until now the Court's stance upon one's right to access to information suggests that legitimate interest to obtain something is only exists in the context of potential harm if access is denied. Neuroenhancers may only potentially enhance an individual, and therefore do not cause harm if neuroenhancement use is denied, and it would

[67] Ibid; Pretty v. The United Kingdom App no. 2346/02 (ECtHR, 29 April 2002) §61.

[68] A, B and C v. Ireland App no. 25579/05 (ECtHR, 16 December 2010) §245.

[69] See: Zehnalova and Zehnal v. the Czech Republic App no. 38621/97 (ECtHR, 14 May 2002).

[70] Nuutinen v. Finland App no. 32842/96 (ECtHR, 27 June 2000) §127; Kutzner v. Germany App no. 46544/99 (ECtHR, 26 February 2002) §62.

[71] Hämäläinen v. Finland App no. 37359/09 (ECtHR, 16 July 2014) §66.

[72] McGinley and Egan v. the United Kingdom App no. 21825/93 (ECtHR, 9 June 1998) §100-101; Roche v. the United Kingdom App no. 32555/96 (ECtHR, 19 October 2005) §161-162.

[73] McGinley and Egan v. the United Kingdom App no. 21825/93 (ECtHR, 9 June 1998) §99; Roche v. the United Kingdom App no. 32555/96 (ECtHR, 19 October 2005) §161.

[74] Mikulić v. Croatia App no. 53176/99 (ECtHR, 7 February 2002) §54.

therefore be challenging to prove legitimate interest in this context. It may be unfair, however, to compare neuroenhancement with the right to access information. Such a right concerns a balance between multiple people's interest, while some forms of neuroenhancement may primarily concern the interest of the user, and such a strong balancing act may not be needed to be placed between the individual and society. If someone had interest in accessing the liberty to alter their own mental and physical integrity, then some may argue that this individual is the only relevant stakeholder in this act. However, the balance between societal and individual interests is incredibly delicate under Article 8, and a variety of reasons may exist to reinforce the claim that many neuroenhancers may potentially interfere with the interests of society, or even the user themselves.[75]

Before going further, it is also relevant to clarify the role of Article 8's derogation clause in the context of positive liberty. While the positive obligations under Article 8(1) may enforce a respect for individual autonomy, it is of critical importance to remember that infringements of this respect will still be allowed if in accordance with Article 8(2). Therefore, under Article 8, the scope of one's positive liberty to neuroenhancement is fundamentally limited to the extent that an infringement on such liberty is lawful or necessary in a democratic society.[76] It is also important to note that member states enjoy a margin of appreciation over interpreting whether this is the case, however this margin varies depending upon the nature of the relevant issues and the importance of the interests at stake. The most relevant question here for interfering with the liberty to neuroenhancement would be to what extent this interference is necessary in a democratic society. The interests of national security and public safety are often employed for purposes of prohibition, a prominent example being the War on Drugs, which has criminalized several substances which may be potential neuroenhancers according to Chapter 2. The margin of appreciation granted to states over defining 'necessary' in this context, however, does not grant excessive flexibility to the concept. It does not have the flexibility of terms such as 'desirable', but instead must exist within the context of addressing a pressing social need.[77] States still get to make the initial assessment of identifying this pressing social need, alongside a margin of appreciation, however this judgement still remains subject to review by the Court.[78] A necessary interference must also be proportionate to the legitimate aim pursued.[79]

So, it is clear that personal development is protected by positive obligations under Article 8, however the degree of this protection is dependent upon the potential existence of competing interests. To identify the potential scope of this protection in the context of neuroenhancement, it is important to consider in more detail how the court specifically views mental and physical integrity, as well as self-determination, within its case law.

[75] This delicate balance of interests is ultimately the crux of this Chapter. Further detail of how neuroenhancers may go against the interests of society or even the individual user will be elaborated upon in the following section.

[76] In the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others.

[77] Dudgeon v. the United Kingdom App no. 7525/76 (ECtHR, 22 October 1981) §51-53.

[78] Ibid.

[79] Pretty v. The United Kingdom App no. 2346/02 (ECtHR, 29 April 2002) §70.

3.2.1 Self-determination and mental and physical integrity

Mental and physical integrity is considered by the Court to be an extremely important component of private life. In fact, interferences which can be seen as 'minor' will still be a violation of one's private life if they are against the person's will.[80] For example, even minor medical interventions, if compulsory, constitute an interference with one's right to respect for private life.[81] One's body is considered to be an 'intimate' part of private life,[82] and a sound mental state is an important factor for the possibility to enjoy the right to private life.[83] If this is the case, then perhaps the Court would recognise a perspective which recognises not just the protection of mental and physical integrity, but the enhancement of these qualities within one's own private sphere. Since neuroenhancement pertains to the manipulation of an individual's nervous system and cognitive ability, the ECtHR's specific stance on self-determination over one's physical and psychological integrity would seem to be directly relevant.

In Hristozov and Others v. Bulgaria, the applicants claimed that a regulatory limitation on their capacity to choose alternative medicine was a violation of Article 8. Limiting the capacity to choose non-traditional medicinal procedures is a form of limiting one's self determination over their own physical integrity, and the Court believed that this complaint clearly falls under the scope of Article 8.[84] However, while this was indeed an infringement of Article 8(1), it was justified under Article 8(2), and no positive obligations therefore existed in this context, because *inter alia* the safety and efficacy of the non-traditional medicine was open to doubt.[85] The reason that this doubt was sufficient to justify a restriction of autonomy was ultimately due to the fact that states must also '*protect people from the consequences of their own conduct, including when that conduct poses a danger to health or is of a life-threatening nature*'.[86] Thus, states have a wide margin of appreciation over matters relating to health-care policy.[87] It is interesting that the Court considers that one's self-determination may infringe upon one's *own* interests and must therefore be limited. This is certainly not promising for allowing any liberty to neuroenhancement, since neuroenhancement requires a direct manipulation of the brain, and the safety of this may sometimes be difficult to determine. The same reasoning was employed in A.M. and A.K. v. Hungary, where the prohibition of cannabis was also an accepted interference of self-determination, due to the public health considerations of such a prohibitive law.[88]

[80] Storck v. Germany App no. 61603/00 (ECtHR, 16 June 2005) §143; Y.F. v. Turkey App no. 24209/94 (ECtHR, 22 July 2003) §33.

