



Models for Ethics Assessment and Guidance in Higher Education

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October 2016

Annex 5

A reasoned proposal for a set of shared ethical values, principles and approaches for ethics assessment in the European context

Deliverable D4.1

This deliverable and the work described in it is part of the project *Stakeholders Acting Together on the Ethical Impact Assessment of Research and Innovation - SATORI* - which received funding from the European Commission's Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 612231

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ABSTRACT

This report will investigate best practices for developing ethics assessment and guidance in universities, through research ethics committees (RECs), institutional policies, scientific integrity boards, teaching and training, and other means. The objective is to identify different means by which universities may promote and regulate consideration of ethical aspects of research and innovation within their institutions, and to make recommendations on the means that are most adequate and the ways in which they may be implemented. The report subsequently considers goals for ethics at universities, pathways for advancing ethics at universities, ethics codes and protocols, scientific integrity boards and codes, ethics assessment and research ethics committees, and ethics teaching and training. It ends with a summary of the recommendations of earlier sections.

1 INTRODUCTION

This report will investigate best practices for developing ethics assessment and guidance in universities, through research ethics committees (RECs), institutional policies, scientific integrity boards, teaching and training, and other means. It is based on previous studies of the role of ethics of research and innovation at universities in the European member states, the United States and China, including the SATORI D1.1 deliverable. It is also based on desk research on the role and functioning of ethics structures and procedures for research and innovation at universities.

1.1 CONTEXT

Universities and research institutes increasingly invest in structures and procedures to take into consideration ethical aspects of research and innovation. They institute research ethics committees (RECs), not just for biomedical research, but increasingly for other fields as well, they institute research integrity codes and boards, they include research ethics and professional ethics teaching in their curricula, and they include various other means by which ethical aspects of research and innovation are taken into consideration in university activities and policies. Very few studies have been undertaken, however, of the role and functioning of such ethics structures and procedures at universities, and very few attempts have been made to compare various means for promoting consideration of ethical aspects of research and innovation at universities, and to recommend particular solutions.

1.2 OBJECTIVES

The objective of this report is to identify different means by which universities may promote consideration of ethical aspects of research and innovation within their institutions, and to make recommendations on the means that are most adequate and the ways in which they may be implemented.

1.3 METHODOLOGY

This report is based in part on previous studies in the SATORI project of the role and functioning of ethics assessment and ethical guidance of research and innovation at universities. These studies include interviews with more than twenty university representatives and a study of protocols and procedures that are present at universities in

different countries for ethical assessment and guidance. The report furthermore makes use, through desk research, of other existing literature on the inclusion of consideration of ethical aspects of research and innovation in university structures, procedures and policies.

2 GOALS FOR ETHICS AT UNIVERSITIES

As higher education and research performing institutions, universities are the centres of producing and distributing knowledge in societies. Universities acknowledge that their “legitimacy, credibility, support, and autonomy” rests not only on the quality of their activities but also on “the integrity and transparency of their procedures”.¹ The International Association of Universities recognises the importance of dealing with ethical implications of the role of universities in society. The ever increasing expectations of the knowledge society to push back “the frontiers of discovery” are accompanied by educational responsibilities of universities:

“The formative and socializing role of higher education in educating ever-increasing number and often a culturally more diverse group of students, and the far-reaching, at times unpredictable consequences of scientific and intellectual enquiry, place additional responsibility on the entire academic community to deepen ethical self-awareness, to act with integrity and to examine continuously the ethical underpinnings and implications of their actions in the wider community.”²

Ethics in terms of both, professional conduct and the consequences of research is thus perceived as an important and inherent aspect of universities’ role, mission and status in society. The first goal and an internal motivation of ethics at universities is therefore to maintain institutional integrity as well as to fulfil their role in society by producing and distributing knowledge in an ethical and socially responsible way.

Next to this internal motivation, ethics at universities also serves the purpose to fulfil external obligations. As research institutions, universities are subject to national laws and regulation and to the general ethical assessment system in a country. To various extents, they are also accountable to the demands of accreditation agencies, research funders and academic publishers.

These goals are often advanced by national and international association of universities, who recognise research ethics and integrity as important factors in their mission to promote the position of universities in society as well as the fundamental values upon which the institution of university is based. Preventing misconduct and dealing with cases of misconduct is important in maintaining public trust and social position of universities. Furthermore, ethics is increasingly recognised as an integral part of the quality of research. Associations thus often provide for ethical guidance. For example, the Association of Universities in the Netherlands (VSNU) has published four codes of conduct: on personal data, scientific integrity, animal experiments, and good governance. Cooperation between universities at the national level can also take place at an informal level. King’s College London hosts the UK University Research Ethics Committees Forum, a platform for debate and experience exchange. Regular meetings are organised to encourage debate and spread new knowledge.³ International associations of universities have a similar role. The League of European Research Universities (LERU) participates in ethics discussions on the EU level and has a working group on ethics, which published “Agenda for Ethics Research in Horizon 2020”.⁴ The International Association of

¹ International Association of Universities and Magna Charta Observatory, *Guidelines for an Institutional Code of Ethics in Higher Education*, December 2012, p. 2.

² *Ibid.*, p. 1.

³ <http://www.kcl.ac.uk/innovation/research/support/ethics/training/ukurecforum.aspx>

⁴ <http://www.leru.org/index.php/public/news/leru-publishes-an-agenda-for-ethics-research-in-horizon-2020/>.

Universities (IAU) established a Working Group for Ethics in Higher Education in association with Magna Charta Observatory (MCO) to “promote academic and scientific integrity and prevent academic dishonesty and unethical behaviour by actors and stakeholders that form the academic community”.⁵ The group developed the *Guidelines for an Institutional Code of Ethics in Higher Education* to encourage and advise on the adoption of comprehensive ethical policies by higher education institutions.

University programmes accreditation agencies may also consider ethics-related activities as a part of higher education programmes evaluation frameworks. For example, the European Qualification Framework (the so called Dublin Descriptors) requires attention in the curriculum to training in reflection on ethical and social issues and responsibilities of knowledge, gained at education programmes.⁶

There are several means available to universities to advance ethics according to the discussed internal and external goals. Ethical considerations are included in general codes of conduct or in more specific ethical codes related to research and innovation. Universities may establish research ethics and/or research integrity offices to form ethics guidelines, provide guidance and deal with alleged cases of misconduct. Many universities have instituted research ethics committees (RECs) to develop assessment protocols and monitor their own research. Ethics is also being integrated into the educational process through courses and trainings, sometimes by specialised ethics departments or units.

In terms of ethical guidance, the goal of ethical codes is to make explicit ethical values, principles, issues and good practices. However, codes should be complemented by awareness raising activities, access to information and advice (preferably by a research ethics or integrity office) as well as ethics courses and trainings as part of the education process.

Ethical guidance is complemented by ethical assessment of professional behaviour and research projects. In some countries this entails that some university research projects are reviewed by external ethical committees, depending on research regulation in each country. Nevertheless, many universities still establish their own research ethics committees (RECs), guidelines and protocols to complement external review.

In some countries, however, ethical assessment is officially assigned to research ethics committees at the institutions where research takes place. In these cases, internal assessment by a university's research ethics committee is obligatory and binding. Apart from meeting these requirements, ethics approval is often also requested by funding institutions and academic publishers. University RECs may often provide ethics assessment as requested by these actors.

In fields not covered by a national review system, as is often the case in non-medical research, such as the social sciences, university committees may act as replacements for the external review. The role and protocols of these RECs are dependent on universities' own regulations and may follow guidelines provided by professional associations or associations of universities. In some cases, the role of these RECs is to provide ethical guidance and non-binding opinions on research project proposals, while in other cases, they have the mandate to assess particular projects and stop ethically inappropriate research from being carried out.

To sum up, the goals of ethical assessment and guidance at universities are the following:

- To fulfil the role and mission of universities in society as centres of producing and distributing knowledge in an ethical and socially responsible way.

⁵ <http://www.iau-aiu.net/content/background>

⁶ SATORI Interview with NVAO representative.

