Promoting Integrity as an Integral Dimension of Excellence in Research

***

Codes and legislation

DOCUMENT DESCRIPTION

Deliverable Number	D III.4
Work Package	WP III
Task	T III.4
Type	Report
Version	1.0
Number of Pages	45
Due Date of Deliverable	Month 20, 31/08/2016 [extensions granted]
Actual Submission Date	Month 32, 23/04/2018
Dissemination Level	Public
Authors	Gloria González Fuster and Serge Gutwirth (Law, Science, Technology & Society, Vrije Universiteit Brussel, VUB)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 665926.

Table of Contents

Introduction

This report relates to the empirical work conducted under the *Promoting Integrity as an Integral Dimension of Excellence in Research* (PRINTEGER) research project on research integrity and scientific misconduct.[1] It focuses on the findings resulting from the analysis of existing codes and legislation in this area, in order to allow for the identification of relevant input both for training materials and policy recommendations. It builds upon a prior inventory of key documents carried out jointly by the research consortium's partners, as well as a prior investigation on the role of law in the field which resulted in PRINTEGER Deliverable DII.4.[2]

The present deliverable combines a study of relevant legal requirements, codes and legislation (Section 1), in particular searching for remarkable commonalities and salient frictions, with a discussion on some of the upcoming regulatory challenges in the area of research integrity and scientific misconduct (Section 2). The selection of analysed instruments reflects the geographical spread of the PRINTEGER research project but is not exclusively limited to it, and includes references to international instruments as well as policy documents when suitable for contextualisation and assessment of the issues at stake. The specific question of designing 'fair procedures' for the follow up of allegations of scientific misconduct is discussed in a separate deliverable - PRINTEGER Deliverable DIII.10.

2. Analysis of codes and legislation

As described in PRINTEGER Deliverable DII.4, heterogeneous approaches to regulation of research integrity coexist in Europe, granting different roles to law, and relying differently (and sometimes, not at all) on the existence of ad hoc codes and legislation.[3] There is therefore no single European model, or even a shared European approach to regulation in the area of research integrity and scientific misconduct. Additionally, existing codes and legal instruments sometimes refer to other codes and instruments in different manners.

Taking into account the disparity of national (and sometimes sub-national) approaches, but also the great number of codes and legal instruments that could be regarded as directly or indirectly applicable to the conduct of research in Europe, the present report

[1] More information about PRINTEGER can be found at the project's website: https://printeger.eu/.
[2] Gloria González Fuster and Serge Gutwirth, 'Promoting Integrity as an Integral Dimension of Excellence in Research: D II.4 Legal Analysis, PRINTEGER', 2016.
[3] For earlier overviews of policy and institutional approaches, see: Simon Godecharle, Ben Nemery, and Kris Dierickx, 'Guidance on Research Integrity: No Union in Europe', *The Lancet* 381, no. 9872 (2013): 1097–98; Olivier Boehme et al., 'Research Integrity Practices in Science Europe Member Organisations' (Science Europe, July 2016). Another earlier useful panorama: European Science Foundation (ESF), 'Stewards of Integrity: Institutional Approaches to Promote and Safeguard Good Research Practice in Europe - Survey Report' (Strasbourg, April 2008).

cannot pretend to provide a comprehensive picture of all said applicable instruments. The discussion will thus focus on key instruments or provisions regarded as particularly significant for the normative framing of research integrity and scientific misconduct in Europe, and aiming specifically at this objective.

The present section first introduces the basic parameters of applicable law in this field from a European Union (EU) perspective, by describing both the relevant fundamental rights requirements, and the appropriate provisions of EU Treaties. Second, it presents pertinent case law of the European Court of Human Rights (ECHR). Third, it describes some of the prominent features of the analysed instruments, while at the same time opening the question of what could be the problematic gaps or frictions in the resulting panorama.

1.1 EU law

From an EU perspective, the key provisions circumscribing the legal framework applicable to research integrity and scientific misconduct are to be found, first, in the Charter of Fundamental Rights of the EU, and, second, in EU Treaties.

First, the **EU Charter of Fundamental Rights** establishes in its Article 13, on *Freedom of the arts and sciences*, that *'The arts and scientific research shall be free of constraint'* and that '*Academic freedom shall be respected*'. This provision, as a matter of fact, mirrors similar clauses present in many Member States' constitutions. In Germany, for instance, Article 5 of the German Basic Law (*Grundgesetz*) recognises that *'arts and sciences, research and teaching shall be free'*.[4]

EU fundamental rights requirements also echo universal human rights standards. A 2017 **UNESCO Recommendation on Science and Scientific Researchers** similarly emphasises the need for states to ensure that:

> *'in the performance of research and development, scientific researchers respect public accountability while at the same time enjoying the degree of autonomy appropriate to their task and to the advancement of science and technology. It should be fully taken into account that creativity of scientific researchers should be*

[4] Also pointing this out: Saskia K. Nagel et al., 'Ethics Assessment in Different Countries: Germany' (Stakeholders Acting Together on the Ethical Impact Assessment of Research and Innovation (SATORI), June 2015), 10. Other constitutional systems protect academic freedom under freedom of expression; in reference to the Netherlands: Philip Jansen and Wessel Reijers, 'Ethics Assessment in Different Countries: The Netherlands' (Stakeholders Acting Together on the Ethical Impact Assessment of Research and Innovation (SATORI), June 2015), 10.

promoted in national policy on the basis of utmost respect for the autonomy and freedom of research indispensable to scientific progress'.[5]

The UNESCO Recommendation's Preamble also highlights the connection between academic freedom and the quality of science, advancing that:

'open communication of the results, hypotheses and opinions - as suggested by the phrase "academic freedom" - lies at the very heart of the scientific process, and provides the strongest guarantee of accuracy and objectivity of scientific results'.[6]

Second, for an understanding of the legal framework applicable to research integrity and scientific misconduct in the EU, it is necessary to take into account **EU Treaties**, which delimit the competence of the EU, and thus the ambitions and limitations of EU policy action. The crucial provision in this regard is Article 179 of the Treaty on the Functioning of the EU (TFEU): Art. 179(1) of the TFEU establishes that the EU shall achieve a European research area *'in which researchers, scientific knowledge and technology circulate freely'*, and Art. 179(2) of the TFEU specifies that for such purpose the EU shall encourage undertakings, research centres and universities, supporting their efforts to cooperate with one another, '*aiming notably, at permitting researchers to cooperate freely across borders'*, in particular *inter alia* through *'the removal of legal* (…) *obstacles to that cooperation'.*

For the interpretation of this provision, it is necessary to refer to a Declaration about it which accompanied the signing of the Treaty of Lisbon. The Declaration notes the existence of an agreement among signatories regarding the fact that any EU action in the area of research and technological development *'will pay due respect to the fundamental orientations and choices of the research policies of the Member States'*.[7] By doing so, the Declaration stresses the importance, at least for some Member States, of the respect of their specific policy choices in the field of research.

1.2 Case law of the European Court of Human Rights

Lorem The standards set by the **European Convention on Human Rights (ECHR)** are also relevant for the determination of EU law fundamental rights requirements. The European Court of Human Rights (ECtHR), based in Strasbourg and maximum interpreter

[5] Art. 10 of the UNESCO Recommendation on Science and Scientific Researchers adopted on 13 November 2017, and superseding the Recommendation on the Status of Scientific Researchers of 20 November 1974 adopted by the General Conference of UNESCO at its 18th session (18 C/Resolution 40).
[6] See 4th paragraph of the Recommendation.
[7] Declarations annexed to the Final Act of the Intergovernmental Conference which adopted the Treaty of Lisbon, signed on 13 December 2007, #34: Declaration on Article 179 of the Treaty on the Functioning of the European Union.

of the ECHR, has ruled on issues related to scientific research mainly on the basis of Article 8 of the ECHR, concerning the right to respect for private life, and Article 10, on the right to freedom of expression. Although there is no explicit reference in the ECHR to science or academia, the ECtHR has recognised the existence of '*academic freedom in research and in training*', which '*should guarantee freedom of expression and of action, freedom to disseminate information and freedom to conduct research and distribute knowledge and truth without restriction*'.[8] Additionally, the Court's case law underlines that such freedom *'is not restricted to academic or scientific research, but also extends to the academics' freedom to express freely their views and opinions, even if controversial or unpopular, in the areas of their research, professional expertise and competence*'.[9]

The issues addressed by the Strasbourg Court can be very varied.[10] They are sometimes particularly closely related to research integrity, or at least to both the importance and limits of the scrutiny of scientific practices.

In 2007, the ECtHR decided on a case concerning Mr Marian Boldea, lecturer at the Faculty of Automation and Computer Science of the Polytechnic University of Timişoara.[11] At a meeting of the teaching staff he attended, the Dean opened a discussion on whether two colleagues had incurred in plagiarism in scientific publications, and Boldea was the only person to agree with such an idea. The meeting concluded there had been no plagiarism, but at the same time established that the publications at stake did not provide scientific references in the field, and an oral warning was delivered to the authors.[12] The two authors later filed a criminal complaint for defamation against Boldea, who was eventually condemned to pay an administrative fine. Before the ECtHR, the applicant claims among other things that there has been a violation of his right to freedom of expression protected under Article 10 of the ECHR. In finding the existence of such a violation, the Court emphasizes the need to take into account the context of the accusations of plagiarism in which he was involved, concretely the fact that they were based on preliminary evidence[13] and their professional nature, as well as the fact that the applicant had actually been requested to share his opinions on the matter during a meeting convened by the Dean[14] - a series of factors justifying, in the Court's view, that protection shall have been granted.

[8] Judgment of the Court (Second Section) of 27 May 2014, *Case of Mustafa Erdoğan and Others v. Turkey,* ECLI:CE:ECHR:2014:0527JUD000034604, § 40.
[9] Idem.
[10] For instance, the ECtHR has established that the right to respect for private life guaranteed by Article 8 of the ECHR can encompass the right of a woman to make use of embryos obtained from in vitro fertilisation for the purposes of donating them to scientific research, as the ability to exercise a conscious and considered choice regarding the fate of her embryos concerns an intimate aspect of her personal life and accordingly relates to her right to self-determination (Judgment of the Court (Grand Chamber) of 27 August 2015, *Case of Parrillo v. Italy*, ECLI:CE:ECHR:2015:0827JUD004647011, esp. § 149 and § 159).
[11] Judgment of the Court (Third Section) of 23 February 2007, *Case of Boldea v. Romania,* ECLI:CE:ECHR:2007:0215JUD001999702.
[12] *Boldea,* § 6.
[13] Ibid., § 56.
[14] Ibid., § 57.

In 2009, the Strasbourg Court ruled in a case opposing a Turkish national, Mr Vehbi Doğan Sorguç, to the Turkish government, in which the applicant - a professor of construction management at the Istanbul Technical University - alleged that his right to freedom of expression under Article 10 of the ECHR had been breached. In a nutshell, Doğan had distributed a paper in which he criticised the way in which the examinations for assistant professors were being administered at his University, and the domestic courts had qualified his criticism of the academic system as defamation.[15] The case was more concretely triggered by the fact that an assistant professor had brought a civil action for compensation against Sorguç, claiming that certain remarks used in the distributed paper constituted an attack on his reputation, although the assistant professor's name was actually not mentioned in said paper. In its assessment of the case, the ECtHR considered that the Turkish court previously deciding on the matter had not convincingly balanced, on the one hand, the protection of the unnamed individual (the assistant professor claiming his reputation had been attacked) and, on the other, the applicant's right to freedom of expression and the general interest in promoting this freedom where issues of public interest are concerned.[16] More specifically, the Court underlined in this context '*the importance of academic freedom, which comprises the academics' freedom to express freely their opinion about the institution or system in which they work'*.[17]

Another case, also of 2009, concerned Mr László Karsai, a Hungarian historian and university professor specialising in research about the Second World War and, in particular, the extermination of Jews and Roma.[18] In 2004, there had been a public controversy in Hungary about whether a statue should be raised to commemorate somebody who, in the historian's view, was one of the most reprehensible figures of Hungarian history, notably responsible for substantial anti-Semitic legislation.[19] Karsai published an article on the subject in a weekly paper,[20] in which he criticised right-wing media and accused them of making anti-Semitic statements; concretely, he appeared to refer to a certain Mr B.T.. The latter brought an action against Karsai, claiming his reputation had been tarnished by the paper. National courts upheld this claim and ordered Karsai to arrange for the publication of a rectification, as well as to pay a compensation for his statements.[21] All this, according to Karsai, amounted to an infringement of his freedom of expression guaranteed by Article 10 of the ECHR. The ECtHR assessment confirmed the existence of such infringement, specifically on the grounds of the general interest in promoting the right to freedom of expression where

[15] Judgment of the Court (Second Section) of 23 June 2009, *Case of Sorguç v. Turkey,* ECLI:CE:ECHR:2009:0623JUD001708903.
[16] *Sorguç,* § 36.
[17] Ibid., § 35.
[18] Judgment of the Court (Second Section) of 1 December 2009, *Case of Karsai v. Hungary*, ECLI:CE:ECHR:2009:1201JUD000538007.
[19] *Karsai,* § 8.
[20] Ibid., § 9.
[21] Ibid., § 13.

issues of public interest are concerned.[22] The fact that the debate was of the utmost public interest is corroborated in the eyes of the Strasbourg Court by the facts that the applicant was *'a historian who had published extensively on the Holocaust'*, and that he wrote the impugned article *'in the course of a debate concerning the intentions of a country, with episodes of totalitarianism in its history, to come to terms with its past'*. [23]

In 2010, the European Court stressed again the importance of academic freedom in a case concerning a book based on a PhD thesis on 'stars' as a phenomenon, and analysing the life of a specific singer as an example of such phenomenon.[24] The singer had requested the book to be prohibited, arguing it interfered with his rights. The ECtHR observed the book had been written by an academic, and that it presented an analysis based on scientific tools, so it was definitely not related to any press devoted to the mere satisfaction of the desire of a certain audience to know more about the strictly private life of some public persons.[25] Prohibiting the book was thus a violation of the author's freedom of expression guaranteed by Article 10 of the ECHR.