[81] Ibid.

[82] Y.F. v. Turkey App no. 24209/94 (ECtHR, 22 July 2003) §33.

[83] Bensaid v. the United Kingdom App no. 44599/9847 (ECtHR, 6 February 2001) §47.

[84] Hristozov and Others v. Bulgaria App no. 47039/11 (ECtHR, 13 November 2012) §116.

[85] Ibid §120.

[86] Ibid §116.

[87] Ibid §119.

[88] A.M. and A.K. v. Hungary App nos. 21320/15 35837/15 (ECtHR, 4 April 2017) §46-52.

In Laskey, Jaggard and Brown v. the United Kingdom,[89] a case concerning applicants who were imprisoned for sadomasochistic activities (i.e. self-determination over one's physical integrity), the Court favoured the health interests of the applicants and society by deciding that the prosecution and conviction of the applicants were necessary in a democratic society for the protection of health.[90] For comparison, while sadomasochistic sex is not necessarily protected by positive obligations, homosexual sex is protected due to the absence of any public health considerations in such an activity when pursued privately.[91] An individual cannot simply rely upon the concept of self-determination to pursue any private activity they wish, but only if such self-determination also does not countervail their own safety or interests. Subsequently, the pursuit of a potentially harmful practice for the sake of neuroenhancement, even if legal and with minimal social impacts, would not necessarily be protected by one's right to self-determination.

This shows that the Court takes such a highly protective stance over our mental and physical integrity that such integrity may even trump our right to self-determination. Even the positive obligations under our right to respect for private life are ultimately designed to protect us from harm, rather than to provide us liberty over ourselves. The approach of the Court in safeguarding individuals from physical/mental interferences by other people, such as via acts of violence, therefore provides a protection very similar to that afforded by Article 3 ('prohibition of torture'). Neuroenhancement practices, however, do not preserve or protect the individual, but enhance the individual. The liberty to neuroenhancement would therefore instead be more effectively granted through positive obligations which allow for self-determination over one's mental and physical integrity, rather than ones which serve to protect one's metal and physical integrity.

One could argue that the paternalistic and liberty-retarding protection that Article 8 has over our private lives contradicts the fact that the Court considers the respect for human freedom to comprise the very essence of the Convention.[92] This respect for freedom is of course the essence behind Article 8's specific 'respect' for private life, as opposed to pure protection of private life. In 2002, the concept of personal autonomy was firmly introduced in the Court's case law by means of the Pretty judgment concerning assisted suicide.[93] Here the Court specifically recognised personal autonomy as a principle which underlies the guarantees of Article 8. However, in the context of mental and physical integrity, the interests of the individual and the interests of the community appear to greatly outweigh the autonomy of the individual. One's freedom may be limitless to the extent that it does not directly infringe upon the interests of others - but the interest of the community can involve itself quite deeply into the realm of one's private life, and can be incredibly easy to interfere with. For example, the Pretty case shows that one does not have the positive liberty to assisted suicide (even if done

[89] Laskey, Jaggard and Brown v. the United Kingdom 21627/93 21826/93 21974/93 (ECtHR, 19 February 1997).

[90] Ibid, §50.

[91] A.D.T. v. the United Kingdom App no. 35765/97 (ECtHR, 31 July 2000) §37

[92] Pretty v. The United Kingdom App no. 2346/02 (ECtHR, 29 April 2002) §65.

[93] Ibid.

privately), since a prohibitive law on assisted suicide is justified under Article 8(2) for protecting the rights of others.[94]

3.3. Conclusion

The positive obligations provided by Article 8 are rather general – establishing that states must take sufficient measures to protect the private life of its citizens, by ensuring a proportionate balance between the potentially conflicting interests of private individuals and the community. States must also take positive action to ensure that one's private life is only interfered with in accordance with Article 8(2).

The positive obligations found within the case law of Article 8 continue to take a protective stance over one's private life, rather than providing as much liberty over one's private life as much as possible. An example of this would be the Courts stance regarding mental and physical integrity under Article 8, which essentially ends up with the same function as Article 3's prohibition of torture. The Court does view self-determination as a fundamental principle under private life so long as there are no countervailing interests at play. But these interests are incredibly delicate. They do not even need to be only the interests of society or other individuals, since one can infringe upon their own interests by causing harm to themselves. States also have an obligation to prevent this, creating a balancing act between the legitimate interests of the individual to pursue a private act, and the vulnerability that the individual may have to being harmed by their own autonomy. This also subsequently means that the liberty to use neuroenhancers which may potentially be harmful to the individual is not granted by one's right to self-determination, even if they do not directly interfere with community interests.

While the positive obligations under Article 8 are not exhaustively defined, and the balancing act between interests at hand is determined primarily on a case-by-case basis, some aspects of liberty to neuroenhancement are clearly provided under Article 8. One has the liberty to neuroenhancement for as long as any infringement on such liberty goes against the derogation clause of Article 8. Therefore, the neuroenhancement in question must not create a pressing social need for its prohibition. Furthermore, this liberty to neuroenhancement may only extend as far as it does not create conflicting interests – either of the community, or the user of neuroenhancement himself. This is, however, an ultimately very limiting factor for one's liberty to neuroenhancement. Manipulations of the brain are manipulations of our most complex and essential organ. Furthermore, the current state-of-the-art of neuroenhancement is not advanced enough to be entirely risk-free, and Chapter 2 of this thesis shows how some potential neuroenhancers can also have strong negative side effects. According to the Court, our interests are incredibly fragile, and many forms of neuroenhancement which are blunt in comparison may therefore be incompatible with our degree of positive liberty prescribed by Article 8.

[94] Ibid §74-78.

Chapter 4 - Freedom of thought, conscience and religion

ARTICLE 9

Freedom of thought, conscience and religion

1. Everyone has the right to freedom of thought, conscience and religion; this right includes freedom to change his religion or belief and freedom, either alone or in community with others and in public or private, to manifest his religion or belief, in worship, teaching, practice and observance.

