

Working Papers on University Reform

Working Paper 27

Mapping the Integrity Landscape: Organisations, Policies, Concepts

By Rachel Douglas-Jones and Susan Wright

PRACTICING INTEGRITY

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Working Papers on University Reform

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This working papers series is published by the Centre for Higher Education Futures (CHEF) at the Danish School of Education, Aarhus University. The series brings together work in progress in Denmark and among an international network of scholars involved in research on universities and higher education.

The current paper arises from a project, 'Practicing Integrity', which is researching the history of the emergence of international and national codes of 'integrity' in research practice, how they are being translated into institutional procedures and educational courses, and how early stage researchers navigate their requirements in the context of the management and performance incentives, research and funding conditions and challenges of career development. This project is funded by the Danish Ministry of Higher Education and Science.

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**Mapping the Integrity Landscape: Organisations,
Policies, Concepts**

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Introduction

This working paper addresses the question, ‘How has the idea of research integrity arisen?’ and assembles an international overview of key moments, documents and organisations that have shaped the field as it operates today. This policy field is rich in actors, declarations, concordats, statements, official publications, codes, reviews and press articles. Using snowballing from bibliographies, internet searches and, occasionally the Internet Archive (‘Wayback Machine’) this document has built up an overview of the organisations that have had a role in introducing ideas associated with research integrity into different policy environments. The result is a corpus of 136 such texts, a selection of which are reviewed here. We have been careful to complement and not duplicate work done by the EU-funded projects, particularly SATORI and PRINTAGER (the latter has an inventory of 127 documents).

The working paper is organised by geographical regions – global, USA, Europe, and then within Europe, the UK, Iberian and Nordic countries. Each section details the main organisations involved and summarises the documents they have produced, focusing on the ways they define or discuss ‘integrity’, and the other concepts and issues they link with that word, or try to keep separate. It becomes clear that there are several different strands to the storyline about the emergence of integrity as a key word in science policy and university management. As a result, in each strand, the word ‘integrity’ has become associated with different clusters of cognate words, each cluster giving ‘integrity’ a different range of meanings and references, with different ideas about who is responsible for upholding standards in scientific research, and how. The account identifies key events and key moments that were formative for these different strands, and some of the key actors involved. It has makes regular links to the Danish research and policy environment, from which the study was conducted.

Note: As a guide to reading, the titles of texts are *italicised* and keywords associated with ‘integrity’ are identified in **bold**.

Origin Texts

In Research Ethics and Bioethics there exist a series of texts thought of as ‘foundational’. They travel widely, are cited and used as templates for further, localised development. Within (predominantly biomedical) research ethics, these include the *Belmont Report* (1979) in the USA, the *Declaration of Helsinki* (World Medical Association 2013 [1965]) and to a lesser extent, the UNESCO *Declaration on Bioethics and Human Rights* (2005). A question driving this document search was whether similar documents have appeared for the younger field of research integrity: what documents and timeframes are viewed as ‘foundational’?

On a global scale: In this initial search for texts on integrity, the *Singapore Statement on Research Integrity* (2010) has emerged as an equivalent ‘foundational document on a global scale’ (Science Europe Roadmap 2013:21).

Within Europe, the 2011 *European Code of Conduct for Research Integrity*, issued by the European Science Foundation (ESF) and ALLEA is an equivalent ‘foundation’ and is used within the EU’s H2020 research strategy. It was revised in March 2017 by ALLEA.

Global

A general observation from this initial survey is that the globalisation of research is seen as a driving force necessitating harmonisation of standards of research merit and practice. Global bodies address questions of interdisciplinarity, collaboration, and the potential for integrating research integrity into research assessment exercises/metrics.

The most comprehensive/synthetic resource available for the ‘global’ is the 2011 book edited by Steneck and Mayer, the co-convenors of the first and second World Conferences on Research Integrity, entitled *Promoting Research Integrity in a Global Environment*. With submissions from 51 countries, and sections that discuss integrity training and institutionalisation, it is an essential first resource for exploring the treatment of integrity by its champions. Terminology is a point of contention. For example, Tetsuji Iseda asks whether there is a problem in teaching a research ethics class without the notion of integrity, as there is no corresponding term in Japanese. A newly-created term *kenkyuu kousei* (‘Fair treatment in research’) is used, but the authors reflect that it perhaps does not convey what is intended in other linguistic environments (2011: 252). This has a bearing on the Danish environment since there is no direct translation of integrity into Danish, with an open question being what terms are chosen, and why, in policy and teaching settings.

1. *World Conferences on Research Integrity*

The World Conferences are a vital site for the coalescence of interests, actors, and debates. The first took place in 2007 in Lisbon, a collaboration between the ESF/ALLEA and the USA’s Office of Research Integrity (ORI). This is significant because it illustrates an early engagement between the American Office of Research Integrity, and the European Science Foundation. The collaboration began in 2005, as a ‘modest effort to expand a US Office of Research Integrity outreach programme to Europe’ (Mayer and Steneck 2011: v, emphasis added)

The first collaborative event was supported by the European Commission (late 2005), and subsequently gained the support of the Portuguese, who at that time held the European Union Presidency, and the Gulbenkian Foundation. This set the location for the first World Conference in Lisbon where other ‘major partners’ included the International Council of Science (ICSU) Committee

on Publication Ethics (COPE), the European Molecular Biology Organisation (EMBO), and the Japanese Society for the Promotion of Science (JSPS) (The UK's Research Integrity Office, UKRIO is also mentioned and the preface of the resulting report refers to concurrent developments at the OECD). The World Conference is described by its organizers, Mayer and Steneck, as an attempt at 'providing World awareness of research integrity and discussing strategies for harmonising policies and fostering responsible conduct in research' (2011: v).

Following the first Lisbon conference, the ESF and ORI issued a joint *Science Policy Briefing* in December 2007. The document's title emphasises a 'global responsibility to foster common standards.' In the Foreword, authors Mayer and Steneck put it to the reader that increased globalisation of research presents new challenges for promoting integrity. While differences should be respected, they write, there is also a need to agree 'on **professional** standards' for responsible conduct in research. The objective is 'harmonious' collaboration. Finding 'shared **standards**' was the route they sought through the Lisbon conference, which is described as a 'platform'.

At the second World Conference, in Singapore, the 2010 *Statement on Research Integrity* was developed. In 2013, the Third World Conference produced the *Montreal Statement on Research Integrity in Cross-Boundary Research Collaborations*.

2. OECD

Research integrity falls under the Global Science Forum (GSF) within the OECD, which deals with integrity in a wide range of domains (commerce, trade, lobbying). There are three emphases for integrity within their documentation: **misconduct, collaboration and legalese**. The main orientation is how, practically, to deal with questions of integrity. 'Science' and **public trust** are seen to be at stake.

In 2007, based on the initiative of Japanese and Canadian delegates, the GSF held a workshop collaboration at Tokyo which led to a document entitled *Best Practices for Ensuring Scientific Integrity and Preventing Misconduct*. The starting point for integrity in this document is **misconduct: fabrication, falsification and plagiarism**. The frame for the workshop is totalizing: 'like science itself, the problem has a major international dimension' (2007: 1) which draws on the universality of the scientific enterprise logic. The document is oriented towards practical solutions, best practices.

The 2007 Tokyo meeting also clearly identified differences in how 'collaborating countries deal with allegations of misconduct'. To follow this up, a Co-ordinating Committee for Facilitating International Research Misconduct Investigation was established with 30 members, who held three meetings. Their final report developed the **legal-ese** dimension, producing agreement on a

‘**boilerplate**’¹ text, that ‘could be inserted into agreements for specific international research projects’. This text provided pre-established formulations of agreements and ‘principles for handling ethical matters’. This mechanism/boilerplate text has been picked up in the Science Europe Integrity Survey Report (2016: 20, 24, 30, 32, 45, 48, 49) and endorsed by the ESF/ALLEA 2010 European Code of Conduct.

3. United Nations Educational, Scientific and Cultural Organisation (UNESCO)

Within the United Nations Educational, Scientific and Cultural Organisation, ‘integrity’ appears under several domains: the integrity of the person (Universal Declaration on Bioethics and Human Rights), the integrity of heritage (World Heritage Sites) and Education (including Higher Education).

