BOOK OF ABSTRACTS-1

PRINTEGER EUROPEAN CONFERENCE ON RESEARCH INTEGRITY

WHY RESEARCH INTEGRITY MATTERS TO YOU!

BONN – FEBRUARY 05.-07., 2018

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Good Science I - Chair: Prof. Ruud ter Meulen

1. Research Integrity as a new Battlefield for Concepts of good Science

Barend van der Meulen (Rathenau Institut)
Willem Halffman (Radboud University Nijmegen)

Like other knowledge intensive organizations, universities have also been implementing new practices formalizing and standardizing concepts of good performance. In research management, these concepts have been translated as specific forms such as competitive funding, priority setting, audit, evaluation by output indicators, or human resource management. In general, these practices have strengthened the effects of organizational and bureaucratic relationships within the university and weakened the professional networks of scientists. While concepts like priority, research project, research quality, or scientific talent used to be concepts embedded within professional research practices and interactions, these are nowadays formalized bureaucratic concepts, often delineated through specified budgets, time lines and spaces.

In this paper, we analyze the development of “research integrity” as a new object of research management and professional concern. In the Netherlands, the Stapel case, soon followed by a few other major cases, has led to an increased attention for research integrity and a new “infrastructure” to manage the issue. As this infrastructure developed, it has become an arena for a growing number of issues. Originally, research integrity was strongly associated with scientific misconduct in terms of plagiarism, data fabrication and falsification, for which organizational and professional interests seem to converge. However, the notion of research integrity has become more unclear. One reason is the introduction of “questionable research practices” or QRP. QRP’s range from practices close to plagiarism, such as unfair authorship claims, p-hacking, or sloppy data handling, to diverging from strict methodological rules which some consider the cornerstone of good science. The label thus creates an arena of disciplinary work, in which new boundaries are drawn between good and bad science, real and fake science, evidence and speculation. Another reason is that the new reward system of science, driven by much formal indicators of good performance, has created new strategies to ‘game’ the reward system, like citation rings and manipulation of JIF and H-indexes. Many scientists feel that such strategies are at least on the edge of misconduct. Last but not least, within science-society interfaces research integrity is used by journalists, citizens and NGOs to frame scientists behavior, introducing new concepts like self-plagiarism, connecting it to practices of public expertise and university-industry interactions. Some of the new connections have stabilized rather quickly, others are still unclear and part of new organizational and professional struggles to define good science.

Our focus will be on the Netherlands, where after 2011 an infrastructure for managing research integrity rapidly emerged, including Scientific integrity committees, new codes of conduct, courses for PhDs, integrity officers, retraction practices, etc. Also a professional network on research integrity, NRIN, and a funding program for research integrity were set up. Some of these new practices, or revitalized practices, are embedded within the organizational structure of the university, supporting Boards to discipline university staff in cases of scientific misconduct. Others, like PhD courses by Graduate Schools can be understood as attempts to embed professional understandings of research integrity within the discipline.

2. What is research integrity and how can we promote it? A qualitative study of researchers, managers and advisors working in the European Economic Area (EEA)

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Background. Global concern about research misconduct is growing however, views regarding what counts as misconduct and how it can be prevented can vary. There are fears that obvious wrongdoing such as Falsification, Fabrication and Plagiarism (FFP), although serious, may be just the 'tip-of-the-iceberg', with low-level 'sloppy-science' being a far more widespread and underreported problem threatening the integrity of academic research. An increasingly competitive research environment and 'publish or perish' culture are thought to be factors which challenge research integrity, potentially resulting in individuals cutting corners or committing FFP. Some research has been conducted with researchers, exploring their experiences and perspectives to investigate these issues. However, little work has previously been conducted to examine matters in countries in the European Economic Area (EEA). The aim of this paper is to report on some of the findings from a qualitative research study, investigating perspectives of academic researchers and staff involved in research management and governance advice. The research is part of a wider project PRINTEGER: Promoting Integrity as an Integral Dimension of Excellence in Research, whose goals are to develop tools and educational materials to enhance research integrity; part of an ongoing effort to promote a research culture where research integrity is part and parcel of what it is to do research, not just an external and restrictive control system.