2. Freedom to manifest one's religion or beliefs shall be 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.

4.1. Introduction

Article 9 preserves the individual's right to freedom of thought, conscience and religion, which means that one does not only have the freedom to *hold* beliefs, but to *manifest* them in practice (or worship, teaching, and observance). The right to hold a belief essentially means that one has the liberty to believe something insofar as the state may not interfere with such belief, such as by taking coercive steps to change the belief within the mind of its holder.[95] This right to the 'holding' of a belief is absolute and unconditional – the limitations set out by Article 9's derogation clause only relates to the freedom to 'manifest' a belief and not to possess it.[96] This already foreshadows the fact that manifesting a belief may interfere with the rights of others and is therefore subject to more regulation. The right to manifest a belief within the outer world is not absolute, since this manifestation may have an impact upon others. Still, the protection of one's freedom to manifest a belief ensures that Article 9 does not only protect the private *forum internum*, but also protects one's right to exercise their belief within the public sphere. This is because the right to freedom of thought[97] is seen by the Court through the lens of its pluralistic benefits: it is considered to be one of the foundations of democracy, being crucial for the pluralistic nature of a democratic society.[98] This stems from the Court recognising that our thoughts and beliefs, religious or otherwise, directly concern our identity and the way in which we perceive our role within the public sphere. The manifestation of our beliefs and identity within the public sphere is therefore not only inevitable, but a valuable part of our life and society which must be protected.

The right to 'hold' a belief alone does not do much for neuroenhancement: the conviction to pursue neuroenhancement may be seen as a belief that may be 'believed unconditionally', but this does not mean that the manifestation of this belief (i.e. via the act of neuroenhancement) is equally protected. Therefore, to outline one's liberty to neuroenhancement under Article 9, one must answer what exactly 'manifestation' means

[95] Ivanova v. Bulgaria App no. 52435/99 (ECtHR, 12 April 2007) §79.

[96] Ibid.

[97] while thought, conscience, religion, and belief are distinguished individually under Article 9, for now I shall bundle them as forms of 'thought' for the sake of convenience for the reader.

[98] Kokkinakis v. Greece App no 14307/88 (ECtHR, 25 May 1993) §31.

according to the Court and whether this definition can extend to physical and direct interventions upon one's own nervous system. This should illuminate the existence of any relevant positive obligations. In general terms of positive obligations, states have a positive obligation to ensure that Article 9 is respected – taking reasonable and appropriate measures to secure Paragraph 1 and to ensure that any limitations to this are in line with Paragraph 2.[99] The derogation clause of this Article is also the same as that of Article 8, meaning that the criteria for a lawful and necessary infringement to someone's freedom of thought is the same as the criteria for a lawful and necessary interference with someone's private life.

This chapter will first assess the possibility of protecting the conviction to pursue neuroenhancement as a 'belief' (both religious or otherwise) according to Article 9(1). Following this will be an analysis of the extent to which such a belief may be manifested in the outer world, rather than being merely held privately.

4.2. Beliefs and Religion

Beliefs, to be protected by Article 9, do not need to be religious. However, since religion is seen by many as a fundamental part of their identity, and religious worship/teaching/practice/observance is often a potent way for one's beliefs to interact with society, the religious dimension of Article 9 has taken a kind of front-seat in Article 9 case law. Nevertheless, while often employed within the religious sphere, freedom of thought is also 'a precious asset for atheists, agnostics, sceptics and the unconcerned'.[100] This is positive news for the liberty to neuroenhancement, since the conviction to pursue neuroenhancement may be challenging to claim as part of 'religion', but this will be explored further in this chapter. To possess a belief is an absolute right, however the liberty to manifest a belief in reality is to be determined on a case by case basis. If neuroenhancement is a manifestation of the desire to enhance one's self (religious or otherwise), then outlining the extent to which this belief/religion may be manifested would highlight the boundaries of one's liberty to neuroenhancement as under Article 9.

4.2.1. Neuroenhancement from the perspective of religion and belief

Most current examples of neuroenhancement are non-religious, but first the religious element of Article 9 cannot be ignored. Some may consider it a stretch to integrate the concepts of neuroenhancement and theology, especially among orthodox Western religions, but the Court has given great leniency in its interpretation of religion, and religious practices can often be seen as a conduit for the enhancement of the individual self. Religious practices involving entheogens, for example, directly concern the pharmacological enhancement of the individual; they entail the use psychoactive substances to induce spiritual experiences in a manner which is not recreational but for the purposes of personal development.[101] From the Hindu 'Soma',[102]

[99] Jakóbski v. Poland App no. 18429/06 (ECtHR, 7 December 2010) §44.

[100] Kokkinakis v. Greece App no 14307/88 (ECtHR, 25 May 1993) §31.

[101] H Sayin, 'The Consumption of Psychoactive Plants During Religious Rituals: The Roots of Common Symbols and Figures in Religions and Myths' [2014] 12(2) NeuroQuantology 276-296.

[102] Sachidananda Padhy and Santosh Dash, 'The Soma Drinker of Ancient India: An Ethno-Botanical Retrospection' [2004] 15(1) Journal of Human Ecology 19-26.

South American 'ayahuasca',[103] to the Ancient Greek 'Kykeon',[104] all display how various religions have historically manifested themselves in the practice of altering the brain. Whether these measures have the potential to enhance one's cognitive and/or affective ability is up for debate and is to be determined on a case-by-case basis. Nevertheless, entheogens are an example of direct and physical alterations upon one's own neurobiology for the potential improvement of one's self, as a manifestation of one's religious beliefs. This can only be considered as neuroenhancement if it potentially improves one's cognitive and/or affective ability. Since this is to be determined on a case-by-case basis, I will instead frame my analysis as an exploration of the boundaries set by the Court regarding the extent to which religious or non-religious beliefs may be manifested by means which alter one's own neurobiology. This is not to claim that it is easy to link neuroenhancement with the religious sphere, but is instead because of the fact that these topics are not so distinct that it would be useless to inspect the religious dimension of Article 9 to potentially uncover more information about one's liberty over their own brain. Perhaps there may come a future religion which prescribes more technologically advanced neuroenhancement, rather than crude forms of spiritual enhancement via the brain, but as of now this idea can only be left to realm of speculation.