UNESCO has a strong background in driving bioethics initiatives and *Declarations* such as the non-binding *Universal Declaration on Bioethics and Human Rights* (2005) which has acted as a reference document for national legislation, capacity building and awareness raising (Langlois 2008).

Eckstein’s 2003 *Combating Academic Fraud: Towards a Culture of Integrity* is part of the *Corruption* series, and **fraud** was also the emphasis in the 2015 International Institute for Educational Planning’s (IIEP) Policy Forum on Planning Higher Education Integrity, held in Paris.² An **integrity ranking of universities** was proposed, along with an **international coalition on higher education integrity** (Council of Europe, *Agence Universitaire de la Francophonie* and the Open Society Foundation). Within this domain, the integrity of higher education is also to do with **falsification** of degrees, and **corruption**.

4. International Council for Science (ICSU)

The International Council for Science (ICSU) is an NGO comprising national scientific bodies and international scientific unions. ICSU has co-sponsored World Conferences on Research Integrity since the outset. Integrity initially fell under the Standing Committee for Responsibility and Ethics in Science (SCRES) but currently is the responsibility of the Committee on Freedom and Responsibility in the Conduct of Science (CFRS).

The earlier committee (SCRES) produced *Standards for Ethics and Responsibility in Science – an Empirical Study* (2002) which responded to a World Science Conference (Budapest 1999) arranged by UNESCO and ICSU. The document provides a useful overview of the dates of publication for 115 codes of **ethics and responsibility**. It is interesting that integrity does not appear in the document at

¹ A boilerplate text is standard language of any kind that can be recycled and is used often as a standard clause in contracts or in computer code. The term ‘boilerplate’ has a fantastic history in the use of steel to create set advertisements ready for printing.

² <http://www.iiep.unesco.org/en/iiep-policy-forum-planning-higher-education-integrity-3129>

all, but there are frequent references to ‘**collaboration, respect, giving due credit, honesty, fairness**’. In the conclusion, which is sufficiently rich to quote in full, the authors note that

with regard to the individual qualities the striving for objectivity or, more generally, the upholding of professional quality is widely perceived as the primary ethical obligation of the individual scientist. In itself, this may again not be very surprising, since it seems to reflect what many people regard as the **traditional ethos of science**. However, when seen against the background of current discussions about the alleged deep structural changes that science has undergone since WWII, with the increased pressures on relevancy and problem-based research in new institutional settings, this insistence on ‘traditional’ values is indeed noteworthy, if not reassuring. Its explicit mention may, however, also reflect that one perceives that this **professional quality** has come under **increased attack** from other forces (2002: 11).

The *Standards for Ethics and Responsibility in Science – an Empirical Study* also proposes the **issuance of a scientific oath or scientific pledge**, which would mark the individual adoption of norms by a public act. They worry that such an oath or pledge ‘runs the danger of becoming a pure formality without content’ (2002: 13).

In 2008, the ICSU CFRS produced a *Statement on Promoting the Integrity of Science and the Scientific Record* which was composed of 3 recommendations, concerning National Oversight Mechanisms, Scientific Publishing and Deliberate Misconduct.

This was followed up in 2014 with an International Workshop ‘Science Assessment and Research Integrity’, in collaboration with the China Association for Science and Technology (CAST) and the Chinese Academy of Sciences (CAS), which was based on the following premise:

Because science is **universal** and can benefit all of **mankind, innovative** and expanding scientific activities in rapidly developing science systems hold great promise. To **maximise progress**, the scientific enterprise must be rigorous and reliable, with **fair allocation of credit**. The promotion of **integrity** in the conduct of science and in scientific publications should assist in making progress in research in these countries more **efficient** and in ensuring broad acceptance of research outputs by fellow scientists and society.³

At the 4th World Conference on Research Integrity (Brazil 2015), the ICSU worked with the systems/incentive theme of the conference to run a parallel Symposium on ranking and **research assessment tools and their effects on integrity**, as well as whether integrity should be part of research assessment.

³<http://www.icsu.org/events/ICSU%20Events/international-workshop-science-assessment-and-research-integrity>

5. **Global Research Council**

The Global Research Council is a ‘virtual’ organisation established in May 2012 at the Global Summit on Merit Review, held in Washington DC. It comprises the heads of science and engineering funding agencies around the world. In 2013, 70 of the HORCs met in Berlin and endorsed statements concerning both Open Access and Research Integrity. The *Principles for Research Integrity* point out that **researchers and institutions themselves remain ultimately responsible** for undertaking research with integrity. On the other hand, research funding agencies have an obligation to ensure that the research they fund corresponds to the highest standards possible.⁴

6. **International Committee of Journal Editors, World Association of Medical Editors, and Committee on Publication Ethics**

In 2016 the ICJE updated their *Guidelines*, with a strong focus on authorship. The corresponding author is called a ‘**guarantor**’, with responsibility for data and the integrity of the article as a whole.

The first guidelines developed for COPE came in 1999 as *Guidelines on Good Publication Practice* (COPE 1999) followed by a *Code of Conduct* for Editors in 2004, which calls upon editors ‘to take seriously their role as guardians of biomedical science’.⁵ In 2006, the Guidelines on Good Practice were replaced by a series of *flowcharts* for responding to **whistle-blowers, appropriation of ideas/data, suspecting plagiarism, duplicate publication, changes in authorship** etc. In 2007 these flowcharts were turned into a *Gold Standard of Best Practice Guidelines*, intended to be more ‘aspirational’. It is these guidelines that form ‘the basis for periodic journal audits’ (ibid).

A consensus statement on **research misconduct** in the UK was published in 2012 by COPE and the British Medical Journal (BMJ), which stated that ‘this meeting believes that the UK’s mechanisms for ensuring good research conduct and investigating research misconduct need to be strengthened’. It goes on to comprehensively define research misconduct.

At present, there are two measures in operation: the *Code of Conduct*, to which all COPE members are expected to adhere, and the *Best Practice Guidelines* which ‘were developed in response to requests from editors for guidance about a wide range of increasingly complex ethical issues’. Liz Wager has been a key figure in these revisions, and has published on how research institutions and journals can cooperate on integrity cases (Wager and Kleinert 2012)

The World Association of Medical Editors (WAME) is a voluntary association of editors of medical journals. The first point in their *Professionalism Code of Conduct* expects editors to ‘correct or retract

⁴ <http://www.globalresearchcouncil.org/meetings/2013-meeting>

⁵ <http://publicationethics.org/resources/code-conduct>

publications as needed to **ensure the integrity of the scientific record**' (WAME 2016). They are also tasked with pursuing allegations until the matter is solved.

7. InterAcademy Council

The InterAcademy Council (IAC) (whose logo says 'Science for a Better Future') is a multinational organisation of science academies, funded by national governments, private foundations and international organisations. The Royal Netherlands Academy of Arts and sciences hosts the IAC Secretariat in Amsterdam and funds the IAC's running costs and overhead expenses. The 2012 report *Responsible Conduct in the Global Research Enterprise: A Policy Report* emphasises **global** research, the **institutional arrangements** necessary for responsible conduct and the **environment** required to foster integrity. It rests on the **self-correcting** nature of research, and is aimed at **preventing irresponsible conduct**.

The Introduction provides a good (and different) overview of divergent approaches to research integrity, which takes in Finland, Australia, Japan, Germany and India.

The report also (in Box 1.3) provides a selection of 'notable' cases of irresponsible research conduct. The cases include Hwang Woo-Suk (Korea) who was found to have fabricated results of research on human stem cells; Gopal Dundu (India), a biologist debarred in 2010 after a finding that he had re-used images in a 2005 paper that had been published earlier; Li Liansheng (China), who was stripped of a national award in 2010 after it was found some of his work was plagiarized; Scott Reuben (USA) who fabricated data for his clinical trials and was sentenced to prison for healthcare fraud in 2010; Jan Henrik Schön, a physicist who falsified data underlying significant findings in 2002; Diederik Stapel (Netherlands), a social psychologist who fabricated and falsified data in numerous publications (2011); and Jon Sudbø (Norway and the only Scandinavian in the list) a biologist who fabricated patient data on studies on pain killer and smoking risk (2005). The inset box also comments that **irresponsible research** also occurs in the humanities, and gives references.