In 2012, another interesting judgment was published by the Strasbourg Court.[26] It concerned Mr Christopher Gillberg, a professor at the University of Gothenburg specialising in child and adolescent psychiatry, who between 1977 and 1992 had led a research project on cases of Attention-Deficit Hyperactivity Disorder (ADHD) or Deficits in Attention, Motor Control and Perception (DAMP) in children.[27] Parents to almost 150 children volunteered to participate to the study, and certain assurances were made to them (and later to the young people themselves) concerning the confidentiality of the data collected,[28] including statements such as '*All data will be dealt with in confidentiality and classified as secret'*, and *'No data processing that enables the identification of your child will take place'*. [29] According to Gillberg, the Ethics Committee of the University of Gothenburg had made it a precondition in their permits to allow for the study that sensitive information about participating individuals participating would be accessible only to him and his staff,[30] even though, in reality, according to the Court, the permits at stake did not contain any specific reference to secrecy.[31]

Several doctoral theses were eventually based on the data gathered for that project.[32] In 2002, a sociologist working at Lund University requested access to its background

[22] Ibid., § 37.
[23] Ibid., § 35.
[24] Judgment of the Court (Second Chamber) of 8 June 2010, *Case of Sapan v. Turkey,* ECLI:CE:ECHR:2010:0608JUD004410204.
[25] *Sapan,* § 35.
[26] Judgment of the Court (Grand Chamber) of 3 April 2012, *Case of Gillberg v. Sweden*, ECLI:CE:ECHR:2012:0403JUD004172306.
[27] *Gillberg*, § 11.
[28] Idem.
[29] Ibid., § 14.
[30] Ibid., § 12.
[31] Ibid., § 13.
[32] Ibid., § 11.

material (excluding personal data), to be released to her with conditions of an applicable Secrecy Act. Her request was refused by the University of Gothenburg, notably on the grounds that the material contained sensitive data. Following an appeal lodged with the Administrative Court of Appeal, the University was asked to examine whether the material could be released after removal of identifying information, or with conditions restricting the sociologist's right to pass on or use the data, but the University of Gothenburg again refused the request. A second appeal followed.[33] In the meantime, a paediatrician also requested access to the material. Eventually, the Administrative Court of Appeal determined that both the sociologist and the paediatrician should be granted access to the data, subject to conditions in order to protect the interests of the individuals concerned.[34]

While the judicial procedure was unfolding, the Vice-Chancellor of the University of Gothenburg wrote a letter ordering Gillberg to give access to the documents on the University's premises, in a determined location to which they were to be moved without delay. He was thus requested to arrange for allowing the collection of the documents, and to ensure all keys to pertinent rooms and filing cabinets were handed over.[35] Gillberg replied, also by letter, he did not intend to follow such instructions.[36] A series of meetings and discussions took place afterwards, and, according to the applicant, during a weekend, three of his colleagues destroyed all the research material.[37] In light of these developments, the Swedish Parliamentary Ombudsman initiated criminal proceedings against Gillberg, who was convicted of misuse of office, given a suspended sentence and ordered to pay a fine. The Vice-Chancellor of the University was also convicted of misuse of office for having disregarded, through negligence, his obligations. The three colleagues who had destroyed the research material were convicted of the offence of suppression of documents, and also given a suspended sentence, and they were fined.[38]

Gillberg brought the case before the ECtHR complaining his rights under Articles 8 and 10 of the ECHR had been breached by the criminal conviction. The Strasbourg Court first determined that the criminal conviction did not, such, affect his rights under Article 8 of the ECHR,[39] recalling in passing he was a public official researcher exercising public authority at a public institution, and *'not the children's doctor or psychiatrist and he did not represent the children or the parents'*.[40] In relation to Article 10 of the ECHR, the question for the Court was whether the applicant could have a negative right to freedom of expression in the circumstances of the case.[41] More concretely, this question was narrowed down to whether Gillberg, as a public employee, had an independent negative

[33] Ibid., § 16.
[34] Ibid., § 18-23.
[35] Ibid., § 25.
[36] Ibid., § 26.
[37] Ibid., § 32.
[38] Ibid., § 32.
[39] Ibid., § 34.
[40] Ibid., § 64.
[41] Ibid., § 86.

right within the meaning of Article 10 of the ECHR '*not to make the research material available*',[42] taking into account the material did not belong to him but to his employer, the University of Gothenburg, and whether he could have such a right despite the fact that the university actually intended to comply with the final judgments of the Administrative Court of Appeal by making the research available. In this light, the Strasbourg Court finding that the applicant had such a right '*would run counter to the property rights of the University of Gothenburg*', but would also impinge on the other researchers' rights to receive information, and to have final judgments implemented.[43]

In 2014, the ECtHR ruled in a case in which the applicant complained against Turkey for having financially supported publications, including a book, containing remarks and expressions that reflected anti-Roma sentiment.[44] The applicant relied for such a claim on Article 14 of the ECHR, on protection from discrimination, in conjunction with Article 8 of the ECHR. The European Court observed that the Turkish courts that had dealt with the case had been called to strike a fair balance between the applicant's rights as a member of the Roma community, on the one hand, and the freedom of the author of the books to carry out academic/scientific research on a specific ethnic group and publish his findings, on the other, and noted that the courts had taken into account, *inter alia*, a report prepared by seven university professors which found that the book in dispute was an academic study based on scientific research.[45] The ECtHR appreciated that national courts '*attached importance to the fact that the book had been written by an academic and was therefore to be considered as an academic work*', adding it was '*consistent with the Court's case-law to submit to careful scrutiny any restrictions on the freedom of academics to carry out research and to publish their findings*'.[46] More specifically, it is also welcomed the national courts had, in line with its own approach, considered the controversial passages '*not in isolation but in the context of the book*', and that they had taken into account '*the method of research used by the author*', encompassing observation of the lifestyle of the Roma community '*according to scientific observation principles*'.[47]

In 2015, the Strasbourg Court decided in a case originating in a conflict between the Orel State Technical University, in Russia, and a member of its staff - a tenured professor in the physics department.[48] In 2006 the University's president had convened a university-wide conference for the election of the university's academic senate, its standing governing body.[49] Unhappy with the lack of information about the procedure, the professor took the floor during the event to express his views.[50] The Orel University then sued the applicant

[42] Ibid., § 92.
[43] Ibid., § 93.
[44] Judgment of the Court of 15 March 2012, *Case of Aksu v. Turkey,* ECLI:CE:ECHR:2012:0315JUD000414904.
[45] *Aksu*, § 69.
[46] Ibid., § 71.
[47] Ibid., § 72.
[48] Judgment of the Court (First Section) of 8 October 2015, *Case of Kharlamov v. Russia,* ECLI:CE:ECHR:2015:1008JUD002744707.
[49] *Kharlamov*, § 6.
[50] Ibid., § 7.

for defamation, arguing the speech had undermined the professional reputation of the institution and of its academic senate.[51] The first domestic court dealing with the case found the lecturer liable for defamation, and notably ordered him to read a refutation at the following University conference. Following an appeal, another court upheld the initial judgment but slightly altered its content, notably ordering the refutation to be read by the University's president rather than by the applicant.[52] The applicant claimed before the ECtHR all this amounted to a violation of his right to freedom of expression, as protected by Article 10 of the ECHR. In its positive assessment, the Strasbourg Court observes that generally '*employees owe to their employer a duty of loyalty, reserve and discretion'*, but that at the same time the Court cannot '*lose sight of the academic context of the debate'*.[53] This implies, the Court maintains, that the principle of open discussion of issues of professional interest must thus be construed '*as an element of a broader concept of academic autonomy which encompasses the academics' freedom to express their opinion about the institution or system in which they work'*.[54]

In 2016, the ECtHR ruled in a case related to a dispute between the University of Agronomical Sciences and Veterinary Medicine, a State university in Romania, and a member of its teaching staff.[55] Between 2002 and 2005, the applicant had submitted many requests for the creation of a position of full professor in his department, but he was informed in 2005 by the rector that, for financial and other objective reasons, a new professor position could not be created.[56] During the same period, he had been informing the Dean and the Rector of the University of suspicions of intellectual theft and plagiarism at the institution, and, in the absence of any internal follow-up measures, communicated the suspicions to the press. In this context, he was told that the redistribution of the faculty's space obliged to clear the laboratory he was using.[57] The applicant being also a member of a non-profit organisation called the European Association of University Teaching Staff in Romania, fighting the degradation of education and research standards by making known the abuses, unlawful acts and corruption in education, he participated to a press conference by the organisation, and in that context published a paper putting forward a number of accusations of corruption. He notably referred to the deputy rector, who supervised and signed a eulogistic foreword to a book of a colleague described as 80% a copy of another book.[58] The deputy rector lodged a joint criminal and civil complaint against the applicant for defamation; the domestic court partially allowed the civil complaint, ordering the applicant to pay a compensation for non-pecuniary damage

[51] Ibid., § 9.
[52] Ibid., § 13.
[53] Ibid., § 27.
[54] Idem.
[55] Judgment of the Court (Fourth Section) of 19 January 2016, *Case of Aurelian Oprea v. Romania,* ECLI:CE:ECHR:2016:0119JUD001213808.

[56] *Aurelian Oprea*, § 7.
[57] Ibid., § 10.
[58] Ibid., § 11-15.

for the way he had brought to the attention of journalists the information regarding his professional activity;[59] a separate civil action for compensation was also lodged later.

Eventually, the University issued a decision by which it ordered the seizure of one third of the applicant's monthly salary, representing compensation for non-pecuniary damage and the legal expenses awarded to the deputy rector by the courts.[60] Amidst other developments, the University decreased the applicant's salary on account of unjustified absences from work, but he contested such absences, pointing out the actual reason for sanctioning him was his conflict with the management because he had made public that the deputy rector had encouraged plagiarism.[61] Additionally, the University issued a decision by which it applied a disciplinary sanction consisting in a two-years suspension of his right to apply for a higher teaching position, obtain a teaching degree or take up a management position, based on a variety of reasons (unjustified absences, non-compliance with the teaching curriculum, and contempt and ignorance of management decisions concerning the ordered clearance of laboratory space).[62]

The applicant complained before the ECtHR that his right to freedom of expression had been interfered with, in breach of Article 10 of the Convention.[63] In this context, the Strasbourg Court noted that the signalling by an employee in the public sector of illegal conduct or wrongdoing in the workplace should, in certain circumstances, enjoy protection, and that that is the case '*in particular where the employee or civil servant concerned is the only person, or part of a small category of persons, aware of what is happening at work and is thus best placed to act in the public interest by alerting the employer or the public at large*'.[64] Noting the applicant's allegations concerned a topic of public interest, namely the legality and morality of education at university level, the Court states these are *'important issues in a democratic society'*, about which the public had a legitimate interest in being informed,[65] even though it does not accept the applicant's argumentation according to which he had acted as a whistle-blower.[66] The Court concludes in any case there has indeed been a violation of Article 10 of the ECHR.[67]

The commented cases do not fully encompass all issues that codes and legislation on research integrity typically cover. They do, however, show some of the many ways in which academics and scientists' work can be questioned, disputed, and defended through legal means, and some of the consequences and critical factors surrounding such disputes.

[59] Ibid., § 22.
[60] Ibid., § 28.
[61] Ibid., § 31.
[62] Ibid., § 33.
[63] Ibid., § 41.
[64] Ibid., § 59.
[65] Ibid., § 65.
[66] Ibid., § 69.
[67] Ibid., § 80.

All in all, these cases illustrate well the many rights and interests that must be taken into account in cases in which there are conflicts between academics and scientists and the institutions for which they work, between them and other actors (e. g. the media, but also potentially the objects/subjects of their research), or between academics and scientists among themselves – be they at the same or at different institutions. The summarised cases also show how these disputes are paradigmatically addressed by the ECtHR, and thus from a human rights perspective, not only considering specifically the rights and interests of those involved in practice but also the general interest of society, a public interest that connects the solution of the cases to the imperative of safeguarding all issues that are important in a democratic society, under which fall for instance the legality and morality of education at university level.

1.3. Key features of applicable instruments

Existing codes and legislation can be analysed by describing and comparing their basic parameters (scope, purpose, addressees), as well as breaking down their content into, on the one hand, the delimitation of positive obligations ('good practices', or the substance of research integrity), and, on the other, the determination of scientific misconduct.[68]

Below are presented the most prominent features of reviewed instruments, by taking as basic reference the European Code of Conduct for Research Integrity in its 2017 Revised Version.[69] This instrument, in addition to being particularly influential in the shaping of national research integrity policies in Europe, bears special relevance from an EU perspective for having been endorsed by EU institutions. The selection of instruments reviewed, based in other mapping exercises within the PRINTEGER project,[70] has privileged instruments emanating from Europe and with a discernible focus on research integrity and/or scientific misconduct.