So, in what circumstances could neuroenhancement practices be considered to be a protected manifestation of religion or belief? The concept of religion has not been specifically defined by the Court – this would be too challenging and inefficient to accomplish, since this definition would need to be flexible enough to cover every religion in the world[105] while also being specific enough to be applicable to individual cases. While this is the case, states do not have the discretion to define which convictions are religious or not. Those who are a party to the ECHR enjoy a degree of discretion in their interpretation and application of the Convention, however the Court also intends to ensure that this does not lead to the rights of the Convention being theoretical or illusory, as they must remain practical and effective.[106] Article 9 therefore does not give states enough discretion to allow for the interpretation of what is 'religious' to be so restrictive that it threatens the legal security of non-traditional and minority forms of religion.[107] This shows that a practice does not need to be traditional or practiced by the majority in order to be protected. One's protected liberty under Article 9 is therefore not restricted to protecting behaviours which are specifically prescribed by a doctrine, but is wide enough in scope to cover behaviours which are conducted under the individuals own private interpretation of this doctrine. Here the Court tries to protect non-traditional forms of religion for the sake of being 'practical and effective', but this is a double-edged sword, since it would also not be too practical nor effective for the definition of religion to be overly broad and vague. In X. v. the United Kingdom, for instance, the applicant's beliefs were not considered to be religious since the applicant produced no facts which could make it

[103] Robert Gable, 'Risk assessment of ritual use of oral dimethyltryptamine (DMT) and harmala alkaloids' [2007] 102(1) Addiction 24-25; Charles Grob and others, 'Human Psychopharmacology of Hoasca, A Plant Hallucinogen Used in Ritual Context in Brazil ' [1996] 184(2) The Journal of Nervous & Mental Disease 86-94.

[104] H Sayin, 'The Consumption of Psychoactive Plants During Religious Rituals: The Roots of Common Symbols and Figures in Religions and Myths' [2014] 12(2) NeuroQuantology 285.

[105] Which in essence is an impossible task to accomplish, since religious convictions form a kind of gradient of beliefs throughout the world rather than being binary ('I am religious' or 'I am not religious') by nature.

[106] Izzettin Dogan and Others v. Turkey App no. 62649/10 (ECtHR, 26 April 2016) §114.

[107] Ibid.

possible to identify the existence of their claimed religion.[108] The existence of the religion must be provable in some way, with the use of objective evidence.

In order to assess whether or not a belief is to be protected by Article 9, the Court observes if the belief has obtained a level of 'cogency, seriousness, cohesion and importance'.[109] It is important to consider that these criteria are not only used for identifying the legitimacy of beliefs which are religious, but the legitimacy of any belief which is seen to be held or manifested by an individual or group. If these criteria are met, then any state assessment of the legitimacy of beliefs or how these beliefs may be manifested is incompatible with the state's duty of neutrality and impartiality, according to the Court. Having a body of four criteria to determine whether or not a belief can be relied upon may seem to be quite broad and elusive, however case law has narrowed and defined the scope of what exactly these four criteria mean. For example, In Bayatyan v. Armenia, it was decided that the opposition to military service, when motivated by a serious and insurmountable conflict between the obligation to serve in the army and a person's deeply help beliefs, constitutes a conviction of sufficient cogency, seriousness, cohesion, and importance.[110] In Jakóbski v. Poland, it was decided that observing a meat-free diet according to Buddhism is seen to fit the criteria of cogency, seriousness, cohesion, and importance, because of the fact that Buddhism is one of the world's major and well-recognised religions, and that a vegetarian diet (in this case) can be regarded as motivated by belief and is not unreasonable. The checks for the 'importance' of a belief prevents Article 9 from being invoked by anyone who's behaviour has been restricted, without there actually being a significant issue at hand. In X. v. Germany[111] for example, the applicant's wish to have his ashes scattered on his own land was not considered to be a manifestation of his belief since it does not express a coherent view on fundamental problems. In terms of 'seriousness', the sincerity of a belief cannot be justifiably doubted by state's unless with sufficient evidence to reinforce such doubt,[112] and so instead is determined by the Court on the basis of the applicant's circumstance. To summarise how the notions of cogency, seriousness, cohesion, and importance may apply to a belief, they dictate that the belief must be determined[113] to be: a sincere belief which is not only logical and convincing, but deeply held, which is evidenced by factors such as the belief relating to a fundamental problem. The importance and seriousness of a belief can be reinforced by its religious nature; however, this religious aspect is not necessary for the belief to be protected.

4.2.2. Manifesting neuroenhancement

While the manifestation of religion and belief is protected under Article 9, this does not mean that every form of practice is protected indiscriminately. Not every act which is motivated or influenced by a religion or belief may constitute legitimate 'practice' under

[108] X. v. the United Kingdom App no. 7291/75 (The European Commission of Human Rights, 4 October 1977).

[109] Eweida and Others v. the United Kingdom App nos. 48420/10, 59842/10, 51671/10 and 36516/10 (ECtHR, 15 January 2013) §81.

[110] Bayatyan v. Armenia App no. 23459/03 (ECtHR, 7 July 2011) §110.

[111] X. v. Germany App no. 8741/79 (The European Commission of Human Rights, 10 March 1981).

[112] Kokalkovs v. Latvia App no. 35021/05 (ECtHR, 31 January 2012) §57.

[113] By the court on the basis of the case at hand.

Article 9(1).[114] Since it is challenging for neuroenhancement to be practiced within a vacuum of privacy, the criteria for how a belief may be manifested within the outer world is crucial for identifying one's liberty to neuroenhancement. According to Article 9, one has the freedom to manifest their beliefs alone and in private, in a community with others, or within the public sphere.[115] However, even when the belief in question is one of sufficient cogency, seriousness, cohesion, and importance, not every act inspired by this belief may constitute a 'manifestation' of it.[116] Instead, in order to constitute a 'manifestation' of belief, acts/omissions must directly express the belief concerned.[117] The act in question must have an intimate link to the religion or belief, and while this is often demonstrated via an act of worship or devotion which is part of the generally recognised practice of the religion or belief, it is not limited to such acts. What is required is the existence of a sufficiently close and direct nexus between the act and the underlying belief, as to be determined on a case-by-case basis.[118] Therefore 'manifestation' of a belief is not limited to duties which are specifically mandated by such belief, or generally recognised to be a part of such belief.[119] The desire to pursue neuroenhancement directly predetermines the act of neuroenhancement itself, and a close and direct nexus between the act and belief can therefore be identified. This suggests that the court would consider neuroenhancement to be a manifestation of belief in this context.[120] A close example to this can be seen in the Commission Decision of Nyyssönen v. Finland, where the application of alternative medicine is seen as a manifestation of medical philosophy.[121] If it is relatively straightforward to determine whether or not neuroenhancement can be seen as a manifestation of belief, the next question should then concern the extent to which this manifestation would be protected.