The chosen epigraph of the InterAcademy Council's 2012 report is as follows:

All creatures seek happiness in whatever they do; but happiness cannot be had without righteous conduct. **Therefore righteous conduct is obligatory for all.** Physician Vāgbhāṭa in *Aṣṭāṅgahṛdaya*, believed to be sixth century AD, as quoted in Valiathan (2009)

8. Epigeum

Epigeum are an online training offshoot of the University of Oxford press. They offer training to university employees, through peer reviewed courses. One aim is to cater to researchers who might

be unable to fit in-person training into their work lives. Training is offered under four categories: Research, Studying, Teaching and Leadership and Management. At the time of writing (May 2017) a course on Academic Integrity was open for collaboration/in development. It was proposed that the course would take students 3-4 hours and staff 2-2.5 hours. In contrast, a course on Research Quality and Reproducibility was projected to last 12 hours. The lead Advisor on the course was Dr. Tracey Bretag, an Associate Professor of Higher Education and the Director of the Office for Academic Integrity in the Business School, at the University of South Australia. She published a *Handbook of Academic Integrity* (2016) which focuses more on students, particularly the problem of **contract cheating by outsourcing of student essays, placements, or degrees**. The blurb mentions that the course has two strands, targeted at students and staff, 'so that institutions can take a holistic approach to integrity'. 'Each module will help staff build and contribute to a culture of academic integrity by demonstrating how to make use of academic integrity tools consistently and effectively across their academic communities in a way that has a lasting impact.'⁶ Steneck, from the World Conferences (above) is presumably involved as his slides from the 2913 World Science Forum (entitled Research Integrity Risks and Management) declared Epigeum as a conflict of interest. The contribution on Europe comes from Irene Glendinning who has created an **Academic Integrity Maturity Model** for the EU Erasmus-funded IPPHEAE project (Impact of Policies for Plagiarism in Higher Education Across Europe). The model is intended to evaluate the maturity of institutional policies for academic integrity. The handbook cost 898.75€ The project has a consortium with partners from universities in Lithuania, Poland, UK, Czech Republic and Cyprus and conference sponsorship from the companies Turnitin, the plagiarism checker, and IS5U, which 'manages the lifecycle of digital identities in your organisation'.

USA

General observations: The USA, with its adversarial and litigious legal system was an early site for wrangling over the trustworthiness of science and the social contract for science. Two reviews are by David Guston (2000, 2000a), with a specific focus on presumptions of integrity and David Demeritt (2000) which contrasts the USA and UK in terms of accountability. The USA is also a rich space in which the independence as against the political control of scientific freedom is debated. The cases have predominantly been biomedical.

Research funding organisations are not usually directly involved in developing or promoting policies or codes of conduct on research integrity, given their distance from everyday research management. However, the NSF and NIH have policies that come with the granting of national or federal funds, and some require a formal declaration that funded researchers will abide by certain rules.

⁶ <https://www.epigeum.com/courses/studying/academic-integrity/>

In this review of the evolution of ‘research integrity’ in the USA, there are several key figures, including:

Nicholas H. Steneck Director of the Research Ethics and Integrity Program of the Michigan Institute for Clinical and Health Research. In the early 1980s, he chaired a ‘Task Force’ on Integrity in Scholarship in Michigan, and participated in the Public Health Service Advisory Committee on Research Integrity (1991-1993). Helped establish and directed ORI/NIH Research on Research Integrity Program (and four of their conferences). Responsible for co-chairing and organising the program for the ORI-ESF World Conference on Research Integrity in Lisbon, Portugal 2007. ‘In general terms, responsible conduct in research is simply good citizenship applied to professional life’ (Steneck 2007: 3).

Brian Nosek: Open Science Framework, Reproducibility Project, ‘Scientific Utopia’ (‘a world where researchers will pre-register their hypotheses, openly share and archive raw data in one central location and check one another’s work through replication’. Nosek: ‘I don’t know how any scientist in good conscience could be opposed to transparency’).⁷

1. *US Office of Research Integrity (ORI)*

The U.S. ORI was established under that name in 1992. Its precursors were set up in 1989 by Assistant Secretary for Health James Mason: the Office of Scientific Integrity (OSI in NIH) and the Office of Scientific Integrity Review (OSIR) in the Dept. of Health (Gold 1993).

However, in the ‘Historical Background’ section of the ORI website, references run back to 1981 when cases of research misconduct (12 cases between 1974 and 1981) were being heard by the Investigations and Oversight Subcommittee of the House Science and Technology Committee (Al Gore).⁸ *Responsible Science: Ensuring the Integrity of the Research Process: Part II* (NAS 1993, authored by Barry D Gold) provides a comprehensive overview of the kinds of cases that caught the attention of Congress and the public.

- Elias Alsabti: cancer immunology - fabricated credentials, plagiarized almost 60 papers
- Marc Strauss: oncologist - falsified patient records to make them eligible for clinical trials
- Vijay Soman: endocrinologist – fudged/fabricated data and plagiarized
- John Long: cancer researcher - fabricated data, mislabelled cell line

⁷ <https://www.theatlantic.com/health/archive/2012/12/the-myth-of-self-correcting-science/266228/>

⁸ <https://ori.hhs.gov/historical-background>

In the early 1980s, the mood was deeply adversarial. The terms **fraud** and **misconduct** were predominant in journalistic reporting, (Broad 1980, 1981) with discussion of **betrayal** and **deceit** (Broad and Wade 1982, Woolf 1981).

The first attempt to act was to introduce language concerning an '**administrative process** to review reports of **scientific fraud** in connection with biomedical or behavioural research' into legislative bills. The bill was passed but vetoed by the then president Regan (once in 1984 and again in 1985) on the grounds that the bill 'manifested an effort to **exert undue political control** over decisions regarding scientific research'.

By the late 1980s, misconduct in science was discussed in relation to **white-collar crime** suggesting that it could become a **criminal offence** (reports were flowing in from the US Congress concerning *Scientific Fraud and Misconduct and the Federal Response* (1988) with titles like *Is Science for Sale? Conflicts of Interest vs the Public Interest* (1989). Rosenzweig, president of the Association of American Universities (1988) strongly resisted a draft bill which would have established a new office of scientific integrity in DHHS (Gold 1993), and would have 'reversed the presumption of the 1985 legislation which recognised an **institution's responsibility for the conduct of its members and placed the government in a monitoring role**. If enacted as proposed, the new office would have been empowered to receive allegations of misconduct and, if it chose, to investigate them independently of institutional processes' (Rosenzweig 1988). On 16 March 1989, the Office of Scientific Integrity (in the NIH) and the Office of Scientific Integrity Review (Department of Health) were established by James Mason (Gold 1993).

In 1990, integrity entered the vocabulary. Reading Gold, it is possible to see that this was partly to defuse the adversarial climate that had arisen, and create a new reconciliatory tone. Representative Robert Roe (D-NJ) opened hearings on *Maintaining the Integrity of Scientific Research* with the 'belief that the responsibility for maintaining integrity in science belonged to the science community'. The hearings were comprehensive, covering **oversight mechanisms, the distinction between fraud and honest error, pressure to publish, informality of teaching of ethics and values, institutional policies, and the role of journals, editors and peer review**.

Research misconduct evolved into the Research on Research Integrity program (RRI) which convened biennial Research conferences on Research Integrity in the first decade of the 2000s (2000, 2002, 2004, 2006, and 2009). Through Nicholas H. Steneck, this series of conferences was connected to the first World Conference on Research Integrity, held in collaboration between ORI and ESF, as he was instrumental in organising the program for both sets of events. Programs for all are available online, including abstracts, and from 2006, PowerPoint slides become available.

ORI began to develop a training program for a new entity called 'Institutional Research Integrity Officers' (RIOs) and in 2007, started an RCR program for postdocs. Nowadays ORI is heavily

involved in training. Educational videos can be viewed on YouTube,⁹ and are being shared in Europe via Twitter. A ‘name and shame’ page is regularly published, with ORI detailing the outcome of cases, known as ‘*Misconduct Case Summaries*’.