From a legal perspective, it is important to emphasise that codes and legislation explicitly referring to research integrity such as those reviewed here are far from being the only instruments potentially legally relevant in cases related to research integrity. Other relevant provisions can be found, for instance, in national criminal codes, in disciplinary (deontological) law, in administrative law, in legislation about specific issues such as

[68] The dimensions analysed here correspond partially to the ten dimensions of the framework for the analysis of codes developed by Anderson and Shaw: nature, purpose, impetus, subjects who must obey, authors, grounding in ethics, scope and content, format, language, quality (Melissa S. Anderson and Marta A. Shaw, 'A Framework for Examining Codes of Conduct on Research Integrity', in *Promoting Research Integrity in a Global Environment*, ed. Tony Mayer and Nicholas Steneck (London: World Scientific Publishing, 2012, 133).

[69] All European Academies (ALLEA), The European Code of Conduct for Research Integrity: Revised Edition (Berlin, 2017) [hereafter, 'European Code of Conduct']. The Code was originally developed by the European Science Foundation and ALLEA in 2011; it was presented in its revised version in March 2017. All following references to the Code are to its revised version.

[70] In particular, as mentioned, a prior inventory of key documents carried out jointly by the research consortium's partners.

copyright or personal data protection or information law more in general, or in liability law.[71]

1.3.1 Scope

Research integrity instruments do not systematically define or strictly delimit the practices to which they aim to apply.[72] Typically, codes of conduct tend to be particularly generous in the broadening of their possible scope, targeting for instance all research, or all research in a particular country.

The 2009 **Ethics Code for Scientific Research in Belgium**,[73] in this sense, applies to all disciplines,[74] and was elaborated so it would be observed without restriction in all forms of research, be it fundamental or applied, private or public.[75] Similarly, the **European Code of Conduct for Research Integrity** presents its scope of application as '*research in all scientific and scholarly fields*',[76] research being defined as '*the quest for knowledge obtained through systematic study and thinking, observation and experimentation*',[77] which might be *'carried out in academic, industry and other settings'*.[78] The Code explicitly describes itself as *'relevant and applicable to publicly funded and private research'*.[79]

[71] In this sense, referring to the importance of certain provisions of the German Criminal Code and the German Act on Copyright and Related Rights for the regulation of research integrity in Germany: Nagel et al., 'Ethics Assessment in Different Countries: Germany', 11. For a discussion of the (manifold) possibilities of Belgian Law not specifically aimed at scientific misconduct or the protection of scientific integrity, see : Serge Gutwirth and Jenneke Christiaens, 'Reageren Op Problematisch Wetenschappelijk Gedrag Voorbij de Moralisering: Een Ander Wetenschapsbeleid Is Mogelijk', *Tijdschrift over Cultuur & Criminaliteit* 5, no. 1 (2015): 70–91.

[72] Cf. Art. 1(a) of the 2017 UNESCO Recommendation on Science and Scientific Researchers, which states that: *'(i) 'the word "science" signifies the enterprise whereby humankind, acting individually or in small or large groups, makes an organized attempt, by means of the objective study of observed phenomena and its validation through sharing of findings and data and through peer review, to discover and master the chain of causalities, relations or interactions; brings together in a coordinated form subsystems of knowledge by means of systematic reflection and conceptualization; and thereby furnishes itself with the opportunity of using, to its own advantage, understanding of the processes and phenomena occurring in nature and society; (ii) the term "the sciences" signifies a complex of knowledge, fact and hypothesis, in which the theoretical element is capable of being validated in the short or long term, and to that extent includes the sciences concerned with social facts and phenomena'*. The Recommendation also describes 'scientific researchers' (Art. 1(d)(i)), although it establishes that Member States are to determine the criteria for inclusion in such category (Art. 1(d)(ii).

[73] Code d'éthique de la recherche scientifque en Belgique / Ethische code voor het wetenschappelijk onderzoek in België [hereafter, 'Belgian Ethics Code'], Académie Royale des Sciences, des Lettres et des Beaux Arts de Belgique, l'Académie Royale de Médecine de Belgique, la Koninklijke Vlaamse Academie van België voor Wetenschappen en Kunsten et la Koninklijke Academie voor Geneeskunde van België, with the support of the SPP Politique scientique / POD Wetenschapsbeleid, 2009.

[74] Ibid., 3.

[75] Ibid., 4.

[76] European Code of Conduct, 3.

[77] Idem.

[78] Idem.

[79] Idem.

In the United Kingdom (UK), the **Concordat to Support Research Integrity**[80] presents itself as applying to all fields of research, with the argument that *'[t]he highest standards of integrity are needed in all fields of research'*.[81] Research is defined in rather broad terms:

> *'a process of investigation leading to new insights, effectively shared… It includes work of direct relevance to the needs of commerce, industry, and to the public and voluntary sectors; scholarship; the invention and generation of ideas, images, performances, artefacts including design, where these lead to new or substantially improved insights; and the use of existing knowledge in experimental development to produce new or substantially improved materials, devices, products and processes, including design and construction'.*[82]

The **National Policy Statement on Ensuring Research Integrity in Ireland**[83] generally applies to '*Irish research'*: developed by the Irish Universities Association, it states '*it provides a robust framework which might usefully be adopted by other research performing organisations in Ireland*'.[84] The 2014 **Danish Code of Conduct for Research Integrity**[85] generally applies to all research in Denmark. The 2017 **Estonian Code of Conduct for Research Integrity,**[86] strongly inspired in the Danish Code of Conduct, targets generally all Estonian research. The 2017 **Austrian Agency for Research Integrity Guidelines for Good Scientific Practice**[87] generally refer to their relevance for the governance in the Austrian science and research system.[88] The **Responsible Conduct of Research and Procedures for Handling Allegations of Misconduct in Finland**[89] note they aim to apply to all academic disciplines in Finland.[90] Research organisations can voluntary commit to them.[91]

[80] Concordat to Support Research Integrity, Universities UK, July 2012 [hereafter, 'UK Concordat'].
[81] Ibid., 10.
[82] Ibid., 22.
[83] National Policy statement on Ensuring Research Integrity in Ireland, developed by the Irish Universities Association in collaboration with a series of organisations, 2014 [hereafter, 'Irish Policy Statement'].
[84] Ibid., 2.
[85] Danish Code of Conduct for Research Integrity, Danish Ministry of Higher Education and Science, Copenhagen, November 2014 [hereafter, 'Danish Code of Conduct'].
[86] Estonian Code of Conduct for Research Integrity, Tartu, 2017 [hereafter, 'Estonian Code of Conduct']. Elaborated as a cooperation between Estonian research institutions, the Estonian Academy of Sciences, the Estonian Research Council, and the Ministry of Education and Research.
[87] Austrian Agency for Research Integrity Guidelines for Good Scientific Practice, Österreichische Agentur für wissenschaftliche Integrität (OeAWI), Vienna, 2017 (hereafter, 'OeAWI Guidelines for Good Scientific Practice'].
[88] Ibid., 3.
[89] Responsible Conduct of Research and Procedures for Handling Allegations of Misconduct in Finland, Guidelines of the Finnish Advisory Board on Research Integrity 2012 [hereafter, 'Finnish RCR Guidelines'].
[90] Ibid., 28.
[91] Idem.

Instruments can however have a relatively more limited scope. The **Netherlands Code of Conduct for Academic Practice**[92] applies to academic practice, understood to include scientific and scholarly teaching and research at all universities that have declared to uphold the Code.[93]

Furthermore, often broader instruments coexist with less extensive documents. In Germany, the German Research Foundation's (*Deutsche Forschungsgemeinschaft*, DGF) **Proposals for Safeguarding Good Scientific Practice**[94] are generally concerned with the self-regulation of the science system, while the **Max Planck Society's Rules of Good Scientific Practice**[95] adapted such recommendations to the research conditions of the Max Planck Society.

In terms of scope, in any case, what can be observed is a certain trend in codes and legislation on research integrity to assert a rather extended reach for their relevance, often on the grounds that research integrity is crucial for science and society and the relations between both, and thus no parcel of science and research (which are often left undefined) shall be excluded from integrating research integrity concerns.

1.3.2 Purpose

In Europe, research integrity is only exceptionally regulated nationally via an ad hoc legal instrument setting up directly applicable legal rules. More often, European countries rely on self-regulatory instruments which have the ambition of serving as main inspiration and guide for the field, and might at a later stage acquire legal applicability for instance by being referred to in funding agreements, or by self-adherence by institutions.

The explicit purpose of the **European Code of Conduct for Research Integrity** is '[*t]o serve the research community as framework for self-regulation'*.[96]

The **Netherlands Code of Conduct for Academic Practice** contains principles that all members of the academic community should observe, to be read as general notions of

[92] Association of Universities in the Netherlands (VSNU), Netherlands Code of Conduct for Academic Practice: Principles of good academic teaching and research, The Hague, originally elaborated in 2004 and revised in 2012 and 2014 in consultation with the Royal Netherlands Academy of Arts and Sciences (KNAW) (hereafter, 'Netherlands Code of Conduct').
[93] Preamble to the Netherlands Code of Conduct, § 1.
[94] Deutsche Forschungsgemeinschaft (DGF), Proposals for Safeguarding Good Scientific Practice: Recommendations of the Commission on Professional Self-Regulation in Science, originally published in 1998, amended and updated on 3 July 2013 [hereafter, 'DGF Proposals'].
[95] Max-Planck-Gesellschaft zur Förderung der Wissenschaften, Rules of Good Scientific Practice, adopted by the Senate of the Max Planck Society on November 24, 2000, amended on March 20, 2009.
[96] All European Academies (ALLEA), 'The European Code of Conduct for Research Integrity: Revised Edition', 3.

good academic practice, and aims thus to operate as a self-regulatory instrument,[97] not affecting the overarching principle according to which every Dutch academic practitioner is bound by the frameworks established by Dutch and international legislation.[98] The Code of Conduct presumes the autonomous setting in which universities operate, described as a fundamental aspect of academic freedom,[99] and argues that integrity is the foundation of good and reliable academic practice, as well as an essential condition for external stakeholders' trust in science[100].[101]

The main target of the **UK Concordat** is '*to help to ensure that research produced by or in collaboration with the UK research community is underpinned by the highest standards of rigour and integrity*'.[102] Research Councils UK, known as RCUK, a non-departmental public body which coordinates science policy in the UK, published in 2013 the **RCUK Policy and Guidelines on Governance of Good Research Conduct**,[103] which have been updated since. These Policy and Guidelines on Governance of Good Research Conduct, to be read in conjunction with the UK Concordat, are devoted to setting standards of good research practice, specifying unacceptable research conduct, providing guidelines for reporting and investigating allegations of research misconduct, and clarifying the responsibilities of the Research Councils and research organisations.[104]

The **National Policy Statement on Ensuring Research Integrity in Ireland** aspires to commit the main organisations in Irish research '*to the highest standards of integrity*' in carrying out their research.[105] It endorses international definitions and principles, while arguing that it '*is required for Ireland that is appropriate to our specific national circumstances and the Irish legal situation*', and notes the statement's content was *'influenced significantly'* by the UK Concordat.[106]

The **Danish Code of Conduct for Research Integrity** aims to support a common understanding and common culture of research integrity in Denmark, by providing the Danish research community with a framework to promote commonly agreed principles and standards.[107] It is concerned with what it presents as '*responsible research*'.[108] Not a legally binding document in itself, its notes it shall '*gain full impact when researchers*

[97] A legal obligation to take into account such self-regulatory instrument can arguably be regarded as deriving from Art. 1(7) of the Dutch Higher education and Research Act (Wet op het hoger onderwijs en wetenschappelijk onderzoek), on the ethical aspects of research.
[98] Preamble to the Netherlands Code of Conduct, § 4.
[99] Ibid., § 2.
[100] Translated as 'faith in science' in an un-official English translation made available by Metamorfose Vertalingen BV; '*vertrouwen in de wetenschap*' in the Dutch original.
[101] Preamble to the Netherlands Code of Conduct, § 3.
[102] UK Concordat, 9.
[103] Research Councils UK (RCUK), RCUK Policy and Guidelines on Governance of Good Research Conduct, February 2013, as updated in July 2015 and April 2017 [hereafter, 'RCUK Policy and Guidelines'].
[104] RCUK Policy and Guidelines, 3.
[105] Irish Policy Statement, 2.
[106] Idem.
[107] Danish Code of Conduct, 4.
[108] Ibid., 7.

adhere to the document and when public and private research institutions integrate the document in their institutional framework'.[109]

The objective of the **Estonian Code of Conduct for Research Integrity** is *'to support knowledge about, acceptance and entrenchment of research integrity in the Estonian research community'*.[110] It is meant to complement a pre-existing Code of Ethics of Estonian Scientists.[111]

The objective of the **Responsible Conduct of Research and Procedures for Handling Allegations of Misconduct in Finland** is to promote the responsible conduct of research while ensuring that alleged violations are handled with competence, fairness and expediency.[112] Applying them is described as '*a form of self-regulation that is bound by legislation'*, and '*an integral part of the quality assurance of research organisations*'.[113]

References to the self-regulatory function of the instruments can be read as an assertation of the fact that they do not should be seen as clashing with legal requirements. The **Code of Ethics of the Researchers of the Czech Academy of Sciences**[114] puts forward framework principles of good conduct in science *'seeking to support desirable moral standards in academic research'*.[115] With its **Guidelines for Good Scientific Practice**, the Austrian Agency for Research Integrity aims to contribute to effective self-governance in the Austrian science and research system. The Guidelines are framed as being a complement to – but not in competition with – the legal system.[116]

In Germany, the **Max Planck Society's Rules of Good Scientific Practice** both detail '*the conditions for and specific dangers to good, responsible scientific practice'* and *'plea for cooperation in the further development of the relevant recommendations'*.[117] The rules described are nevertheless presented as to be observed *'over and above the provisions of national, European and international law'*.[118]

Sometimes, instruments portray themselves openly as the result of collaborative work between scientists or research institutions, while at the same time aim to function as drivers for further work. The **Ethics Code for Scientific Research in Belgium** presents itself as offering guidance to researchers based on the experiences of other researchers,

[109] Ibid., 5.
[110] Estonian Code of Conduct, 2.
[111] Code of Ethics of Estonian Scientists, adopted in 2002.
[112] Finnish RCR Guidelines, 28.
[113] Ibid., 30.
[114] Code of Ethics of the Researchers of the Czech Academy of Sciences, as supplemented by Addendum No. 1 from 22 April 2010, Addendum No. 2 from 16 December 2014, and Addendum No. 3 of 15 December 2016 [hereafter, 'Czech Code of Ethics'].
[115] See the Preamble to the Czech Code of Ethics.
[116] OeAWI Guidelines for Good Scientific Practice, 3.
[117] Max Planck Society's Rules of Good Scientific Practice, 1.
[118] Ibid., 2.

and inviting them to pursue the reflection on the matters discussed, both individually and inside research organisations and professional organisations.[119]

As can be seen, generally speaking codes and instruments on research integrity pursue raising the standards of research integrity by facilitating a common, or at least clearer (but not necessarily fixed) understanding of its requirements. What will often be different are the degree of abstraction of the principles (or values, recommendations, standards, rules, etc.) and their regulatory ambitions.