'Manifestation' is qualified as an element of Article 9 within its derogation clause, stating that any limitations on one's freedom to manifest their beliefs is only permitted on the conditions that these limitations 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. This illuminates the boundaries of one's liberty to manifest their wish to pursue neuroenhancement before such liberty can be infringed upon. Since this derogation clause is very similar to that of Article 8, the notion of what may be considered 'necessary in a democratic society' has already been covered in Chapter 3.[122] An important element of this is that 'necessary' is to be determined relative to a pressing social need, rather than to what is 'desirable' for the state. However, this doesn't mean that any belief

[114] Pretty v. The United Kingdom App no. 2346/02 (ECtHR, 29 April 2002) §82.

[115] Leela Förderkreis e.V. and Others v. Germany App no. 58911/00 (ECtHR, 6 November 2008) §80.

[116] Eweida and Others v. the United Kingdom App nos. 48420/10, 59842/10, 51671/10 and 36516/10 (ECtHR, 15 January 2013) §82.

[117] Ibid.

[118] Ibid.

[119] Ibid.

[120] Supposing that this desire to pursue neuroenhancement fulfils the criteria of cogency, seriousness, cohesion, and importance as explored in Chapter 4.2.1.

[121] Nyyssönen v. Finland App no. 30406/96 (The European Commission of Human Rights, 15 January 1998).

[122] Chapter 3.2 of this thesis.

can be freely manifested as long as it doesn't have a countervailing social interest, since it must first must be sufficiently cogent, serious, cohesive, and important before it receives any protection from Article 9 in the first place.

4.3. Conclusion

A dynamic exists between religion and neuroenhancement, and the religious nature of a conviction can be used to reinforce its seriousness and importance in the eyes of the Court. While this is the case, any belief may still be protected by Article 9 as long as it fulfils the criteria of cogency, seriousness, cohesion, and importance. In essence this means that the belief, religious or otherwise, must not only be logical, but deeply and sincerely held. Only after meeting these criteria is a belief protected by Article 9. Therefore, the wish to pursue neuroenhancement is alone not enough to secure protection. Instead, this wish must be reinforced by factors which suggest that neuroenhancement is not just of interest to the applicant, but of sufficient importance. While cogency, seriousness, and cohesion may not be difficult to identify in relation to one's wish to pursue neuroenhancement, the element of 'importance' would be challenging to prove. It would require proof that such a wish is held deeply by the applicant, for example by this belief relating to a 'fundamental problem'. The issue with this is that neuroenhancement does not solve any cognitive or affective 'problem' but instead advances the individual beyond their natural state. Depriving someone of neuroenhancement does not cause harm, but instead only prevents theoretical future benefits. The criteria of 'importance' would therefore be a great obstacle for securing the protection of Article 9 in this context. Assuming that these criteria have been met and the wish to pursue neuroenhancement in this case is protected, then this still doesn't protect any act which stems from this belief. The act must be a 'manifestation', i.e. possessing a close and direct nexus with the wish to pursue neuroenhancement. In this context, such a nexus is not challenging to identify. The boundaries of this manifestation are outlined by Article 9(2), which does not detail the limits to someone's freedom per se, but instead details when this freedom may justifiably be infringed upon. These criteria are substantially the same as the criteria provided in Article 8(2), the crucial element of both concerning the fact that any infringement must be in response to a pressing and social issue. This is obviously determined on a case-by-case basis, but a trend that can be seen from this is that one's liberty to neuroenhancement must be balanced with societal interests. If a social issue arises from neuroenhancement (such as through the social damage which can be caused by pharmacological substances), then the scope of one's liberty to pursue this neuroenhancement is far more limited.

It seems that Article 9 has relatively little strength outside of religious matters in protecting the manifestation of belief. For reasons such as this, Bublitz describes Article 9 as 'the only human right without any practical application – yet'.[123] The unconditional right to hold a belief does not benefit the liberty to neuroenhancement, and the limited conditions for the manifestation of this belief is also an obstacle for liberty. Overall, it may be difficult to prove that the wish to pursue neuroenhancement is a conviction of sufficient importance for protection. However, if this importance is proven,[124] then one's liberty to neuroenhancement can be wide in scope. This liberty would be limitless insofar as the state is not permitted to infringe upon it according to Article 9(2), and so would be truly limitless if existing entirely

[123] Christoph Bublitz, 'Freedom of Thought in the Age of Neuroscience' [2014] 100(1) Archiv fur Rechts- und Sozialphilosophie 2.

[124] It may not be too fantastical of an idea to ascribe importance to an act which directly relates to one's physical and mental integrity, which has been previously seen by the court to be of great importance.

separate from any pressing social issue or other people's rights. While Bublitz views Article 9 as currently ineffective, his mention of 'yet' brings hope to the development of Article 9. The legal recognition of neuroenhancers and their benefits may slowly nudge the right of freedom of thought into being a more practical right, which can ensure one's freedom to enhance the brain and the self.

Chapter 5 - Conclusion

5.1. Findings – Neuroenhancement within the ECHR and society

The intent of this thesis is to explore the borders, however precise or vague they may be, of our liberty to neuroenhancement within the current framework of the ECHR. This is a response to our increasingly pressing need to form some sort of legal framework which specifically qualifies neuroenhancement, and which provides legal certainty regarding the extent to which an individual has the right to enhance themselves via altering their own neurobiology. We are possibly along a trajectory which leads to a future in which neuroenhancement practices are widespread and normalised. While this may bring many benefits to our society, an increasing interaction between neuroenhancement and the public sphere will place inevitable strain upon any unequipped legal system. To regulate the social impacts of neuroenhancement with sufficient legal certainty would require a legal framework which specifically qualifies neuroenhancement. But where to begin? Identifying our current scope of liberty to neuroenhancement under human rights law would be a natural starting point for such an undertaking, since it would provide a basis for future legislation to consider while being drafted. Both enhancing the self, and using direct interventions upon the brain, are actions which can lead to various ethical and regulatory issues within the social sphere. It is therefore of great importance to identify and tackle the issue of qualifying neuroenhancement under law, before the regulatory challenges that it poses become too problematic.