2. National Institutes of Health

The National Institutes of Health are a central funding and advisory body in the biomedical sciences in the USA. In the early 1990s, the NIH inserted a requirement for *Responsible Conduct of Research (RCR)* training into its grant applications. This was an early example of focusing on **training** (especially graduate students and postdoctoral fellows) which ORI and ESF argue that ‘could be the key to improving **research climates** and developing a global **culture of integrity** in research’ (*Science Policy Briefing 30*, December 2007). The phrasing implies or presumes there was not already a culture of integrity.

3. American Association for the Advancement of Science AAAS

In 1980, the AAAs surveyed the professional ethics activities of affiliate societies and concluded ‘little attention and only minimal resources have been directed toward **professional ethics**’ among scientific and engineering societies (Chalk et al. 1980, cited in AAAS 2000)

In a ‘landmark visit’ in 2007, the AAAS collaborated with CAST, the China Association for Science and Technology, to set up a conference on Global Science and Technology Ethics Challenges.¹⁰ During the workshop in Beijing, Song Nanping, the executive secretary of CAST said ‘We want to send a message to the whole world that it is our purpose to promote the development of ethics and scientific integrity’. The framing of this engagement was one of ‘unprecedented global cooperation in science and technology’

4. Institutes of Medicine

The Institutes of Medicine weighed into the debates in 1989 with *The Responsible Conduct of Research in the Health Sciences* (1989) which concluded that the ‘**quality** of the research **environment** may be more damaged by **sloppy or careless** research practices and apathy [lack of attention to traditional monitoring approaches] than by incidents of research fraud or other serious scientific misconduct’ (1989:21).

⁹ <https://www.youtube.com/playlist?list=PLr17E8KABz1H2m2HVztr-zUssnSBQUhEr>

¹⁰ <https://www.aaas.org/news/beijing-conference-explores-causes-and-solutions-global-st-ethics-challenge>

5. National Academy of Sciences

The NAS, a private, non-profit society of distinguished scholars, was founded in 1863, at the height of the American Civil War. Its roots can be traced to Cambridge, Massachusetts and its charter ‘requested the members to serve the government on scientific and related technical problems without personal remuneration apart from out-of-pocket expenses such as cost of travel, housing accommodations and the like.’¹¹

It has published a number of detailed and thorough documents reporting on workshops convened to deal with research practice. These are mentioned in chronological order, with a brief comment:

1989 The Responsible Conduct of Research in the Health Sciences

This text originated in 1985, when the President of the Institute of Medicine requested advice on forming a program ‘that would respond to the occurrence of misconduct in biomedical research’ (1989: v). Integrity is already central, but not a framing concept. The 17 member committee convened in 1987 and wrote that by ‘improving the **integrity and quality of the institutional environment of research**, we sought to foster **professional research standards of individual researchers** and to discourage future incidents of scientific misconduct [...] Integrity in research means that the reported results are **honest and accurate** and are in keeping with **generally accepted research practices**’ (1989: v).

1992 Responsible Science Vol I: Ensuring the Integrity of the Research Process

This document opens with a reference to Einstein’s statement ‘The right to **search for truth** implies also a duty; one must **not conceal** any part of what one has recognised to be true’, which is inscribed on the statue of Einstein that stands in front of the NAS building (NAS 1992: iii). The preface notes that ‘not all scientists adhere to this obligation’, and Frank Press’s introductory letter situates the report in an environment where ‘every major institution of American society is now undergoing scrutiny and examination’. Press argues that it is ‘important for scientists to demonstrate the **accountability that accompanies public investment in research**’, and that the ‘broader scientific community knows that ensuring the integrity of the research process is fundamental to the **success of science**’. This report identified and introduced the term ‘**Questionable research practices**’ in 1992, with the comment that ‘Questionable research practices do not directly damage the integrity of the research process and thus do not meet the panel’s criteria for inclusion in the definition of misconduct in science’ (NAS Responsible Science 1992: 28).

1993 Responsible Science Vol II: Ensuring the Integrity of the Research Process

The second volume contains the background papers and institutional guidelines which informed Volume I, and ‘have been selected to convey the diverse approaches for addressing different aspects of misconduct or integrity in science within research institutions’ (1993: vii). The authors of the

¹¹ <http://www.nasonline.org/about-nas/history/highlights/>

background papers are Nicholas H. Steneck, Mark S. Frankel, David H. Guston, Robert A. Weinerbg. Barbara Mishkin, Barry D. Gold.

2002 Integrity in Scientific Research: Creating an Environment that Promotes Responsible Conduct

In the executive summary of this document, **integrity is distinguished from misconduct**: ‘The committee’s goal was to define the desired outcomes and set forth a set of initiatives that it believes will enhance integrity in the research environment’ (2002: 2). The framing provided is this: ‘The **public will support** science only if it can **trust** the scientists and the institutions that conduct research. Major social institutions, including research institutions, are expected to be **accountable** to the public. Fostering an **environment that promotes integrity** in the conduct of research is an important part of that accountability’ (2002: 1).

2017 Fostering Integrity in Research

Released in April 2017, this update starts with a preface from the chair of the report’s committee, Robert M. Nerem, who is an emeritus professor of Bioengineering and Bioscience at Georgia Institute of Technology. He begins from an historical background of alleged cases of misconduct and argues that such cases ‘continue to emerge with disturbing regularity in the United States and around the world’ (2017: vii). It addresses the recommendations of *Responsible Science* and updates them for what is seen as a **globalised environment** of research.

6. National Science Foundation

The US National Science Foundation is a funder of research. Head of the NSF (2010-2013), Subra Suresh writes that ‘the most fundamental barriers to bilateral and multilateral international **collaborations** are **disparate standards** for scientific-merit review and differences in the infrastructures that ensure professional ethics and scientific integrity’ (Suresh 2011: 802).

Focus of the NSF Scientific Integrity Policy covers **legal** dimensions, such as **conflict of interest**, **whistle-blower protection**, **misconduct**, **COMPETES act**, **access to Data**, **public communications**, **media policy** (a surprising amount on media policy).

7. Union of Concerned Scientists (UCS) /Centre for Science and Democracy

UCS is included in this review because their definition of scientific integrity is ‘**working to stop political interference** in government science’ (Website). For them the principles are **independent science**, **transparent decision-making**, scientific **free speech**, and **statutory compliance**. Their activism dates back to the first George W. Bush administration and UCS’s publication of *Scientific Integrity in Federal Policy Making*. Subsequent documents covered case studies of abuses in science, and *Atmosphere of Pressure* (2007). In 2009, President Obama issued a memo ‘calling for comprehensive scientific integrity reform in federal agencies’. Their 2017 document *Preserving Scientific Integrity in Federal Policymaking* consists of recommendations to President Trump,

focusing on a culture of scientific integrity, the promotion of **independent science**, an increase in **government transparency** and enhanced **public participation**.

European

General observations: There are two key European documents.

1. *The European Code of Conduct for Research Integrity* ESF/ALLEA (2011), which was recently revised by ALLEA (2017) at the request of the European Commission. This code is pre-dated by an ALLEA/Dutch KNAW *Memorandum on Research Integrity* (2003).

2. *The Science Europe Roadmap*, and the Science Europe's *Research Integrity Practices in Science Europe's Member Organisations* (2016).

There are important differences in terminology between the USA and Europe. In the USA, RRI stands for Research on Research Integrity. RRI in Europe stands for Responsible Research and Innovation which has been incorporated into funding instruments within the European Union. It is defined as the 'on-going process of aligning research and innovation to the values, needs and expectations of society'. The 'science and society' relationship plays out differently in Europe, and the situation regarding research accountability is arguably more complex, having to take into account different legislative structures and national models for handling university research.

An initial search showed that a number of academic projects and articles drew Europe-wide comparisons.

- PRINTEGER has produced a useful account of the diverging notions of integrity. It analyses 36 policy documents from five European countries (UK, Holland, Germany, Italy, Norway) but is, however, limited to documents produced in English. Newspaper articles found through the search 'research integrity' OR 'scientific integrity' were classified according to three periods (1987-1990, 1995-2000, 2010-2015) (Horbach and Halffman 2016)
- Tavare's 2011 discussion overview compares 'The American dream' with Scandinavia, Croatia (an early ORI collaborator), Poland and Germany and mentions developments in Canada.
- Godecharle et al.'s 2013 review, emerging from the Centre for Biomedical Ethics and Law in Leuven Belgium, compares the regulatory framework regarding research integrity in Europe across 27 countries plus four countries of the European Free Trade Association (Iceland, Liechtenstein, Norway and Switzerland).