- To help employees to respect the principles of research ethics and ethical professional behaviour and thus maintaining institutional integrity.
- To ensure that research, conducted at a university, is in line with national and international legislation and regulations, with funders' and publishers' requirements and with ethical guidelines, developed by various organisations for a specific field of research.

3 PATHWAYS FOR ADVANCING ETHICS AT UNIVERSITIES

The following sections will cover various means for advancing the consideration of ethical issues in research and innovation at universities. Their coverage is in fact somewhat broader, because some sections more broadly consider the role of ethics at universities. Not all considerations of ethics at universities relate to research and innovation. There are also ethical issues that pertain to teaching, to student and staff behaviour in general (not specifically in relation to research and innovation), and to the proper governance of universities. These ethical issues are not the main concern of this report. However, some ethics codes, committees and frameworks of universities do employ a broad notion of ethics that includes these kinds of issues, and it needs to be considered to what extent they pertain to research and innovation as opposed to other topics.

In relation to research and innovation, we distinguish the following main instruments for advancing ethics of research and innovation at universities:

- ethics codes and protocols;
- scientific integrity boards and codes;
- research ethics committees; and
- ethics teaching and training.

This listing may not exhaust all instruments for advancing ethics of R&I, but we are confident that these are the main instruments. Some other instruments for advancing ethics of R&I that are not discussed in subsequent sections are ethics awareness-raising through the organisation of ethical debates, lectures and special events, and the inclusion of ethical criteria in protocols for good governance at universities.

4 ETHICS CODES AND PROTOCOLS

This section looks at the ethics codes of universities throughout Europe. It consists of three main parts: typology, function, and a discussion of ethics codes. This section concludes with a series of recommendations. For the first main point, some universities' ethics codes will be analysed and sorted from being rather broad to being rather specific. This typology enables a closer inspection of the ethics codes focusing on R&I, which are relevant for the SATORI project. While all universities' ethics codes researched in this report can be sorted into one type of ethics code, it might also be possible for universities to have a general ethics code and additional specific ones. Secondly, the codes' function in the university will be investigated – how is the ethics code used? Is it only written down *pro forma* or is it also integrated in the curriculum or is there an ethics board? By evaluating scientific literature, the advantages and disadvantages of the types of ethics codes will be discussed. The results are then transferred into recommendations.

4.1 TYPOLOGY OF ETHICS CODES

Type 1: Very broad ethics codes or mission statements

Some universities have very general ethics codes, which state general principles, values and virtues rather than focusing on a particular kind of conduct⁷. Often named are e.g. integrity, honesty, respect and objectivity. Accordingly, these ethics codes concern all students and staff members, and therefore all disciplines and all possible conduct at universities, including fair admission, finances, etc. While some universities do not specify the relevant conduct at all, the University of Birmingham states six relevant core activities: “teaching, research, knowledge transfer, fundraising, investments and procurement”.⁸ The University of Exeter applies their ethics code to activities “from research and education to enterprise, student recruitment and alumni relations.”⁹ Most of these codes are written by a university council or board. Other universities with general ethics codes are the University of Madrid,¹⁰ the University of Graz,¹¹ the IE Business School Madrid,¹² the University of Namur¹³ (Belgium), the University of Iași¹⁴ (Romania) and the University of Uppsala.¹⁵ Furthermore, some universities have general mission statements, like the University of Zurich,¹⁶ the University of Thessaloniki,¹⁷ and the University of Heidelberg.¹⁸ Some universities’ ethics codes focus more on the conduct of students, like the one of the University of Mannheim.¹⁹

Type 2: Ethics codes focusing on R&I

A lot of universities seem to have ethics codes that are general in regard to disciplines, but specific in regard to the kind of relevant conduct, namely conduct in research and innovation. Addressed values are amongst others honesty and integrity, but also safety, social responsibility and accuracy. Examples are the University of Lisbon,²⁰ Oxford University,²¹

⁷ Conduct then refers to all kinds of actions carried out at a university.

⁸ University of Birmingham, “The University of Birmingham Code of Ethics”.

<http://www.birmingham.ac.uk/Documents/university/legal/uob-code-of-ethics.pdf>.

⁹ University of Exeter, “Ethics Policy”.

https://www.exeter.ac.uk/media/universityofexeter/corporateresponsibility/pdfs/Ethics_Policy.pdf.

¹⁰ Universidad Complutense Madrid, “Código de Conducta Complutense”. <https://www.ucm.es/data/cont/docs/3-2013-02-19-21-Codigo%20de%20Conducta%20Complutense%20%28para%20impresi%C3%B3n%29.pdf>.

¹¹ University of Graz, “Code of Ethics and Conduct”. https://static.uni-graz.at/fileadmin/Personalressort/Dateien/CODE_OF_ETHICS_WEB.pdf.

¹² IE Business School, “Code of Ethical Conduct”.

https://www.ie.edu/business/programas/PDFs/pdfs/ie_ethics_code.pdf.

¹³ Université de Namur, “Code de Bonne Conduite de l’Étudiant Université de Namur”.

<https://www.unamur.be/services/social/code-bonne-conduite-etudiant>.

¹⁴ ‘Grigore T. Popa’ University of Medicine and Pharmacy Iasi, “The Code of Academic Ethics and Deontology”.

<http://www.umfiasi.ro/organizare/comisiadeetica/Documents/Code%20of%20Ethics%20and%20Professional%20Deontology%20%28EN%29.pdf>.

¹⁵ Uppsala University, “Objectives and Strategies for Attaining Excellence and Benefiting Society”.

<http://www.uu.se/en/about-uu/mission-core-values/excellence-benefiting-society/>.

¹⁶ University of Zurich, “The University of Zurich Mission Statement”.

<http://www.uzh.ch/en/about/basics/mission.html>.

¹⁷ Aristotle University of Thessaloniki, “Vision – Mission – Strategic Objectives”. <http://www.auth.gr/en/vision>.

¹⁸ Universität Heidelberg, “Leitbild der Universität Heidelberg”. <https://www.uni-heidelberg.de/universitaet/profil/leitbild.html>.

¹⁹ University of Mannheim, “Code of Ethics of the University of Mannheim”. <https://www.uni-mannheim.de/1/english/university/profile/commitment/Code%20of%20Ethics/>.

²⁰ Technical University of Lisbon, “Code of Conduct of the Instituto Superior de Agronomia”. https://www.isa.ulisboa.pt/files/site/pub/Code_of_Conduct.pdf.

the University College Dublin,²² the University of Helsinki,²³ the University of Bristol,²⁴ and Cambridge University.²⁵ These codes are often written by a university council or board, but also by a general research ethics committee.

Type 3: Ethics codes focusing on R&I in specific disciplines

Some universities do not have a general ethics code, but rather one or several ethics codes focusing on R&I for particular departments, especially medicine. These codes then explicitly concern behaviour which is only relevant in this particular field of study. Examples are the University of Glasgow²⁶ and the University of Warsaw.²⁷ At the University of Heidelberg, guidelines for ethical conduct are distributed to different fields of study and conduct, like guidelines against corruption, research data policy, medicine ethics, etc.²⁸

4.2 FUNCTION IN UNIVERSITIES

As stated in the introduction, this report focuses on ethics codes concerning R&I. Therefore, type 1 of ethics codes stated in 4.2 is not going to be analysed further. However, a lot of universities have ethics codes about scientific integrity, without further specifying the sciences (type 2). These universities sometimes have one central research ethics committee. This is the case with Universities in Thessaloniki, Oxford, Exeter, the University of Provence Aix-Marseille and University of Stockholm.

Other universities have several ethics codes for various disciplines. That often comes with several specialised research ethics committees and sometimes, also teaching. Especially often there are own committees or even centres for bioethics or ethics in medicine. Examples are Cambridge, Münster (involving teaching), University of Dublin, Aachen, Bristol (with an ethics centre involving teaching) and Helsinki.

4.3 DISCUSSION

The literature on recommendations for ethics codes differs in its views on whether universities should have ethics codes at all and if so, what these ethics codes should look like. While more authors tend to favour ethics codes, first we will consider some of the objections raised against them.