1.3.3 Addressees

Codes and legislation on research integrity generally address both individuals and institutions, sometimes marking clearly the distinct responsibilities incumbent upon them, and occasionally placing a different emphasis on their roles.

The **Netherlands Code of Conduct for Academic Practice**[120] is addressed to all individual academic practitioners, encompassing students, as well as those who bear administrative responsibility for academic practice.[121] The majority of the principles of the **Ethics Code for Scientific Research in Belgium** refer openly to duties of researchers, even though some obligations are addressed to other actors such as research funders.[122] The **Code of Ethics of the Researchers of the Czech Academy of Sciences** addresses generally researchers, but also mentions the responsibility of the institutes of the Czech Academy of Sciences to develop specifications pertaining to their discipline.[123] The **Estonian Code of Conduct for Research Integrity** aims to reach both all Estonian research institutions and the researchers working in Estonia.[124] Similarly, the **Austrian Agency for Research Integrity Guidelines for Good Scientific Practice** addresses '*all persons involved in research*',[125] but also '*organisations that conduct scientific and scholarly research as well as the individual organisational units in which research is conducted*'.[126]

The **European Code of Conduct for Research Integrity** is addressed to *'[r]esearchers, academies, public and private research performing organisations, publishers and other relevant bodies*'.[127]

[119] Belgian Code of Ethics, 3.
[120] Association of Universities in the Netherlands (VSNU), Netherlands Code of Conduct for Academic Practice: Principles of good academic teaching and research, The Hague, originally elaborated in 2004 and revised in 2012 and 2014 in consultation with the Royal Netherlands Academy of Arts and Sciences (KNAW) (hereafter, 'Netherlands Code of Conduct').
[121] Preamble to the Netherlands Code of Conduct, § 1.
[122] Belgian Code of Ethics, 9.
[123] Czech Code of Ethics, VI.
[124] Estonian Code of Conduct, 2.
[125] OeAWI Guidelines for Good Scientific Practice, 5.
[126] Idem.
[127] All European Academies (ALLEA), 'The European Code of Conduct for Research Integrity: Revised Edition', 3.

The **UK Concordat** details different responsibilities of researchers, employers of researchers and funders of research, as well as other organisations engaged with supporting research and researchers (including '*professional, statutory and regulatory bodies; journals and publishers; academies and learned societies; representative bodies; and organisations that provide support and guidance such as the UK Research Integrity*').[128] The document asserts that '*responsibility for ensuring that no misconduct occurs rests primarily with individual researchers*', grounding this idea on the fact that academic freedom is fundamental to the production of excellent research[129] – which could be read as implying that placing the responsibility for research integrity elsewhere would be in tension with academic freedom.

The **UK Policy and Guidelines on Governance of Good Research Conduct** present themselves as '*relevant to all individuals involved in research, irrespective of the subject of research, entry route into research or any other consideration*', noting they apply in particular to: researchers, research support staff and students funded by the Research Councils; applicants for Research Council funding; researchers, research managers and research administrators in institutions in receipt of, or eligible to apply for Research Council funding; Research Council staff and members of Councils, Boards, Panels and Committees, and all individuals contributing to Research Councils' peer review procedures.[130]

The **National Policy Statement on Ensuring Research Integrity in Ireland** enumerates commitments which could be adhered by '*all research performing organisations in Ireland*',[131] and specifies principles to be observed by '*all scientific and scholarly researchers and practitioners*'.[132]

The **Danish Code of Conduct for Research Integrity** addresses researchers, institutions, and in general all parties involved in research. It establishes that institutions shall notably further specify its content with their own policies and procedures, as well as take responsibility for continually informing their research staff about policies and procedures in place.

The **Responsible Conduct of Research and Procedures for Handling Allegations of Misconduct in Finland** addresses researchers, and in general all parties involved in research projects. It notes that both individual researchers and 'the whole research community' are responsible for '*complying with the principles of the responsible conduct of research*'.[133]

[128] UK Concordat, 10.
[129] Ibid., 20.
[130] RCUK Policy and Guidelines, 2.
[131] Irish Policy Statement, 2.
[132] Ibid., 6.
[133] Finnish RCR Guidelines, 31.

In Germany, the **Max Planck Society's Rules of Good Scientific Practice** are *'binding on all persons active in research work at the Max Planck Society'*.[134]

In 2017, the Norwegian legal framework for research integrity was revised,[135] most notably with the objective of establishing by law the principle of research institutions' responsibility for research ethics.[136] This was grounded in the detection of significant variations in how Norwegian institutions handled research ethics issues, encompassing a lack of routines, follow-up and compliance with recognised ethical standards.[137] The institutions' responsibility is envisaged from this perspective in addition to the ethical responsibility of the individual researcher.[138]

There exists a broad policy discussion around where lies the 'ultimate responsibility' for research integrity.[139] In 2015, the **Conclusions on Research Integrity of the Council of the EU**[140] had advanced what could be described as a compromise approach between the individual and the institutional perspective by asserting that '*the primary responsibility for research integrity is with researchers themselves, with an overarching responsibility also being existent at institutional level*'.[141] In this line, they defended '*the value and benefit of the promotion of research integrity at individual and institutional level*'.[142]

The analysis of the addressees confirms that instruments can be very ambitious in identifying who should embrace the principles they support, with recurrent references to all researchers or all research organisations, or both, as targets and recipients of research integrity guidance or obligations.

1.3.4 'Good practice'

Codes and legislation on research integrity prototypically attempt to depict both the positive content of research integrity, for instance by advancing principles of integrity or describing good research practice, and a negative counterpart, which might be designated as breaches or violations of research integrity, or instances of scientific misconduct.[143]

[134] Max Planck Society's Rules of Good Scientific Practice, 1.
[135] Leading to the adoption of: Lov om organisering av forskningsetisk arbeid, 28.04.2017.
[136] Norwegian Ministry of Education and Research, 'Consultation Paper – Research Ethics in Norway', 2015, 16.
[137] Idem.
[138] Idem.
[139] Arguing the 'ultimate responsibility for responsible research conduct' lies with individual researchers, but that there is in parallel a responsibility of the research community as a whole: Science Europe, 'Research Integrity in the European Policy Landscape: Open Letter by Science Europe Governing Board', 15 December 2016, 1.
[140] Council of the EU. 'Council Conclusions on Research Integrity, adopted by the Council at Its 3431st Meeting Held on 1 December 2015'. Brussels, 1 December 2015.
[141] Council Conclusions on Research Integrity, para. 5.
[142] Ibid., para. 7.
[143] Which had led, at the end of the conceptual phase of the PRINTEGER project, to the conclusion that integrity and misconduct shall not be evoked as two faces of the same coin; González Fuster and Gutwirth,

These two elements, however, commonly do not fully match,[144] but most often intersect in complex, sometimes blurred ways. It is thus worthwhile examining in a separate way, first, how applicable codes and legislation commonly characterise integrity and/or 'good practice', and, second, how they delineate misconduct.

From the outset it must be noted that not all systems nor organisations have a definition of 'research integrity',[145] a notion on which, in any case, there is no normative consensus in Europe.[146]

For some reason for which no explanation is provided in the document, the **Council Conclusions on Research Integrity** of 2015 rely for the purposes of such conclusions on an understanding of research integrity openly based in two Irish sources, that is, the Irish Universities Association, and the Royal Irish Academy.[147] Research integrity is described as relating '*to the performance of research to the highest standards of professionalism and rigour, and to the accuracy, objectivity and truth of the research record in publications and elsewhere'*;[148] it is also added that '*good research practice includes research ethics in the proposal and experimentation phase, as well as publication ethics in its analysis and dissemination'*.[149]

The **European Code of Conduct for Research Integrity** puts forward four fundamental principles of research integrity (reliability, honesty, respect and accountability),[150] and describes 'good research practices', in relation to eight different contexts or issues (research environment; training, supervision and mentoring; research procedures; safeguards; data practices and management; collaborative working; publication and dissemination; reviewing, evaluating and editing). Such 'good research practices' are detailed in different terms for different addressees, or depending on the specific role played in relation to the research practice, and can be summarised as follows:

- *Research institutions and organisations*: promote awareness and ensure a culture of research integrity; demonstrate leadership in providing clear policies and procedures on good research practice and the transparent and proper handling of violations; support proper infrastructure for the management and protection of

'Promoting Integrity as an Integral Dimension of Excellence in Research: D II.4 Legal Analysis, PRINTEGER', 22.

[144] Exceptionally, the 2015 Conclusions on Research Integrity of the Council of the EU do straightforwardly state '*Research misconduct is understood as breaches of research integrity*'; Council of the EU, 'Council Conclusions on Research Integrity, Adopted by the Council at Its 3431st Meeting Held on 1 December 2015', n. 5.

[145] Boehme et al., 12.

[146] See, in this sense, for instance: Serge Horbach and Willem Halffman, 'Promoting Virtue or Punishing Fraud: Mapping Contrasts in the Language of "Scientific Integrity"', Science and Engineering Ethics 23, no. 6 (2017): 1464.

[147] See first footnote of the Council Conclusions on Research Integrity.

[148] Idem.

[149] Idem.

[150] European Code of Conduct, 4.

data and research materials necessary for reproducibility, traceability and accountability; reward open and reproducible practices in hiring and promotion; ensure researchers receive rigorous training in research design, methodology and analysis; develop appropriate and adequate training in ethics and research integrity to ensure that all are aware of codes and regulations;[151]

- *All researchers*: undertake training in ethics and research integrity (across the entire career path); take into account the state-of-the-art in developing research; design, carry out, analyse and document research in a careful and well considered manner;[152] make proper and conscientious use of research funds; publish results and interpretations in an open, honest, transparent and accurate manner, and respect confidentiality of data or findings when required; report their results in line with the standards of the discipline; comply with relevant codes and regulations; handle research subjects with respect and care, and in accordance with legal and ethical provisions; have due regard for the health, safety and welfare of the community, of collaborators and others; recognise and manage potential harms and risks; [153] take seriously their commitment to the research community by participating in refereeing, reviewing and evaluation; review and evaluate submissions for publication, funding, appointment, promotion or reward in a transparent and justifiable manner;[154] make sure research protocols take account of, and are sensitive to, relevant differences in age, gender, culture, religion, ethnic origin and social class.[155]

- *Senior researchers, research leaders and supervisors* mentor their team members and offer specific guidance and training to properly develop, design and structure their research and to foster a culture of research integrity.[156]

- *Researchers, research institutions and organisations*: ensure appropriate stewardship and curation of all data and research materials, with secure preservation for a reasonable period; ensure access to data is as open as possible, as closed as necessary, and where appropriate in line with the FAIR Principles (Findable, Accessible, Interoperable and Re-usable) for data management; provide transparency about how to access or use data and research materials; acknowledge data as legitimate and citable products of research; ensure that any contracts or agreements relating to outputs include equitable and fair provision for the management of their use, ownership, and/or their protection under intellectual property rights.[157]

[151] European Code of Conduct, 5.
[152] Idem.
[153] Ibid., 6.
[154] Ibid., 7.
[155] Ibid., 6.
[156] Ibid., 5.
[157] Ibid., 6.