1. **European Science Foundation ESF / (Science Connect)**

The European Science Foundation is a non-profit organisation founded in 1974, which claims 42 years of experience in ‘science management’, coordinating European research funding and research performing organisations. Its fee-paying members are public or private organisations who fund or promote research or are interested in scientific research. ESF is a network that provides advice and road-mapping support for access to EU funding, specialised seminars and reports. It is based in Strasbourg, France.

Science Connect is the recently launched ‘expert services division’, of a science services ‘start-up with a 42-year history’. It ‘delivers practical, skilled and interdisciplinary support and consultancy services across all sectors of the science community’. Their intention is ‘to be a key partner in delivering a globally competitive European Research Area’.¹²

ESF was influential in the first World Conference on Research Integrity and has a long history of addressing topics that fall in the domain of integrity. In 2000, ESF published a Science Policy Briefing (ESPB No. 10) ‘*Good Scientific Practice in Research and Scholarship*’. They note that the publication was a response to the several cases of misconduct reported over the preceding years.

Since then, ESF has been responsible for two key documents, the 2008 *Stewards of Integrity* survey and (with ALLEA) the *European Code of Research Integrity* (2011) used as part of Horizon 2020 with a revised version published in March 2017. This section deals with each in turn.

The survey *Stewards of Integrity* took place in 2008, prior to the publication of the *European Code of Research Integrity* (2011) and prior to the development of the *Danish Code of Research Integrity* (2014). It therefore provides a snapshot of how integrity was being considered in Europe and in Denmark prior to either of these key texts. The Danish section of the *Stewards of Integrity* document 3.4, (2008: 14) provides an account of the status quo in 2008, demonstrating both participation in ESF activities and the landscape prior to 2014 in Denmark. At that time, very few cases were considered serious enough to count as **misconduct**. The framing is one of **dishonesty** and **adjudication** and is based on a Committee structure. Members of committees are **appointed** by a minister and the chair is a **High Court Judge**. Their **jurisdiction** is limited to cases that ‘could potentially influence Danish research’ (ESF 2008: 14)

In 2008 an ESF Member Organisation Forum on Research Integrity was set up following the survey, to ‘serve as a platform for the exchange of good practice, to support and encourage those organisations which did not yet have the appropriate support to develop such structures, to learn from others and initiate debates in their respective communities’ (Makarow 2010: 3)

The 2010 report *Fostering Research Integrity in Europe* arose from an ESF Member Organisation

¹² <http://www.esf.org/blog/post/what-is-science-connect/>

Forum on Research Integrity, which was set up in 2008, following the survey, to ‘serve as a platform for the exchange of good practice, to support and encourage those organisations which did not yet have the appropriate support to develop such structures, to learn from others and initiate debates in their respective communities’ (Makarow 2010:3). The document, *Fostering Research Integrity in Europe* was put together by the Forum chairs Pieter Drenth, Sonia Ftacnikova, Maura Hiney and Livia Puljak. Professor Marja Makarow, the ESF Chief Executive opens the Foreword with this:

At a time when the need to build **trust** between science, society and policy makers is becoming more and more important, it is essential that the **culture of best practice** is established as the foundation for research integrity. Research activities should be undertaken with the **highest ethical considerations** and **misconduct** should be identified and dealt with in an open and transparent manner. The **quality** of research is entirely based on the **highest level of integrity** (Makarow 2010: 3).

The outcomes of the 2008 forum were designed to be ‘channelled as the European input to the second World Conference on Research Integrity’ in Singapore, July 2010.

Any doubt or distrust about the ethical standards employed calls into question the basis of our scientific understanding. There have been flagrant cases of deliberate dishonesty, but most researchers have tended to think of these as rare events. That is because it is believed that **peer review and collegiate ethos**, the process of **challenge** and the practice of **questioning**, sooner or later **reveal the truth**. As Arthur C. Clarke once said, “In the long run, there are no secrets in science. The universe will not cooperate in a cover-up.” This report aims at strengthening this ethos (Makarow 2010: 6).

The 2011 *European Code of Conduct for Research Integrity* was published by ESF in collaboration with All European Academies, ALLEA¹³

The Code addresses the proper conduct and principled practice of **systematic** research in the medical, natural and social sciences and the humanities. It stands as a canon for **self-regulation** with clear recommendations, and is now on the way to being taken as a reference template for implementation throughout Europe. It is not intended to replace national or academic guidelines, but to represent a **Europe-wide agreement** on a set of principles and priorities for the research community [...] **Human curiosity and science are borderless, and so must be the policies that surround them. Global research collaboration is unthinkable without a common understanding of the rules of integrity.** That is why the next step is to develop an international Code of Conduct for scientists and stakeholders worldwide (Marja Makarow and Jüri Engelbrecht 2011: 3).

¹³ <http://archives.esf.org/coordinating-research/mo-fora/research-integrity.html>

The 2011 ESF/ALLEA *European Code of Conduct for Research Integrity* is a foundational document. It describes itself ‘not a body of law, but rather a canon for self-regulation’. The *European Code of Conduct for Research Integrity* was revised in 2017 by in ALLEA (see below).

2. European Network of Research Integrity Offices (ENRIO)

ENRIO began as an initiative by the (then) director of the UK Research Integrity Office (UKRIO) to bring together a group of eight people who were dealing with questions about research integrity, or lack thereof, within their national organisations. The group met for the first time in London in March 2008, just a few months after the first World Conference on Research Integrity in Lisbon, Portugal. They decided to establish an (informal) European Network to enhance research integrity within Europe in a world with growing international cooperation. ENRIO aims to facilitate discussions and share knowledge, experiences and (possible) solutions related to the investigation of allegations of misconduct in research and to consider questions on training and education with regard to research integrity and good research practices.

3. Science Europe

Science Europe is an association of European Research Funding and Research Performing Organisations founded in 2011, with the aim of promoting the collective interests of Members and facilitating collaboration at policy, funding and performing levels (Roadmap 2013: 3).

Science Europe was founded by European Heads of Research Councils (EuroHORCS) and ESF members who decided to establish a separate body from the ESF in Brussels. It was ‘designed to be slim and agile’ and act primarily in a policy role (Hynes 2015: 24).

Their *Roadmap* acts as a ‘framework for voluntary collective activity’ (*Roadmap* 2013: 6) and identifies research integrity as one of nine areas. It recognises a multi-institutional stake in integrity, and notes that research funders, academies, universities and ministries all have a role in ensuring research integrity. However, it regards these authorities as ‘not sufficiently **legally robust**, and therefore vulnerable’ (*Roadmap* 2013: 22).

To pursue tangible results and enhance collaborative efforts in this area, Science Europe has set up a dedicated Working Group.¹⁴ The main aim of the group is to support the **implementation of existing principles and codes**, and to contribute to the consolidation of a normative framework in practice in Europe.

¹⁴ <http://www.scienceurope.org/policy/working-groups/research-integrity/>

4. European University Association (EUA)

Doctoral training events form part of the EUA's Europe-wide initiatives in drawing attention to research integrity. On the 18-19 January 2017 in Lisbon, Portugal, the EUA hosted a very popular workshop on 'Ethics and Integrity in Doctoral Education and Research Training'. The event had 138 participants from 87 higher education and research institutions from 25 European countries.¹⁵ The Programme for the day and all power-points are available on EUA's website, providing an excellent overview of doctoral integrity training programs across Europe.

5. Council of Europe

The Council of Europe approaches integrity from a **human rights perspective**. Together with the Charles University (Prague), the Council of Europe has established a new 'platform' to fight corruption in education: the European Platform in Ethics, Transparency and Integrity in Education (ETINED). The emphasis is on **corruption**.

6. Member States (via EU Project documents)

Many EU funded work projects, often funded under the Responsible Research and Innovation framework, have engaged in mapping studies.