In identifying the scope of our liberty to neuroenhancement, Chapter 2 of this thesis provides a set of rules which qualify what specifically is meant by the term 'neuroenhancement', while Chapters 3 and 4 apply this to ECtHR case law in an attempt to highlight points of conflict or harmony when it comes to our liberty to neuroenhancement as provided by the ECHR's positive obligations. The ECtHR's role is not just to form a final ruling regarding particular cases, but to expand upon the ECHR and to illuminate upon its reasoning, for the purposes of aiding the foreseeability of the ECHR's legislation when applied to novel cases. It is precisely this foreseeability that we need in order to determine how our right to freedom of thought and our right to respect for private life (Articles 8 and 9) may be applied to cases regarding neuroenhancement. Therefore, the reasoning of the Court within its official case law is the most valuable resource available for attempting to interpret the current scope of our liberty to neuroenhancement under the ECHR.

To attempt a relatively secure definition of neuroenhancement, in Chapter 2 I deconstruct the term into its two respective parts: 'neuro' and 'enhancement'. The neurobiological aspect of neuroenhancement entails a direct intervention upon one's own central or peripheral nervous system. The element of enhancement demands that the neurobiological measure taken must enhance the individual's cognitive and/or affective ability beyond its normal state, therefore distinguishing neuroenhancement from reparative or protective interventions on the brain (i.e. medicine).

Chapter 3 investigates the right to respect for private life under Article 8. Private life, according to the Court, is a very important right for which States must ensure protection. However, this only extends as far as one's private life does not infringe upon the rights of others. Securing an effective right to private life means forming a balancing act between private and societal interests, since the exercise of one's private life may in some circumstances infringe upon the private life of another. As a result of this, Article 8 serves a mostly protective function: rather than viewing effective 'private life' as having the freedom to pursue certain acts, it instead views private life as a freedom from interference. This would suggest that the scope of one's positive liberty to neuroenhancement under Article 8 is minimal. Fortunately,

positive obligations under Article 8 ensure that state's must take proactive measures to secure the right to private life, rather than simply not interfering with it, which may lend a more optimistic view regarding the scope of liberty provided by Article 8. In particular, the positive obligations in relation to self-determination and mental and physical integrity are relevant to the context of neuroenhancement. Mental and physical integrity is viewed in utmost regard by the Court, leading to a highly protective stance. Even minor violations of this integrity, if against the subjects will, can still be seen as an infringement of private life. This protective stance does not really align with a liberty to pursue neuroenhancement, since neuroenhancers are specifically do not protect or restore the mental and/or physical integrity of their users, but instead must potentially enhance the users beyond their normal healthy state. That being said, personal autonomy is still viewed by the Court as a fundamental principle which underlies of Article 8, and therefore personal autonomy over one's neurobiology (i.e. and therefore their mental and physical integrity) could still be seen, to some degree, as a component of private life. One's scope of self-determination as prescribed by Article 8 does not extend infinitely; the respect for self-determination must be balanced with the protection of the individual and others around him. This balance is also incredibly delicate and greatly favours protection, which circles back to the mostly protective position that the Court takes over private life. For better or worse, the Court is so protective over private life that it may limit an individual's self-determination in order to protect that very same individual from his/her own actions. Self-determination over one's neurobiology therefore must not countervail the interests or health and safety of the individual or others around them. Autonomy may not only be a threat to society in the eyes of the Court, but a threat to the autonomous being himself. Ultimately, this is substantially restrictive when it comes to one's autonomy over their own brain, which is possibly the most vital component to someone's mental and physical integrity. Prohibitive drug laws are an example of how pharmacological measures of intervening upon one's own brain can be seen as a threat to both the individual and society - and the ECHR therefore allows such prohibitive laws, viewing them as legitimate restrictions over autonomy. While being 'enhancers', it is still possible by definition for a neuroenhancer to have some negative impacts upon an individual, hence the prohibition of several substances which could be defined as neuroenhancers. The ECtHR's tolerance of such prohibitive laws shows the lack of positive obligations which exist to secure liberty over the brain. Perhaps advanced surgical and electric measures, which may be more precise and with fewer negative side effects upon private and/or public health, may be allowed within the scope of self-autonomy under Article 8. Their potential harms must be substantially smaller than their benefit in order to possibly be a part of one's protected scope of liberty, but this could only be confidently derived from future technological developments, as current neuroenhancement measures can be seen as relatively crude and imprecise. Under Article 8, one's positive liberty to neuroenhancement is ultimately very limited, due to the fact that the right to private life is mainly a private right which serves to protect the individual as well as the private lives of those he may interact with. As a result of this, while some neuroenhancement measures may be allowed by the Court, there exist a minimal amount of positive obligations which would secure the liberty to pursue these measures. In summary, in terms of positive obligations under Article 8, protection almost always trumps autonomy.

Article 9, as investigated in Chapter 4, prescribes the right to *freedom* of thought and could therefore possibly widen the seemingly limited scope of positive liberty to neuroenhancement under the ECHR. This could be the case particularly because freedom of thought does not only entail the right to hold a belief, but to manifest it beyond the private inner sphere. This manifestation can exist in different forms, and the act of neuroenhancement can naturally be seen as a manifestation of one's conviction to enhance themselves. The assessment

of whether or not such a manifestation would be protected by Article 9 is twofold: it must be determined whether this conviction itself is protected by Article 9, as well as the extent to which this conviction may be manifested in the public sphere. Protected convictions are those with sufficient cogency, seriousness, cohesion and importance. Seriousness and importance are often represented by someone's deeply held beliefs being related to a fundamental problem, a prominent example being religious beliefs which are tightly linked to someone's core identity. This has made it so that Article 9 leans mostly towards the protection religious beliefs, rather than beliefs which are not fundamental to one's identity, but this does not discount non-religious beliefs from protection. There is a chance that the conviction to enhance one's self via the manipulation of neurobiology can stem from a religious belief, as can be seen with the historical use of pharmacological substances for spiritual enhancement. Identifying whether or not these substances are neuroenhancers, and whether or not the religiously charged conviction to use them is of sufficient seriousness or importance, is to be decided on a case by case basis. Currently, however, while unorthodox and minority religions are protected by Article 9, it is unlikely that there would be many cases where neuroenhancement is specifically protected as a religious conviction, especially since the existence of this religion must be objectively proven.[125] Furthermore, the requirement of seriousness and importance for a conviction to be protected is an obstacle for neuroenhancement. Neuroenhancement is to be pursued for utility rather than recreation, and so may be seen to have some level of seriousness and importance, but the Court judges these terms based upon their relationship to a fundamental problem, and neuroenhancement unfortunately does not directly fix any problems with the self.