Arguments against ethics codes:

²¹ University of Oxford, “Academic Integrity in Research: Code of Practice and Procedure”. <https://www.admin.ox.ac.uk/personnel/cops/researchintegrity/>.

²² University College Dublin (UCD), “Code of Good Practice in Research”. <http://www.ucd.ie/t4cms/REC%20Core%20Doc%201-%20Code%20of%20Good%20Practice%20071215.pdf>.

²³ University of Helsinki, “Research Ethics”. <https://www.helsinki.fi/en/research/research-ethics>.

²⁴ University of Bristol, “Ethics of Research Policy and Procedure”. http://www.bristol.ac.uk/media-library/sites/red/documents/research-governance/research_ethics_policy_v6_220515%20FINAL.pdf.

²⁵ University of Cambridge, “Research Integrity Statement”. <http://www.research-integrity.admin.cam.ac.uk/research-integrity/research-integrity-statement>.

²⁶ University of Glasgow, “School of Medicine School Code of Professional Conduct for MBChB Students”. http://www.gla.ac.uk/media/media_359097_en.pdf.

²⁷ Warsaw University, “The Deontological Code of the Warsaw University Legal Clinic”. http://www.internationalprobono.com/resources/item.195132-Deontological_Code_of_the_Warsaw_Legal_Clinic

²⁸ Universität Heidelberg, “Regelkodex der Universität Heidelberg”. <https://www.uni-heidelberg.de/universitaet/profil/regelkodex/>.

Geoff Moore draws conclusions from the more researched field of ethics codes in corporations. For that he looks at studies and literature from business ethics and argues that for the goal of ethical behaviour, ‘embedded virtues’ are more effective than ethics codes: “The evidence from the corporate sphere indicates that not only are such codes expensive and difficult to implement but that their effectiveness is inconclusive.”²⁹ He would rather rely on the integrity of individuals, focusing on the organisational mechanisms for communication of ethics between staff members and students.

In a case study of the University of Bristol, Whitman highlights the success of an ethics framework that is built on the development of a supportive quality assurance programme, and not on ethics codes.³⁰

Arguments for ethics codes:

De Boer and Goedegebuure state three general advantages of an ethics code: It increases the trust of state and society in researchers and their work, it draws attention to values and norms that otherwise remain implicit, and it is a flexible instrument of policy.³¹

These advantages may contribute to the ethics code’s popularity. In the United States, a survey asking college and university administrators about ethics codes states that ‘Survey respondents were generally supportive of the concept of codes of ethical conduct in colleges and universities’³².

And another study on corporations used by Valentine gives an opposite view on ethics codes to Moore’s: “The results suggest that ethics codes may lead to higher levels of organisational commitment by increasing the belief that their organisations have strong ethical values, as long as the existence of ethics codes are adequately communicated.”³³

The communication and implementation of ethics codes is also a concern of the International Association of Universities (IAU), which believes ethics codes are necessary: “ethical values and principles need to be made explicit by higher education institutions in an Institutional Code of Ethics Code”³⁴. However, an ethics code is not sufficient: “Higher education institutions need to go beyond declaring the values and principles they protect and promote by integrating these fully into their institutional strategies, curriculum, management processes and relations with outside stakeholders including international partner institutions, while continuously updating their Code and monitoring its application to ensure relevance and currency”³⁵.

²⁹ Moore, Geoff, “Managing ethics in higher education: implementing a code or embedding virtue?”, *Business Ethics: A European Review*, vol. 15, no. 4, 2006, pp. 407–418 [p. 417].

³⁰ Whitman, B., “Development of a research integrity and ethics framework in a higher education institution: five years on”, *Research Ethics Review*, vol. 6, no. 3, 2010, pp. 81–85 [p. 81].

³¹ Boer, Harry de, and Leo Goedegebuure, “‘Modern’ Governance and Codes of Conduct in Dutch Higher Education”, *Higher Education Research & Development*, vol. 26, no. 1, 2007, pp. 45–55 [p. 53].

³² Rezaee, Zabihollah, Robert Elmore, and Joseph Szendi, “Ethical Behavior in Higher Educational Institutions: The Role of the Code of Conduct”, *Journal of Business Ethics*, no. 30, 2001, pp. 171–183 [p. 171].

³³ Valentine, Sean, “Ethics Code Awareness, Perceived Ethical Values, and Organizational Commitment”, *Journal of Personal Selling & Sales Management*, vol. 23, no. 4, 2003, pp. 359–367 [p. 359].

³⁴ International Association of Universities, “IAU-MCO Guidelines for an Institutional Code of Ethics in Higher Education”, 2012. http://www.iau-aiu.net/sites/all/files/Ethics_Guidelines_FinalDef_08.02.13.pdf. [p. 2]

³⁵ Ibid., p. 6.

Type of code

For the purpose of this report, encouraging ethical behaviour in research and innovation, especially the second type of ethics codes distinguished in section 4.2 seems suitable, since it explicitly addresses the conduct of researchers in the context of research and innovation. An indispensable part of an effective ethics code is a clear description of the code's scope.³⁶

However, that does not mean that the first type is unsuitable. It can fulfil this criterion if research and innovation as one field of relevant conduct are named explicitly (among others). In contrast, stating values and virtues without connecting them to any relevant conduct should be avoided: Just stating general values like integrity is not very helpful to determine concrete ethical conduct.

Additional to the typology made by inspecting European universities' ethics codes, another typology of ethics codes stems from governmental ethics.³⁷ This typology divides ethics codes as following either the integrity approach (also called the 'high-road approach') or the compliance approach (also called the 'low-road approach'). While the integrity approach focuses on general values, the compliance approach focuses more on legal and administrative control, stating rules and also possible punishments.³⁸ In R&I, Rezaee asserts that most universities in the US with ethics codes follow the compliance approach.³⁹ In Europe, such a trend seems not to be recognisable – as can be seen in section 4.2, most ethics codes focus on general values. One reason for this could be that with a compliance approach, people know what to refrain from in order to stay out of trouble, but the ethics code does not appeal to their conscience to encourage ethical behaviour. However, the third type of ethics codes, providing guidance in only one field, comes close to the compliance approach. Ethics codes following the compliance approach can also be called scientific or research integrity codes. The procedure of their execution is described in section 5 on integrity boards.

4.4 CONCLUSION AND RECOMMENDATIONS

We conclude that an ethics code is most effective when it comes with a program for its implementation. We present a series of recommendations for ethics codes below:

- 1) For universities, it is recommended to develop an ethics code that explicitly addresses conduct in research and innovation.
- 2) An ethics code for conduct in research and innovation should not only focus on one discipline, but rather be general. This allows for a discussion by research ethics committees in diverse fields. This diversity should be secured as a main priority. However, if further specific principles are needed (in e.g. medicine), it is possible to add specific forms of conduct to the general ethics code.
- 3) An ethics code should not be published and then forgotten. It should be implemented in the curriculum and institutional strategies. Research integrity boards are helpful for enforcing these codes. Recommendations on scientific integrity procedures will be made in the following section.

³⁶ Anderson, M., & Shaw, M., "A Framework for Examining Codes of Conduct on Research Integrity", In T. Mayer & N. Steneck (Eds.), *Promoting Research Integrity in a Global Environment*, World Scientific Publishing, Singapore, 2012, pp. 133-147 [p. 142].

³⁷ Rohr, J. A., *Ethics for Bureaucrats: An Essay on Law and Values*, Marcel Dekker, Inc., New York, 1978, p. 53.

³⁸ Rezaee, Zabihollah, Robert Elmore, and Joseph Szendi, "Ethical Behavior in Higher Educational Institutions: The Role of the Code of Conduct", *Journal of Business Ethics*, no. 30, 2001, pp. 171–183 [p. 173].

³⁹ Ibid., p. 178.