Methods. To explore these issues from the 'work-floor', a series of focus groups have been conducted in four countries in the EEA: UK, Norway, Estonia and Italy. The research teams in each country have worked to the same protocol to carry out focus groups with four distinct participant groups: low-seniority, mid-level seniority and senior level researchers, and staff who manage research or advice on research governance issues. Analysis of the focus groups has been conducted in two stages. First, each research team has conducted a thematic analysis upon the data collected, using the question guide as a framework, creating an overall report for each focus group. Second, the team at the University of Bristol, UK, are in the process of conducting a qualitative synthesis of these reports to develop the overall findings of this study from across all four countries.

Results & Discussion. The presentation will report on some preliminary work from the synthesis stage of the study, to explore how participants understand research integrity and what they suggest is needed to help promote research integrity in the day-to-day practice of academic research.

Conclusions. We will reflect upon the preliminary findings presented to highlight key issues for consideration for policy makers and research organisations with regards to promoting research integrity. We will also make some recommendations about how the findings can contribute to the development of educational resources for researchers working in an academic environment.

3. The Myth of Null-Hypothesis Testing

Leonie van Grootel (VU University Amsterdam)

Problem statement

The widespread use of null hypothesis significance testing (NHST) threats research integrity, because it can cause researchers to draw erroneous conclusions from their data. NHST is still ubiquitously used as a default procedure to make inferences about population effects. Despite its popularity, NHST has received much criticism in the past decades. The core of this criticism is that NHST is a form of indirect inference; a conclusion about a population effect (the null hypothesis) is drawn from the p---value that provides the probability of the data or more extreme data, given the null hypothesis. However, as researchers, we are interested in whether the empirical data, along with our prior expectations, correspond with the 'truth' – a question that is not answered by NHST. This is an important underlying reason that many conclusions from research are false and it makes NHST unsuitable as the default procedure to draw conclusions from empirical data. A number of alternatives have been developed that overcome this pitfall, such as Bayesian inference methods, informative hypothesis testing and a---priori inferential statistics. However, the uptake of these methods so far has been limited. Therefore, we wonder why many scientists keep on using NHST and how this information can be used to create a paradigm shift in the scientific community.

Research aim

This research project has the goal to increase research integrity by creating awareness among researchers about the problems associated with NHST and to provide researchers with better alternatives for NHST. The aims of our study are to explore the views of scientists on the utilization of NHST in scientific research and to develop strategies to implement use of alternative methods for drawing conclusions from empirical data.

Strategy

The project consists of two phases. In the first phase, we will collect data regarding the views of participants on the use of NHST by conducting semi---structured interviews with editors, senior researchers, junior researchers, lecturers in statistics and program leaders from funding agencies. The interviews will result in background information helping us understand the persistent use of NHS. Subsequently, we will organize focus groups to further explore the findings of the interviews and to discuss the possibilities for alternatives to NHST. The preliminary findings from the interviews and the focus groups will be presented during the presentation. In the second phase of the project, we will organize three search conferences. With the information from the interviews and the focus groups, the search conferences will be used to decide upon the desired alternatives for NHST, and to come up with strategies to implement these alternatives in research practice and educational programs.

International Perspectives I – Chair: Dr. Eric Breit

4. The Irish National Forum on Research Integrity: A National Approach to Responsible Conduct of Research

Jennifer Brennan (Technological Higher Education Association)

The Irish National Forum on Research Integrity was established in June 2015, following on from the publication of the *National Policy Statement on Ensuring Research Integrity in Ireland*. The Forum membership is drawn from research funders, research performing organisations and other relevant organisations. It is coordinated by the Irish Universities Association and the Technological Higher Education Association. The Forum has six key responsibilities: 1) Supporting the implementation of research integrity policies and processes in a harmonised manner across the research performers; 2) Supporting national research funders in implementing harmonised research integrity statements in grant conditions and associated audit processes; 3) Agreeing a process and format for the public dissemination of the outcome of research integrity investigations; 4) Supporting the development and roll-out of research integrity training programmes for staff and students in the research performers; 5) Monitoring international developments and policy in the area of research integrity, and making appropriate recommendations for adjustments in research integrity policy and practice in Ireland; 6) Communicating the importance of research integrity to the Irish research community and to the general public. The Forum has been tasked with specific actions in the area of research integrity in the Irish national research and innovation strategy Innovation 2020, and reports annually on progress to the Irish government.