In cases relating to neuroenhancement, one may attempt to invoke Article 8 if they believe that their self-determination over their own integrity is being unnecessarily interfered with, and one may invoke Article 9 if they believe that they are prevented from legitimately manifesting their serious and important conviction to pursue neuroenhancement. Perhaps both rights would even be invoked in conjunction with each other in some cases, since they overlap in several areas. Interestingly, while neuroenhancement is unqualified in the ECHR, there are not many aspects of neuroenhancement which remain entirely untouched by Article's 8 or 9. Both Articles can be seen to intersect with the concept, at least theoretically, of the autonomy to manipulate the brain, and the implication that this may have with the rights of others or the subject himself. In both Articles, positive obligations arise to protect some form of autonomy when the case at hand concerns important fundamental interests or values, which are judged by the Court in terms of the potential harm that will result if these interests are unprotected. As a more general right, Article 8 could possibly be invoked in a wider variety of cases regarding neuroenhancement. As a more specialised right, Article 9 may provide greater protection to one's liberty to manifest neuroenhancement in individual cases, so long as this interest fulfils the requirement of cogency, seriousness, cohesion, and importance, without disproportionately interfering with other people. These requirements may be difficult to attain, but if they are satisfied then this would provide a positive obligation to secure the liberty to neuroenhancement in this context. But again, they may be very difficult to attain due to the delicate nature of the rights of others; for example, if neuroenhancement provides unfair advantages in society, then the right to pursue neuroenhancement may infringe upon the rights of others to *refuse* neuroenhancement, since they will be disadvantaged by this choice. Nevertheless, the increasing accessibility of ways in which we can alter the brain may force

[125] Although, a potential counter to this would be the fact that the chosen manifestation of religion does not necessarily need to be an orthodox or specifically prescribed part of such religion, and can be a non-traditional practice.

Article 9 further into the spotlight, and may stimulate the right into having a more 'practical' application as hoped by Bublitz.

While the research of this thesis has been limited to the scope of the number and types of cases which have been judged by the Court, this limitation is not so great that it is impossible to form an outline of the liberty to neuroenhancement that Articles 8 and 9 may prescribe to us. Overall, it is clear that the Court views an interference of our autonomy over the brain as something which may violate Articles 8(1) and 9(1). However, the Court also very frequently sees such interferences (such as via a prohibitive law) as justified under Articles 8(2) and 9(2), because of the way in which these interferences are seen as necessary for the protection of the very delicate rights of others or the applicant themselves. This shows that positive obligations for ensuring autonomy over the brain are minimal. They are not entirely non-existent, but restricted to special circumstances where the prohibition of neuroenhancement would result in a fundamental problem relating to the individual and their essential beliefs/identity.

It is fortunate that our current state-of-the-art does not yet allow for highly accessible and portable forms of effective neuroenhancers, since this gives our hunkering legal system some time to prepare. While the ECtHR has yet to utter the term 'neuroenhancement', it is possible to draw a loose outline of our current liberty to neuroenhancement within the ECHR. The most notable thing to learn from this is that the positive liberty we have over our own neurobiology is rather limited – our neurobiology is protected greatly, but our liberty over it is not. This stems from a balancing act between the interests of the self and society; when an individual manifests their private convictions into a real-world act, the Court puts strong limitations on the degree to which this act may interfere directly or indirectly with the interests of others, and sometimes with the interests of the subject himself. The ECHR can even protect individuals from themselves, and the integrity of the brain is ultimately a very important thing to protect. As the efficacy and safety of our neurotechnology continues to develop, society may no longer need to be so cautious and protective when it comes to alterations of the brain. A future of widespread neuroenhancement could be a potential catalyst for the legal recognition of cognitive liberty, sparked by the new socio-economic benefits that neuroenhancement can bring. Alterations of the brain may be increasingly recognised as tools for the construction of the self, rather than the destruction. For the benefit of individuals and collective society, rather than for hedonistic pleasure, addiction, or arbitrary purposes. If this becomes the case, then perhaps the ECtHR would prescribe a wider scope of positive liberty over the brain, as opposed to negative protection. Nevertheless, if the floodgates are opened and advanced neuroenhancers proliferate throughout society, then legislators may very well face the existential issue of reconstructing the way in which they view liberty over the self. Our paradigm of liberty within society has been rattled and probed throughout history by technological developments which have challenged the status quo. This drama is not one which will cease, for as long as the legislature may dictate the scope of what we can and cannot do, and for as long as our species continues to explore the realm of our inner self.

Bibliography

A Kolber, 'Therapeutic Forgetting: The Legal and Ethical Implications of Memory Dampening' [2006] 59 Vanderbilt Law Review

Bliss T and Collingridge G, "A Synaptic Model of Memory: Long-Term Potentiation in the Hippocampus" [1993] 361 Nature 31

Bublitz J, 'Freedom of Thought in the Age of Neuroscience' [2014] 100(1) Archiv fur Rechts- und Sozialphilosophie

Bublitz J, "My Mind Is Mine!? Cognitive Liberty as a Legal Concept" [2013] Cognitive enhancement 233-264

Chinthapalli K, 'The billion dollar business of being smart' [2015] 351 Bmj.

Chokrevski T, Re-writing brains and minds: freedom of thought for the modifiable self: neuro-technologies, mind control, and human rights (Universiteit van Tilburg Recht, Technologie en Samenleving 2016)

Claus N and Berger M, 'Neuroenhancement: status quo and perspectives' [2008] 258(5) European Archives of Psychiatry and Clinical Neuroscience 110-114

Fitzgerald E, 'Chemical castration: MPA treatment of the sexual offender.' [1990] 18(1) Am J Crim L.