- 4) An ethics code should be revised and updated on a regular basis. It should be regarded as a ‘living document’ that is open to change, to help identify problems with the code and allow them to be addressed.⁴⁰

5 SCIENTIFIC INTEGRITY BOARDS AND CODES

Research integrity is concerned with maintaining accepted standards of scientific practice. It seeks to ensure that the research produced will be reliable and of sufficient quality for others to utilize it in their own research and innovation projects. It is a subset of the broader area of research ethics, which also includes the personal responsibilities of researchers towards others and the broader community.

Research integrity is usually incorporated into broader codes of research conduct rather than in specific codes focusing on the subject.⁴¹ Broad expectations of research practice may be described in type 1 codes of conduct (as defined in the previous section). These broad codes, however, do not describe in detail how allegations of misconduct in conducting research should be dealt with. This task falls to the compliance approach of type 2 and type 3 codes of conduct, which both define standards that researchers must comply with and describe what happens when allegations of research misconduct emerge. The task of ensuring that researchers comply with the research standards described in these codes of conduct is the task of *integrity boards*. These groups are often associated with ethics committees, although their focus is largely on investigating and resolving allegations of misconduct rather than reviewing projects for ethical concerns.

5.1 INSTITUTIONAL AND NATIONAL INTEGRITY BOARDS

In response to growing concerns about the problems of addressing research misconduct in international research projects, the Global Science Forum (GSF) of the Office of Economic Development (OECD) produced a report in 2007 that described existing and potential responses to this problem.⁴² The report lists three approaches organisations and governments take to address allegations of research misconduct:

- 1) ‘ad-hoc’ committees, often connected with existing ethics committees
- 2) Standing committees in research institutions
- 3) Dedicated committees operating at the national level⁴³

The groups described in the second and third approaches will be called *institutional* and *national* integrity boards, respectively. These groups may have codes of conduct that follow the compliance approach. Ethics committees are discussed in the next section of this report.

⁴⁰ Anderson, M., & Shaw, M., “A Framework for Examining Codes of Conduct on Research Integrity”, In T. Mayer & N. Steneck (Eds.), *Promoting Research Integrity in a Global Environment*, World Scientific Publishing, Singapore, 2012, pp. 133-147 [p. 142-143].

⁴¹ 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*, edited by Tony Mayer and Nicholas Steneck, World Scientific Publishing, Singapore, 2012, pp. 133-147 [p. 133].

⁴² OECD Global Science Forum, “Best Practices for Ensuring Scientific Integrity and Preventing Misconduct”. <http://www.oecd.org/sti/sci-tech/40188303.pdf>.

⁴³ Ibid.

There is no international organisation with the responsibility of receiving and investigating allegations of research misconduct.⁴⁴

Institutional integrity boards benefit from the close proximity they have with the researchers whose work may be investigated. Researchers are better able to observe and understand the workings and procedures of an integrity board within their own institution, and this proximity may foster greater acceptance of the board's work and decisions.⁴⁵

The GSF report also lists several problems with relying on institutional integrity boards. Firstly, the decisions on misconduct may be not consistent across institutions, which is a problem for research that occurs within several different institutions.⁴⁶ The costs of establishing and maintaining an integrity board are also a potential burden, and there is the potential for real and apparent conflicts of interest with the members of an integrity board investigating misconduct within their own institution.⁴⁷ As with ethics committees, outside experts can be appointed to address concerns about institutional or individual conflicts of interest.⁴⁸

In addition to avoiding the issues of real and apparent conflicts of interest and potential inconsistencies in decisions made by different institutions, national integrity boards offer other potential benefits. National integrity boards may include a more diverse range of expertise than may be possible if the membership is drawn from a single institution.⁴⁹ (Institutional integrity boards may still avoid this problem by appointing outside experts to their integrity board.) Administrative benefits, such as the potential for a close connection with the national government about relevant policy matters, and the potential to work with other national integrity boards, are also motivations for establishing a national integrity board.⁵⁰

The 2008 report *Stewards of Integrity* by the European Science Foundation presents a survey of national integrity boards within Europe.⁵¹ Accounts of national and institutional boards in selected European countries (as well as the US and China) can be found in the country reports in Annex 4 of the SATORI D1.1 Deliverable.⁵²

5.2 FUNCTIONS OF INTEGRITY BOARDS

The formal procedures of integrity boards can be divided into *inquiry processes* that receive allegations of misconduct, and *investigation processes* that seek to establish whether

⁴⁴ Boesz, Christine C., "Developing Research Integrity Structures: Nationally and Internationally", in *Promoting Research Integrity in a Global Environment*, edited by Tony Mayer and Nicholas Steneck, World Scientific Publishing, Singapore, 2012, pp. 7–16 [p. 15].

⁴⁵ OECD Global Science Forum, "Best Practices for Ensuring Scientific Integrity and Preventing Misconduct". <http://www.oecd.org/sti/sci-tech/40188303.pdf>.

⁴⁶ Ibid.

⁴⁷ Ibid.

⁴⁸ Solomon, Stephanie, "Too Many Rationales, Not Enough Reason: A Call to Examine the Goals of Including Lay Members on Institutional Review Boards", *Accountability in Research*, vol. 23, no. 1, January 2016, pp. 4–22 [pp. 16-17].

⁴⁹ Ibid.

⁵⁰ Ibid.

⁵¹ European Science Foundation (ESF), "Stewards of Integrity: Institutional Approaches to Promote and Safeguard Good Research Practice in Europe", April 2008.

http://www.esf.org/fileadmin/Public_documents/Publications/StewardOfIntegrity.pdf.

⁵² "Comparative Analysis of Ethics Assessment Practices." *SATORI*, June 2015.

http://satoriproject.eu/work_packages/comparative-analysis-of-ethics-assessment-practices/.

deliberate wrongdoing has occurred.⁵³ The inquiry process determines whether the allegations are serious and should be investigated further.⁵⁴ The investigation process involves the collection and evaluation of evidence to determine whether the allegations are supported.⁵⁵

Particular challenges for integrity boards are the protection of both whistleblowers who make allegations of misconduct to the board and the accused researchers. Whistleblowers and those accused of misconduct face risks to their reputation if the investigation is not handled carefully.⁵⁶ Whistleblowers need to be protected against retaliation for raising their allegations. The innocence of researchers accused of misconduct should also be presumed until the board has completed its investigation into the allegations.

5.3 RECOMMENDATIONS

The structure and operation of an integrity board, whether it is institutional or national, must encourage the trust of both the scientific community and the public in the fairness and accuracy of its decisions. The investigation of alleged misconduct must strive for fairness and credibility, so that the decisions made based on the evidence gathered during the investigation process will themselves be fair and credible.⁵⁷

Christine C. Boesz presents a number of recommendations for the structure of integrity boards, whether they are institutional or national:

- There must be clarity in the legal framework in specifying which organisations are responsible for particular aspects of the inquiry and investigation processes.⁵⁸ This is important for transparency and consistency, as well as for avoiding potential litigation in response to irregularities in these processes.⁵⁹
- The independence of those investigating alleged misconduct should be protected so that their investigation is fair and impartial. Such independence may be difficult to achieve for an institutional integrity board, but it is possible if the integrity board is separate from the research-performing sections of the institution. Conflicts of interest (real and apparent) must be avoided, and the integrity board should have the necessary resources to perform its work without having to rely on other sections of the institution.⁶⁰

⁵³ OECD Global Science Forum, “Best Practices for Ensuring Scientific Integrity and Preventing Misconduct”. <http://www.oecd.org/sti/sci-tech/40188303.pdf>.

⁵⁴ Boesz, Christine C., “Developing Research Integrity Structures: Nationally and Internationally”, in *Promoting Research Integrity in a Global Environment*, edited by Tony Mayer and Nicholas Steneck, World Scientific Publishing, Singapore, 2012, pp. 7–16 [p. 14].

⁵⁵ OECD Global Science Forum, “Best Practices for Ensuring Scientific Integrity and Preventing Misconduct”. <http://www.oecd.org/sti/sci-tech/40188303.pdf>.

