




Freedom of thought in Europe: do advances in ‘brain-reading’ technology call for revision?

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ABSTRACT

Since advances in brain-reading technology are changing traditional epistemic boundaries of the mind, yielding information from the brain that enables to draw inferences about particular mental states of individuals, the sustainability of the present framework of European human rights has been called into question. More specifically, it has been argued that in order to provide adequate human rights protection from non-consensual brain-reading, the right to freedom of thought should be revised, making it ‘fit for the future’ again. From the perspective of criminal justice, the present paper examines whether such a revision is necessary within the European legal context. It argues that under its current understanding, the right to freedom of thought would probably not cover the employment of most brain-reading applications in criminal justice. By contrast, the right to freedom of (non-)expression will provide legal protection in this regard and, at the same time, will also allow for certain exceptions. Hence, instead of revising the absolute right to freedom of thought, a legal approach tailored to non-consensual brain-reading could be developed under the already existing right not to convey information, ideas, and opinions as guaranteed under the freedom of (non-)expression. This might need to re-interpret the right to freedom of expression, rather than the right to freedom of thought.

KEYWORDS: Freedom of Thought, Brain-reading, Mental Privacy, Human Rights, Neuroimaging, Criminal justice, Neurolaw

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I. INTRODUCTION

Whereas much case-law and scholarship exist on the right to freedom of religion, belief, and conscience,¹ freedom of thought is still a relatively underelaborated notion.² A possible explanation for the limited amount of case-law and scholarship on freedom of thought is that thoughts are deemed factually intangible and beyond the reach of controlling interventions and revealing methods.³ Since one's inner thoughts are largely exercised inside an individual's mind,⁴ with which interferences are considered epistemologically impossible, the limits of the notion of 'thought' in the meaning of the right to freedom of thought have as yet simply not required in-depth deliberation.⁵

However, recent advances in neuroscience and its technology seem to change traditional epistemic boundaries of mental states, raising novel questions under the right to freedom of thought. Think, for example, of neuroenhancement and closed-loop brain interventions, but also of other (digital) influences on the brain, such as nudging and persuasive technologies.⁶ In addition, one particular area of research, central to the present paper, focuses on the observation of the brain with the aim of obtaining insights about mental properties. Because in a way, researches in this context are 'reading' information out of the brain, which information enables to drawing inferences about various mental states, they are sometimes referred to as 'brain-reading'.⁷ For example, measuring a person's brain activity with electroencephalography (EEG) or functional magnetic resonance imaging (fMRI) enables to draw inferences about particular mental properties, such as a person's emotions and memory.⁸ Whereas these technologies were introduced and commonly employed to assess mental health issues,⁹ various

- 1 See, eg Malcolm Evans, *Religious liberty and international law in Europe* (1997); Carolyn Evans, *Freedom of Religion Under the European Convention on Human Right* (2001); Paul Taylor, *Freedom of Religion: UN and European Human Rights Law and Practice* (2005); David J. Harris et al., Harris, O'Boyle, and Warbrick: *Law of The European Convention on Human Rights* (2018), at 573 et seq; Ben Vermeulen and Marjolein Roosmalen, *Freedom of Thought, Conscience and Religion*, in *Theory and Practice of The European Convention on Human Rights* (Pieter van Dijk et al. eds, 2018).
- 2 Evans, *supra* note 1, at 52; Taylor, *supra* note 1, at 119; Simon McCarthy-Jones, *The Autonomous Mind: The Right to Freedom of Thought in the Twenty-First Century*, 25 *Front. Artif. Intell.* 1 (2019), at 2 and 3; Christoph Bublitz, *The Nascent Right to Psychological Integrity and Mental Self-Determination*, in *The Cambridge Handbook of New Human Rights Recognition, Novelty, Rhetoric*, 387 (Andreas von Arnould, Kerstin von der Decken and Mart Susi eds, 2020), at 394–95.
- 3 Christoph Bublitz, *Freedom of Thought in the Age of Neuroscience*, 100 *Archiv für Rechts-und Sozialphilosophie* 1 (2014), at 3; McCarthy-Jones, *supra* note 2, at 5; Cf. Vermeulen and Roosmalen, *supra* note 1, at 738.
- 4 Harris et al., *supra* note 1, at 573; Donna Gornien, *Short Guide to the European Convention on Human Rights* (2005), at 95.
- 5 Bublitz, *supra* note 3, at 5; Susie Alegre, *Rethinking Freedom of Thought for the 21st Century*, 3 *Eur. Hum. Right Law Rev.* 221, (2017), at 221. Cf. Evans 2001, *supra* note 1, at 68.
- 6 McCarthy-Jones, *supra* note 2; Bublitz, *supra* note 3; Alegre, *supra* note 5; Sjors Ligthart, Tijs Kooijmans, Thomas Douglas and Gerben Meynen, *Closed-Loop Brain Devices in Offender Rehabilitation: Autonomy, Human Rights, and Accountability*, *Camb. C. Healthc. Ethic.* (accepted for publication); Sjors Ligthart, Gerben Meynen and Thomas Douglas, *Persuasive technologies and the right to mental liberty: The 'Smart Rehabilitation' of Criminal Offenders*, in *Cambridge Handbook of Life Science, Information Technology and Human Rights* (Marcello Ienca et al. eds, forthcoming).
- 7 Giulio Mecacci and Pim Haselager, *Identifying Criteria for the Evaluation of the Implications of Brain Reading for Mental Privacy*, 25(2) *Sci. Eng. Ethics* 443 (2019), at 444.
- 8 See, eg Andrea L. Glenn and Adrian Raine, *Neurocriminology: Implications for the Punishment, Prediction and Prevention of Criminal Behaviour*, 15 *Nat. Rev. Neurosci.* 54 (2014); J. Peter Rosenfeld (ed.), *Detecting Concealed Information and Deception: Recent Developments* (2018).
- 9 Mecacci and Haselager, *supra* note 7, at 444.

brain-reading devices, such as EEG sensor headsets, are now available for consumers, eg for gaming, self-monitoring, and entertainment.¹⁰ Moreover, some brain-reading technologies have already been deployed in the context of criminal justice systems all over the world,¹¹ including European countries like England and Wales, Slovenia, Italy, and the Netherlands.¹²

A much-debated issue regarding brain-reading technologies is whether they may be applied without consent of the individual. If such non-consensual use of brain-reading will ever be introduced, it is likely to be in the field of criminal justice, where non-consensual methods of investigation are commonly used to acquire information, for example, by taking blood for DNA testing and by coercing a car driver to cooperate with a breathalyzer test. Moreover, focusing on brain-reading in criminal justice is also interesting since this is arguably a context in which infringements of human rights could be justified, because they usually serve considerable interests such as the detection, prosecution, and prevention of crime. For example, coercively taking and examining a person's DNA infringes the right to respect for bodily integrity and personal data, but can be justified for the legitimate aims of detecting, prosecuting, and preventing crime.¹³ Thus, criminal justice is both the context in which non-consensual brain-reading is perhaps most likely to be deployed and the context in which it is most likely to be justified. For these reasons, this paper focuses on non-consensual brain-reading in the context of criminal justice.

Non-consensual brain-raiding in criminal justice raises various questions under different fundamental rights, such as the right to respect for private life, the privilege against self-incrimination, and the right to freedom of thought.¹⁴ Recently, it has been argued that the present framework of European human rights does not as such prohibit non-consensual brain-reading.¹⁵ In order to amend this situation, two general approaches have been suggested. Following the first approach, a novel European human right to mental privacy should be developed, protecting any bit of brain data

10 For an overview, see Marcello Ienca, Pim Haselager and Ezekiel J. Emanuel, *Brain Leaks and Consumer Terotechnology*, 36(9) *Nat. Biotechnol.* 805 (2018).

11 Armin Alimardani and Jason Chin, *Neurolaw in Australia: The Use of Neuroscience in Australian Criminal Proceedings*, 12 *Neuroethics* 255 (2019); Nita A. Farahany, *Neuroscience and Behavioral Genetics in US Criminal Law: An Empirical Analysis*, 2(3) *J. Law Biosci.* 485 (2015); Jennifer A. Chandler, *The Use of Neuroscientific Evidence in Canadian Criminal Proceedings*, 2(3) *J. Law Biosci.* 550 (2015).

12 Paul Catley and Lisa Claydon, *The Use of Neuroscientific Evidence in the Courtroom by Those Accused of Criminal Offenses in England and Wales*, 2(3) *J. Law Biosci.* 510 (2015); Miha Hafner, *Judging Homicide Defendants by their Brains: An Empirical Study on the Use of Neuroscience in Homicide Trials in Slovenia*, 6(1) *J. Law Biosci.* 226 (2019); Michele Farisco and Carlo Petrini, *On the Stand. Another Episode of Neuroscience and Law Discussion From Italy*, 7 *Neuroethics* 243 (2014); C.H. de Kogel and E.J.M.C. Westgeest, *Neuroscientific and Behavioral Genetic Information in Criminal Cases in The Netherlands*, 2(3) *J. Law Biosci.* 580 (2015).

13 For example, *Caruana v. Malta*, App. No. 41079/16, Admissibility, 15 May 2018, paras 28–42; *Peruzzo and Martens v. Germany*, App. Nos 7841/08 and 57900/12, 4 June 2013, paras 44–49.

14 Sjors Ligthart, Thomas Douglas, Christoph Bublitz, Tijs Kooijmans, and Gerben Meynen, *Forensic Brain-Reading and Mental Privacy in European Human Rights Law: Foundations and Challenges*, *Neuroethics* 2020 doi.org/10.1007/s12152-020-09438-4; Nita A. Farahany, *Incriminating Thoughts*, 64 *Stan. L. Rev.* 351 (2012); Bublitz, *supra* note 3; Sjors Ligthart, *Coercive Neuroimaging, Criminal Law and Privacy: A European Perspective*, 6 *J. Law Biosci.* 296 (2019).