Forlini C and Racine E, 'Disagreements with implications: diverging discourses on the ethics of non-medical use of methylphenidate for performance enhancement' [2009] 10(1) BMC Medical Ethics

Fregni F and others, 'Anodal transcranial direct current stimulation of prefrontal cortex enhances working memory' [2005] 166(1) Experimental brain research 23-30

Gable R, 'Risk assessment of ritual use of oral dimethyltryptamine (DMT) and harmala alkaloids' [2007] 102(1) Addiction 24-34

Greely H and others, 'Towards responsible use of cognitive-enhancing drugs by the healthy' [2008] 456(7223) Nature 702-705

Grob C and others, 'Human Psychopharmacology of Hoasca, A Plant Hallucinogen Used in Ritual Context in Brazil ' [1996] 184(2) The Journal of Nervous & Mental Disease 86-94

Hale D and Strickland B, 'Induction of Mood States and Their Effect on Cognitive and Social Behaviors' [1976] 44(1) Journal of Consulting and Clinical Psychology 155

Kennedy D and Strickland B, 'Modulation of mood and cognitive performance following acute administration of Melissa officinalis (lemon balm)' [2002] 72(4) Harmacology Biochemistry and Behavior 955-957

Lynch Z, 'Neurotechnology and society (2010-2060)' [2004]1013(1) Annals of the New York Academy of Sciences 229-33

Mayberg H and others, 'Deep Brain Stimulation for Treatment-Resistant Depression' [2005] 45(5) Neuron 651-650

Padhy S and Dash S, 'The Soma Drinker of Ancient India: An Ethno-Botanical Retrospection' [2004] 15(1) Journal of Human Ecology 19-26

Partridge B, 'Smart Drugs ‘‘As Common As Coffee’’: Media Hype about Neuroenhancement' [2011] 6(11) PloS.

Perlmutter J and Mink J, 'Deep Brain Stimulation' [2006] 29 Annual Review of Neuroscience 229-257; D Rose et al, 'Patients’ perspectives on electroconvulsive therapy: systematic review' [2003] 326(7403) Bmj.

R Battleday and A Brem, 'Modafinil for cognitive neuroenhancement in healthy non-sleep-deprived subjects: A systematic review' [2015] 25(11) European Neuropsychopharmacology 1866

Repantis D and others, 'Modafinil and methylphenidate for neuroenhancement in healthy individuals: A systematic review' [2010] 62(3) Pharmacological Research 187-206

Sayin H, 'The Consumption of Psychoactive Plants During Religious Rituals: The Roots of Common Symbols and Figures in Religions and Myths' [2014] 12(2) NeuroQuantology 276-296

Vincent C and Parasuraman R, 'Neuroenhancement: Enhancing brain and mind in health and in disease' [2014] 85(3) NeuroImage 889-894

Weber J and Wahl J, 'Neurosurgical Aspects of Trepanations from Neolithic Times' [2006] 16(6) International Journal of Osteoarchaeology 536–545

Wynne B, 'Redefining the issues of risk and public acceptance: The social viability of technology' [1983] 15(1) Futures 13-32

Berlin I, *Two concepts of liberty* (Oxford University Press 1958)

Guttenplan S, *A companion to the philosophy of mind* (Blackwell 1995)

The president's council on bioethics, *Beyond Therapy: Biotechnology and the Pursuit of Happiness* (Washington D.C., 2003)

A, B and C v. Ireland App no. 25579/05 (ECtHR, 16 December 2010)

A.D.T. v. the United Kingdom App no. 35765/97 (ECtHR, 31 July 2000)

Bayatyan v. Armenia App no. 23459/03 (ECtHR, 7 July 2011)

Bensaid v. the United Kingdom App no. 44599/9847 (ECtHR, 6 February 2001)

Chauvy and Others v. France App no. 6415/01 (ECtHR, 29 June 2004)

Dudgeon v. the United Kingdom App no. 7525/76 (ECtHR, 22 October 1981)

Eweida and Others v. the United Kingdom App nos. 48420/10, 59842/10, 51671/10 and 36516/10 (ECtHR, 15 January 2013)

Hämäläinen v. Finland App no. 37359/09 (ECtHR, 16 July 2014)

Hristozov and Others v. Bulgaria App no. 47039/11 (ECtHR, 13 November 2012)

Ireland V. the United Kingdom App no. 5310/71 (ECtHR, 18 January 1978)

Ivanova v. Bulgaria App no. 52435/99 (ECtHR, 12 April 2007)

Izzettin Dogan and Others v. Turkey App no. 62649/10 (ECtHR, 26 April 2016)

Jakóbski v. Poland App no. 18429/06 (ECtHR, 7 December 2010)

Kokalkovs v. Latvia App no. 35021/05 (ECtHR, 31 January 2012)

Kokkinakis v. Greece App no 14307/88 (ECtHR, 25 May 1993)

Kutzner v. Germany App no. 46544/99 (ECtHR, 26 February 2002)

Laskey, Jaggard and Brown v. the United Kingdom 21627/93 21826/93 21974/93 (ECtHR, 19 February 1997)

Leela Förderkreis e.V. and Others v. Germany App no. 58911/00 (ECtHR, 6 November 2008)

Lozovyye v. Russia App no. 4587/09 (ECtHR, 24 December 2018)

Marckx v. Belgium App no. 2833/74 (ECtHR, 13 June 1979)

McGinley and Egan v. the United Kingdom App no. 21825/93 (ECtHR, 9 June 1998)

Mikulić v. Croatia App no. 53176/99 (ECtHR, 7 February 2002)

Niemietz v. Germany App no. 13710/88 (ECtHR, 16 December 1992)

Nuutinen v. Finland App no. 32842/96 (ECtHR, 27 June 2000)

Nyyssönen v. Finland App no. 30406/96 (The European Commission of Human Rights, 15 January 1998).

Pretty v. The United Kingdom App no. 2346/02 (ECtHR, 29 April 2002)

Roche v. the United Kingdom App no. 32555/96 (ECtHR, 19 October 2005)

Rotaru v. Romania App no. 28341/95 (ECtHR, 4 May 2000)

Salonen v. Finland App no. 27868/95 (The European Commission of Human Rights, 2 July 1997)

Storck v. Germany App no. 61603/00 (ECtHR, 16 June 2005)

X and Y v. the Netherlands App no. 8978/80 (ECtHR, 26 March 1985)

X. v. Germany App no. 8741/79 (The European Commission of Human Rights, 10 March 1981)

X. v. the United Kingdom App no. 7291/75 (The European Commission of Human Rights, 4 October 1977).

Y.F. v. Turkey App no. 24209/94 (ECtHR, 22 July 2003)

Zehnalova and Zehnal v. the Czech Republic App no. 38621/97 (ECtHR, 14 May 2002).

Convention on Psychotropic Substances 1971

European Convention on Human Rights 1953

Single Convention on Narcotic Drugs 1961