This paper will present the advantages of a national approach to research integrity, highlighting the substantial progress that has been made since the Forum was established, such as producing national guidance on topics such as the role and responsibility of the Research Integrity Officer, managing investigations of research misconduct, and the interface between research ethics and research integrity. It will also outline how the Forum will facilitate the roll-out of a research integrity training programme in all Irish publically-funded research performing organisations. The paper will conclude with a discussion of the Forum's future plans for enhancement of responsible research conduct in Ireland.

5. Unintended consequences of institutional reform in Uzbekistan– closer look at publication behavior for academic performance in health research institutions

Minjung Cho (Leiden University)

Uzbekistan government, like many other low middle-income countries have reformed their higher education and public research system into two broad directions: the reform of research performance and the reform of the funding system. Reform on research performance included higher education sector's mandate for researchers to pass the foreign language acquisition (e.g. English) as well as to publish research in indexed journals for academic promotion (Resolution of the Cabinet of Ministers of 18.08.2009 № 233; Resolution of the Cabinet of Ministers of 28.12.2012 № 365[1]). This has brought changes to the health research performance especially those related to the publication behavior. The purpose of this research is to examine the impact of institutional reforms on research performance and its output in relation to research integrity. The implemented policies are well intended, but the consequences of such reforms seem to have had little success in building a better-educated and better-trained cadre of researchers.

The results from both quantitative and qualitative analysis revealed the unintended outcomes. For instance, more than 43% (140/321) of the publications in the health sector had Uzbek authors as corresponding authors, which implies great progress in the field. However, most of the publications were in low impact factor journals mainly published in Russia. Moreover, a growing trend showed that researchers were publishing in journals with less strict or non-existent peer review processes. Qualitative study results indicated increased pressures for researchers and teachers leading to lowering the quality of their research for publication purposes. Researchers also indicated English language as a major barrier leading them to seek for manuscript writing services.

Such high standards in fulfillment criteria have pushed scholars to get anything published in a given time, making scholars more likely to approach spurious predatory journals. The same issues have been raised recently in Kazakhstan, India, and Oman (Al-Adawi et al., 2016; Kana, 2016; Groves, 2016; Yessirkepov et al., 2016). As argued by Laruelle (2010), the lack of means and avenues to publish research as well as difficulties in accessing research information in Western languages due to poor library information systems (Laruelle, 2010; Johnson, 2013; Johnson, 2014b) has prevented the health research system of Uzbekistan from participating in contemporary ways of doing research. The new policy reforms of the Uzbekistan's higher education need to consider the caveats of existing established practices that would require long term planning. There are systematic multi-level factors in the structure of the health research system that limit research performance as well as limiting the changes needed to take place as part of policy reform. A more objective criteria and better guidelines need to be set to ensure research integrity for future research performance of Uzbekistan.

[1]Source: "On measures to further stimulate the research of employees," Resolution of the Cabinet of Ministers of 28.12.2012 № 365; "On measures to further improve the system of post-graduate education and attestation of scientific and scientific-pedagogical personnel." www.lex.uz accessed on June 16, 2017

6. Research Integrity at the Intersections in Interdisciplinary Collaborations

Peter Lutz (Maastricht University)
Bart Penders (Maastricht University)

Cases of scientific misconduct receive much scholarly and policy attention, yet they are not representative of actual research practices. The organisation of science is forever shifting, currently characterised by interdisciplinarity and large-scale collaboration. These modes of working generate encounters between different versions of good science. In a governance context that stimulates collaborative interdisciplinary work, threats to scientific integrity are under studied. Disciplinary cultures have their own norms and practices prescribing what counts as 'scientific integrity' and 'proper science' as well as what disqualifies these domains. In an interdisciplinary setting this may lead to inefficient cooperation, innovation avoidance, unfounded questioning of integrity and credibility, and even conflict.

In this presentation, we report from an ongoing study of different operationalisations of integrity in practice, and the ways in which actual collaborations deal with them. We consider how interdisciplinary scientific collaborations shape articulations and research integrity practices as well as how these deal with the pluralities of good science they host.

Our research takes a constructivist approach, acknowledging that alternatives exist alongside one another, and tracing definitions and articulations of research integrity as they emerge from practices rather than impose them. The empirical case studies from which we draw encompass three research collectives in the context of midwifery science, epidemiology and nutrition science – all characterised by collaborative working modes and interdisciplinary contexts. All are subject to institutional and national guidelines offering universally phrased requirements for responsible research. However, these can be unclear in concrete situations, making it unclear to researchers, labs, and institutes about how to act in specific circumstances. Our ongoing empirical analysis focusses on how tacit norms for responsible research shape research practices in concrete dialogue with more explicit guidelines and how they influence the design, conduct, and (e)valuation of collaborative research.