15 Marcello Ienca and Roberto Andorno, *Towards New Human Rights in the Age of Neuroscience and Neurotechnology*, 13(5) *LSSP* (2017); Ligthart et al., *supra* note 14.

that can be acquired through current and futuristic brain-reading technologies.¹⁶ A similar approach has been proposed regarding the US legal context as well.¹⁷ Moreover, *Nature* recently reported that ‘Chile could soon become the first country to incorporate ‘neurorights’ into its constitution to prevent the misuse of artificial intelligence and neurotechnology’.¹⁸

By contrast, under the second approach, developing such a novel fundamental right to mental privacy is not necessary, because the present framework of generic human rights is well equipped to cover all conceivable (brain-)privacy interests that should enjoy legal protection.¹⁹ Therefore, introducing a specific additional human right focusing on the brain is not necessary. Under this approach, what needs to be done though is specifying the implications of current rights for particular neurotechnologies and purposes.²⁰ Drawing out such implications is a commonplace legal activity and does not require novel human rights.

In line with the second approach, it has been argued that apart from developing a legal framework for non-consensual brain-reading under the right to respect for private life,²¹ we should specify the implications of *the right to freedom of thought*.²² In this context, both Bublitz and McCarthy-Jones argued to broaden the scope of freedom of thought,²³ *inter alia* by (re-)interpreting it as protecting ‘any mental state that has content’. At the same time, since good reasons can exist to reveal particular mental states of an individual, eg, in ticking bomb scenarios, both authors call for a discussion on the absolute nature of freedom of thought.²⁴

The present paper examines whether revising the right to freedom of thought would be necessary to offer adequate legal protection from non-consensual brain-reading in criminal justice in the European context. First, it examines whether the *lex lata* of freedom of thought would cover non-consensual forensic brain-reading. It argues that under its present understanding, the right to freedom of thought would normally not apply in this regard. Second, focusing on the *lex ferenda*, it is argued that revising freedom of thought will not be necessary, because together with the right to respect for private life, the right to freedom of expression covers the non-consensual use of both present and futuristic brain-reading technologies. In order to develop a sustainable human rights approach tailored to non-consensual brain-reading in criminal justice, the precise implications of non-consensual brain-reading in light of the right to freedom of

16 Inca and Andorno, *supra* note 15; Andrea Lavazza, *Freedom of Thought and Mental Integrity: The Moral Requirements for Any Neural Prosthesis*, 12(82) *Front. Neurosci.* 1 (2018).

17 Farahany, *supra* note 14, at 406.

18 José M. Munoz, *Chile-Right to Free will Needs Definition*, 574 *Nature* 634 (2019). See also Rafael Yuste et al., *Four Ethical Priorities for Neurotechnologies and AI*, 551 *Nature* 159 (2017).

19 Lighthart et al., *supra* note 14; Alegre, *supra* note 5, at 222 and 232. See also Sabine Michalowski, *Critical Reflections on the Need for a Right to Mental Self-Determination*, in *The Cambridge Handbook of New Human Rights: Recognition, Novelty, Rhetoric* 404–411 (Andreas von Arnould, Kerstin von der Decken and Mart Susi eds., 2020)

20 *Id.*

21 Lighthart, *supra* note 14.

22 Bublitz, *supra* note 3; Alegre, *supra* note 5; McCarthy-Jones, *supra* note 2.

23 Bublitz, *supra* note 3, at 18; McCarthy-Jones, *supra* note 2, at 11. See also Alegre, *supra* note 5.

24 Bublitz, *supra* note 3, at 24–25; Christoph Bublitz, *Cognitive Liberty or the International Human Right to Freedom of Thought*, in *Handbook of Neuroethics* 1329–1331 (Jens Clausen and Neil Levy eds., 2015); McCarthy-Jones, *supra* note 2, at 12–13.

expression deserve further debate. This might need to re-interpret the right to freedom of expression, rather than the right to freedom of thought.

The outline of this paper is as follows. [Section II](#) first briefly introduces two much-debated brain-reading applications and illustrates how they could contribute to criminal justice. [Section III](#) examines the meaning and scope of the right to freedom of thought pursuant to Article 9 of the European Convention of Human Rights (ECHR). [Section IV](#) briefly discusses two proposals to revising the right to freedom of thought, followed by an examination of their necessity in [Section V](#). [Section VI](#) draws some concluding remarks.

II. READING BRAINS IN CRIMINAL JUSTICE: TWO EXAMPLES

As Greely writes, humans read minds and are constantly trying to understand what our fellow humans are thinking and feeling and how they are going to act. Whereas we know that we do not read minds perfectly, or even very well, it may soon be that machines read minds in some circumstances, better than we do.²⁵ Obviously, one of the areas where more accurate ‘mind reading’ would be invaluable is criminal justice, in which context judges, juries, public prosecutors, and lawyers constantly aim to determine whether the defendant, victim, or witness is telling the truth. Hence, much research on brain-reading focuses on how to enhance our ability to ‘read’ what a person knows or what he remembers, eg, through brain-based lie detection, and the identification of recognition.²⁶ In this context, researchers use functional neuroimaging technologies, such as functional magnetic resonance imaging (fMRI) and electroencephalography (EEG), which measure brain activity and yield information about how the active brain functions.

For example, according to the general assumption underlying brain-based lie detection, telling a lie is a complex process that *inter alia* requires the suppression of the truth, communication of a coherent falsehood, and modifications of behavior to convince the other of one’s statements. This process of lying activates specific brain areas, generating brain activity that can be detected with fMRI.²⁷

As to the identification of recognition, researchers have found a particular brain reaction that appears to be stronger if a person recognizes a meaningful piece of information. Because this brain reaction occurs automatically 300 ms after the individual observes a stimulus, it is called ‘P300’. By measuring this brain reaction with EEG, Meixner and Rosenfeld were able to ‘discriminate perfectly between 12 knowledgeable subjects who viewed stimuli related to their activities and 12 nonknowledgeable subjects who viewed only irrelevant items.’²⁸ In line with these findings, Meijer et al. concluded that this brain-reading application ‘is highly accurate in differentiating between knowledgeable

25 Henry T. Greely, *Mind Reading, Neuroscience, and the Law*, in *A Primer on Criminal Law and Neuroscience* 121 (Stephen Morse and Adina L. Roskies eds., 2014). See also Gerben Meynen, *Neuroscience-based Psychiatric Assessments of Criminal Responsibility: Beyond self-report?* 29 *Camb. C. Healthc. Ethic.* 446, 452 (2020); McCarthy-Jones, *supra* note 2, at 7.

26 Martha J. Farah et al., *Functional MRI-based Lie Detection: Scientific and Societal Challenges*, 15 *Nat. Rev. Neurosci.* 123 (2014); Rosenfeld, *supra* note 8.

27 Farah et al., *supra* note 26, at 124.

28 John B. Meixner and J. Peter Rosenfeld, *Detecting Knowledge of Incidentally Acquired, Real-World Memories Using a P300-Based Concealed-Information Test*, 25 *Psychol. Sci.* (2014), at 1994.

and unknowledgeable individuals.²⁹ A paradigmatic example of deploying this P300 test in criminal justice is to show a defendant, suspected of murder, five pictures of a gun. One picture images the gun that was actually used during the murder. If the defendant's P300 appears to be significantly stronger when observing the murder weapon compared to the other pictures, it implies that he recognizes the murder weapon—that is, that he knows something about the crime. Because in a way, this test aims to identify 'concealed information', it is well referred to as the concealed information test.

Note, that apart from detecting lies and recognition, the current research focuses on other forensic applications of brain-reading as well, such as the detection of brain anomalies in order to predict future dangerousness and the identification of *mens rea*.³⁰ Another very interesting (futuristic) application is the use of neuroimaging together with machine-learning algorithms, which, to some extent, enables researchers to identify 'real-time thoughts' of an individual. Using this technology in a laboratory setting, researchers were able to detect actual thoughts about abstract physics concepts and even identified suicidal thoughts with 91% accuracy.³¹ Although this form of neural representation of real-time thoughts is yet in its infancy, it may become a very valuable tool for future criminal investigators in determining whether a defendant has relevant knowledge about a particular crime.

Note that the brain-reading applications discussed in this paper are still in an experimental stage and yet not ready for practical forensic use.³² An important current limitation, for example, is that the subject can manipulate the scan results by using mental or physical 'countermeasures', such as moving one's tongue or recalling emotional memories.³³ However, horizon scanning is an important task of legal scholars in order to anticipate coming developments and consider potential legal implications of employing brain-reading in the law—before it actually arrives in Court.³⁴ Prior to considering the implications of forensic brain-reading in light of the right to freedom of thought, the meaning and scope of this right are discussed in the following section.

29 Ewout Meijer et al., *Memory Detection with the Concealed Information Test: A Meta Analysis of Skin Conductance, Respiration, Heart Rate, and P300 Data*, 51 *Psychophysiology* 879 (2014), at 881.

30 Carl Delfin et al., *Prediction of Recidivism in a Long-term Follow-up of Forensic Psychiatric Patients: Incremental Effects of Neuroimaging Data*, 14(5) *PLoS One* 1 (2013), 14; Eyal Aharoni et al., *Neuroprediction of Future Rearrest*, 110 *PNAS* 6223 (2013); Glenn and Raine, *supra* note 8; Owen D. Jones, Read Montague and Gideon Yaffe, *Detecting Mens Rea in the Brain*, 169 *U. Pa. L. Rev.* (2020).

31 Robert A. Mason and Marcel A. Just, *Neural Representation of Physics Concepts*, 27 *Psychol. Sci.* 904 (2016); Marcel A. Just et al., *Machine Learning of Representations of Suicide and Emotion Concepts Identifies Suicidal Youth*, 1 *Nat. Hum. Behav.* 911 (2017).

32 Notice, however, that in the USA, the results of lie detection have already been introduced, though rejected, as evidence in a criminal trial and memory detection has even already been used in legal proceedings: *United States v. Semrau*, 693 G.3d 510 (6th Cir. 2012); Larence A. Farwell, *Brain Fingerprinting: A Comprehensive Tutorial Review of Detection of Concealed Information with Event-related Brain potentials*, 6 *Cogn. Neurodyn.* 115, 131–32 (2012).