The 4-year SATORI¹⁶ project involves 17 partners from 12 countries in improving **respect for ethics principles and laws** in research and innovation, and adapting them to the evolution of technologies and societal concerns. The first of 12 work packages involves a 'systematised inventory of current practices and principles in ethics assessment. To this end, Göran Collste, at Linköping University, has lightly mapped and discussed research integrity in Europe, and Agata Gurzawska at the University of Twente, has explored institutional integrity.

The PRINTEGER project, mentioned above, has analysed the diverging notions of integrity in policy documents and newspaper articles from five European countries. A 'reconnaissance' work package, coordinated by the University of Tartu, has produced an Inventory of Key Documents on Research Integrity. 127 are classified as 'General' and 73 are 'Key'. It is of note that only documents published in English have been collected.

¹⁵ <http://www.eua.be/activities-services/news/newsitem/2017/01/25/eua-cde-ethics-and-integrity-workshop-draws-record-attendance>

¹⁶ <http://satoriproject.eu/the-project/>

7. League of Research Universities

LERU is the League of Research Universities in Europe, although there are currently no Danish Universities participating in LERU. It has an Expert Group on Research Integrity and in September 2015, LERU produced a press release on Research Integrity. It is not clear what prompted the press release, but LERU declared that they ‘would not wish to see the term ‘research integrity’ become a catch-all for all aspects of good research practice’ (2015:2), arguing that aspects such as data management, open data, open access to publications, quality doctoral research education, respecting equality and diversity, etc. do and should stand on their own merits.¹⁷ It warned against more regulation or punitive measures for universities and recommended that the Commission should document existing practices, including the UK’s *Concordat to Support Research Integrity* and the *Danish Code of Conduct*. This latter, it says, was completed ‘following extensive public consultation’, and ‘provides the research community with a sound framework to promote commonly agreed principles and standards’ (LERU 2015).

LERU was ‘doubtful’ that a single, European-wide definition of research integrity could be reached. They looked to the ‘protracted’ debates in the U.S., which produced the ‘compromise Federal FFP definition of misconduct (i.e. **Fabrication, Falsification and Plagiarism**). However, they continued, ‘**misconduct, so defined, is not the same as ‘research which lacks integrity’** (2015: 1). LERU argues that universities wished to ‘take ownership’ of research integrity, and their argument that integrity should not become a ‘catch all’ for all aspects of **good research practice** (2015: 2) seems to be in strong contrast with the route taken by ALLEA and UKRIO.

8. EuroScience (working group)

EuroScience is an association of researchers, policymakers and citizens in Europe. It was founded in 1997 with a desire to foster the integration of Europe through the promotion of the idea of a threefold citizenship among scientists and scientific institutions in Europe – a European, disciplinary and national (and regional) citizenship.¹⁸ It has had a significant role in establishing RRI Tools (see above) and has contributed to the EC’s *The European Charter and Code for Researchers* (2005) and shaped H2020.

EuroScience holds a biennial EuroScience Open Forum (ESOF) which brings together about 4,000 scientists, junior researchers, educators, innovators, business people, policy makers and journalists to discuss breakthroughs in science. At ESOF 2016, EuroScience’s Science Policy Working Group focused on Research Integrity. The group discussed three themes: the role of funders in research integrity, the consequences of interdisciplinarity on research integrity, and the possibility of using research integrity indicators (with recognition that metrics can have negative effects).

¹⁷ <http://www.leru.org/index.php/public/news/europe-needs-ongoing-efforts-to-promote-research-integrity/>

¹⁸ <http://www.euroscience.org/about/>

9. ALLEA

ALLEA stands for the ‘European Federation of Academies of Science and Humanities’. It was founded in 1994 and is based in Berlin. The Royal Danish Academy of Sciences and Letters is a member. It works with a policy orientation towards addressing European issues in science research and innovation, using an understanding of a common Europe, ‘bound together by historical, social and political factors as well as for scientific and economic reasons’.¹⁹

In 2011, ALLEA and the ESF published *The European Code of Conduct for Research Integrity* (see ESF above). ALLEA’s Permanent Working Group on Science and Ethics is currently responsible for this document, and is chaired by Dr. Maura Hiney who also chairs Science Europe’s Working Group on Research Integrity.²⁰

The 2011 document was apparently adapted from a Dutch Document from the Royal Netherlands Academy into the ‘*Memorandum on Scientific Integrity*’ 2003. It became used as the reference document for the European Commission in their H2020 Model Grant Agreements. The Council of the European Union also mentioned it in December 2015 at the Competitiveness Council, which underlined that integrity is a prerequisite for excellence in both public and private research. Documentation from this meeting (European Commission 2015) shows that research integrity is tied to a number of interests and issues:

- The Luxembourg Presidency (which made Research and Innovation a top priority)
- The Irish Universities Association and Royal Irish Academy,²¹ which was used as the definitional source for research integrity in this context
- The relationship between research integrity and open science
- Consequences for research misconduct (for individuals and society, public policies, public institutions, public trust)
- Primary responsibility is with individuals, an ‘overarching’ responsibility exists for institutions, and ‘calls for the fostering of an institutional culture of research integrity in order to create, mainly through clear institutional rules, procedures and guidelines as well as training and mentoring based on the exchange of best practices, a climate in which responsible behaviour is expected at individual and institutional level’ (European Commission 2015: 4)
- Avoiding administrative burden
- Train the trainer principle (for consistency)

¹⁹ <http://www.allea.org/>

²⁰ <http://www.allea.org/allea-permanent-working-group-on-science-ethics-met-in-berlin-to-revise-of-european-code-of-conduct-for-research-integrity/>

²¹ For the purposes of these conclusions, research integrity relates 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. Good research practice includes research ethics in the proposal and experimentation phase, as well as publication ethics in its analysis and dissemination (main source: Irish Universities Association – www.iua.ie - and Royal Irish Academy- www.ria.ie) Council of the European Union 14201/15 RECH 278

- Doctoral training programs
- Diminishing incentives for misconduct, positive incentives for promotion of quality of research

The 2017 revision of the *European Code of Conduct for Research Integrity*, which took ten months, was designed to address ‘new developments such as **self-plagiarism, reproducibility of research results and Open Science**. Other websites reference motivations such as ‘developments in the European research funding and regulatory landscape, changing institutional responsibilities and evolving review procedures’. Participants in the revision working group ‘shared the[ir] understanding of the Code as an empowering document for scientists and scholars, which should be universally applicable and should aim to promote a culture of integrity and good research practice’ (ALLEA 2016).

The Code will be reviewed every 3-5 years. It is referred to as a ‘living document’ (*EC Factsheet Integrity Code 2017*)

Salient quotes from the March 2017 launch of the *European Code of Conduct for Research Integrity* include:

European Commissioner Carlos Moedas: The public needs full **trust in science**, and this can only be achieved if the highest level of research **ethics and integrity are guaranteed**. This goes hand in hand with our Open Science agenda to ensure open access to scientific publications and data.

Günther Stock: Research integrity is a prerequisite for achieving excellence and building trust in research. The Code offers a common understanding on the ethical and practical challenges **inherent to research** in Europe and globally. Through the revision process, the Code helps researchers to navigate the changing and increasingly **complex research environment** they are facing today and in days to come. At the same time it reveals to the general public how researchers reflect on their work and what principles they follow.

European Commission Factsheet

The new code is **truly European**. It was drafted following wide **consultation** with key EU stakeholders from the academic and private research performers, NGOs and Young researchers associations. The new code is shorter and more focused than the previous code, clearly underlining the main areas of concern and responsibilities for researchers and funders.

UK organisations

General overview: There are two key UK documents, the 2009 *Code of Practice for Research* produced by UKRIO, the UK's advisory body on research integrity. The *Code of Practice* was adopted by over 50 universities, endorsed by research funders and other bodies²². The second key document is the 2012 *Concordat to Support Research Integrity* which was assembled by the UK Government's Department for Employment and Learning, the Scottish Funding Council, Higher Education Funding Council for Wales (HEFCW), Universities UK, Research Councils UK, the National Institute for Health Research, the Wellcome Trust, the NHS and UKRIO, all of whom are founding signatories. In 2016, these eight signatories commissioned a report (UniversitiesUK 2016) on the dissemination, awareness, and implementation of the *Concordat*, an analysis which focuses on **research culture**, the question of who is responsible for promoting such a culture, the collection and sharing of **best practice** and public **transparency** including a recommendation that universities should have a 'named point of contact for misconduct enquiries', and 'produce a publicly available annual narrative statement setting out the steps taken to promote a positive culture of research integrity' (UniversitiesUK 2016: 4).