- *All partners in research collaborations:* take responsibility for integrity; agree at the outset on the goals of the research and on the process for communicating their research as transparently and openly as possible;[158] formally agree at the start of their collaboration on expectations and standards concerning research integrity, on applicable laws and regulations, on protection of the intellectual property of collaborators, and on procedures for handling conflicts and possible cases of misconduct; are properly informed and consulted about submissions for publication of the research results.[159]

- *Authors:* are fully responsible for the content of a publication, unless otherwise specified; agree on the sequence of authorship, acknowledging that authorship itself is based on a significant contribution to the design of the research, relevant data collection, or the analysis or interpretation of the results; ensure work is made available to colleagues in a timely, open, transparent, and accurate manner, unless otherwise agreed, and are honest in their communication to the general public and in traditional and social media; acknowledge important work and intellectual contributions of others who have influenced the research in appropriate work, and cite related work correctly; disclose any conflicts of interest and financial or other types of support for the research or for the publication of results; adhere to the same criteria whether they publish in a subscription journal, an open access journal or in any other alternative publication form.[160]

- *Authors and publishers*: issue corrections or retract work if necessary, the processes for which are clear, the reasons are stated, and authors are given credit for issuing prompt corrections post publications; consider negative results as valid as positive findings for publication and dissemination.[161]

- *Reviewers and editors:* withdraw from deciding on publication, funding, appointment, promotion or reward in case of conflict of interest; maintain confidentiality unless there is prior approval for disclosure; respect the rights of authors and applicants, and seek permission to make use of ideas, data or interpretations presented.[162]

The **Netherlands Code of Conduct for Academic Practice** sets out six principles of proper academic practice: honesty and scrupulousness, reliability, verifiability, impartiality, independence, and responsibility. Each principle is defined and elaborated in a series of rules. For example, the principle of 'honesty and scrupulousness' is elaborated as including the idea that research on human subjects is exclusively permitted

[158] Idem.
[159] Ibid., 7.
[160] Idem.
[161] Idem.
[162] Idem.

if the persons concerned have freely given informed consent, the risks are minimal, and their privacy is sufficiently safeguarded.[163]

The **UK Concordat** puts forward five 'commitments', the first of which proclaims: *'We are committed to maintaining the highest standards of rigour and integrity in all aspects of research'*.[164] The core elements of research integrity are identified as honesty, rigour, transparency and open communication, and care and respect.[165] The other commitments consist of '*ensuring that research is conducted according to appropriate ethical, legal and professional frameworks, obligations and standards*'; [166] *'supporting a research environment that is underpinned by a culture of integrity and based on good governance, best practice and support for the development of researchers'*;[167] '*using transparent, robust and fair processes to deal with allegations of research misconduct should they arise'*;[168] and '*working together to strengthen the integrity of research and to reviewing progress regularly and openly*'.[169] The **UK Policy and Guidelines on Governance of Good Research Conduct** establish that all individuals to which they apply are '*expected to observe the highest standards of integrity, honesty and professionalism and to embed good practice in every aspect of their work*'.[170] They add that *'individual actions must comply with the principles of honesty, openness, transparency and research rigour*'.[171]

The **National Policy Statement on Ensuring Research Integrity in Ireland** refers to the need to respect the principles underpinning all research integrity and good practice as detailed in the European Code of Conduct for Research Integrity, but additionally notes that '*research should always be designed and conducted in accordance with ethical principles*', which are notably '*well aligned with the Singapore Statement on Research Integrity*'.[172]

The **Singapore Statement on Research Integrity**[173] identifies both principles and responsibilities applicable to research integrity. Its listed principles are: honesty in all aspects of research; accountability in the conduct of research; professional courtesy and fairness in working with others, and good stewardship of research on behalf of other. The **Ethics Code for Scientific Research in Belgium** identifies as good practice the respect of six general principles: rigour and caution, reliability and verifiability, independence and impartiality.

[163] Elaboration 1.2 of the 'Honesty and scrupulousness' principle.
[164] UK Concordat, 10.
[165] Idem.
[166] Ibid., 13.
[167] Ibid., 15.
[168] Ibid., 17.
[169] Ibid., 20.
[170] RCUK Policy and Guidelines, 2.
[171] Idem.
[172] Irish Policy Statement, 6.
[173] Singapore Statement on Research Integrity, developed at the 2nd World Conference on Research Integrity, 21-24 July 2010, in Singapore, as a global guide to the responsible conduct of research.

In accordance with the **Danish Code of Conduct for Research Integrity:**

- Three basic principles should pervade all phases of research: honesty ('*To ensure the trustworthiness of research, researchers should be honest when reporting objectives, methods, data, analysis, results, conclusions, etc.*'); transparency ('*To ensure the credibility of scientific reasoning and to ensure that academic reflection is consistent with practice in the relevant field of research, all phases of research should be transparent*'), and accountability ('*To ensure the reliability of research, all parties involved should be accountable for the research carried out*'). [174]

- Six standards should guide responsible research: these are explicitly described as recommendations ('*i.e. they are not per se legally binding regulations*'), and relate to research planning and conduct, data management, publication and communication, authorship, collaborative research, and conflicts of interest.

The **Estonian Code of Conduct for Research Integrity** firstly describes the 'values' of research integrity, and secondly the 'principles of research integrity', which '*concentrate on what researchers or research institutions should do to follow the values of research integrity*'.[175] The Estonian Code depicts as *'[t]he most essential values of research integrity*': '*freedom, responsibility, honesty and objectivity, respect and caring, justice, openness and cooperation'*, and adds that *'[a]fter moral considerations, balance should be found between different values'*.[176] Following such values, principles of research integrity are described, regarding:

- planning of research, which *'includes setting the aim of research, choice of the method, application for resources, and consideration of ethical and legal requirements'*;[177]

- conduct of research ('*In addition to collection and analysis of data, conduct of research includes the questions of safety, security and ensuring the wellbeing of the persons and animals involved*'[178]);

- authorship, publishing and application of research results, noting '*it is essential to consider the interests and rights related to authorship, intellectual property and acknowledgement of all the researchers and cooperation partners who have contributed to research'*[179];

- the researcher in the research community (about conflicts of interest);

[174] Danish Code of Conduct, 6.
[175] Estonian Code of Conduct, 6.
[176] Ibid., 4.
[177] Ibid., 7.
[178] Ibid., 9.
[179] Ibid., 12.

- observance, promotion and application of research integrity – under which are notably discussed issues related to the possibility for researchers of asking for advice and informing confidentially about possible breaches of principles of research integrity.

The **Code of Ethics of the Researchers of the Czech Academy of Sciences**[180] describes a series of principles of good conduct in science, which include: general principles,[181] principles of scientific work,[182] principles for publicizing scientific knowledge and results,[183] principles regulating relations with students and co-workers,[184] principles for the assessment, evaluation, opponent and expert activities.[185]

The **Austrian Agency for Research Integrity Guidelines for Good Scientific Practice** states that anybody involved in research is *'obliged to adhere to the principles of integrity in research and scholarship'*.[186] It also presents a list of 'Standards of Good Scientific Practice', which is nevertheless an open list.[187]

In line with **Regulation (EU) No 1290/2013**, actions falling within the scope of the Horizon 2020 Framework Programme must be in conformity with '*ethical principles*' not enumerated but '*which include avoiding any breach of research integrity*', and which must be respected in addition to legal obligations.[188] Avoiding breaches of research integrity could thus be interpreted as constituting an ethical principle applicable to EU-funded research, different from compliance with legal obligations, although such principle is de facto configured as a legal obligation by the Regulation itself, which foresees a sanction in case of non-compliance: its Art. 3 states that any proposal contravening '*ethical principles or any applicable legislation* (…) *may be excluded from the evaluation, selection and award procedures at any time'.*

The **Horizon 2020 Multi-Beneficiary General Model Grant Agreement**[189] establishes in its Art. 34(1) that '*beneficiaries must respect the fundamental principle of research integrity — as set out in the European Code of Conduct for Research Integrity*', which '*implies compliance with the following fundamental principles: reliability* (…), *honesty* (…),

[180] Code of Ethics of the Researchers of the Czech Academy of Sciences, as supplemented by Addendum No. 1 from 22 April 2010, Addendum No. 2 from 16 December 2014, and Addendum No. 3 of 15 December 2016 [hereafter, 'Czech Code of Ethics'].
[181] Czech Code of Ethics, I.
[182] Ibid., II.
[183] Ibid., III.
[184] Ibid., IV.
[185] Ibid., V.
[186] OeAWI Guidelines for Good Scientific Practice, 5.
[187] Ibid., 9.
[188] Recital (9) of Regulation (EU) No 1290/2013 of the European Parliament and of the Council of 11 December 2013 laying down the rules for participation and dissemination in "Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)" and repealing Regulation (EC) No 1906/2006 [Rules for Participation], OJEU L 347, 20.12.2013, 81-103.
[189] Consulted version: H2020 General MGA — Multi, Version 5.0, 18 October 2017.

respect (…) *and accountability* (…) *and means that beneficiaries must ensure that persons carrying out research tasks follow the good research practices and refrain from the research integrity violations described in this Code'.* The last part of this provision is particularly circular, as it ends up specifying that respecting the principle of research integrity means following good research practices and refraining from research integrity violations as specified in a Code which describes the latter as failure to follow good research practices.

Summing up, the positive content of research integrity (or notions presented as possibly equivalent) is paradigmatically described either through principles (called for instance principles of research integrity, or principles of good conduct), which tend to be generic, and practices or standards (for instance, standards of good scientific practice), for which usually more concrete examples are given, although often the limits of integrity as such are not described. Recommended practices tend to be grounded on principles, which might be further grounded in values. Although in regard to substance it might be argued that there are no major divergences among the instruments, there is also no formal consistency regarding terminological choices. It is also not possible to claim there is an exact coincidence between the scope of the notion of research integrity in the different instruments, as they paradigmatically do not delimit the scope of integrity with precision.

1.3.5 'Misconduct' and/or 'violations of research integrity'

The exact relations between 'good practice' and 'malpractice' in research, or between scientific 'good conduct' (or integrity) and 'misconduct', are in global terms unsettled. In some cases, inadmissible practices are primarily approached as 'violations of research integrity'.

The **European Code of Conduct for Research Integrity** frames 'violations of research integrity' mainly using the terms '*research misconduct and other unacceptable practices*'.[190] These are regarded as sanctionable '*in their most serious forms*',[191] and portrayed as including:

- Fabrication, Falsification and Plagiarism (FFP), which are '*considered particularly serious*' (because they distort the research record).[192]
    - Fabrication: '*making up results and recording them as if they were real*';[193]

[190] European Code of Conduct, 8. The Code also includes a statement according to which '*Failing to follow good research practices violates professional responsibilities*', which could be interpreted in the sense that any failure to follow good research practices is a violation of research integrity, but does not oblige to such interpretation (idem).
[191] Ibid., 9.
[192] Ibid., 8.
[193] Idem.

- Falsification: '*manipulating research materials, equipment or processes or changing, omitting or suppressing data or results without justification'*; [194]
- Plagiarism: *'using other people's work and ideas without giving proper credit to the original source, thus violating the rights of the original author(s) to their intellectual outputs'.* [195]

- *'Direct violations of the good research practices set out in this Code of Conduct'.*[196]
- *'Other unacceptable practices'*, [197] examples of which include, but are not confined to:
  - manipulating authorship or denigrating the role of other researchers in publications;
  - re-publishing substantive parts of one's own earlier publications, including translations, without duly acknowledging or citing the original ('self-plagiarism');
  - citing selectively to enhance own findings or to please editors, reviewers or colleagues;
  - withholding research results;
  - allowing funders/sponsors to jeopardise independence in the research process or reporting of results so as to introduce or promulgate bias;
  - expanding unnecessarily the bibliography of a study;
  - accusing a researcher of misconduct or other violations in a malicious way;
  - misrepresenting research achievements;
  - exaggerating the importance and practical applicability of findings;
  - delaying or inappropriately hampering the work of other researchers;
  - misusing seniority to encourage violations of research integrity;

[194] Idem.
[195] Idem.
[196] Idem.
[197] Idem.

- ignoring putative violations of research integrity by others or covering up inappropriate responses to misconduct or other violations by institutions;
- establishing or supporting journals that undermine the quality control of research ('predatory journals').

The described determination of what are to be regarded as 'violations of research integrity' is not without ambiguities. In this sense, it appears that a distinction could be made between violations of research integrity in general and research misconduct concretely, which would be a type but (but not the sole type) of unacceptable practice, to be sanctioned in its most serious forms. The reference to direct violations of good research practices begs the question of how to conceptualise other violations – whether they would simply be regarded as not paradigmatic examples of sanctionable practices, or as actually not sanctionable at all.

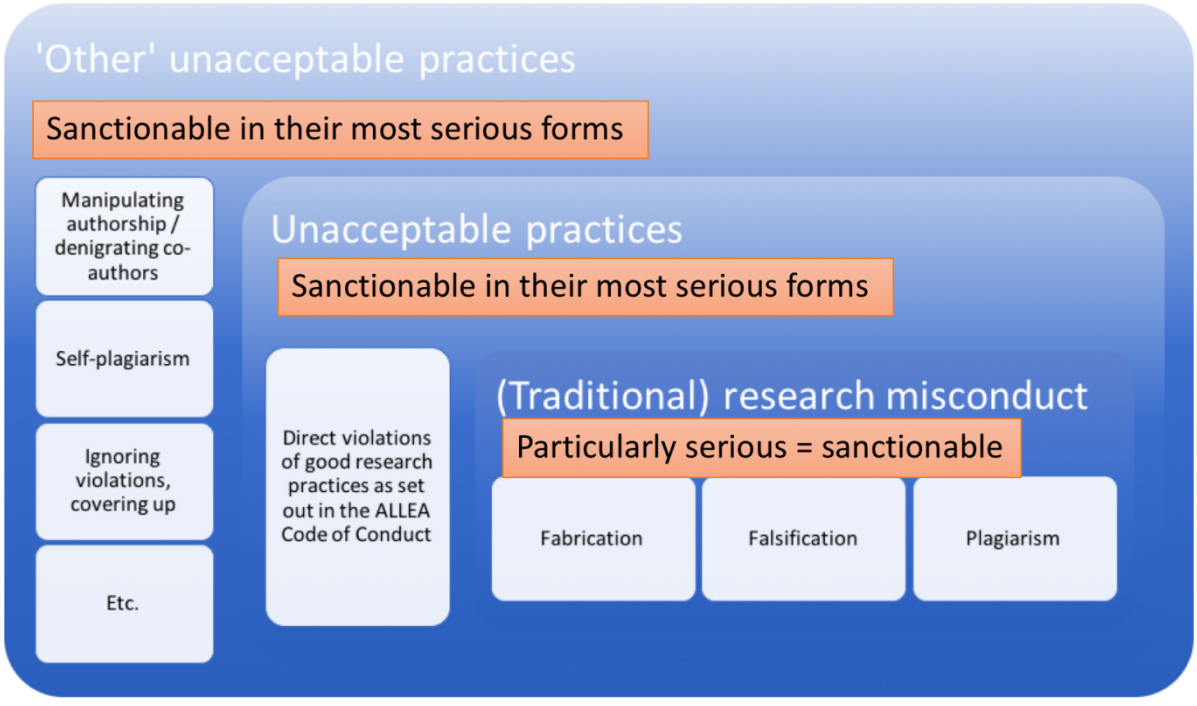

Figure 1.- Sanctionable practices in the light of the European Code of Conduct for Research Integrity

In any case, the open-ended nature of the category, and the lack of clarity on what exactly is unacceptable, and what exactly is sanctionable, can be interpreted as potentially problematic from the perspective of legal certainty, which shall have important consequences for the determination of 'fair procedures'.