33 J. Peter Rosenfeld et al., *Simple, Effective Countermeasures to P300-based Tests of Detection of Concealed Information*, 41 *Psychophysiology* 205 (2014); Wagner et al., *fMRI and Lie Detection: A Knowledge Brief of the MacArthur Foundation Research Network on Law and Neuroscience* (2016); Anthony Wagner et al., *fMRI and Lie Detection: A Knowledge Brief of the MacArthur Foundation Research Network on Law and Neuroscience*, 3 (2016).

34 McCarthy-Jones, *supra* 2, at 3; Thomas Nadelhoffer and Walter Sinnott-Armstrong, *Neurolaw and Neuroprediction: Potential Promises and Perils*, 7(9) *Philos. Compass*, 631, 634 (2012).

III. FREEDOM OF THOUGHT: MEANING AND SCOPE

A. Introduction

As Article 9(1) ECHR prescribes:

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.³⁵

This right consists of an internal and external dimension: the *forum internum* and *forum externum*. Whereas the right to freedom of thought, conscience, and religion falls within the internal dimension, the right to manifest one's religion and belief concerns the external dimension.³⁶ Infringements of the *forum externum* can be justified under certain circumstances via Article 9(2) ECHR.³⁷ By contrast, the *forum internum* is absolute—that is, it may never be restricted; any infringement necessarily implies a violation of the right.³⁸ Notice that Article 9 ECHR does not cover the manifestation of thoughts. Yet, thoughts can be 'manifested' through actions, primarily via speech and expression, covered by Article 10 ECHR.³⁹

According to the *human rights handbooks* of the Council of Europe, the *forum internum* of Article 9 ECHR seeks at its most basic level 'to prevent state indoctrination of individuals by permitting the holding, development, and refinement and ultimately change of personal thought, conscience and religion.'⁴⁰ Other handbooks endorse this view. For example, Vermeulen and Roosmalen write that the internal dimension of Article 9 ECHR guarantees that the State may never interfere with the most intimate and inner sphere of its citizens, *inter alia*, by dictating what a person has to believe or by taking coercive steps to make an individual change his beliefs, eg through 'brainwashing'.⁴¹

Besides prohibiting non-consensual State interferences that *control the holding* of a particular thought, conscience, or religion, Article 9(1) ECHR also protects from coercive measures to *disclose* one's thoughts, conscience, or religion.⁴² As stated by Vermeulen and Roosmalen, the *forum internum* prohibits *any form of compulsion to express*

35 The same right is guaranteed under Article 10(1) of the Charter of Fundamental Rights of the European Union (ECFR). According to Article 52(3) of the Charter, the meaning and scope of Articles 10 ECFR and 9 ECHR are similar. Therefore, this paper focuses on (the more elaborated) literature and case-law on Article 9 ECHR.

36 Harris et al., *supra* note 1, at 573; Vermeulen and Roosmalen, *supra* note 1, at 738.

37 Article 9(2) ECHR: '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.'

38 Vermeulen and Roosmalen, *supra* note 1, at 738; Harris et al., *supra* note 1, at 573; Bernadette Rainey, Elizabeth Wicks, and Clare Ovey, *The European Convention on Human Rights* (2017), at 458. Article 9(1) ECHR is however not exempted from derogation in times of war or other public emergency threatening the life of the nation: Article 15(2) ECHR.

39 Evans 1997, *supra* note 1, at 285; Jim Murdoch, *Protecting the Right to Freedom of Thought, Conscience and Religion under the European Convention on Human Rights* (2012), at 16.

40 Murdoch, *supra* note 39, at 18.

41 Vermeulen and Roosmalen, *supra* note 1, at 738. Cf. Harris et al., *supra* note 1, at 573–5; Evans 1997, *supra* note 1, at 294.

42 Harris et al., *supra* note 1, at 574–5; Murdoch, *supra* note 39, at 18; Taylor, *supra* note 1, at 120. See, eg *Dimitras and others v. Greece*, App. Nos 42837/06, 3237/07, 3269/07, 35793/07 and 6099/08, Merits and Just

thoughts or to divulge a religion; it guarantees that States may never use inquisitorial methods to discover one's personal thoughts and convictions.⁴³ This view can be traced back to the birth of Article 9 ECHR, when its 'founding fathers' considered that the right to freedom of thought, conscience, and religion intends to protect 'not only from 'confessions' imposed for reasons of State but also from those abominable methods of police enquiry or judicial process which rob the suspect or accused person of control of his intellectual faculties and of his conscience'.⁴⁴ A similar view is expressed in the General Comment on Article 18 of the International Covenant on Civil and Political Rights (ICCPR): 'No one can be compelled to reveal his thoughts or adherence to a religion or belief.'⁴⁵

It is especially this part of Article 9 ECHR that raises questions regarding non-consensual brain-reading in criminal justice, revealing mental states of the individual without valid consent.⁴⁶ Because forensic brain-reading does normally not (intend to) yield information related to the person's religion or conscience, the key question is whether it discloses any 'thoughts' in the meaning of Article 9 ECHR, therefore infringing the right to freedom of thought.⁴⁷

Whereas much case-law and scholarship exist on the right to freedom of conscience and religion,⁴⁸ the precise meaning and scope of the notion of 'thought' in this context remain rather unclear.⁴⁹ For example, does the right to freedom of thought protect from forcible disclosure of any mental state and content, or do only particular thoughts fall within its scope?⁵⁰ In this regard, De Jong discusses three central approaches for the interpretation of the notion of thoughts, respectively putting emphasis on:

1. Religion: covering only thoughts and convictions that originate from religion
2. Conscience: covering only thoughts and convictions (including religions) that have a major impact on one's way of living
3. Thought: covering any thought, without additional requirements⁵¹

Satisfaction, 3 June 2010; *Sinan Işık v. Turkey*, App. No. 21924/05, Merits and Just Satisfaction, 2 May 2010; *Alexandridis v. Greece*, App. No. 19516/06, Merits and Just Satisfaction, 21 February 2008.

43 Vermeulen and Roosmalen, *supra* note 1, at 738. Cf. Taylor, *supra* note 1, at 202; *Sinan Işık v. Turkey*, App. No. 21924/05 Merits and Just Satisfaction, 2 May 2010, para 42: 'What is at stake is the right not to disclose one's religion or beliefs, which falls within the *forum internum* of each individual.'

44 European Commission of Human Rights, Preparatory work on Article 9 of the European Convention on human rights (1959) at 3–4.

45 General Comment No. 22: The right to freedom of thought, conscience and religion (Art. 18) CCPR/C/21/Rev.1/Add.4, para 3.

46 Bublitz, *supra* note 3, at 7–8; Lighthart et al., *supra* note 14; Elena Rusconi and Timothy Mitchener-Nissen, *Prospects of Functional Magnetic Resonance Imaging as Lie Detector*, 7(594) *Front. Hum. Neurosci.* 1 (2013), at 8.

47 Of note, if a brain-reading test does reveal any information about the subject's (non-)religious conviction, Article 9 ECHR evidently applies.

48 *Supra* note 1.

49 Evans 2001, *supra* note 1, at 52; Taylor, *supra* note 1, at 119; Bublitz, *supra* note 2, at 394–95; McCarthy-Jones, *supra* note 2, at 2; Alegre, *supra* note 5, at 224; Lighthart et al., *supra* note 14.

50 Cf. Bublitz, *supra* note 1, at 2.

51 Dennis de Jong, *The Freedom of Thought, Conscience and Religion or belief in the United Nations (1946–1992)* (2000), at 23. The author discusses these approaches in the context of Article 18 of the Universal Declaration of Human Rights.

In examining which approach is, or should be leading, the very limited amount of European Court of Human Rights (ECtHR)-case-law on freedom of thought can provide some helpful insights, but will not necessarily provide a clear definition of what thoughts should comprise to fall within the scope of Article 9(1) ECHR. Therefore, in order to determine how to define ‘thought’ in the meaning of Article 9(1) ECHR, [Section III.B](#) starts with an examination of some historical glances of the right to freedom of thought. In light of these historical considerations, [Section III.C](#) discusses (the limited amount of) case-law of the ECtHR on freedom of thought, together with some views from the literature.

B. Historical Glances

In August 1949, the founding fathers of the ECHR proposed that the convention should guarantee a list of fundamental rights and freedoms to every person residing within the metropolitan territory of all Member States, including ‘[t]he Freedom of religious practice and teaching, as laid down in Article 18 of the Declaration of the United Nations.’⁵² After an amendment of the UK, the Committee agreed on a text that included freedom of thought; the convention should guarantee ‘freedom of thought, conscience and religion, as laid down in Article 18 of the Declaration of de United Nations.’⁵³

As a result of this proposal, the preliminary draft of the ECHR provided a right identical to Article 18 of the Universal Declaration of Human Rights (UDHR): ‘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 teaching, practice, worship and observance.’⁵⁴ After some minor textual changes, Article 9(1) ECHR, as we know it today, was born on 4 November 1950.⁵⁵

Since the drafters of Article 9(1) ECHR did not spend many words on the exact meaning and scope of the right—probably because the wordings were derived from the then already existing Article 18 UDHR⁵⁶—the *Travaux Préparatoires* on Article 9(1) ECHR are not very illuminating for the interpretation of the notion of thought.⁵⁷ Instead, for understanding this notion, we should rather examine why it had been introduced in the first place, during the codification process of Article 18 UDHR.⁵⁸ In addition, since the legal history of Article 9 ECHR reveals certain affinities with Article 18 ICCPR,⁵⁹ the preparatory work on this latter provision could provide some helpful insights for the interpretation of ‘thoughts’ as well.

The Draft Outline of the International Bill of Rights of 4 June 1947, which ultimately evolved into the UDHR, contained an Article 14, which read as follows: ‘There shall be

52 European Commission of Human Rights, *supra* note 44, at 2.

53 *Id.* at 3.

54 *Id.* at 8.

55 *Id.* at 17–8.

56 See also James Fawcett, *The Application of the European Convention on Human Rights* (1987), at 236.

57 In this context, Evans 2001, *supra* note 1, at 38 notes that the *Travaux Préparatoires* of the ECHR ‘are neither complete nor particularly revealing as regards the reasons for the development of the various drafts of the convention.’