In contrast with the litigious history in the USA, the UK has tended to approach research integrity through documents – the codes of conduct, the *Concordat* – and an attention to the negative cultures within academia that might hamper personal and professional integrity. An example of the intersection of metrics with integrity is *The Metric Tide* (2015), a review conducted at the behest of David Willets (Minister for Universities and Science 2014). *The Metric Tide* was supported by the Higher Education Funding Council for England (HEFCE). It identifies that the **pressures** on academics – to write more, attract more funding, work faster – lead to **potential compromises**, whether classified as '**corners cut**' or **fraud**. The *Metric Tide* references integrity in a number of ways – as being about **equality and diversity** embedded in research (2015: 94).

Among the British people who feature prominently in the global integrity story is Tony Mayer. He convened the first and second World Conferences on Research Integrity (Lisbon and Singapore). He is a British geologist, educated at the University of Manchester, with experience working in the USA. He has worked at the European Science Foundation, served on the governing board of EuroScience and directed the COST Office/ secretary of the European Research Advisory Board. He is currently serving as the Research Integrity Officer for Nanyang Technological University (NTU). With Steneck, he has written a book called *Promoting Research Integrity in a Global Environment* (World Scientific 2011).

²² <http://ukrio.org/publications/code-of-practice-for-research/>

1. UKRIO

UKRIO is the UK Research Integrity Office, an advisory body that exists to ‘fill gaps between jurisdictions, where no overall regulation might apply’.²³ UKRIO was set up in 2006 as an independent charity ‘providing advice and support to the public, researchers and organisations to further good practice in academic, scientific and medical research’ UKRIO claim that the UK’s *Concordat to Support Research Integrity* (Department of Employment and Learning et al. 2012) recognises them as a ‘key part of the **architecture** for the future’.

On October 1 2009, UKRIO launched its *Code of Practice for Research: Promoting Good Practice and Preventing Misconduct* which included a checklist based **self-assessment** tool for researchers. It is considered a living document, and is updated via the UKRIO website. UKRIO have subsequently developed a series of publications and tools to help **institutions** identify **practices, systems and issues** that may need revision to comply with the UK’s 2012 *Concordat*. They warn that the introduction of new policies and guidelines can ‘lead to a ‘tick box’ mentality unless provided with comprehensive and long-term support. The *Concordat* self-assessment tool is only available to subscribers. Subscription costs are not presently available on the website.

On 10 March 2017 UKRIO provided feedback to the House of Commons Science and Technology Committee on their inquiry into research integrity. Their main points were that the UK’s approach was positive but ‘there is no room for **complacency**’; there are concerns over the ‘negative influence of certain aspects of “research culture”’ and they advised against expanded regulation of research integrity. UKRIO is opposed to new or expanded statutory regulation on the grounds of the ‘**burden and bureaucracy**’. They have also explicitly stated that they do not want regulatory powers themselves, see no need for greater bureaucracy, and wish to remain an independent advisory body (UKRIO 2017).

2. Council for Science and Technology

The Council for Science and Technology (CST) advises the UK government on cross-departmental matters. It was established in 1993, and relaunched in 2003. As of 2017, it is sponsored by the UK government’s department for Business, Energy and Industrial Strategy.

In 2006, the CST released *Rigour, Respect and Responsibility – A universal ethical code for scientists*. This was put forward by the British Government’s Chief Scientific Adviser Professor Sir David King’s as a seven-point code of conduct. Writing in the UK’s newspaper *The Guardian*, David King commented that the title was a ‘simple summary of the values that each of us espouses as practising scientists; it should also demonstrate to the public that scientists take ethical issues seriously’.²⁴ King

²³ <http://ukrio.org/about-us/role-and-remit/> Note: the image on this page in 2017 is the Mona Lisa, but only her eyes.

²⁴ <https://www.theguardian.com/science/2007/mar/20/research.highereducation1>

also writes about the **social licence** to operate as scientists, and the need for a **continually renewed relationship of trust** between scientists and society.

In coverage of this code in CORDIS (*Community Research and Development Information Service*) the UK's Royal Society is said to have suggested the code would 'help potential **whistle-blowers** to uncover instances of **malpractice** and remind scientists of the potential consequences of their research'.

3. UniversitiesUK

UniversitiesUK is made up of the vice-chancellors and principals of UK universities. It is a company with charitable status, funded through subscription from member institutions. In July 2012, UniversitiesUK launched a *Concordat* to 'assure government, business, international partners and the public that they can continue to have **confidence** in the research produced in the UK'. An update in November 2016 showed that 'universities have taken their responsibilities seriously' and begun to implement the *Concordat*.

4. Responsible Research in Practice

Responsible Research in Practice is a consultancy service run by Nikki Osborne that 'provides clients with the support and advice they need to develop the local research culture, encourage innovative thinking and promote good research practices'.²⁵ It is an example of the industry that is being generated around integrity. Responsible Research in Practice is focused on the life sciences, and frames integrity as a problem of **pressure and time**, which may 'cause **shortcuts** to creep into individuals' daily routines and the **quality of research begin[s] to slip** with no immediate obvious warning signs to indicate a decline in research standards or conduct.'

5. The Royal Society

The Royal Society is the UK's national science academy, tracing its origins to 1660. It is responsible for promoting scientific research in the UK, and does so through a range of activities, from the election of fellows to publications, awards and the allocation of funding. In 2016, the Royal Society blog published an article from an early career scholar, Dr. Carter, which set **impact and integrity against one another**, arguing that '[c]urrent selection for high impact results over high quality science encourages us to compromise scientific integrity for the sake of academic impact'.²⁶ On October 9 2017, the Royal Society issued a statement on research integrity, dividing the responsibility for its four points, **Excellence, Accountability, Transparency and Responsiveness** between

²⁵ <http://www.responsibleresearchinpractice.co.uk/>

²⁶ <https://blogs.royalsociety.org/publishing/integrity-or-impact-confessions-of-an-early-career-researcher/>

researchers and institutions.²⁷ It is applicable to the Fellowship of the Royal Society and those who receive grants from the Society. Under the theme of Accountability, the text references UK RIO's *Code of Practice*.

6. The Association of Research Managers and Administrators (ARMA) and the Association for Research Ethics (AfRE).

ARMA is the UK's professional association for research leaders, managers and administrators, which exists to provide networking support and to build knowledge and skills. In December 2016, ARMA and AfRE announced a merger, ('amalgamation') which would 'allow ARMA to provide expert training on research ethics to administrators and academics involved in research in human participants [...] and will lead to efficient and easily accessible provision of expert advice on research ethics' (ARMA 2016). This makes it difficult to find information on the previous remit and form that AfRE took. However, in the press release concerning their merger, the new joint body states: 'Like ARMA, AfRE believes that good ethical practice in research is vital to ensure high quality research, protect participants and reassure funders that research complies with legislation'. The chair of ARMA, Stephane Bales, referenced the *Concordat to Support Research Integrity* in the press release about the amalgamation, highlighting the timeliness of the integration of AfRE into ARMA: 'more than ever, our members need to be aware of the ethical issues surrounding initiatives such as open data and supporting the principles set out in the Concordat' (AfRE/ARMA Press Release 2016).

Iberia

General overview: 'Iberia' is included in this overview because authors writing about research integrity on the Iberian peninsula make a distinction between the directions they wish to pursue, and those of the 'Anglo-Saxon' tradition. It therefore provides a clear example of **the 'localization' of integrity** terminology and perhaps provides a starting point for thinking about the question of translation between fields of meaning in different languages. Xavier Bosch, an associate professor at the University of Barcelona has commented that 'training in research integrity and responsible conduct of research are not issues of concern for the academic authorities here [...] The research institutions, science ministry and health ministry don't seem to have any interest' and states that although "misdoings may occur, nobody has any interest in publicising them" (Bosch, cited in Tavare 2011)

²⁷ <https://royalsociety.org/topics-policy/publications/2017/research-integrity-statement/>

9. UNESCO Declaration (Iberia)

The UNESCO reference document, *Declaration on Research Integrity in in Responsible Research and Innovation* (2016) was written by Dr. María Casado (University of Barcelona), Dr. María Do Ceu Patrao Neves (University of the Azores), Dr. Itziar de Lecuona (University of Barcelona), Dr. Ana Sofia Carvallho (Portuguese Catholic University) and Dr. Joana Araujo (Portuguese Catholic University).