⁵⁶ Boesz, Christine C., “Developing Research Integrity Structures: Nationally and Internationally”, in *Promoting Research Integrity in a Global Environment*, edited by Tony Mayer and Nicholas Steneck, World Scientific Publishing, Singapore, 2012, pp. 7–16 [p. 11].

⁵⁷ OECD Global Science Forum, “Best Practices for Ensuring Scientific Integrity and Preventing Misconduct”. <http://www.oecd.org/sti/sci-tech/40188303.pdf>.

⁵⁸ Boesz, Christine C., “Developing Research Integrity Structures: Nationally and Internationally”, in *Promoting Research Integrity in a Global Environment*, edited by Tony Mayer and Nicholas Steneck, World Scientific Publishing, Singapore, 2012, pp. 7–16 [p. 11].

⁵⁹ Ibid.

⁶⁰ Ibid., pp. 11-12.

- The processes for investigating, adjudicating, and appealing against allegations of misconduct should be distinct from each other, so that different parties are involved in each process. This separation is intended to promote fairness in each stage of the process.⁶¹

The OECD Global Science Forum has also produced a guide for dealing with research conduct issues in international research projects.⁶² It recommends that the agreement stating the terms of the collaboration should clearly describe how allegations of research misconduct will be addressed.⁶³ The text should include statements of what is considered research misconduct and the procedures through which such allegations will be investigated.⁶⁴

To encourage whistleblowers to report research misconduct when and if it occurs, institutions should put in place protections against retaliation against those who report misconduct.⁶⁵ The identity of whistleblowers should be kept confidential while the claims are investigated and their position and status should be protected if their allegations are proven to be correct.⁶⁶ Investigations into wrongdoing should be performed discreetly to avoid pre-empting discrediting researchers who are innocent of wrongdoing. Implementing a policy of regular research audits is a potential method of achieving this. Having regular audits may desensitise researchers from feeling accused or stigmatised by having their work audited, and if such audits were performed randomly it would reduce the perception that the audit is the result of a reported claim of wrongdoing. It would also discourage misconduct due to the greater possibility of it being detected.⁶⁷

6 ETHICS ASSESSMENT AND RESEARCH ETHICS COMMITTEES

The analysis of ethics assessment in institutions of the higher education system performed in the framework of the SATORI project identified the following problems and challenges for ethics assessment:

In countries where there is little experience with ethics assessment in the higher education system, ethics assessment systems face problems of acceptance. While ethicists at universities want to discuss research ethics in all its complexity, researchers feel ethics assessment is merely a yet another administrative burden and show resistance to reviews of ethics committees.⁶⁸

In countries where the sensibility for the fact that ethics is of importance has already increased, the impact of ethics committees on making research projects better through interdisciplinary dialogue has already gained ground.⁶⁹ For both the evaluators and the researchers, ethics assessment is thus regarded as adding value. Especially if research is

⁶¹ Ibid., pp. 14-15.

⁶² OECD Global Science Forum, "Investigating Research Misconduct Allegations in International Collaborative Research Projects: A Practical Guide". <http://www.oecd.org/sti/sci-tech/42770261.pdf>.

⁶³ Ibid.

⁶⁴ Ibid.

⁶⁵ Redman, Barbara, and Arthur Caplan, "No One Likes a Snitch", *Science and Engineering Ethics*, vol. 21, no. 4, June 2014, pp. 813–819 [p. 817].

⁶⁶ Ibid.

⁶⁷ Ibid.

⁶⁸ <http://satoriproject.eu/media/3.e-Universities.pdf>

⁶⁹ <http://satoriproject.eu/media/4.a-Country-report-Austria.pdf>

concerned in which it is not totally clear from a legal point of view whether it is problematic or not, the view of the ethics committee adds to its “legalization” respectively “acceptability”.⁷⁰

As regards procedures, a shared ethics approach enshrined in the legal system is not regarded as desirable. The legal system could provide for some procedural issues such as the fixing of quotas within the committees. The powers of the committees are closely linked to an internal dynamic, which creates an attitude of responsibility. Structures built into the legal system would entail many questions in relation to the organisational structure and procedures, including a system of monitoring and sanctions. The intention of creating ethical behaviour is best served by “constructive anarchy”, which will lead to shared values which could never be reached through sanctions provided for by the legal system, as ethical behaviour is developed in pre-legislative deliberations. In addition, the possible content of ethical behaviour is a moving target and is therefore not fit for legislative provisions; only standardised procedures could add to transparency and legitimacy.⁷¹

Problems mainly relate to the underfinancing of committees conducting ethics assessment and to the complexity and variety of topics dealt with in ethics committees.⁷² Institutions in the higher education system have reacted to the difficulty of establishing a common ethics assessment framework across a variety of fields by establishing different ethics assessment protocols in different faculties.

This section highlights practices with regard to ethics assessment in institutions of the higher education system and offers recommendations regarding ethics assessment of projects in institutions of higher education, their institutional setup and respective procedures.

6.1 ETHICS ASSESSMENT IN HIGHER EDUCATION: GOALS AND CRITERIA

Institutions of higher education are subject to the general ethics assessment system and regulation of a country. This entails that there are considerable differences between countries. Research in the field of medicine (in particular clinical trials), animal research, and data protection are highly regulated through EU legislative provisions.⁷³ For all other research in the higher education system, there are no common guiding principles and countries respectively institutions have taken an individual approach to ethics assessment:

- Many universities, for instance, establish their own research ethics committees.⁷⁴ The legal consequence of ethics review by these research ethics committees can differ among countries. In some cases, these committees only have a guiding role on individual research projects and their advice is non-binding. In other cases, university research ethics committees may have the power to stop ethically inappropriate research projects from being carried out. In these latter cases, internal assessment by a university’s research ethics committee is obligatory and binding.
- Some countries have established central research ethics committees independent from the individual higher education institution.

⁷⁰ <http://satoriproject.eu/media/4.a-Country-report-Austria.pdf>

⁷¹ <http://satoriproject.eu/media/4.a-Country-report-Austria.pdf>

⁷² <http://satoriproject.eu/media/3.e-Universities.pdf>

⁷³ <http://satoriproject.eu/media/3.a-Research-ethics-committees.pdf>

⁷⁴ <http://satoriproject.eu/media/3.e-Universities.pdf>

We can thus distinguish between ethics assessment at the institutional level and ethics assessment on the central (national) level.

The aims of ethical assessment in institutions of higher education usually include:⁷⁵

- ensuring that research, conducted at a university, is in line with national and international standards and regulations, as well as with publishers' and funders' requirements by providing in-house ethical assessment of research projects;
- providing internal ethics assessment in fields and disciplines (especially in non-medical research) where the assessment is not fully institutionalised and there are no obligatory external assessment procedures;
- offering ethical guidance in the form of general ethical codes or advice on requests made by the institution or individual researchers; and
- promoting high ethical standards and ethical debate among faculty and to integrate both in the educational process through courses or trainings.

Recommendation:

As the aims of ethics assessment are linked to responsibility assigned to individual institutions ethics assessment in higher education (in all fields beyond medicine, animal research and data protection where detailed legislation presently exists) should be placed within the institution responsible for the research performed.

6.2 ORGANISATIONAL STRUCTURE FOR ETHICS ASSESSMENT IN HIGHER EDUCATION

The level of institutionalisation of ethics assessment in institutions of higher education varies greatly across different countries and particular universities.⁷⁶ Institutional forms of research ethics committee assessment range from independent ethics committees at individual faculties and departments to central university-wide committees. Central committees usually delegate assessment of individual research projects to faculty committees, sub-committees or panels in order to properly address discipline-specific issues.

Members of university research ethics committees are usually appointed by the universities' governance bodies and include professors and researchers at the university, chosen for their knowledge in the field and/or experience with ethical issues.⁷⁷ A variety of disciplines within the field of the research being assessed may be represented in committee membership, alongside lawyers, philosophers/ethicists and theologians.