58 Cf. Evans 2001, *supra* note 1, at 50.

59 European Commission of Human Rights, *supra* note 44, at 18.

freedom of conscience and belief and of private and public religious worship.’⁶⁰ In line with preceding draft proposals,⁶¹ this provision did not make any allusion to freedom of thought. However, France proposed to explicitly protect freedom of thought and suggested the following text:

The individual freedom of conscience, belief and thought is an absolute and sacred right. The practice of a private or public worship and the manifestations of opposite convictions can be subject only to such limitations as are necessary to protect public order, morals and the rights and freedoms of others.⁶²

In response to this proposal, Lebanon argued that the right should also guarantee the fundamental freedom to change one’s opinions and beliefs,⁶³ which suggestion was adopted and resulted in Article 16 of the Draft UDHR:

1. Individual freedom of thought and conscience, to hold and change beliefs, is an absolute and sacred right.
2. Every person has the right, either alone or in community with other persons of like mind and in public or private, to manifest his beliefs in worship, observance, teaching, and practice.⁶⁴

During the discussion of this draft of Article 16, the chairman of the Drafting Committee noticed that the proposed text only pertained to freedom of ‘conscience and belief.’⁶⁵ If this were true, the word ‘thought’ in paragraph 1 would have been identical to ‘belief.’⁶⁶ However, a subsequent discussion arose on the autonomous meaning and importance of the word ‘thought’ when Lebanon submitted an amendment that aimed to alter Article 16 of the Draft UDHR into the following:

Everyone has the right (is entitled) to freedom of religion, conscience and belief; this right includes freedom to change his religion or belief, and freedom, either alone or in community with other persons of like mind and in public or private, to manifest his religion or belief in teaching, practice, worship and observance.⁶⁷

According to the Lebanese representative, this amendment embodied all essential elements of the previous text. It only added freedom of religion. The Soviet Union, however, objected that the amendment did not explicitly recognize freedom of thought

60 William Schabas, *The Universal Declaration of Human Rights: The Travaux Préparatoires* (2013), at 283. See also the Plan of the Draft Outline of an International Bill of Rights, at 305–7.

61 *Id.* at 118.

62 *Id.* at 792.

63 *Id.* at 863.

64 *Id.* at 534, 1248 and 1391.

65 *Id.* at 1573.

66 Cf. the preparatory work on Article 18 ICCPR as collected by Marc Bossuyt, *Guide to the “Travaux préparatoires” of the International covenant on Civil and Political Rights* (1987) at 355: ‘The question was raised whether the words “thought” and “belief” in this article were intended to different concepts’. See also Evans 1997, *supra* note 1, at 203.

67 Schabas, *supra* note 60, at 1766.

and argued that '[s]cience had a right to protection on the same terms as religion. Out of respect for the heroes and martyrs of science, those words should not be deleted'.⁶⁸

Just like the Soviet Union, France objected to the removal of freedom of thought as well, arguing that:

Freedom of thought differed from freedom of expression in that the latter was subject to certain restrictions for the sake of public order. It might be asked why freedom of inner thought should have to be protected even before it was expressed. That was because the opposite of inner freedom of thought was the outward obligation to profess a belief which was not held. Freedom of thought thus required to be formally protected in view of the fact that it was possible to attack it indirectly.⁶⁹

As a consequence, France argued that the right to freedom of thought should have been guaranteed by Article 16 of the Draft UDHR. In response to both France and the Soviet Union, and since Lebanon was also very keen on protecting freedom of thought, it agreed to (re)including thought in its amendment,⁷⁰ proposing that '[e]veryone has the right to freedom of religion, conscience, belief and thought, including freedom to change his religion or belief'.⁷¹

But now China and the UK objected: Article 16 should typically protect freedom of *religion and belief*; freedom of thought should be dealt with under Articles 17 and 18.⁷² The Soviet Union considered this view quite unjustified, since just as religious groups, atheists should have their freedom of thought protected as well.⁷³ According to Uruguay, freedom of thought was the fundamental freedom from which the freedom of religion and belief were derived. Hence, freedom of thought should be guaranteed prior to freedom of religion.⁷⁴

Ultimately, it was proposed to take a vote on whether freedom of thought should be guaranteed in both Article 16 (freedom of thought, conscience, and religion) and Article 17 (freedom of thought, expression, and opinion), or whether it would be sufficient to only mention 'thoughts' in Article 16. In this context, France stressed the metaphysical significance of freedom of thought:

It was an unconditional right which could not be subjected to any restrictions of a public nature. The other rights, however important they might be, were subject to certain limitations. There was a great difference in degree between freedom of thought and freedom of opinion. It would, therefore, be sufficient to mention the right to freedom of thought first among the freedoms enumerated in Article 16; it was unnecessary to mention it again in Article 17.⁷⁵

Eventually, a subcommittee was appointed that unanimously recommended the following text for Article 16:

68 *Id.* at 1766.

69 *Id.* at 1766–7.

70 *Id.* at 1766.

71 *Id.* at 1767.

72 *Id.* at 1767–1768.

73 *Id.*

74 *Id.*

75 *Id.*

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, in public or private, to manifest his religion or belief in teaching, practice, worship and observance.⁷⁶

In addition, it argued that the word 'thought' in Articles 17 and 18 should be replaced by 'opinion'. These recommendations were approved by Commission on Human Rights.⁷⁷

Although many States were now satisfied with Article 16 of the Draft UDHR, again, some objections were raised and amendments proposed.⁷⁸ In this regard, Cuba noticed that everyone has some kind of faith, even those who are not religious. It argued that no distinction should be made between different faiths. Hence, Cuba suggested an altered text for Article 16, taking into account the two essential aspects of human belief, ie philosophy and religion:

Every person has the right freely to profess a religious or philosophical belief, this right includes freedom to change his religion or belief, and freedom, either alone or in community with others, in public or private, to manifest his religion or belief in teaching, practice, worship and observance.⁷⁹

In response, the USA objected that since the Cuban proposal only mentioned freedom of religious and philosophical belief, it would exclude the cultural, scientific, and political aspects of the right that Article 16 aimed to guarantee.⁸⁰ In addition, the Soviet Union advocated more explicit emphasis on freedom of thought, which should promote the development of modern sciences, taking into account the existence of free-thinkers whose reasoning had led them to discard all old-fashioned beliefs and religious fanaticism. As the Soviet Union put it, '[t]he times when scientists were condemned to be burnt at the stake were past, and science occupied a most important place in human life.'⁸¹ Accordingly, the Soviet Union proposed the following text:

Everyone must be guaranteed freedom of thought and freedom to perform religious services in accordance with the laws of the country concerned and the requirements of public morality.⁸²

Although Uruguay agreed to extend freedom of thought to the realms of politics and science, together with most other States,⁸³ it could not accept the Soviet's amendment, because it allowed domestic laws to control the exercise of freedom of thought.⁸⁴ In addition, some States considered it worrisome that the Soviet's proposal did not explicitly recognize freedom of religion.⁸⁵ In response, the Soviet Union stressed that,

76 *Id.* at 1789.

77 *Id.* at 1789.

78 *Id.* at 2271–2.

79 *Id.* at 2502 and 2271.

80 *Id.* at 2490.

81 *Id.* at 2489.

82 *Id.* at 2271.

83 *Id.* at 2503.

84 *Id.* at 2499.

85 *Id.* at 2492, 2498 and 2499.

indeed, all forms of religious and non-religious thought should be equally respected, but argued that ‘freedom of thought’ was broad enough to include scientific, philosophical, and religious thoughts as well.⁸⁶ Just like Venezuela,⁸⁷ China agreed that freedom of thought included freedom of conscience and religion, but stated that the Declaration should never be criticized for being too explicit.⁸⁸ Ultimately, all amendments were rejected, except the proposal of France, replacing the term *croynance* in the France text by the less religious flavored *conviction*.⁸⁹ On 10 November 1948, the following Article 16 was adopted:

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 teaching, practice, worship and observance.⁹⁰

After a renumbering, this provision resulted in Article 18 UDHR as we know it today—subsequently inspiring the founding fathers of Article 9 ECHR.

As the previous discussion shows, the legal history of Article 18 UDHR does not provide one specific and clear definition of freedom of thought. Instead, it illustrates that controversy existed on its meaning and scope as well as on its importance compared to freedom of religion and the freedom to hold and express opinions and ideas. However, although some States disagreed on the best provision within the declaration to recognize freedom of thought, many States did agree that freedom of thought was the fundamental freedom, from which freedom of religion and conscience were derived.⁹¹ In addition, as argued by the Soviet Union, Uruguay, the USA, and Cuba, freedom of thought must not be confined to religion and conscience, but should comprise science, philosophy, and politics as well.⁹²

Let us now turn back to the three central approaches for the interpretation of freedom of thought of De Jong, as were mentioned in Section III.A. As to the first approach—religion, covering only thoughts and convictions that originate from religion—we can conclude that such an approach does not strongly reflect the historical glances of the right to freedom of thought, since it had repeatedly been stressed that apart from *religious* thoughts, *political*, *scientific*, and *philosophical* thoughts are protected as well.⁹³

At the same time, the third approach, under which any thought is protected including any ideas, opinions, and matters of fact, neither has strong roots in the discussed legal history. For example, as France noticed, there is a great difference in the degree between freedom to hold an opinion and freedom of thought, of which only the latter is unconditional. Accordingly, at present, freedom of thought is only guaranteed

86 *Id.* at 2500.

87 *Id.* at 2498.

88 *Id.* at 2495–6.

89 *Id.* at 2495 and 2504.

90 *Id.* at 2536.

91 *Id.* at 1768, 2495–6, 2498 and 2500.

92 *Id.* at 1766, 2490, 2489, 2500–3.

93 Cf. De Jong, *supra* note 51, at 24–6.

under Article 18 UDHR, not under Article 19 UDHR.⁹⁴ The same is true for the ECHR: freedom of thought is (only) prescribed by Article 9 ECHR, whereas Article 10 ECHR recognizes the right to freedom of expression, including the freedom to hold opinions and to receive and impart information and ideas, without interference by public authority.⁹⁵ Contrary to the freedom of thought, the freedoms guaranteed by Article 10 ECHR may be subjected to formalities, conditions, restrictions, and penalties. As De Jong puts it '[i]f, in accordance with the third approach, every thought is to be included, the distinction between the freedom of thought, conscience and religion on the one hand and freedom of expression and opinion on the other becomes blurred.'⁹⁶

Whereas both the first and third approaches are not very likely to apply from an historical perspective, some sympathy seems to have existed for the second approach—conscience: covering only thoughts and convictions (including religions) that have a major impact on one's way of living.⁹⁷ After all, the only thoughts that were explicitly mentioned to being protected are thoughts that have a considerable impact on the individual's way of life, ie philosophical, scientific, and political thoughts.