Its premise is that the documents circulating ‘come from cultural areas different from our own and, to be effective, need to be adapted to the context of our Latin countries’ (2016: 67). Casado et al, observe that there is increasing ‘multiplication, diversification and complexity of the rules and regulatory codes extolling the **attitudes and behaviours** that conform to scientific integrity, in response to new situations or new cases challenging the established concept of integrity’ (2016: 66). Their aim is to influence Spanish and Portuguese higher education decision-makers (2016: 62).

The authors suggest that there is presently a ‘period of **translation** between old and new conceptions of ethics and scientific integrity and responsible research’ (2016: 63). They also argue that an increased use of the term ‘integrity’ has undermined its meaning. Their discussion of definitions provokes the question of whether there have been other initiatives to ‘localize’ integrity based on alternative traditions.

Nordic Region

Overview: The Nordic region is held up in international literature as an example of the use of legislation to deal with research misconduct (Godecharle et al. 2013: 1097). In the 1990s, the National Medical Research Councils of Denmark, Norway and Sweden set up a National Committee on Scientific Dishonesty, while in Finland this task was undertaken by the Ministry of Education.

Date	Country	Establishing organisation	Purpose
1992	Denmark	National Medical Research Council	To initiate preventive measures, to investigate alleged cases, or both. Sanctions responsibility of establishing organisation.
1994	Norway	National Medical Research Council	
1997	Sweden	National Medical Research Council	
1994	Finland	Ministry of Education	

Denmark

Along with the USA, Denmark is cited internationally as having a ‘regulatory body overseeing publicly funded research and adjudicating on falsification, fabrication and plagiarism’ (POST 2017: 4). The Danish Committee on Scientific Dishonesty was established in 1992, with its jurisdiction

initially restricted to biomedicine (*Nature* 1999: 14). One of its roles seems to have been to generate data on the prevalence and types of scientific ‘dishonesty’. For example, in an article on European reflections on scientific dishonesty (Riis 2001), figures from Denmark are used to indicate a prevalence of one case of scientific dishonesty per million inhabitants every five years.

Riis comments in his conclusion that ‘the global impact of international experiences within this area has clearly shown that scientific dishonesty is *not* an esoteric fantasy of groups of ‘national missionaries’ but is a reality that the research society has to take seriously’ (1999: 92). This implies an ongoing national debate over the **need for oversight** of research integrity, but references are not provided. The journal *Nordisk Medicin* (1929-1998) may be a good place to search for regional articles in the biosciences concerning fraud, misconduct and research integrity.

Norway

Tavare, a clinical fellow writing in the *British Medical Journal* (*BMJ*), draws a causal link between the Norwegian law on ethics and integrity in research, and oncologist Jon Sudbø’s fabrication of published datasets. ‘The legislative machinery kicked into gear and produced the 2007 law on ethics and integrity in research’, writes Tavare, stating that

it [the law] requires institutions to bear the primary burden of regulating research misconduct, and heralded the birth of the National Commission for the Investigation of Research Misconduct (*Granskingsutvalget*). The commission oversees research in all fields, across both the public and the private sectors. According to its director, Torkild Vinther, institutions have a duty to inform the commission, although it may decide to investigate independently if the institution lacks appropriate mechanisms or there are severe conflicts of interest (2011:2).

He adds that it is difficult to know how the commission is perceived by Norwegian academia, but that ‘cooperation between the commission and universities is getting better and better’ (2011: 2).

Conclusion

In organising this working paper by geographical region, we have demonstrated the distinct and contrasting histories and approaches within different policy domains. Key to the future direction of our analysis is that research integrity is defined or discussed in relation to other concepts and issues, which are embedded within policy and institutions in distinct ways in different national settings. To conclude this working paper, we therefore draw attention to three different ways these historical and conceptual relations affect the emergence of integrity as a key word in science policy, before offering a commentary on our opening question regarding the emergence of research integrity.

The first concerns the breadth of terms presented. In the pages above, we have highlighted (in **bold**) the range of terms alongside which integrity arises. From these initial summaries, we can see that the word ‘integrity’ is associated with different clusters of cognate words, each cluster giving ‘integrity’ a different range of meanings and references, with different ideas about who is responsible for upholding standards in scientific research, and how.

<ul style="list-style-type: none"> • Professional • Standards • Misconduct • Collaboration • Falsification • Fabrication • Plagiarism • Fraud • Corruption • Ethics • Responsibility • Respect • Honesty • Fairness • Behaviour 	<ul style="list-style-type: none"> • Irresponsibility • Political control • Criminal offence • Monitoring • Oversight • Research climate • Research environment • Global culture • Trust in science • Transparency • Malpractice • Whistleblowing • Confidence in research • Pressure • Attitude
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In internationally circulating documents, these terms tend to be organised along a spectrum of seriousness, from the ‘good’ - responsible conduct of research, through ‘questionable research practices’ to the ‘bad’ fraud, falsification and plagiarism. The spectrum is itself the result of the historical emergence first of “FFP” in the USA, and subsequently of QRP, which aimed at the ‘grey areas’ that “FFP” did not address. However, as is evident in the sections above, it is not given that documents do, in practice, separate out their thinking and motivations along the spectrum.

In the light of our review, this spectrum model seems to simplify an environment where struggles over definitions are ongoing, and re-created each time a training course decides what to cover and how to cover it. This is evident in divergent views on whether it is desirable or possible to aim for a global agreement and standardisation. The OECD’s approach to integrity as a matter needing standardisation in an era of globalised research stands in contrast to LERU’s scepticism that harmonisation even across Europe is possible. As is evident from the range of considerations addressed in the documents reviewed, there is presently an ongoing struggle to stabilise research integrity around a set of principles or approaches, with numerous attempts to stake out the jurisdiction of ‘integrity’. Each new code, codex, concordat, statement and declaration takes a slightly different slice through the concepts available.

Second, we find a range of contrasting mechanisms for governing the problem of research integrity. If research integrity is a problem, then the *kind* of problem it is shapes the kind of solution that is offered. If, as in the early days in the USA, the challenge was one of fraud, then treating research as a ‘white collar crime’ pulls research integrity closer to legal frames of governance, including the reporting and ‘whistleblower’ systems set up in Scandinavia during the 1990s. In contrast, the UK’s RIO currently emphasises that it does not see regulatory mechanisms as an effective tool, focusing instead on the ‘research culture’ in which researchers operate and emphasising the importance of training. They argue that they do not need (or want) statutory powers to get results. We describe this as a contrast between regulatory and ‘research culture’ approaches.

Finally, the question of responsibility is central to how the question of integrity is to be addressed. Early documents from the USA and the recent European *Code of Conduct* point to the idea of ‘self-regulation’ within scientific research, positioning responsibility within scientific disciplines and professions. LERU asserts that ‘ownership’ of the issue must remain with universities, rather than an external evaluator. This stands in contrast with the individualisation common during the fraud framing of research integrity. More recent approaches appear to designate those responsible for different elements of research integrity, focusing particularly on the role of the institutions where research is conducted, and on the role of the researchers.

Returning to the question of how the idea of research integrity has arisen, our initial findings are twofold. First, we observe links to two key motivators: the narrative of scandal (the character of which varies from setting to setting) and that of ensuring public trust in research, particularly for publicly funded research. Second, research integrity is a relatively young field, with a growing professional class and new documents being released regularly by existing organisations. It sits both within and outside of existing university structures, and, due to its breadth crosses between legal and education domains. Like ethics before it, research integrity can be seen as germane to most aspects of the scientific process, and it is in that sense unsurprising that definitional clarity is both sought and difficult to arrive at. The scope of international initiatives covered within this document remains partial, but is representative of the range of professional, government, non-governmental, institutional and pedagogic activity going on under the banner of research integrity. It is a changing landscape, and one where anthropological attention to the role of policy is a vital contribution.

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