We are in the process of building a comparative overview and insights into the diverse disciplinary operationalisations of good research and of research integrity, and the consequences of these differences that exist in scientific practice. Given that these are often implicit and hidden in normal working practices and daily routines, they become visible only when contested, trespassed, broken, denied, or confronted with alternatives. This is a work in progress in which we target socio-historical sources (drawn from literature as well as reflections in interviews on the biographical past), reflections on current working milieus, careers, and confrontations with alternative interpretations of 'good', 'bad', 'right' or 'wrong'. We conduct narrative analysis to construct 'research integrity narratives'. In other words, any type of issue arising from positive or negative encounters with articulations of research integrity is embedded in stories about careers, collaboration, and exchange.

Misconduct I- Chair: Prof. Dr. Massimiano Bucchi

7. Rule-breaking and research excellence

Knut Jørgen Vie (Oslo and Akershus University College)

Rules in the form of codes of conduct, legislation, policy documents and other instruments, are increasingly being introduced to prevent misconduct in science, and research integrity is by some understood as compliance with relevant rules and laws. In this paper, I will argue that rule-breaking is sometimes a necessary part of promoting excellence in science. Paul Feyerabend opens his work Against Method by making this point. According to him, rule-breaking is not only something that researchers sometimes do, it is "absolutely necessary for the growth of knowledge" (8). Feyerabend focuses on epistemic and methodological rules when presenting examples supporting this claim. When new avenues of science are explored, for example, the established rules, lessons and methods must sometimes be set aside in favor of "unreasonable, nonsensical, unmethodical foreplay" (11). New approaches in science must necessarily start out as incoherent projects, and one needs a certain tolerance of unreasonable assumptions and rule-breaking, before a coherent whole can take form. Even though Feyerabend's main interest is internal scientific rules, his point may apply to other rules as well.

Today, the consensus is that falsification, fabrication and plagiarism are among the worst infringements of scientific integrity, and this has been formalized in many policy documents and codes of conduct. While these kinds of activities are indefensible in almost all cases, there are a few examples of exceptions to these rules. Scientific hoaxes like the Sokal affair is one such example. In these cases, nonsensical papers are submitted to journals in order to prove a point about things like lax scientific standards or the ease of being published in pay-to-publish open-access journals. These hoaxes break several academic norms and rules. They involve deception, and technically, they can be considered fabrication, as the "research" in question is simply made up. While this type of hoaxes can be criticized, it is not clear that they should lead to punishment because rules were broken, and some will argue that they contribute to discussions that can promote excellence in science.

Accepting that even our best rules in research integrity can have exceptions should have consequences for how we approach the codification of research integrity and ethics, and for the systems we construct for ensuring compliance to these codes. I will argue that we need flexibility in how rules are enforced and formulated. Those whose job it is to investigate and

punish misconduct need room to exercise their judgement in how the rules are applied. Research is a complex and evolving field, and as Feyerabend argues, its progress depends, in part, on rule-breaking. It is important that we ask why the rules are there in the first place. What purpose are they supposed to serve? If we can answer this question we have the tools we need for discerning which rule-breaking is an acceptable use of discretion, and which is not.

Feyerabend, P. (2010). Against method. London, Verso.

8. Cases of Misconduct and Massmedia: The Romanian Case

Maria Aluas (Iuliu Hatieganu University of Medicine and Pharmacy, Cluj-Napoca)

What relation between Media and Research? In the last decade, in Romania media reported hundreds of misconduct cases. It was for the first time in the history when people heard about misconduct, especially about plagiarism and conflict of interests. Massmedia has fulfilled its role of informing by presenting numerous cases of misconduct from different areas: politics, academies, and sports.

Objectives: As objectives of this presentation I set up the following: presenting the Romanian cases of research misconduct reported by media; analyzing the consequences of these cases for the academic community, students, and society; identifying causes and possible solutions in order to promote integrity of researchers and trust in science.

Method: As a method I will use cases analyze, describing the situation Romania, the role of media in unmasking these cases. But also, I will underline the limits of the media in preventing misconduct and promoting integrity in research and science. In order to show the consequences of these scandals reported, I will present the current legal framework in Romania and the further legal proposal regarding some of these practices.