Of note, according to the General Comment on Article 18 ICCPR, 'Article 18.1 is far-reaching and profound; it encompasses *freedom of thought on all matters*, personal conviction and the commitment to religion or belief.'⁹⁸ Although this comment *prima facie* seems to suggest a broad scope of the right to freedom of thought, it does not clearly define which thoughts enjoy protection under this right.⁹⁹ In fact, it only stresses that protected thoughts can concern any matter, which lends itself for (at least) two interpretations: (i) any kind of thought is protected, including any idea, opinion, and memory, regardless their content and level of impact on one's way of living, or (ii) only thoughts that have a major impact on one's way of living are protected, regardless their precise matter, ie they can concern religion, philosophy, science, and politics.

The preparatory work on the General Comment on Article 18 ICCPR suggests that the latter interpretation would align best with the intention of its creators, rather than the former. Whereas Mr Wennergren argued that freedom of thought, as a specific right, was a far-reaching concept and should embrace the (absolute) freedom of opinion,¹⁰⁰ Mr Sadi proposed that 'the first sentence should say that the concept of freedom of thought, conscience, religion and belief encompassed a whole range of personal and collective convictions in the political, economic, social, scientific and intellectual spheres.'¹⁰¹ To indicate that freedom of thought is indeed not limited to the sphere

94 Prescribing that 'Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers.'

95 Just like Article 9 ECHR, Article 10 ECHR was inspired by its equivalent in Article 19 UDHR: European Commission of Human Rights, Preparatory work on Article 10 of the European Convention on human rights (1959), at 3.

96 De Jong, *supra* note 51, at 26.

97 Cf. *Id.* at 33.

98 General Comment No. 22: The right to freedom of thought, conscience and religion (Art. 18) CCPR/C/21/Rev.1/Add.4, para 3 (italicization SL).

99 Cf. Evans 1997, *supra* note 1, at 213.

100 CCPR/C/SR.1162, para 14.

101 *Id.* para 34.

of religious conviction, Mrs. Higgins proposed to explicitly indicate that Article 18 ICCPR encompasses freedom of thought ‘on all matters’,¹⁰² as stressed today in the General Comment on Article 18 ICCPR.¹⁰³

C. Case-Law and Views from the Literature

As Rainey, Wicks, and Ovey notice, most, if not all applications to the Court on Article 9 ECHR, concern alleged infringements of the freedom to *manifest* one’s religion and belief.¹⁰⁴ Since Article 9(1) ECHR prescribes freedom to manifest one’s religion and belief, but not one’s thoughts and conscience,¹⁰⁵ most case-law does not elaborate on ‘thoughts’ in the meaning of Article 9 ECHR. Nonetheless, the present section examines whether and, if so, which interpretation of ‘thoughts’ can be retraced from the limited amount of Strasbourg case-law and decisions. Subsequently, some views from the literature on the interpretation of the notion of ‘thought’ are briefly discussed as well.

According to the European Court of Human Rights (ECtHR/Court), the scope of Article 9 ECHR is wide, in the sense that it comprises both religious and non-religious thoughts, convictions, and beliefs.¹⁰⁶ It covers, for instance, Taoism, opposition to abortion, pacifism, and fascism.¹⁰⁷ In the case of *F.P. v. Germany*, the European Commission of Human Rights (EComHR/Commission) considered that Article 9 ECHR ‘is essentially destined to protect religions, or theories on philosophical or ideological universal values’.¹⁰⁸ Hence, Article 9 ECHR was not to be invoked regarding a disciplinary sanction of dismissal from military service, for having made discriminatory remarks about Jewish people. Those sanctions did however fall within the scope of Article 10 ECHR, but were considered necessary in a democratic society.¹⁰⁹ In line with this approach—ie that Article 9 ECHR does not protect just any opinion or utterance—the Commission in another case decided that the imposition of penalties by the national court upon the applicant for stating that the judges used *Nazi und Ostblockmethoden* to prosecute him did ‘not show any lack of respect for his freedom of thought under Article 9 of the Convention’.¹¹⁰ By contrast, the applicants’ complaint

102 *Id.* para 40. Cf. Harris et al., *supra* note 1, at 571: ‘The scope of Article 9 is wide, in that it covers forms of both religious and non-religious belief. (italicization SL).’

103 CCPR/C/SR.1162, paras 50–52.

104 Rainey, Wicks, and Ovey, *supra* note 38, at 457.

105 Evans 1997, *supra* note 1 at 284; Harris et al. *supra* note 1, at 573. Notice however that interferences with the voicing of thoughts and expression of conscience can raise issues under Article 10 ECHR: Evans 1997, *supra* note 1, at 285; Murdoch, *supra* note 39, at 16.

106 *Kokkinakis v. Greece*, App. No. 14307/88, Merits and Just Satisfaction, 25 May 1993, para 31; Harris et al. *supra* note 1, at 571.

107 *X. v. the United Kingdom*, App. No. 6886/75, Commission Decision, 18 May 1976; *Van Schijndel and others v. The Netherlands*, App. No. 30936/96, Commission Decision, 10 September 1997; *Arrowsmith v. UK*, App. No. 7050/75, Commission Decision, 16 May 1977; *X v. Italy*, App. No. 6741/74, Commission Decision, 21 May 1976.

108 *F.P. v. Germany*, App. No. 19459/92, Commission Decision, 23 March 1993.

109 *Id.*

110 *Putz v. Austria*, App. No. 18892/91, Commission Decision, 3 December 1993.

that their prison sentences for belonging to the Communist Party of Turkey violated the right to freedom of thought was considered to be admissible.¹¹¹

However, in contrast with these examples, the case of *Salonen v. Finland* suggests a broader understanding of the notion of ‘thought’. In this case, the EComHR decided that the applicants’ wish to name their daughter Ainut Vain Marjaana (The One and Only Marjaana) did fall within the scope of their right to freedom of thought: ‘[t]aking into consideration the comprehensiveness of the concept of thought, this wish can be deemed as a thought in the sense of Article 9’.¹¹² Whereas the Commission in the earlier case of *F.P. v. Germany* followed a rather restrictive approach—Article 9 ECHR merely protects religions and theories on philosophical or ideological universal values—it now underscored the comprehensiveness of ‘thoughts’, even embracing one’s wish to give a child a particular name.

In more recent cases, the ECtHR provides a bit more clarification. In earlier rulings, the Court held that holding a conviction should amount to more than holding an opinion or idea, but must concern a weighty and substantial aspect of human life and behavior, and that a belief should attain a certain level of cogency, seriousness, cohesion, and importance to be protected under Article 9 ECHR.¹¹³ More recently, the Court seems to have extrapolated this view to all notions protected under Article 9(1) ECHR, ie conscience, religion, and thought as well:

The right to freedom of thought, conscience and religion denotes views that attain a certain level of cogency, seriousness, cohesion and importance.¹¹⁴

The Grand Chamber has confirmed this view—adding that the right to freedom of thought, conscience, and religion denotes *only* those views that attain a certain level of cogency, seriousness, cohesion, and importance.¹¹⁵ In line with this approach, an individual’s intention to vote for a particular political party, for example, is essentially a thought embraced by the internal dimension of Article 9 ECHR.¹¹⁶

Although Strasbourg case-law and decisions do not extensively elaborate on the meaning and scope of the notion of thought as protected by Article 9 ECHR, the Court seems reluctant to protect only religious thoughts, nor any mere opinion or idea under Article 9 ECHR. Its case-law rather suggests some sympathy for the second approach of the *De Jong*: Article 9 ECHR only covers thoughts and convictions that have a major impact on one’s way of living—that is, thoughts that attain a certain level of cogency, seriousness, cohesion, and importance.

111 *Hazar and Açık v. Turkey*, App. Nos 16311/90, 16312/90 and 16313/90, Commission Decision, 11 October 1991.

112 *Salonen v. Finland*, App. No. 27868/95, Commission Decision, 2 July 1997.

113 For example, *Folgerø and Others v. Norway*, App. No. 15472/02, Merits and Just Satisfaction, 29 June 2007, para 84; *Campbell and Cosans v. UK*, App. Nos 7511/76 and 7743/76, Merits, 25 February 1982, para 36.

114 *Eweida and others v. UK*, App. Nos 48420/10, 59842/10, 51671/10 and 36516/10, Merits and Just Satisfaction, 15 January 2013, para 81. See also *Jakóbski v. Poland*, App. No. 18429/06, Merits and Just Satisfaction, 7 December 2010, para 44; *Leela Förderkreis E.V. and others v. Germany*, App. No. 58911/00, Merits and Just Satisfaction, 6 November 2008, para 80.

115 *S.A.S. v. France*, App. No. 43835/11, Merits and Just Satisfaction, 1 July 2014, para 55; *Izzettin Doğan and others v. Turkey*, App. No. 62649/10, Merits and Just Satisfaction, 26 April 2016, para 68.

116 *Georgian Labour Party v. Georgia*, App. No. 9103/04, Merits and Just Satisfaction, 8 July 2008, para 120.