The establishment of ethics committees is advocated for by the Universal Declaration on Bioethics and Human Rights. Article 19 of the Universal Declaration on Bioethics stipulates that “[i]ndependent, multidisciplinary and pluralist ethics committees should be established, promoted and supported at the appropriate level in order to:

- assess the relevant ethical, legal, scientific and social issues related to research projects involving human beings; (...)

⁷⁵ <http://satoriproject.eu/media/3.e-Universities.pdf>

⁷⁶ <http://satoriproject.eu/media/3.e-Universities.pdf>

⁷⁷ <http://satoriproject.eu/media/3.e-Universities.pdf>

- assess scientific and technological developments, formulate recommendations and contribute to the preparation of guidelines on issues within the scope of this Declaration; and
- foster debate, education and public awareness of, and engagement in, bioethics.”⁷⁸

This article includes a call for the establishment of research ethics committees. Typical traits which are formulated in this article concern their institutional set-up as an independent, multidisciplinary and pluralist body in relation to (1) their aims regarding the assessment of scientific and technological developments, (2) the formulation of recommendations, and (3) fostering debate, education and public awareness.

Recommendations:

Ethics assessment in institutions of higher education should be centralised in the form of one central research ethics committee for one institution. In order to address discipline-specific issues in project evaluation, the principle of interdisciplinarity and independence should be respected in committee membership. Finally, members of research ethics committees should be appointed by the institutions’ governing body.

6.3 PROCEDURES FOR ETHICS ASSESSMENT IN HIGHER EDUCATION

At some universities, ethical approval is obligatory for certain kinds of research. Universities’ research ethics offices provide application forms, checklists and general guidelines and advice to help their researchers and students. In some countries, it is important to first ascertain whether the assessment is by a university committee’s authority, or whether an external review is obligatory. The review procedure then depends on the identified level of risk. Low-risk projects do not usually require a full review.⁷⁹

The legal quality of ethics assessment performed by these research ethics committees in the higher education system is not always clear. It can be noted that a negative opinion does very often not have a binding character, but has the legal quality of a recommendation. Nevertheless, a negative opinion de facto hinders the researcher or research team to continue the research at the given university. The standard practice in this case would be to revise the project according to the opinion of the Ethics Committee.⁸⁰

The review procedure can be divided in phases (this model draws on the findings of ethics assessment in funding organisations), thus facilitating procedures to applicants and reviewers:⁸¹

- *Ethics self-assessment* during proposal submission, in which the applicant is asked to declare and elaborate on ethical questions in relation to the research proposal.
- *Ethics pre-screening* as the first phase of ethics clearance. In case no ethics issues have been declared or ethics issues have been adequately addressed, this is confirmed through “ethics clearance”. In case unaddressed or inadequately addressed ethical issues are identified in the pre-screening phase, the project will undergo ethics screening.

⁷⁸ http://portal.unesco.org/en/ev.php-URL_ID=31058&URL_DO=DO_TOPIC&URL_SECTION=201.html

⁷⁹ <http://satoriproject.eu/media/3.e-Universities.pdf>

⁸⁰ <http://satoriproject.eu/media/4.a-Country-report-Austria.pdf>

⁸¹ <http://satoriproject.eu/media/3.c-Research-funding-organisations.pdf>

- *Ethics screening* with the help of experts confirms and checks all ethical issues which have not been adequately addressed. The experts can give “conditional ethics clearance”, recommend an “ethics assessment”, or “refuse ethics clearance”. Conditional ethics clearance is given for proposals where the independent experts make the clearance subject to conditions (i.e. “ethics requirements”⁸²) to be fulfilled before the start of the research project.
- *Ethics assessment* with the help of experts can be imposed if serious or complex ethics issues require in-depth analysis of the proposal.
- *Refusal of ethics clearance* is possible in case the experts have the impression that the proposal will never meet the ethics conditions.⁸³

The outcome of the ethics clearance is usually delivered in a written form.⁸⁴

Recommendations:

The review procedure of research ethics committees in institutions of higher education should consist of an ethics self-assessment of the researcher, a pre-screening phase, and a screening phase.

Ethics clearance should be graded: research ethics committees should have the possibility to give “conditional ethics clearance”, recommend an “ethics assessment”, or “refuse ethics clearance”. The outcome of ethics clearance should be binding and should be delivered in a written form.

Research ethics committees in institutions of higher education should provide application forms, checklists and general guidelines and advice to researchers and students with regard to ethics assessment and related procedures.

6.4 RECOMMENDATIONS - SUMMARY

The aforementioned recommendations regarding ethics assessment in the higher education system can be summarised as follows:

- As the aims of ethics assessment are linked to responsibility assigned to individual institutions, ethics assessment in higher education (in all fields beyond medicine, animal research and data protection where detailed legislation presently exists) should be placed within the institution responsible for the research performed.
- Ethics assessment in institutions of higher education should be organised into one or more research ethics committees. In order to address discipline-specific issues in project evaluation, the principle of interdisciplinarity and independence should be respected in committee membership.
- Members of research ethics committees should be appointed by the institutions' governing bodies.

⁸² The conditions may include: regular reporting; appointing an independent ethics advisor or board (that may notably be tasked to report to the Commission/Agency on the compliance with the ethics requirements); an ethics check or audit; submission of further information/documents; and necessary adaptation of the methodology to comply with ethical principles and relevant legislation.

⁸³ http://webcast.ec.europa.eu/eutvadmin/preview/preview_conference?viewConference=22480&portal.id=1

⁸⁴ <http://satoriproject.eu/media/3.a-Research-ethics-committees.pdf>

- The review procedure of research ethics committees in institutions of higher education should consist of an ethics self-assessment of the researcher, a pre-screening phase, and a screening phase.
- Ethics clearance should be graded: research ethics committees should have the possibility to give “conditional ethics clearance”, recommend an “ethics assessment”, or “refuse ethics clearance”. The outcome of ethics clearance should be delivered in a written form.
- Research ethics committees in institutions of higher education should provide application forms, checklists and general guidelines and advice to researchers and students in regard to ethics assessment and related procedures.

7 ETHICS TEACHING AND TRAINING

In what follows, we will discuss teaching and training in medical ethics, social responsibility, and discipline-specific ethics teaching (covering research ethics, professional ethics and ethics and society) at universities, and the goals of ethics teaching at universities. We then offer recommendations and conclude with an overview of major sources for ethics teaching and training at universities.

7.1 MEDICAL ETHICS TRAINING

In 1999, the World Medical Assembly passed a resolution recommending that all schools of medicine should include teaching medical ethics and human rights as an obligatory course in their curricula.⁸⁵ A survey conducted in 2006 in 25 medical schools from 18 European countries shows that in 21 of those medical schools there was at least one ethics module⁸⁶. Only one of the responding schools did not teach ethics. The mean time invested in ethics teaching was 44 hours during the overall curriculum.

The educational methods used for teaching were (in order of frequency):

- lectures;
- practical case studies (discussion of clinical cases);
- individual work;
- student papers and presentations;
- clinical examination/hospital rounds; and
- computer-assisted teaching.

Only two of the medical schools in the afore-mentioned study used the World Health Organization/WMA course materials, which provide a repository of documents and international policies, and a number of case studies. Instructors who participated in the modules were (in order of frequency):

- doctors;
- ethics or bioethics specialists;

⁸⁵ World Medical Association. Resolution on the inclusion of medical ethics and human rights in the curriculum of medical Schools world-wide. Adopted by the World Medical Assembly, Tel Aviv, Israel, October 1999. <http://www.wma.net/e/policy/e8.htm>

⁸⁶ Claudot, F et al. Teaching ethics in Europe (2007). J Med Ethics 33, 491-495.

- philosophers; and
- other professionals who were less frequently involved, such as healthcare professionals from other disciplines, scientists/researchers, lawyers, theologians, sociologists/anthropologists, psychologists, politicians and rarely patient representatives/self-help group leaders.

The learning process was generally evaluated by written or oral examination of course-related questions or by analysis of a clinical situation.

7.2 SOCIAL RESPONSIBILITY TRAINING

SATORI Deliverable 1.1 analysed the principle of social responsibility and its role as the core of ethics in the field of engineering and innovation.⁸⁷ Industry and business seem to use the term (and its extension “corporate social responsibility”) as a perfect substitute of ethics and ethics assessment.