Particularly delicate is the existence of what could be described as meta-misconduct provisions, that is, the fact that some sanctionable practices are defined by the lack of appropriate action in the face of sanctionable practices, which potentially doubles the unpredictability of the consequences of the researcher's individual conduct. In this sense, for instance, according to the Code, it is an unacceptable practice to ignore '*putative violations of research integrity by others*', but it can be difficult to know whether one is ignoring or not any of such putative violations when no definite list of what constitutes a violation is provided.

The **Council Conclusions on Research Integrity** do not delimit the notion of research misconduct, but refer to it systematically by noting it must be construed as including questionable research practices. In this sense, the Conclusions recognise the negative impact of '*research misconduct, including questionable research practices*',[198] stresses the need for measures '*to prevent and address research misconduct, including questionable research practices*';[199] and calls on all actors '*to prevent and address research misconduct, including questionable research practices*'.[200]

The introduction to the **Ethics Code for Scientific Research in Belgium** clarifies that limited deviations from the principles established by the code shall not necessarily be regarded as infractions.[201] Moreover, it states that mistakes might not constitute a 'moral wrong', which is what the Code aims to prevent.

The **Netherlands Code of Conduct for Academic Practice** stresses in its preamble that a deviation from any of the rules it contains does not necessarily constitute a violation of academic integrity: the violations of academic integrity to which institutional complaints regulations apply are described in said regulations, not in the Code of Conduct.[202] The Association of Universities of the Netherlands (VSNU) provides a National Template for the Complaints Procedure for Academic Integrity,[203] with the explicit aim of ensuring an equal treatment of suspected violations in each university, and which includes an annex addressing 'violations of academic integrity' – this category is however not clearly defined or circumscribed. Only an open list of practices to be regarded, in any case, as a violation is provided. Some institutional regulations, nonetheless, do define all '*acts or omissions in violation of the Netherlands Code of Conduct for Scientific Practice*' as a 'breach of academic integrity'.[204]

The **UK Concordat** states that '*[r]esearch misconduct can take many forms, including: fabrication (…), falsification (…), plagiarism (…), failure to meet ethical, legal and professional obligations (…), breach of confidentiality (…), and improper dealing with*

[198] Council Conclusions on Research Integrity, para. 4.
[199] Ibid., para. 6.
[200] Ibid., para. 13.
[201] Belgian Code of Conduct, 4.
[202] Preamble to the Netherlands Code of Conduct, § 10.
[203] In its original version, Landelijk Model Klachtenregeling Wetenschappelijke Integriteit.
[204] See, in this sense, Art. 1(a) of the Regulation on Academic Integrity of IHE Delft Institute for Water Education, Version 1.1, December 2017.

allegations of misconduct',[205] but adds that that such a list is not exhaustive.[206] What are explicitly excluded from the notion of research misconduct are *'[h]onest errors and differences in, for example, research methodology and interpretations'*. The '*improper dealing with allegations of misconduct*' as a type of research misconduct is described as encompassing '*failing to address possible infringements such as attempts to cover up misconduct and reprisals against whistleblowers'*.[207]

The **UK Policy and Guidelines on Governance of Good Research Conduct** observe that the '*spectrum of inappropriate behaviour is wide'*, but note that they focus on '*entirely unacceptable types of research conduct'*.[208] Unacceptable conduct is deemed to include fabrication, falsification, plagiarism, misrepresentation, breach of duty of care, but also improper dealing with allegations of misconduct.[209]

The **National Policy Statement on Ensuring Research Integrity in Ireland** advances that *'[w]here the principles and good practice underpinning research integrity are not followed, issues of research misconduct may arise'*. It establishes however that research misconduct *'does not include honest error or honest differences in the design, execution, interpretation or judgement in evaluating research methods or results or misconduct unrelated to the research process'*, nor *'poor research per se unless this encompasses an intention to deceive'*.[210] The Policy Statement describes as the most serious breaches of integrity fabrication, falsification and plagiarism, but adds that there are also additional types of poor practices, of which it provides some examples point out there are also other types.[211]

The **Danish Code of Conduct on Research Integrity** touches upon the responsibility for addressing '*research misconduct*' and '*breaches of responsible conduct of research*' and presents recommendations for basic institutional platforms.[212] The Danish Code stresses that its standards for responsible conduct of research are not legally binding regulations, and that, '*as a consequence, breaches of those standards will not per se result in legal sanctions'*.[213] It argues that, nevertheless, '*it is important that suspicions of breaches of responsible conduct of research are brought forward and dealt with adequately'*, and that these cases would encompass both situations of research misconduct as defined by the Danish Committee on Scientific Dishonesty (replaced since July 2017 by the Danish Committee on Research Misconduct), and situations that do not reach the threshold of research misconduct.[214]

[205] UK Concordat, 17.
[206] Idem.
[207] Idem.
[208] RCUK Policy and Guidelines, 6.
[209] Idem.
[210] Irish Policy Statement, 14.
[211] Idem.
[212] Danish Code of Conduct, 19.
[213] Idem.
[214] Idem.

Breaches of responsible conduct of research are defined in the Danish Code of Conduct on Research Integrity as *'breaches of current standards on responsible conduct of research, including those of the Danish code of conduct, and other applicable institutional, national and international practices and guidelines on research integrity'*.[215] '*If serious enough'*, the Danish Code adds, '*a breach may also represent research misconduct, cf. the definition used by the Danish Committees on Scientific Dishonesty'*.[216]

The **Estonian Code of Conduct for Research Integrity** refers to *'possible breaches of principles of research integrity'*,[217] but does not define them.

According to the **Code of Ethics of the Researchers of the Czech Academy of Sciences**[218] are to be considered *'conduct incompatible with the fundamentals of ethical conduct in science'* the following: '*fraud, forgery, plagiarism, falsification, distortion, deliberate deception and theft, namely in any phase of the process of scientific-research work from the plan to the publication of the results'*.[219]

The **Austrian Agency for Research Integrity Guidelines for Good Scientific Practice** defines research misconduct as the *'wilful, conscious or grossly negligent violations of the Standards of Good Scientific Practice'*.[220] The Guidelines clarify that '[c]*ritical statements in scientific scholarly discourse („honest differences of opinion") or errors made in good faith („honest errors") are not considered to be forms of research misconduct'*.[221] They also enunciate that research misconduct includes for instance '[o]*bstructing the research activities of other scientists/researchers as well as other unfair attempts to damage the scientific/scholarly reputation of another scientist/researcher; in particular, this includes anonymous, non-specific and unjustified allegations of violations of the Standards of Good Scientific Practice'*.[222]

According to the **Responsible Conduct of Research and Procedures for Handling Allegations of Misconduct in Finland**,[223] violations of responsible conduct of research are '*unethical and dishonest practices that damage research'* and '*consist of actions that may have been committed either intentionally or through negligence'*.[224] The Finish Code distinguishes between three types of violations of responsible conduct of research:

[215] Ibid., 20.
[216] Idem.
[217] Estonian Code of Conduct, 17 and 18.
[218] Code of Ethics of the Researchers of the Czech Academy of Sciences, as supplemented by Addendum No. 1 from 22 April 2010, Addendum No. 2 from 16 December 2014, and Addendum No. 3 of 15 December 2016 [hereafter, 'Czech Code of Ethics'].
[219] Czech Code of Ethics, VII.
[220] OeAWI Guidelines for Good Scientific Practice, 13.
[221] Idem.
[222] Ibid., 15.
[223] Responsible Conduct of Research and Procedures for Handling Allegations of Misconduct in Finland, Guidelines of the Finnish Advisory Board on Research Integrity 2012 [hereafter, 'Finnish RCR Guidelines'].
[224] Finnish RCR Guidelines, 32.

- '*research misconduct*', further divided into fabrication, falsification (misrepresentation), plagiarism and misappropriation;
- '*disregard for the responsible conduct of research*', manifesting itself as gross negligence and carelessness during the research process and including self-plagiarism and in general '*misleading the research community*', and
- '*other irresponsible practices*', but only when manifesting in their most serious forms; these would include '*maliciously accusing a researcher*' of violations of responsible conduct of research.[225]

In general, as can be seen, there are important terminological and substantive discrepancies between instruments. The term 'research misconduct' appears to resonate especially from an international perspective, as in the United States (US) three main types of such misconduct have been identified, and are construed as the most serious violations of applicable standards (the other violations potentially falling under the ''questionable research practices' category').[226] However, the use of this term in the UK, for instance, has been criticised for being too vague and unconnected to concrete definitions and procedures.[227]

In practice, three main issues appear as especially problematic: first, the fact that misconduct is often construed as mirroring (in an inverted way) principles and standards of research integrity which are rarely defined in a precise way; second, the fact that the relations between integrity and misconduct are actually not consistent among different systems, but also sometimes not internally, and, third, the uncertainty as to which types of misconduct are sanctionable.

In relation to the first point, some instruments do construe the notion of misconduct, or equivalent notions, primarily as a breach of the positive obligations identified in the same instruments. What renders matters complex, however, is that, as documented in the sub-section above, positive obligations are commonly expressed in undefined and open-ended ways, occasionally referring even to other (national or international) documents which might also be open-ended and unspecific. If integrity is not clearly delimited, determining what constitutes a failure of integrity cannnot be a straightforward operation.

As regards to the second point, in some instruments it is clear that not all breaches of research integrity shall be considered misconduct – only some. In some frameworks, indeed, although any misconduct is always considered a breach of integrity, not all

[225] Ibid., 33. Referring instead to the existence of only two categories of misconduct in Finland ('research misconduct' and 'disregard for the responsible conduct of research': Finnish Advisory Board on Research Integrity and Universities Finland UNIFI, 'Supervision of Doctoral Dissertations and Their Review Process in Finland with a Special Emphasis on Research Integrity: Recommendations to Universities' (Finnish Advisory Board on Research Integrity, 2017), 24.

[226] See, for instance: National Academy of Sciences, National Academy of Engineering, and Institute of Medicine of the National Academies, *On Being a Scientist: A Guide to Responsible Conduct in Research (Third Edition)* (Washington, D.C.: The National Academies Press, 2009), 3.

[227] SI Ankier, 'Dishonesty, Misconduct and Fraud in Clinical Research: An International Problem', *The Journal of International Medical Research* 30 (2002): 358.

breaches of integrity are treated as misconduct because being regarded as such triggers certain consequences. This, in the end, can also difficult the identification of instances of misconduct, as knowing the content of research integrity would not suffice for such purpose.

Interestingly, there are also frameworks in which are put forward types of misconduct that are not directly regarded as a breach of integrity or as a violation of responsible conduct of research practices - which is for instance what seems to imply the Finish categorization. In this case, it might be possible to question the logic of accepting this idea: if a practice is treated as a breach of integrity but there is actually no corresponding obligation in the recognized principles or standards of integrity, perhaps those should be revised in order to explicitly include it.

Finally, the third conceivable problematic impact is that the determination of misconduct does not imply, as such, that the practice will be automatically be sanctionable or reprehensible – this might depend on its seriousness, for instance, depending on the system. In practice, this leaves open many questions, such as how to determine which allegations shall or can be reported by well-intended individuals – concretely, whether they shall report any instance of misconduct, or only sanctionable cases. Furthermore, taking into account that in some systems the 'improper dealing with allegations of misconduct' *is* misconduct, uncertainty about how to deal properly with misconduct will also inevitably generate further uncertainty.

2. Pending challenges

The regulation of research integrity does not take place in a frozen environment. On the contrary, it needs to take into account fast-paced changes in research practice.[228] The revised ALLEA European Code of Conduct for Research Integrity openly aims to address new challenges for research integrity emanating from technological developments, open science, citizen science and social media. In this context, it presents itself as applicable to expanding open access publishing and the use of digital repositories, taking into account new ways of communicating science and involving citizens in research.

These developments, however, might be regarded as not yet satisfactorily covered by existing codes and legislation. Two emergent issues appear to be especially in need of reflection:[229] online data collection for research purposes, and the growth of online

[228] Science Europe, 'Research Integrity in the European Policy Landscape: Open Letter by Science Europe Governing Board', 2.

[229] See also, for a concomitant analysis of emerging and ongoing challenges in the responsible conduct of research, mentioning among them the issues of ownership of data; technological advances that offer new ways of collecting, storing, and sharing data; and the changing publication and data sharing environment: Ann Nichols-Casebolt, *Research Integrity and Responsible Conduct of Research: Building Social Work Research Capacity* (Oxford: Oxford University Press, 2012), 106 and 136.

academic social networks. Although it could be argued that these two issues only fit within the boundaries of research integrity concerns if these are understood in a broad manner, there seems to be no reason why they should be definitely excluded from its reach, or why research integrity shall be considered a static rather than a living notion.