Different scholars endorse this approach. For example, Rainey, Wicks, and Ovey write that Article 9 ECHR extends to a wide range of religious and non-religious convictions and philosophies, but that the Court's case-law indicates that, to be protected, thoughts, conscience, and religion must attain a certain level of cogency, seriousness, cohesion, and importance.¹¹⁷ Similarly, Murdoch argues that whereas the terms 'thought, conscience, and religion' suggest a potentially wide scope of Article 9 ECHR, Strasbourg case-law indicates a somewhat narrow approach, because personal beliefs have to attain certain thresholds to be protected.¹¹⁸ Furthermore, Carolyn Evans distinguishes 'religion or belief' from 'thought and conscience',¹¹⁹ of which the latter embrace political, philosophical, ethical, and intellectual positions in human affairs.¹²⁰ Yet, she argues, 'the words thought and conscience are – perhaps even to a greater extent than religion and belief—vague and difficult to convincingly define.'¹²¹ Similarly, Malcolm Evans distinguishes between 'religion or belief' on the one hand and 'thought and conscience' on the other.¹²² He argues that understanding Article 9 ECHR as embracing any idea or view carries the danger that if taken in marginal cases, it might justify a lowering of the high threshold of protection accorded to the right to hold such thoughts.¹²³ In view of the absolute, unconditional nature of the right to freedom of thought, 'it might otherwise be argued that advertising, or any other means of changing peoples' opinions, might be covered.'¹²⁴ Indeed, as Bublitz writes, the absolute status of freedom of thought has resulted in confining the scope of the right: in face of practical necessities and arguably ethical duties to interfere with the inner realm of citizens, for example, in the context of compelled psychiatry, freedom of thought is sometimes simply not applied or interpreted so narrowly that interventions do not constitute infringements.¹²⁵

In the context of Article 18 ICCPR, Partsch as well argues that freedom of thought should not be confined to religious thoughts only, but should neither encompass any idea or opinion:

Although no definition of "thought" or "conscience" is provided, taken together with "religion" they include all possible attitudes of the individual toward the world, society, and toward that which determines his fate and the destiny of the world, be it a divinity, some superior being or just reason and rationalism, or chance. "Thought" includes political and social thought; "conscience" includes all morality. "Religion or belief" is not limited to a theistic belief but comprises equally nontheistic and even atheistic beliefs.¹²⁶

117 Rainey, Wicks, and Ovey, *supra* note 38, at 457.

118 Murdoch, *supra* note 39, at 16.

119 Evans 2001, *supra* note 1, at 52.

120 *Id.* at 66.

121 *Id.*

122 Evans 1997, *supra* note 1, at 289.

123 *Id.* at footnote 30.

124 *Id.* at 295.

125 Bublitz, *supra* note 24, at 1317. See also Taylor, *supra* note 1, at 159 and 199.

126 K.J Partsch, *Freedom of Conscience and Expression, and Political Freedoms*, in *The International Bill of Rights: The covenant on Civil and Political Rights* (Louis Henkin ed., 1981), at 213–4.

Similarly, De Jong concludes that in the interpretation of freedom of thought, the primary emphasis should be on ‘fundamental beliefs’.¹²⁷

D. Synthesis

It is clear that apart from non-consensual state interferences to *control* the holding of a particular thought, non-consensual methods to *disclose* the individual’s thoughts fall within the scope of Article 9(1) ECHR as well. Less clear, however, is how the notion of ‘thoughts’ should exactly be defined in this context. In general, three approaches are conceivable: the right to freedom of thought (i) only protects religious thoughts; (ii) protects those thoughts that have a major impact on the individual’s way of living; and (iii) protects any thought about anything.

The preparatory work on Article 9 ECHR does not provide an extensive elaboration on the meaning and scope of ‘thought’. By contrast, the legal history of Article 18 UDHR provides a discussion on the importance of the explicit recognition of the right to freedom of thought, as well as on its separation from the freedom of opinion and expression. Although this discussion does not explicitly define ‘thought’, it does indicate some sympathy for approach 2: freedom of thought has been included to protect those thoughts significant to the individual’s way of life, such as philosophical, scientific, and political thoughts.

Various scholars endorse this somewhat narrow approach, arguing that the notion of ‘thought’ does not embrace any opinion or idea. Instead, thoughts should attain a certain threshold to enjoy legal protection from the right to freedom of thought. As Carolyn Evans argued, together with conscience, thought embraces political, philosophical, ethical, and intellectual positions in human affairs. Although most Strasbourg case-law does not explicitly deal with freedom of thought, the Grand Chamber seems to follow a similar approach: the right to freedom of thought, conscience, and religion denotes only those views that attain a certain level of cogency, seriousness, cohesion, and importance.

IV. PROPOSED REVISIONS: TWO EXAMPLES

Although the previous section suggests considerable consensus on a somewhat restrictive approach, under which a thought should attain a certain level of cogency, seriousness, cohesion, and importance to be protected under Article 9 ECHR, it has been argued that technological advances such as in brain-reading call for a broader scope of the right to freedom of thought. For example, according to Bublitz, the concept of thought as protected by the right to freedom of thought is as yet underelaborated, presumably because thoughts are considered factually intangible and beyond the reach of controlling interventions.¹²⁸ Since a person’s inner thoughts are mainly exercised inside an individual’s mind,¹²⁹ with which (State) interferences are deemed epistemologically impossible,¹³⁰ the limits of the concept of thoughts have as yet simply not required a serious discussion. However, as Bublitz argues, whereas this premise

127 De Jong, *supra* note 51, at 33.

128 Bublitz, *supra* note 3, at 3; Bublitz, *supra* note 2, at 394–95; Cf. McCarthy-Jones, *supra* note 2, at 2 and 3; Vermeulen and Roosmalen, *supra* note 1, at 738.

129 Harris et al. *supra* note 1, at 573; Gomien, *supra* note 4, at 95.

130 Bublitz, *supra* note 3, at 5; Cf. Evans 2001, *supra* note 1, at 68.

of intangibility of thoughts may have been well-founded during the time in which the general principles of western democracies and modern constitutions were formulated, at present, advances in brain-reading enable to make reasonable assumptions about the content of people's minds.¹³¹ As a consequence, since the individual's mental content might no longer be shielded from the outside world, a clear definition of protected 'thoughts' is desirable in order to determine whether any interference with a person's mind is protected by the right to freedom of thought. Against the backdrop of these considerations, Bublitz suggests to understand the notion of thought as comprising:

Mental states that have content, meaning, or as philosophers of mind say, that are intentional in the sense of referring to something beyond themselves (the "object" one thinks, worries or dreams about). I wish to leave for further discussion distinctions between mental states such as thoughts and emotions and only note that psychology provides evidence that they are factually strongly interwoven entities. (. . .) At any rate, the scope of Art. 9 should not only entail thoughts as states but thinking as a process, and accordingly, the manifold mental processes which thinking involves. Moreover, it would be too narrow if it only captured fully rational, logical thinking. Associative and creative thinking, thinking with inner images, mental simulations, poetic and even surrealist thought should be comprised.¹³²

Under this interpretation, thoughts do not necessarily need to attain a certain level of cogency, seriousness, cohesion, and importance. By contrast, under this view, freedom of thought encompasses (almost) any thought about anything, regardless of whether it is trivial or not. Another recent example of advocating a broader scope of freedom of thought comes from McCarthy-Jones, who argues that core mental processes that enable mental autonomy, such as attentional and cognitive agency, should be placed at the center of freedom of thought. In addition,

We should expand the domain of the right to freedom of thought to cover external actions that are arguably constitutive of thought. This includes reading, writing, and many forms of internet search behavior. Such "thought" is currently not protected by the right to FoT and hence not sheltered by its absolute protection.¹³³

Obviously, as intended, both proposals of Bublitz and McCarthy-Jones will considerably extend the scope of the right to freedom of thought, unconditionally prohibiting any non-consensual interference with, or disclosure of any mental property that has content or meaning (Bublitz), as well as any externalization of such mental states (McCarthy-Jones). However, as Bublitz argues, sometimes good reasons can exist to change or reveal particular mental states of an individual. For example, non-consensual psychiatric interventions that change the patient's mental states are sometimes necessary for the well-being of the patient. Furthermore, in ticking bomb scenarios, pressing State interests to reveal what a person knows are not hard to imagine. Moreover, individuals may sometimes have legal duties to speak and disclose particular mental states,

131 Bublitz, *supra* note 3, at 17; see also Alegre, *supra* note 5.

132 Bublitz, *supra* note 3, at 18; Cf. Christoph Bublitz, *My Mind Is Mine!? Cognitive Liberty as a Legal Concept*, in Cognitive Enhancement (Elisabeth Hildt and Andreas G. Franke eds., 2013), at 245–6.

133 McCarthy-Jones, *supra* note 2, at 11.

for example, as a witness in Court.¹³⁴ Therefore, Bublitz suggests to reconsider the absolute nature of freedom of thought and argues to develop some narrow exceptions that could justify certain infringements of this right.¹³⁵ Similarly, McCarthy-Jones calls the absolute status of freedom of thought into question as well, arguing for a public debate on whether this freedom should remain unconditional or whether some exceptions should be possible.¹³⁶ The following section examines whether advances in (forensic) brain-reading do indeed call for a revision of the right to freedom of thought.

V. DO ADVANCES IN BRAIN-READING CALL FOR A REVISION?

As was discussed in Section III, the *forum internum* of Article 9(1) ECHR embraces the right not to disclose one's thoughts, religion, and beliefs.¹³⁷ Hence, if non-consensual brain-reading in criminal law reveals any thoughts in the meaning of Article 9 ECHR, it will therefore be unconditionally prohibited. According to Bublitz, '[i]t is hard to imagine a better paradigmatic case against which freedom of thought should provide protection.'¹³⁸ However, in light of the discussed legal history, case-law, and literature, it might not be so self-evident whether the ECtHR would, under its current understanding, qualify the results of a non-consensual brain-based lie detection test, or of a concealed information test in the context of criminal justice, as constituting 'thoughts' in the meaning of Article 9 ECHR. After all, to be protected, a thought should presumably attain a certain level of cogency, seriousness, cohesion, and importance, such as philosophical attitudes, political ideas, and scientific views do. Although a specific lie during a criminal trial, eg about one's alibi, or the fact that one recognizes the murder weapon may be very 'important' for the individual in issue, such mental properties will normally not constitute a personal view that attains a certain level of cogency, seriousness, and cohesion similar to, eg philosophical, political, and scientific ideas.

In examining whether the mental content disclosed through forensic brain-reading may attain to 'thoughts', an analogy with obligatory witness testimonies comes to the fore.¹³⁹ As discussed in Section II, brain-reading can be used to identify particular brain processes during the answering of questions or observing particular stimuli such as pictures of possible murder weapons. Using different test paradigms, the acquired data enables to draw inferences about whether a person *lies*, *knows*, or *recognizes* (about) something. Using these tests in criminal justice, a defendant or witness, for example, can be coerced to reveal whether she was indeed (not) present at the crime scene during the offence (lie detection) or whether she recognizes the victim or perpetrator of the crime at issue (concealed information test).