In 2003, a survey was conducted to investigate the teaching of social responsibility and business ethics at both undergraduate and postgraduate educational programmes in the United Kingdom.⁸⁸ A significant proportion of institutions offered at least some business ethics teaching, either as a part of a “mainstream” study course or as a separate module. This provision was reported as being well received by students, but several challenges were identified, including the supply of qualified lecturers and the lack of availability of non-US case study material.

The SOCRASEDU project was an EU-funded project aimed at developing joint “social responsibility” course content for 12 European universities.⁸⁹ As a part of this project, a survey was conducted to assess the opportunities offered for creating such a joint course content through comparative analysis. It was found that universities in some countries, such as Germany and the Netherlands, offer specific courses on social responsibility in management and business schools. Many universities also seemed to rely on a case-based approach to social responsibility training. In Spain and Turkey, social responsibility was found to be embedded in many courses, from finance to marketing, but a lack of awareness of the global perspective of the field it was also found, which reflects the lack of knowledge of its practical use. Countries such as Italy, Greece and Portugal did not offer specific social responsibility training. In these countries, students are aware of the existence and the value of social responsibility through their personal interest, rather than through specific training provided by higher education institutions.

According to another comparative study on social responsibility education in Europe, Germany and the Netherlands offer compulsory training, while in the other countries social responsibility courses are elective.⁹⁰ In this study it was also found that the content of the courses may differ, even if most of them are focused on the protection of society and environment from undesirable consequences of research and innovation. For example,

⁸⁷ SATORI Deliverable 1.1, annex 1.c. Social responsibility. http://satoriproject.eu/work_packages/comparative-analysis-of-ethics-assessment-practices/

⁸⁸ Cowton, C.J., & Cummins, J. (2003). Teaching business ethics in UK higher education: progress and prospects. *Teaching business ethics* 7(1), 37-54.

⁸⁹ Yasar University. “The SOCRES-EDU project”. <http://socresedu.yasar.edu.tr/>

⁹⁰ Turker, D. et al (2016). *Social responsibility education across Europe – A comparative approach*. Springer International Publishing, Switzerland.

business schools provide training in corporate social responsibility and its role toward society, but often present them as marketing tools. A further point of difference is that only in Germany the courses are taught by trained ethicists, while there is a large variety in the background of the lecturers in the other countries that were studied.

Insofar as a Northern European model of social responsibility training can be identified, it is well represented at University of Twente in the Netherlands.⁹¹ This university grants bachelor's degrees and master's degrees in applied social sciences and engineering. Its ethics education is based on the following convictions:

- *Early beginning.* Ethics education should begin in the bachelor's programmes. No student should get an academic diploma without having been taught about ethics.
- *Continuity.* Ethics education should happen continuously. There should be ethics education in master's, PhD and postgraduate programmes. In post-graduate education, workshops or events should be provided aimed at connecting with other researchers and stimulation discussion about ethics. Possible topics are research integrity, human subject research and social knowledge.
- *Case studies.* Ethics education in technical or scientific programmes should not focus on ethical theories, but rather on case studies. This is more efficient in making students realize the importance of ethics. Both applied ethics as well as professional ethics can be taught by way of case studies.
- *Expertise in teaching.* The ethics teacher should either be a professional ethicist with an understanding of science and technology or a scientist with sufficient knowledge about ethics.

7.3 GOALS OF ETHICS TEACHING AND TRAINING

In order to investigate what the goals are of ethics teaching and training among higher education institutions, we conducted an online search using the keywords "ethics", "ethics assessment", "training", "academy", "university". We identified almost 30 different structured programmes, most of them at universities based in US and some at universities based in UK, Germany and other EU countries. Most of the programmes we identified are focused on research ethics, which is defined as the ethics of the planning, conduct, and reporting of research.

Most of the programmes we found aim to put into practice the following general recommendations:

- There should be formalised mandatory ethics training in graduate education at institutional level.⁹²
- Course in research ethics should be case-study and discussion-based and classes should have 15 students or fewer.⁹³
- There should be research ethics training for post-doctoral researchers and new faculty.⁹⁴

⁹¹ Personal communication with P.A.E Brey, Professor of Philosophy at the University of Twente.

⁹² Titus, S., & Bosch, X. (2010). The funding to research integrity. *Nature*, 466, pp. 436–438

⁹³ Stewart, C.N., & Edward, J. (2008). How to teach research ethics. *The Scientist*, 22(2), p. 27.

⁹⁴ Steward, C.N. (2011). *Research ethics for scientists: A companion for students*. Wiley-Blackwell.

- Training for researchers should be focused on the goals of the Singapore Statement on Research Integrity (2010) and on the Montreal Statement on Research Integrity (2013). The Montreal Statement builds on the Singapore Statement, but focuses mostly on the responsibilities of research partners in collaborative endeavors and on the accountability of authors for the outcomes of their research.

The Resources for Research Ethics Education project recommends that ethics training programmes include discussion of the following issues:⁹⁵

- collection, use, and interpretation of research data;
- methods for reporting and reviewing research plans or findings;
- relationships among researchers with one another;
- relationships between researchers and those that will be affected by their research;
- means for responding to misunderstandings, disputes, or misconduct; and
- options for promoting ethical conduct in research.

Most teaching goals could fit into one or more of the following four general categories: knowledge, skills, attitudes, and behaviours. Let us discuss these in turn. Firstly, knowledge about the socially responsible conduct of research would include facts, guidelines, policies, data and other sources of information. Among the competencies discussed in the various programmes there are:⁹⁶

- knowledge of, and sensitivity to, issues surrounding the responsible conduct of research and research misconduct;
- appreciation for accepted, normative scientific practices for conducting research;
- awareness of the grey areas and ambiguities of ethical issues, including differences between compliant and ethical behaviour in the conduct of research, or the range of acceptable and unacceptable practices;
- awareness that rules change over time and vary across disciplines or nations; and
- information about the regulations, policies, statutes, and guidelines that govern the conduct of research in publicly funded institutions.

Secondly, skills to promote ethical practice in science include specific proficiencies such as:

- skills in ethical decision-making, including recognizing problems, identifying and examining assumptions underlying practices;
- skills and strategies in addressing issues and problems, and exploring implications of different courses of action;
- critical thinking and problem solving;
- conflict resolution;
- arbitration and mediation;
- people management;
- stress management; and
- communication skills.

Finally, attitudes and behaviours can be defined by an acceptance of the value of acting in ways that foster responsible conduct. Ethics should be taught, at every level, by professional

⁹⁵ <http://research-ethics.net/introduction/what/>

⁹⁶ <http://research-ethics.net/introduction/why/?print>

ethicists with a background in the scientific field the students are involved in.⁹⁷ In some cases, a scientist can be trained to teach ethics, using the train-the-trainers approach: the future trainer will attend specific courses on ethics, will present a couple of topics during the course, will teach ethics under the supervision of a expert teacher, and finally she will be able to run the course on her own. Most authors seem to be against formally evaluating students after ethics training because the evaluation interferes with the development of a moral attitude towards research (sense of solidarity and identification with others, like research subjects; sense of moral obligation and personal responsibility regarding the practices of research and science).

7.4 DISCIPLINE-SPECIFIC ETHICS TEACHING

Ethics is increasingly a required subject in university curricula. Many bachelor's and master's programmes now pay attention to ethical issues through one or more courses or modules that cover ethical issues. In addition, many accreditation guidelines for curricula in different fields now hold that such curricula should include attention to ethical issues, in particular issues pertaining to professional ethics.