2.1. Online data collection for research purposes

In March 2018, international media revealed that Aleksandr Kogan, a Senior Research Associate at the Department of Psychology at the University of Cambridge, had built an application ('thisisyourdigitallife') that allowed for the harvesting of data of 87 million users of the Facebook social network. The application was presumably originally created for academic research, but then repurposed for use by Global Science Research (GSR), and, according to Kogan's version as related by the University of Cambridge, it was rebranded and released by GSR in a way '*it was made clear that this was commercial, not academic, research'*.[230]

The data eventually ended up processed by Cambridge Analytica, a company specialising in political campaigning and believed to have played an important role in a number of global elections. The case brought to the fore a number of controversial practices, such as political micro-targeting, or the role of Facebook in protecting the data about its users. Importantly, for the purposes of this report, it also put under the spotlight the apparent lack of effective control of the massive collection of personal data of unaware individuals in the name of research.

In a parallel development, the CEO of Cambridge Analytica was secretly filmed suggesting that in order to get access to data his team could pose as *'students doing research projects attached to a university'*, and that he had '*lots of experience on this*'.[231]

Already in 2014, Facebook had been in the news for another controversial research carried out through its platform.[232] In what was eventually known as the 'Facebook

[230] University of Cambridge, 'Statement from the University of Cambridge about Dr Aleksandr Kogan', 23 March 2018. The statement proclaims '[t]*he University of Cambridge takes matters of research integrity and data protection extremely seriously'*, and refers to a '*wide ranging review of all the available information around this case'* being undertaken. An addendum included on 11 April 2018 argues it is a known fact that the university's researchers carry out research using Facebook data, and have published such research in major peer-reviewed scientific journals. Interestingly, the statement integrates a link to an article co-authored by Kogan (who sometimes signs as Spectre) about a study in which a Facebook app automatically gathered information (including their location) about the 'friends' of 857 participants; these 857 participants are said to have given their consent to authorise such gathering, but there is no mention of the consent of, or information provided to, the 287,739 indirectly tracked 'friends': Maurice H. Yearwood et al., 'On Wealth and the Diversity of Friendships: High Social Class People around the World Have Fewer International Friends', *Personality and Individual Differences*, 2015, 224–29.

[231] 'Revealed: Trump's Election Consultants Filmed Saying They Use Bribes and Sex Workers to Entrap Politicians', 19 March 2018, https://www.channel4.com/news/cambridge-analytica-revealed-trumps-election-consultants-filmed-saying-they-use-bribes-and-sex-workers-to-entrap-politicians-investigation.

[232] See, for instance: Michelle N. Meyer, 'Everything You Need to Know about Facebook's Controversial Emotion Experiment', *Wired*, 30 June 2014. Stating *'[m]any Americans reacted in horror to the news that*

emotions scandal', it surfaced that researchers had carried out an experiment within Facebook, altering the content of their News Feed to test whether 'emotional contagion' occurred as a result. A scientific article was later published presenting the results of the experiment.[233] The published article was later accompanied by an Editorial Expression of Concern, stating that it is '*a matter of concern that the collection of the data by Facebook may have involved practices* (…) *not fully consistent with the principles of obtaining informed consent and allowing participants to opt out*', but nevertheless reproducing the authors' arguments according to which, first, the requirement of 'informed consent' could be regarded as covered by the fact that users had accepted Facebook's Data Use Policy, which informs them about the possible use of their data for research, and that, second, the experiment was actually '*conducted by Facebook, Inc. for internal purposes*', and thus the university to which two of the authors were affiliated had determined it did not fall under their institutional review process.[234]

The 'Facebook emotions scandal' triggered a number of reactions on the other side of the Atlantic. Already in 2014, the National Science Foundation (NSF), a US governmental agency supporting fundamental research and education in all the non-medical fields of science and engineering, collaborated in the launching of the Council for Big Data, Ethics, and Society to '*provide critical social and cultural perspectives on big data initiatives*', and *'address issues such as security, privacy, equality, and access in order to help guard against the repetition of known mistakes and inadequate preparation'*.[235]

The implications of processing personal data available online for the purposes of research have as a matter of fact most prominently been discussed in the US, where the debate has typically been framed under the labels of 'data ethics' and 'big data ethics' – allegedly due to the influence of 'research ethics' considerations.[236] These discussions have stressed, for instance, that privacy norms might fail to duly protect the interests of the individuals whose data is processed for research purposes after being transformed into anonymous data, but also that the processing of anonymous data could led to obtaining unexpected results especially detrimental for an entire group or collective.[237] From a legal

Facebook was conducting psychological experiments on its users': Douglas Rushkoff, *Throwing Rocks at the Google Bus: How Growth Became the Enemy of Prosperity* (Portfolio / Penguin, 2016), 32.

[233] Adam D. I. Kramer, Jamie E. Guillory, and Jeffrey T. Hancock, 'Experimental Evidence of Massive-Scale Emotional Contagion through Social Networks', *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, 17 June 2014. It is worthwhile noting that this was not the only experiment taking place through Facebook at that time, and involving the massive manipulation of users' News Feed; on an experiment carried out in all users of at least 18 years of age in the US who accessed the Facebook website on 2 November 2010 (day of the US congressional elections), see: Robert M. Bond et al., 'A 61-Million-Person Experiment in Social Influence and Political Mobilization', *Nature* 489 (13 September 2012): 295–98. See also, on this subject: Cathy O'Neil, *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy* (New York: Crown, 2016), esp. 180-183.

[234] Inder M. Verma, *Editorial Expression of Concern* accompanying the article by Kramer et al.

[235] As stated on the Council's website: http://bdes.datasociety.net/.

[236] Although, in reality, US regulators have generally advised all companies relying on (big) data analytics to integrate ethical considerations. See, for instance: Federal Trade Commission, 'Big Data: A Tool for Inclusion or Exclusion? Understanding the Issues', January 2016, 32.

[237] See, for instance: Andrej Zwitter, 'Big Data Ethics', *Big Data & Society*, no. July-December (2014): 5.

perspective, it has been pointed out that the processing of non-sensitive data can lead to obtaining information that can fall under the sensitive category.[238]

Since 2014, discussions around research access to online data have not dwindled. Examples of particularly controversial uses of 'publicly available' data include, for instance, the use of so-called 'transition videos' made available via Youtube to carry out research aiming to improve facial recognition software. Transition videos include vast quantities of pictures of the same person while undergoing hormone replacement therapy. A dataset compiling links to such videos was created by Karl Ricanek, without the prior consent of the individuals concerned. The use of the data was discovered by another researcher (researcher/artist Adam Harvey).[239]

Another compelling example of online data collection practices is the MegaFace dataset, covering allegedly 4.7 Million photos related to 672K different individuals, all taken from Flickr users. It is managed by University of Washington with, as sponsors, Google, Intel, and the US National Science Foundation (NSF).[240]

Controlling access to data in the name of science matters not solely due to what can eventually be done with such data in the context of scientific research, but also because, as very eloquently illustrated by the Cambridge Analytica / Facebook scandal, data can easily move from academia to the private sector, and increasingly move fast, precisely, in that direction.[241] In doing so, data find themselves in the middle of at least two trends identified as '*potentially affecting the need to keep updating research integrity instruments*' by the European Code of Conduct on Research Integrity: the digitisation of research data, including new data acquisition options, and the changing relationship between pure and applied research, as well as between unsponsored and sponsored research.[242]

Although there are discussions as to what can be done with online data in general, it is the processing of '*data about people*' that can be regarded among the most contentious.[243]

In Europe, in principle it is in data protection laws where could be found the strongest safeguards against abusive collection and misuse of personal data for research purposes. EU data protection law, however, foresees a series of special modulations when the processing of personal data pursues academic or scientific purposes, with the aim of avoiding excessive obstacles to such processing activities. In this context, the General Data Protection Regulation (GDPR), which will be directly applicable from 25 May 2018, foresees for instance the possibility for individuals to consent broadly to the processing

[238] Omer Tene and Jules Polonetsky, 'Big Data for All: Privacy and User Control in the Age of Analytics', *Northwestern Journal of Technology and Intellectual Property* 11, no. 5 (2013): 256.
[239] Vincent, Hames, 'Transgender YouTubers had their videos grabbed to train facial recognition software', 22 August 2017, The Verge.
[240] See: http://megaface.cs.washington.edu/.
[241] Eric T. Meyer and Ralph Schroeder, *Knowledge Machines: Digital Transformations of the Sciences and Humanities* (Massachusetts: The MIT Press, 2015), 14.
[242] European Code of Conduct, 14.
[243] Christine L. Borgman, *Big Data, Little Data, No Data: Scholarship in the Networked World* (Cambridge, Massachusetts and London: The MIT Press, 2015), 77.

of their personal data in certain areas of research, '*when in keeping with recognised ethical standards for scientific research*'.[244] For this exceptional approach to be meaningful from a fundamental right's perspective, the notion of '*keeping with recognised ethical standards for scientific research'* should have some implications, that is, it should limit in a clear manner what can be done with the data. Such implications, however, are currently very unclear.

In the EU, it is most prominently the European Data Protection Supervisor (EDPS) who has been voicing the need to consider the ethical dimension of (personal) data processing beyond adherence to the law.[245] The EDPS has argued, in this sense, that 'E*urope has to lead the conversation on the legal and ethical consequences of the new technologies*',[246] and thus get actively involved in addressing 'digital ethics'.

In the UK, the government reacted to a House of Commons inquiry on the subject of big data setting up in 2017 a Council of Data Ethics within the Alan Turing Institute, the UK's national centre for data science. Similarly, the UK data protection authority has been closely following developments towards self-regulation of private sector approaches to big data under the ethical lens.

These references to '(data/digital) ethics' can be viewed as reverberating the 'ethics' concerns and discourses intertwined with many of the existing European normative instruments on research integrity, and thus yet another illustration of the role 'ethics' can play as 'soft normative glue'[247] – in this case, loosely gluing norms on research and norms on personal data processing.

Insofar as European codes and legislation on research integrity are concerned, researchers or research institutions will not easily find in them useful guidance or indications as to how to deal with the issue. The growing use of the Internet as a site for research through big data-based research projects and methodologies can be regarded as a challenge to traditional ethical frameworks and assumptions on the adequate protection of human subjects in research.[248] It is also testing research integrity frameworks, to the extent that practices which might not respect basic integrity principles or 'good practices' could remain unsanctioned.

The **Norwegian National Committee for Research Ethics in the Social Sciences and the Humanities (NESH)** revised in 2014 its pre-existing **Research Ethics Guidelines for**

[244] This was introduced by the Council (Council Position Doc.15395/14) with initial reservations by FR and COM.
[245] European Data Protection Supervisor (EDPS), 'Opinion 4/2015: Towards a New Digital Ethics: Data, Dignity and Technology' (Brussels, 11 September 2015), 4.
[246] European Data Protection Supervisor (EDPS), 'Leading by Example: The EDPS Strategy 2015-2019' (Brussels, 2 March 2015), 7.
[247] Mariachiara Tallacchini, 'To Bind or Not to Bind? European Ethics as Soft Law', in *Science and Democracty: Making Knowledge and Making Power in the Biosciences and Beyond*, ed. Stephen Hilgartner, Clark A. Miller, and Rob Hagendijk (New York: Routledge, 2015), 158.
[248] Bart van der Sloot and Sascha van Schendel, 'International and Comparative Legal Study on Big Data, Working Paper 20' (The Hague: The Netherlands Scientific Council for Government Policy, 2016), 32.

Internet Research, noting that '*[t]he nature of the internet and the rapid pace of change are giving rise to new and distinctive questions, obliging researchers to reflect on different, often conflicting considerations and norms in research ethics*'.[249] The Guidelines do address the issue of Big Data, pointing out it '*raises a whole set of new problems and challenges*' related to personal data protection, confidentiality and anonymity, and make it difficult for researchers to guarantee such principles, but that nevertheless guaranteeing them remains the researcher's responsibility.[250] '*Potential informants must be informed as far as possible about these challenges and the possible consequences of the research'*, state the Guidelines (the term 'informants' referring here presumably to individuals whose data has been processed).[251]

2.2. Academic social networks

Digital media could be described as either destroying or revolutionising millennia-old scholarly practices.[252] Even considering they might actually do none of that, it is certainly fair to say that they have the capacity to deeply alter the ways in which research is published and communicated globally.

A particularly interesting and challenging contemporary development in this respect is the increased use by researchers of so-called 'academic social networks', that is, online platforms allowing for (and encouraging) the online dissemination of academic publications. In practice, these can take different shapes, the most popular currently being ResearchGate (a sort of social networking site for researchers, Berlin-based), Academia.edu (a similar initiative, San Francisco-based), Google Scholar (a search engine which creates and allows for maintaining online profiles), and Mendeley (a London-based reference management platform, bought by the Elsevier publishing company in 2013) – all furiously competing for users.[253] Although sometimes conflated with the open access repositories, these networks diverge from such repositories notably due to their commercial nature, the limitations they impose on the harvesting of data, and their extensive processing of personal data of users and their networks of co-authors.[254]

[249] National Committee for Research Ethics in the Social Sciences and the and Humanities (NESH), 'Ethical Guidelines for Internet Research' (The Norwegian National Research Ethics Committees, December 2014), 3.
[250] Ibid., 6.
[251] Idem.
[252] Andrew White, *Digital Media and Society: Transforming Economics, Politics and Social Practices* (Hampshire: Palgrave MacMillan, 2014), 3.
[253] David Matthews, 'Do Academic Social Networks Share Academics' Interests?', *Times Higher Education*, 7 April 2016.
[254] Missy, 'A Social Networking Site Is Not an Open Access Repository', *Miss Library Grrl: For the Many Lessons Learnt in Libraryland* (blog), 24 January 2016, https://misslibrarygrrrl.wordpress.com/2016/01/24/a-social-networking-site-is-not-an-open-access-repository/.