In fact, as to witnesses, at present we can acquire similar information through existing methods of criminal investigation—that is, through an obligatory witness

134 Bublitz, *supra* note 3, at 10, 19–20, 24–5; Bublitz, *supra* note 24, at 1312 and 1317. See also McCarthy-Jones, *supra* note 2, at 7.

135 Bublitz, *supra* note 3, at 24–5; Bublitz, *supra* note 24, at 1329–31.

136 McCarthy-Jones, *supra* note 2, at 7 and 12–3.

137 Vermeulen and Roosmalen, *supra* note 1, at 738; *Sinan Işık v. Turkey*, App. No. 21924/05, Merits and Just Satisfaction, 2 May 2010, para 42.

138 Bublitz, *supra* note 3, at 8.

139 Lighthart et al., *supra* note 14.

testimony. For example, if a witness of a murder is summoned to testify in Court, the judge can ask her whether she was present at the crime scene during the offence and whether she recognizes the victim and defendant. Whereas current forms of brain-reading like lie detection and a concealed information test require the witness to answer questions by pressing a yes-or-no-button, or by observing the presented stimuli attentively, an obligatory witness testimony requires the witness to orally answer the questions truthfully. Refusing to give evidence without any valid legal excuse, or answering the questions deceptively, can, in many jurisdictions, result in commitment to custody or the imposition of (financial) penalties. As the Court previously held, ‘the duty to give evidence in criminal proceedings is ordinarily a normal civic duty in a democratic society governed by the rule of law.’¹⁴⁰

Of course, many differences exist between brain-reading and giving testimony. Yet, what is important here is that by imposing some kind of behavioral duty upon the individual (performing a task and answering a question), brain-based lie detection, a concealed information test, and an obligatory witness testimony disclose more or less similar mental properties with more or less similar content, such as: Do you remember what you were doing during the time of the offence? Did you speak the truth when you told the police that you know who committed the crime? Do you recognize the victim, perpetrator, and/or murder weapon? What kind of person do you think the victim was? And did you have an argument with the victim about money, the night before he was killed? The question is whether such mental content qualifies as thoughts in the meaning of Article 9 ECHR.

Case-law on obligatory witness testimonies indicates that the Court will most probably not qualify such information as ‘thoughts’ but rather as the conveyance of information, an opinion, or idea, as protected under Article 10 ECHR. For example, in *Wanner v. Germany*,¹⁴¹ the applicant was summoned to appear before the investigating judge to be examined as a witness in the context of an assault for which he had previously been convicted (which conviction had become final). The judge explained the applicant that now he was a witness, he was required to tell the truth, and that he could face imprisonment if he would lie or did otherwise not comply with his obligation to give testimony. However, the applicant declared that he had not been present at the crime scene and could therefore not say anything about those who had taken part in the assault. In response, the applicant was convicted for giving false testimony and was sentenced to 6-month imprisonment, suspended on probation.¹⁴² The applicant complained before the ECtHR about his conviction for giving false testimony and argued that unlawful pressure had been exerted on him to confess about his accomplices in the assault. The Court, ‘being the master of characterization to be given in law to the facts of the case’, considered that this complaint should be examined under Article 10 ECHR.¹⁴³

In examining the admissibility of the complaint, the Court reiterates that the Grand Chamber ‘does not rule out that a negative right to freedom of expression is protected under Article 10 of the Convention’, which issue should be properly addressed in the

140 *Voskuil v. The Netherlands*, App. No. 64752/01, Merits and Just Satisfaction, 22 November 2007, para 86.

141 *Wanner v. Germany*, App. No. 26892/12, Admissibility, 23 October 2018.

142 *Id.* para 8–16.

143 *Id.* para 37.

circumstances of a given case.¹⁴⁴ As the Commission previously considered: ‘the right to freedom of expression by implication also guarantees a “negative right” not to be compelled to express oneself, ie to remain silent.’¹⁴⁵ As Harris et al. put it, ‘[a]lbeit sparse in the case law, Article 10 guarantees to some extent the negative aspect of freedom of expression, namely the right not to be compelled to express oneself. One notable example is the right to remain silent.’¹⁴⁶ Whether Article 10 ECHR did indeed protect such a right in *Wanner v. Germany* would have been determined if the applicant complained about the coercion to testify. Instead, the complaint rather focused on the conviction for giving false testimony.¹⁴⁷ Nevertheless, assuming that Article 10 ECHR applied under these circumstances, the Court argued that the applicant’s complaint would in any event be inadmissible because the infringement met the requirements of Article 10(2) ECHR. In this respect, the Court reiterated that the duty to give evidence in criminal proceedings is ordinarily a normal civic duty in a democratic society governed by the rule of law.¹⁴⁸ The only thing the applicant had been asked was to provide the names of his accomplices in the assault.¹⁴⁹ This obligation could not be considered disproportionate to the aims of preventing crime and maintaining the authority of the judiciary.¹⁵⁰

So, in *Wanner v. Germany*, the obligation to disclose a simple fact, ie the names of those who committed a criminal offence, and the subsequent conviction for giving false testimony were addressed under Article 10 ECHR—not under Article 9 ECHR. This approach aligns with earlier cases, such as *K. v. Austria* and *Strohal v. Austria*.¹⁵¹ In addition, in *Goodwin v. UK*, the Grand Chamber considered the legal requirement imposed on a journalist to disclose the name of one’s source, together with the imposition of a fine for not doing so, to violate Article 10 ECHR—again, without any reference to freedom of thought pursuant to Article 9 ECHR.¹⁵² As the Commission noticed in its report on this case: ‘[t]here are circumstances in which a “negative right” is to be implied in Article 10 (Art. 10) not to be compelled to give information or to state an opinion. Compulsion to provide information as to a journalist’s sources must in particular constitute a restriction in the capacity of a journalist freely to receive and impart information without interference by a public authority.’¹⁵³

As these examples show, obliging an individual to disclose simple facts in the context of a criminal trial, such as whether one remembers the names of the co-perpetrators and whether one lies about not having been present at the crime scene, does typically not qualify as the disclosure of thoughts in the meaning of Article 9 ECHR but rather as the conveyance of information as protected under Article 10 ECHR. Hence, revealing

144 *Id.* para 39. See *Gillberg v. Sweden*, App. No. 41723/06, Merits and Just Satisfaction, 3 April 2012, para 86.

145 *Strohal v. Austria*, App. No. 20871/92, Commission Decision, 7 April 1994.

146 Harris et al. *supra* note 1, at 595.

147 *Wanner v. Germany*, App. No. 26892/12, Admissibility, 23 October 2018, para 39.

148 *Voskuil v. The Netherlands*, App. No. 64752/01, Merits and Just Satisfaction, 22 November 2007, para 86;

Wanner v. Germany, App. No. 26892/12, Admissibility, 23 October 2018, para 42.

149 *Wanner v. Germany*, App. No. 26892/12, Admissibility, 23 October 2018, para 42.

150 *Id.* para 43.

151 *K. v. Austria*, App. No. 16002/90, Commission Report 13 October 1992; *Strohal v. Austria*, App. No. 20871/92, Commission Decision, 7 April 1994, para 45.

152 *Goodwin v. UK*, App. No. 17488/90, Merits and Just Satisfaction, 27 March 1996.

153 *Goodwin v. UK*, App. No. 17488/90, Commission Report, 1 March 1993, para 48.

such information through non-consensual brain-reading, such as lie detection and the concealed information test do, will probably neither fall within the scope of the right to freedom of thought.

Of note, further technological developments might change this view. After all, if novel methods of interpretation, improved decoding systems, or new technology will (ever) enable to accurately draw inferences about real-time thoughts of an individual, the acquired information might then potentially (also) contain thoughts relating to one's philosophical convictions, political preferences, or other views that attain a certain level of cogency, seriousness, cohesion, and importance. In addition, we cannot exclude the possibility that collateral information may 'accidentally' enable the identification of mental content that is covered by Article 9 ECHR. However, as long as such possibilities are, in general, reserved for the field of 'neuroscience fiction', non-consensual brain-reading in criminal justice is probably not prohibited under Article 9 ECHR.

In order to amend this situation, one can argue to revise the right to freedom of thought in such a way that it does embrace the mental properties yielded through present brain-reading technologies—that is, that it prohibits the non-consensual disclosure of practically any mental state about anything. Based on the proposals to revise freedom of thought as discussed in Section IV, in what follows it is examined whether such a revision would be necessary in the European context.

As outlined in Section IV, both Bublitz and McCarthy-Jones proposed to broaden the scope of freedom of thought, eg by understanding the right in such a way that it encompasses any mental property that has content or meaning. However, since in some cases good reasons could exist to disclose particular mental content of an individual, both authors call the absolute nature of freedom of thought into question. For example, Bublitz suggests to develop some narrow exceptions that could justify certain interferences with the *forum internum* of the right to freedom of thought. This suggestion, ie to reconsider the absolute nature of freedom of thought so that non-consensual brain-reading could in some exceptional cases be justified, follows from the premise that the right not to reveal personal thoughts is enshrined in the absolute *forum internum*, which does not allow for any interferences.¹⁵⁴ This premise is endorsed by Vermeulen and Roosmalen as well, arguing that the *forum internum* protection guarantees that States may never interfere with the citizens most intimate and inner sphere, for example, by 'using inquisitorial methods to discover what his personal thoughts and convictions are'.¹⁵⁵ As they argue, the *forum internum* of Article 9 ECHR prohibits any form of compulsion to express thoughts and religious and non-religious beliefs.