Ethics teaching at universities comes in four kinds, three of which relate directly to research and innovation. They are:

- 1) *Research ethics and scientific integrity teaching.* These are modules or courses in which attention is paid to the proper conduct of research and/or the proper behaviour of research-performing scientists. Research ethics teaching specifically covers the ethical issues that may occur in research, and how research should be set up so as to properly deal with ethical issues. Scientific integrity teaching covers the virtues that scientists are expected to exhibit in research and how they should avoid scientific misconduct.
- 2) *Professional ethics.* Professional ethics is concerned with responsible and ethical conduct in a profession. At universities, these professions are the professions that students are prepared for in their academic training. For example, a computer science student is preparing to be a computer scientist, which is someone who is professionally involved in the design, development and management of computational systems and software. This profession brings with it certain responsibilities, to clients, employers, colleagues, public bodies, and the public at large. Professional ethics courses discuss and reflect on these professional responsibilities. To the extent that the future career in a field may involve research, professional ethics may also include considerations of scientific integrity and research ethics.
- 3) *Science and society teaching.* Science and society courses are courses that consider the social impacts of a certain scientific field and its interactions with society. Many of these courses pay attention to ethical issues and to critical, normative discussions of the interactions between the field and society. The difference with professional ethics teaching is that the focus is not on the professional behaviour of scientists, but with larger societal issues that concern consequences of developments in a certain field for society. Some of these courses may have "ethics" in the name, instead of, or in addition to, "society". For example, a course at the intersection of computing, ethics and society may be called "computers and society", "ethics and information technology", "ethics, IT, and society", and so forth. The aim of such a course would

⁹⁷ Stewart, CN and Edward, J (2008). How to teach research ethics. *The Scientist* 22(2), 27.

be to consider what kinds of social and ethical issues are raised by the use of computers in society. Note that ethics courses for specific scientific fields often combine a discussion of professional ethics with some discussion of general ethical issues related to the field (“applied ethics”, as opposed to “professional ethics”).

- 4) *General ethics and other ethics teaching.* Next to ethics courses that specifically relate to ethical aspects of a particular scientific field or profession, curricula may also contain ethics courses that are not related to research and innovation and that serve to broaden a student’s perspective. These include introductory ethics courses and applied ethics courses that consider one or more social issues (e.g., environmental ethics, ethics of poverty).

7.5 RECOMMENDATIONS

It is recommended that all curricula in all scientific fields, especially at the bachelor level, but if possible also at the master and PhD level, include teaching in ethics in relation to research and innovation in that field. Such teaching should normally cover (a) principles and issues in research ethics and research integrity; (b) professional ethics; (c) social and ethical issues concerning the interactions between science and society.

It is recommended that multiple class meetings be devoted to each of these topics, since single lectures or seminars of them will not be sufficient to adequately cover them. Multiple meetings will normally be needed to introduce the notion of ethics and an ethical perspective, introduce major ethical theories and approaches, introduce techniques for ethical analysis and reflection, introduce issues in research ethics, research integrity, professional ethics, and science and society, properly discuss these issues with students (based on cases which are discussed in class), and have students practice methods and approaches for ethical analysis.

It is also recommended that universities pay attention to ethics training of their employees.

7.6 SELECTED RESOURCES

We have selected a list of online resources to teach ethics and ethics assessment at universities. Each of these resources offers one or more training model, background materials and cases.

National Center for Professional and Research Ethics⁹⁸

This National Center for Professional and Research Ethics website is a collaborative online resources environment that offers teaching materials and a literature search engine.

The Ethics Education Library⁹⁹

The Ethics Education Library is a collection of resources for scholars and university administrators interested in developing ethics training and instruction programmes for undergraduate, graduate, and doctoral students. Focusing on ethics in engineering and science, the Ethics Education Library includes the following kinds of materials:

- ethics cases (searchable by subject area, discipline, and audience level);

⁹⁸ <https://nationalethicscenter.org/>

⁹⁹ <http://ethics.iit.edu/eelibrary/>

- instruction methods and programmes developed by instructors and universities from around the world;
- syllabi of ethics courses from a wide range of disciplines;
- pedagogical materials and methods for inserting ethics into curricula, introductions on how to teach ethics, and discussions of major ethical issues in engineering and science; and
- evaluation and assessment methods for measuring the effectiveness of ethics training, and the growth of ethical awareness in students.

University of Minnesota Ethics Teaching Program¹⁰⁰

The University of Minnesota Ethics Teaching Program is a compendium of resources pertinent to the teaching of ethical conduct in research and scholarship. At its core is a database that provides quick access to instructional materials designed for use in the classroom. The materials are categorized by ethical issue, discipline, and format and based on the case history methodology.

University of Massachusetts Hamherst¹⁰¹

The Science, Technology & Society Initiative develops conceptual frameworks and case studies to advance knowledge of the international dimensions of ethics in science and engineering. Some in-class cases have been transformed into online, interactive cases. With the online cases, the original in-depth case studies have been simplified for faster online reading and are supplemented with streaming audio interviews with key stakeholders and experts for each case.

The Office for Research Integrity¹⁰²

The Office for Research Integrity of the US Department of Health and Human Services offers an overview of online courses and useful documents for training in responsible conduct of research.

The Online Ethics Center (OEC)¹⁰³

The Online Ethics Center website was built by the US National Academy of Engineering. It is an electronic repository of resources on science, engineering, and research ethics, for engineers, scientists, scholars, educators, students, and citizens funded by the National Science Foundation. The project is ongoing and is developing a sustainable long-term resource for education in ethics, social responsibility, and justice for a broadened group of users in all science and engineering fields.

The Project for Scholarly Integrity¹⁰⁴

This is an initiative of the Council of Graduate Schools that seeks to advance the scope and quality of graduate education in the ethical and responsible conduct of research. It is supported by the US Office of Research Integrity. The web site serves as a tool for sharing ideas to developed projects and as a clearinghouse of resources relevant to graduate deans and other university administrators, faculty, researchers, and graduate students. The resources on this site address curricular needs across a wide range of topics typically covered in responsible conduct of research education and training. The site also addresses broad ethical

¹⁰⁰ <http://www.research.umn.edu/ethics/>

¹⁰¹ <http://www.umass.edu/sts/ethics/>

¹⁰² <http://ori.hhs.gov/general-resources-0>

¹⁰³ <http://www.onlineethics.org/>

¹⁰⁴ <http://www.scholarlyintegrity.org/>

issues, such as the ethical obligations of universities, as well as strategies for institutionalizing changes in the research environment.

8 CONCLUSIONS

We identified the following goals for consideration of ethical issues of research and innovation at universities:

- to fulfil their role and mission in society as centres of producing and distributing knowledge in an ethical and socially responsible way;
- to maintain institutional integrity and help employees to respect the principles of research ethics and ethical professional behaviour; and
- to ensure that research, conducted at a university, is in line with national and international legislation and regulations, with funders' and publishers' requirements and with ethical guidelines, developed by various organisations for a specific field of research.

To satisfy these goals, we recommended that universities do the following:

- Universities should develop or adopt a university-wide ethics code that explicitly addresses conduct in research and innovation that is regularly updated and also adopt an implementation strategy to implement the code in the curriculum and institutional strategies and to regularly review and update the code.
- Universities should establish or adopt an integrity code and establish an integrity board that investigates alleged scientific misconduct. The integrity board should have a clear mandate, be independent, and safeguard its reputation for fairness and credibility. In addition, the processes for investigating, adjudicating, and appealing against allegations of misconduct should ideally be distinct from one another.
- Universities should adopt one or more research ethics committees (RECs), with members appointed by the institution's governance bodies, to review proposals for research projects of researchers (including students) at the university. The review procedure of research ethics committees in institutions of higher education should consist of an ethics self-assessment of the researcher, a pre-screening phase, and a screening phase, and RECs should give graded ethics clearance, delivered in written form.
- Universities should include ethics teaching in relation to research and innovation in the curricula of educational programmes of all scientific fields, particularly at the bachelor level. Such teaching should normally cover (a) principles and issues in research ethics and research integrity; (b) professional ethics; (c) social and ethical issues concerning the interactions between science and society. It is also recommended that universities pay attention to ethics training of their employees.
- Universities should invest in accommodation and integration of ethics in its governance codes and practices.
- Universities should engage in communication and awareness raising activities about the importance of ethics of research and innovation and their activities to address ethical issues.