As these networks become more and more widely used, (online) 'scientific' reputation is increasingly quantified – and trapped in a potentially perverse, self-supplying automated game whereby what is popular will become more popular.[255] Thus, to become (more) visible, academics must actively nourish their visibility through such networks. Academics become indeed more and more aware of the measurement of the 'visibility' of their output, getting caught in a 'feedback loop' which feeds into their behaviour.[256]

Growing reliance on these networks brings to the fore the possible necessity to specify, or even possibly adapt, guidance or norms on research integrity. In this context, researchers might face unprecedented questions as regards, for instance, applicable principles on rules on sharing of data, or crediting co-authorship. Additionally, new forms of scientific misconduct might emerge.

Most importantly, perhaps, these platforms constitute actors that appear not to be satisfactorily addressed by existing codes and legislation, which leaves unexplored the key question of determining their exact responsibilities, both in the promotion of research integrity, and in the prevention and sanctioning of scientific misconduct, but also potentially as responsible for misconduct.[257]

3. Concluding remarks

In its conclusions on Research Integrity, the Council of the EU framed research integrity '*as the foundation of high quality research and as a prerequisite for achieving excellence in research and innovation in Europe and beyond*'.[258] As recalled above, nonetheless, excellence in research can also be conceived as grounded in academic freedom, which is a fundamental legal requirement.

Any regulation of research integrity should thus aim to achieve the right balance between guaranteeing academic freedom and regulating research practices in the name of research integrity. Ideally, taking into account the profound connections between these objectives, it appears to be commendable not only to promote integrity as an integral dimension of

[255] White, *Digital Media and Society: Transforming Economics, Politics and Social Practices*, 23.
[256] Meyer and Schroeder, *Knowledge Machines: Digital Transformations of the Sciences and Humanities*, 18.
[257] Research integrity and scientific misconduct issues are not the only that might need to take into account from an academic's perspective in relation to these networks; pointing out privacy issues related to the processing of data of users: Michael Nentwich and René König, 'Academia Goes Facebook? The Potential of Social Network Sites in the Scholarly Realm', in *Opening Science: The Evolving Guide on How the Internet Is Changing Research, Collaboration and Scholarly Publishing*, ed. Sönke Bartling and Sascha Friesike (Berlin: Springer Open, 2014), 120.
[258] Council Conclusions on Research Integrity, para. 1.

excellence in research,[259] but also to support freedom as an integral dimension of both excellence and research integrity.

The review of existing codes and legislation has demonstrated that, in Europe, there is generally speaking serious uncertainty as regards both the definition of research integrity, and the delimitation of scientific misconduct. This corroborates other assessments; there have already been calls for more clarity in the definitions of research integrity and misconduct,[260] and it has been noted the delimitation of the concept of scientific misconduct is, actually, an ongoing discussion.[261] This uncertainty snowballs with the phenomenon that we have described as the regulating meta-misconduct practices.

From a legal perspective, it conveys a degree of unpredictability that can have critical consequence for the fairness of procedures for the investigation of misconduct. While the literature often refers to a 'grey area' of practices somewhere between integrity and misconduct,[262] the review carried out suggests there are rather two persistent grey areas – one surrounding the definition of research integrity, another encircling the definition of misconduct – which partially overlap generating a particularly nebulous, obscure (and vague) area of uncategorised practices.

In analysing applicable instruments, we have also documented that they paradigmatically have a very broad scope of application, and are targeted towards a variety of actors, as well as often massively to all individuals engaged in scientific endeavours. This inevitably translates into a relative vagueness in relation to specific obligations and rights, which does invite to recommend training not only about their existence and content, but also, beyond that, about further applicable instruments or procedures.

It has been suggested in the literature that codes and guidance on research integrity should simultaneously reaffirm broad values of integrity, relevant for the whole research community, and exemplify unambiguous norms, behaviours, and consequences.[263] Currently, existing instruments appear to be better at the first objective than at the second, and might be regarded as failing in reconciling both.

[259] In line with the title of the PRINTEGER project.
[260] In this sense: Science Europe, 'Research Integrity in the European Policy Landscape: Open Letter by Science Europe Governing Board', 2; referring to discussions about the need to harmonise approaches: Péter Kakuk, 'The Legacy of the Hwang Case: Research Misconduct in Biosciences', *Science and Engineering Ethics* 15, no. 545, https://doi.org/10.1007/s11948-009-9121-x, 12.
[261] Göran Collste, 'Principles and Approaches in Ethics Assessment: Research Integrity' (Stakeholders Acting Together on the Ethical Impact Assessment of Research and Innovation (SATORI), June 2015), 3.
[262] See, for instance: Vittorio Busato, 'Learning the Lessons of History? Scientific Fraud in the Low Countries', *The Low Countries (TLC)* 23 (2015), 249.
[263] Noémie Aubert Bonn, Simon Godecharle, and Kris Dierickx, 'European Universities' Guidance on Research Integrity and Misconduct: Accessibility, Approaches, and Content', Journal of Empirical Research on Human Research Ethics 12, no. 1 (2017): 41.

Finally, in light of the evolution of scientific and research practices, especially as driven by technological change, there are important challenges that are still to be appropriately addressed by existing legislation and codes.

References

Anderson, Melissa S. and Marta A. Shaw, 'A Framework for Examining Codes of Conduct on Research Integrity', in *Promoting Research Integrity in a Global Environment*, ed. Tony Mayer and Nicholas Steneck (London: World Scientific Publishing, 2012), 133–47.

Ankier, SI. 'Dishonesty, Misconduct and Fraud in Clinical Research: An International Problem'. *The Journal of International Medical Research* 30 (2002): 357–65.

Aubert Bonn, Noémie, Simon Godecharle, and Kris Dierickx, 'European Universities' Guidance on Research Integrity and Misconduct: Accessibility, Approaches, and Content', *Journal of Empirical Research on Human Research Ethics* 12, no. 1 (2017): 33–44.

Boehme, Olivier et al., 'Research Integrity Practices in Science Europe Member Organisations' (Science Europe, July 2016).

Bond, Robert M., Christopher J. Fariss, Jason J. Jones, Adam D. I. Kramer, Cameron Marlow, Jaime E. Settle, and James H. Fowler. 'A 61-Million-Person Experiment in Social Influence and Political Mobilization'. *Nature* 489 (13 September 2012): 295–98.

Borgman, Christine L. *Big Data, Little Data, No Data: Scholarship in the Networked World*. Cambridge, Massachusetts and London: The MIT Press, 2015.

Busato, Vittorio, 'Learning the Lessons of History? Scientific Fraud in the Low Countries', *The Low Countries (TLC)* 23 (2015): 246–51.

Collste, Göran. 'Principles and Approaches in Ethics Assessment: Research Integrity'. Stakeholders Acting Together on the Ethical Impact Assessment of Research and Innovation (SATORI), June 2015.

Council of the EU. 'Council Conclusions on Research Integrity, adopted by the Council at Its 3431st Meeting Held on 1 December 2015'. Brussels, 1 December 2015.

European Data Protection Supervisor (EDPS). 'Leading by Example: The EDPS Strategy 2015-2019'. Brussels, 2 March 2015.

———. 'Opinion 4/2015: Towards a New Digital Ethics: Data, Dignity and Technology'. Brussels, 11 September 2015.

European Science Foundation (ESF), 'Stewards of Integrity: Institutional Approaches to Promote and Safeguard Good Research Practice in Europe - Survey Report' (Strasbourg, April 2008).

Federal Trade Commission. 'Big Data: A Tool for Inclusion or Exclusion? Understanding the Issues', January 2016.

Finnish Advisory Board on Research Integrity and Universities Finland UNIFI, 'Supervision of Doctoral Dissertations and Their Review Process in Finland with a Special Emphasis on Research Integrity: Recommendations to Universities' (Finnish Advisory Board on Research Integrity, 2017).

Godecharle, Simon, Ben Nemery, and Kris Dierickx, 'Guidance on Research Integrity: No Union in Europe', *The Lancet* 381, no. 9872 (2013): 1097–98.

González Fuster, Gloria, and Serge Gutwirth. 'Promoting Integrity as an Integral Dimension of Excellence in Research: D II.4 Legal Analysis, PRINTEGER', 2016.

Gutwirth, Serge, and Jenneke Christiaens. 'Reageren Op Problematisch Wetenschappelijk Gedrag Voorbij de Moralisering: Een Ander Wetenschapsbeleid Is Mogelijk'. *Tijdschrift over Cultuur & Criminaliteit* 5, no. 1 (2015): 70–91.

Horbach, Serge, and Willem Halffman, 'Promoting Virtue or Punishing Fraud: Mapping Contrasts in the Language of "Scientific Integrity"', Science and Engineering Ethics 23, no. 6 (2017): 1461-1485.

Jansen, Philip, and Wessel Reijers. 'Ethics Assessment in Different Countries: The Netherlands'. Stakeholders Acting Together on the Ethical Impact Assessment of Research and Innovation (SATORI), June 2015.

Péter Kakuk, 'The Legacy of the Hwang Case: Research Misconduct in Biosciences', *Science and Engineering Ethics* 15, no. 545, https://doi.org/10.1007/s11948-009-9121-x,

Kramer, Adam D. I., Jamie E. Guillory, and Jeffrey T. Hancock. 'Experimental Evidence of Massive-Scale Emotional Contagion through Social Networks'. *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, 17 June 2014.

Matthews, David. 'Do Academic Social Networks Share Academics' Interests?' *Times Higher Education*, 7 April 2016.

Meyer, Eric T., and Ralph Schroeder. *Knowledge Machines: Digital Transformations of the Sciences and Humanities*. Massachusetts: The MIT Press, 2015.

Meyer, Michelle N. 'Everything You Need to Know about Facebook's Controversial Emotion Experiment'. *Wired*, 30 June 2014.

Missy, 'A Social Networking Site Is Not an Open Access Repository', *Miss Library Grrl: For the Many Lessons Learnt in Libraryland* (blog), 24 January 2016, https://misslibrarygrrrl.wordpress.com/2016/01/24/a-social-networking-site-is-not-an-open-access-repository/.

Nagel, Saskia K., Michael Nagenborg, Wessel Reijers, Rok Bencin, Gregor Strle, and Bostjan Nedoh. 'Ethics Assessment in Different Countries: Germany'. Stakeholders Acting Together on the Ethical Impact Assessment of Research and Innovation (SATORI), June 2015.

National Academy of Sciences, National Academy of Engineering, and Institute of Medicine of the National Academies. *On Being a Scientist: A Guide to Responsible Conduct in Research (Third Edition)*. Washington, D.C.: The National Academies Press, 2009.

National Committee for Research Ethics in the Social Sciences and the, and Humanities (NESH). 'Ethical Guidelines for Internet Research'. The Norwegian National Research Ethics Committees, December 2014.

Nentwich, Michael and René König, 'Academia Goes Facebook? The Potential of Social Network Sites in the Scholarly Realm', in *Opening Science: The Evolving Guide on How the Internet Is Changing Research, Collaboration and Scholarly Publishing,* ed. Sönke Bartling and Sascha Friesike (Berlin: Springer Open, 2014), 107–24.

Nichols-Casebolt, Ann. *Research Integrity and Responsible Conduct of Research: Building Social Work Research Capacity*. Oxford: Oxford University Press, 2012.

Norwegian Ministry of Education and Research. 'Consultation Paper – Research Ethics in Norway', 2015.

O'Neil, Cathy. *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. New York: Crown, 2016.

'Revealed: Trump's Election Consultants Filmed Saying They Use Bribes and Sex Workers to Entrap Politicians', 19 March 2018. https://www.channel4.com/news/cambridge-analytica-revealed-trumps-election-consultants-filmed-saying-they-use-bribes-and-sex-workers-to-entrap-politicians-investigation.

Rushkoff, Douglas. *Throwing Rocks at the Google Bus: How Growth Became the Enemy of Prosperity*. Portfolio / Penguin, 2016.

Science Europe. 'Research Integrity in the European Policy Landscape: Open Letter by Science Europe Governing Board', 15 December 2016.

Sloot, Bart van der, and Sascha van Schendel. 'International and Comparative Legal Study on Big Data, Working Paper 20'. The Hague: The Netherlands Scientific Council for Government Policy, 2016.

Tallacchini, Mariachiara. 'To Bind or Not to Bind? European Ethics as Soft Law'. In *Science and Democracty: Making Knowledge and Making Power in the Biosciences and Beyond*, edited by Stephen Hilgartner, Clark A. Miller, and Rob Hagendijk, 156–75. New York: Routledge, 2015.

Tene, Omer, and Jules Polonetsky. 'Big Data for All: Privacy and User Control in the Age of Analytics'. *Northwestern Journal of Technology and Intellectual Property* 11, no. 5 (2013): 239–73.

University of Cambridge, 'Statement from the University of Cambridge about Dr Aleksandr Kogan', 23 March 2018.

Vincent, Hames, 'Transgender YouTubers had their videos grabbed to train facial recognition software', 22 August 2017, The Verge.

White, Andrew. *Digital Media and Society: Transforming Economics, Politics and Social Practices*. Hampshire: Palgrave MacMillan, 2014.

Yearwood, Maurice H., et al., 'On Wealth and the Diversity of Friendships: High Social Class People around the World Have Fewer International Friends', *Personality and Individual Differences*, 2015, 224–29.

Zwitter, Andrej. 'Big Data Ethics'. *Big Data & Society*, no. July-December (2014): 1–6.