Indeed, as to religious convictions and beliefs, the Court has acknowledged that the right not to reveal one's convictions and beliefs is comprised of the *forum internum*:

What is at stake is the right not to disclose one's religion or beliefs, which falls within the *forum internum* of each individual. This right is inherent in the notion of freedom of religion and conscience. To construe Article 9 as permitting every kind of compulsion

154 Bublitz, *supra* note 3, at 8, 23–25.

155 Vermeulen and Roosmalen, *supra* note 1, at 738.

with a view to the disclosure of religion or belief would strike at the very substance of the freedom it is designed to guarantee.¹⁵⁶

However, in the same case the Court also recognizes such a right of non-disclosure under the *forum externum* of freedom of thought, based on the right (not) to *manifest* a religion or belief:

the right to manifest one's religion or beliefs also has a negative aspect, namely an individual's right not to be obliged to disclose his or her religion or beliefs and not to be obliged to act in such a way that it is possible to conclude that he or she holds – or does not hold – such beliefs. Consequently, State authorities are not entitled to intervene in the sphere of an individual's freedom of conscience and *to seek to discover his or her religious beliefs or oblige him or her to disclose such beliefs*.¹⁵⁷

This latter approach, under which the right not to disclose one's beliefs is enshrined in the *forum externum*, has been followed in earlier cases as well. For example, in *Dimitras and others v. Greece*, the applicants complained about the legal procedure of taking an oath as a witness in criminal proceedings. According to that procedure, any witness who wished to make a solemn declaration had to reveal that he was not an Orthodox Christian, sometimes even disclosing that one was an atheist or of the Jewish faith. The Court considered that the right to *manifest* one's religious convictions (*forum externum*) also comprises a negative aspect, ie the right not to be obliged to reveal one's religious denomination or convictions and not to be compelled to adopt conduct from which it could be inferred that one has—or does not have—such convictions.¹⁵⁸ In *Dimitras and others v. Greece*, requiring a witness to disclose one's religious adherence in Court infringed this negative right of Article 9(1) ECHR.¹⁵⁹ After an examination of Article 9(2) ECHR, the Court concludes that the infringement was not justified in principle nor proportionate to the interests pursued. Article 9 ECHR had been violated.¹⁶⁰ Following a similar line of reasoning, the Court in *Alexandridis v. Greece* concluded a violation of the external part of Article 9 ECHR as well.¹⁶¹

So, whereas the Court on the one hand recognizes a right not to disclose one's religion and belief under the *forum internum*, it also deduces such a right from the freedom of *manifestation*, protected under the *forum externum*. Although this line of reasoning might not be very illuminating,¹⁶² it could potentially provide a first step in developing an approach that on the one hand covers the results of current and future brain-reading technologies and, on the other hand, allows for certain exceptions, as

156 *Sinan Işık v. Turkey*, App. No. 21924/05, Merits and Just Satisfaction, 2 May 2010, para 42.

157 *Id.* para 41 (italicization SL). See also *Wasmuth v. Germany*, App. No. 12884/03, Merits and Just Satisfaction, 17 February 2011, paras 50 and 51.

158 *Dimitras and others v. Greece*, App. Nos 42837/06, 3237/07, 3269/07, 35793/07 and 6099/08, Merits and Just Satisfaction, 3 June 2010, para 78.

159 *Id.* para 80.

160 *Id.* para 88. Cf. *Wasmuth v. Germany*, App. No. 12884/03, Merits and Just Satisfaction, 17 February 2011, paras 51–54: the tax obligation upon the applicant to disclose his non-affiliation which the church was not disproportionate with the aims pursued.

161 *Alexandridis v. Greece*, App. No. 19516/06, Merits and Just Satisfaction, 21 February 2008, para 38. See also *Wasmuth v. Germany*, App. No. 12884/03, Merits and Just Satisfaction, 17 February 2011, para 50.

162 Cf. Taylor, *supra* note 1, at 127–135.

suggested by both Bublitz and McCarthy-Jones (see Section IV)—without revising Article 9 ECHR. I explain this below.

As to the right to non-disclosure of religious convictions, the Court seems to struggle whether this is a typical right protected by the absolute *forum internum* of Article 9(1) ECHR or is rather part of the right to manifestation guaranteed by the *forum externum*.¹⁶³ In line with this struggle, two general approaches are conceivable for non-consensual brain-reading in criminal law. First, the Court could consider a complaint about a forensic lie detection or concealed information test under the *forum internum*. Most probably, non-consensual brain-reading would then not constitute an interference, because the results of these tests will normally not qualify as a thought in the meaning of Article 9(1) ECHR.

Under the second approach, the Court could consider such a complaint under the negative aspect of the right to manifest one's thoughts, ie the right not to disclose them. However, as noticed in Section III.A, Article 9 ECHR does not embrace the 'manifestation' of thoughts. Instead, the expression of thoughts is protected under Article 10 ECHR, together with the expression of other ideas, opinions, and information that do not necessarily attain a certain level of cogency, seriousness, cohesion, and importance.¹⁶⁴ As previously mentioned, the Grand Chamber does not rule out that the right to freedom of expression also comprises a negative aspect: a right not to express or impart opinions, ideas, and information.¹⁶⁵ In addition, the scope of freedom of (non-)expression is considered 'extremely broad',¹⁶⁶ not only comprising the substance of (almost any) information and idea but also protecting 'a diverse variety of forms and means in which they are manifested, transmitted, and received'.¹⁶⁷ Following this second approach, non-consensual brain-reading in criminal justice will on the one hand be covered by the freedom not to impart information, opinions, and ideas pursuant to Article 10(1) ECHR, while, on the other hand, certain infringements could in some cases be justified under Article 10(2) ECHR, eg for the detection, prosecution, and prevention of crime.¹⁶⁸ Hence, under such an approach, both suggestions of Bublitz and McCarthy-Jones can (more or less) be realized, without the need of revising one of the foundations of a democratic society: the absolute right to freedom of thought. Of course, following such an approach raises novel questions under Article 10 ECHR, which deserve further debate.

As long as non-consensual brain-reading in criminal justice belongs to the field of 'neuroscience fiction', we can only guess which approach the Court will follow. Yet,

163 Cf. *Id.* at 159, 199–202.

164 As Evans 1997, *supra* note 1, at 285 writes: 'a pattern of "thought" or "conscience" can only be "expressed". Therefore, there can be no question of manifesting or "actualizing" thought or conscience under Article 9. Expression of thought or conscience are the exclusive preserve of Article 10.' See also Murdoch, *supra* note 39, at 16; Bublitz, *supra* note 3, at 2.

165 *Gillberg v. Sweden*, App. No. 41723/06, Merits and Just Satisfaction, 3 April 2012, para 86; *Wanner v. Germany*, App. No. 26892/12, Admissibility, 23 October 2018, para 39. See also *Strohal v. Austria*, App. No. 20871/92, Commission Decision, 7 April 1994.

166 Rainey, Wicks and Ovey, *supra* note 38, at 483.

167 Harris et al., *supra* note 1, at 594.

168 See, eg *Wanner v. Germany*, App. No. 26892/12, Admissibility, 23 October 2018; *Strohal v. Austria*, App. No. 20871/92, Commission Decision, 7 April 1994.

in view of the somewhat narrow scope of the *forum internum*,¹⁶⁹ and the Strasbourg's tendency of interpreting complaints as concerning 'manifestation', rather than considering them under the inner part of Article 9 ECHR,¹⁷⁰ it is not unreasonable to assume that the Court would be inclined to consider an obligation to reveal one's memories or lies through brain-reading under the right not to impart information, ideas, and opinions (Article 10 ECHR), rather than under the *forum internum* of freedom of thought (Article 9 ECHR). Such an approach would also align with the way the Court currently deals with obligatory witness testimonies, basically revealing similar mental content as forensic lie detection and concealed information tests.

Of note, as to defendants in criminal proceedings, employing coercion to provide self-incriminating information will normally not be considered under the right to non-expression pursuant to Article 10 ECHR but rather under the privilege against self-incrimination as guaranteed under Article 6 ECHR.¹⁷¹ Yet, the doctrine on the privilege is complex, and it will presumably not cover each type of brain-reading but rather only those applications that require participation of the subject.¹⁷² In addition, as briefly mentioned in the introduction, apart from Articles 10 and 6 ECHR, deploying non-consensual brain-reading in criminal justice will, obviously, also raise issues under the generic right to respect for private life pursuant to Article 8 ECHR.¹⁷³

VI. CONCLUDING THOUGHTS

Since advances in brain-reading technology are changing traditional epistemic boundaries, yielding information from the brain that enables to draw inferences about particular mental states, the sustainability of the present framework of European human rights has been called into question. More specifically, it has been argued that, in order to provide adequate human rights protection from non-consensual brain-reading, the right to freedom of thought should be revised, making it 'fit for the future' again. From the perspective of criminal justice, the present paper examined whether such a revision would indeed be necessary within the European legal context. It argued that to realize the general aims of present proposals to revise freedom of thought—ie to broaden its scope so as to embrace brain-reading and allowing for some exceptions—revising Article 9 ECHR is not necessary, since the right to (non-)expression pursuant to Article 10 ECHR has at present already the ability to cover non-consensual brain-reading, while it also provides for the possibility to justify certain infringements, eg for the detection, prosecution, and prevention of crime. Hence, instead of revising the absolute right to freedom of thought, a legal approach tailored to brain-reading could be developed under the already existing right not to convey information, ideas, and opinions as guaranteed by Article 10 ECHR, together with the generic right to respect for private life pursuant to Article 8 ECHR.

169 Harris et al. *supra* note 1, at 573; Murdoch, *supra* note 39, at 16; Evans 1997, *supra* note 1, at 294–295; Bublitz, *supra* note 24, at 1317.

170 Taylor, *supra* note 1, at 116–202.

171 *Heaney and McGuinness v. Ireland*, App. No. 34720/97, Merits and Just Satisfaction, 21 December 2000, para 62; *Quinn v. Ireland*, App. No. 36887/97, Merits and Just Satisfaction, para 63.

172 Lighthart et al., *supra* note 14. An examination of the intricacies raised by forensic brain-reading in light of the privilege against self-incrimination pursuant to Article 6 ECHR exceeds the scope of the present paper.

173 Lighthart, *supra* note 14.

Note, finally, that the present paper focused on neurotechnological brain-reading in criminal law. Yet, as noted in the introduction, discussions over freedom of thought are elicited by advances in other technologies as well, such as neuroenhancement, closed-loop brain stimulation, nudging, and persuasive technologies. Whether the present interpretations of existing human rights provide sufficient protection in view of these developments deserves further debate.