Results: Trust and integrity in research and researchers is fundamental for a community and for a society. At present, the misconduct in research is a very hot topic not only for scientists or all involved in research, but for all us. These topics were known so far only by those directly interested. Lately, cases about plagiarism practices had as outcomes legislative proposals of the Legal Commission of the Romanian Senate. So, in March 2016, calling for punishment of plagiarism by imprisonment from 6 months to 3 years or a fine, and Ph.D. thesis or scientific works founded to be plagiarized becoming null and void. The scientific community is also very sensitive to all topics involving research misconduct and integrity in research. They adopted in the last year several regulations, codes and guidelines. Some of universities also start to put in the curricula of students courses and workshops on research misconduct. The role of media was and still is very important for Romanian context and they are continuing to investigate and to report more and cases of misconduct.

Conclusion: My conclusion is that researchers and academics need to be more aware about the danger and bad consequences of these practices for the next generations of students and researchers. Even if media insists on solutions, in terms of mandatory regulations (legal or academic), my concerns are that it is not enough. In order to correct and prevent such practices, we need to teach and educate students and academic community on these topics and to search together for solutions. Also, ethicists should have more visibility in the university curricula and to provide students with good examples, good practices, and to support them in their projects and activities.

9. From Research Integrity to Research Misconduct: Rites of Passage

Tina Garani-Papadatos (University of Crete)
Vasiliki Petousi(University of Crete

If there was none of the ancestors there is no us
(popular Indonesian wisdom)

In the context of contemporary societies where patterns of scientific work change with enormous speed, the relevant challenges raised are simultaneously real and symbolical, ethical and legal, individual and social. A major challenge is research misconduct, a transgression of the scientific, moral and legal boundaries set by the profession. A review of various documents, guidelines and reports reveals a variety of types of misconduct having as a common denominator the violation of a fundamental value which national and global endeavours seek to address and control. What happens, therefore, is a passage from the ancestral principle of integrity to a phenomenon attracting increasing attention and interest. But is the rite of this passage protected and respected as a power of legitimization and validity over time? This paper aims to safeguard the conceptual and definitional background of integrity as a fundamental primary concept and to demonstrate that this passage should keep the importance and necessity of this ancestry, this relation between the deviant behaviour and the violated principle. It is only by acknowledging the continuation of this kinship that the proper organization of the scientific community can be maintained and the proper status can be bestowed to it. Thus, the ancestral value of integrity should be seen as part of the effort to govern research misconduct. It is only after the researcher has gained the knowledge of what has to be preserved that regulations, even tools and measurement methods can be developed in a complementary and supportive manner, for their value is not denied; in many cultures the combination of the horizontal and the vertical can contribute to achieving balance and regaining a faith lost, for ignoring the foundations enhances instability and weakens a previously revered situation such as the status of the scientific community that regulations seek to preserve.

Integrity Education - Chair: Andrea Reyes Elizondo (Leiden University)

10. A Transformative Approach to Ethics Education

Scott J. Howell (Seoul National University College of Law)

Since the newest crisis of confidence in science arose several years ago, commentators have chimed in with a variety of thoughtful suggestions on topics ranging from journal policy to statistical methods to experimental replication. But while many improvements are needed in these areas, no matter how much we improve the various technical and systemic weaknesses in our current approach to science, the fact is that scientists will always be faced with a variety of incentives that threaten to undermine scientific integrity. Accordingly, where the typical approach to ethics education focuses on delivering to students the information that we think they should know, I suggest a new approach that focuses as well on engaging with students in a way that crucially changes who they are. Drawing on various extant conceptualizations of cognition—for example, the learning vs. acquisition distinction in linguistics, and Daniel Kahneman's System 1 vs. System 2 distinction in psychology—I examine the ways in which our traditional approach to ethics education necessarily fails to protect the profession from the many nefarious incentives scientists face throughout their careers. Then, moving on from the traditional approach, the replacement approach I suggest involves three main steps:

1. Cover less
2. Engage more
3. Build community

First, where the traditional approach focuses on delivering as much information as possible, our new approach should be content to cover less, not because facts are not important, but because they are insufficient and at some point even distract from our ultimate goal of influencing not just what students know but how they think.

Second, with information delivery scaled back, we should use that extra time to get students to really engage deeply with the contextual significance and practical application of the material that has been preserved.

And finally, with students now engaging deeply with the material instead of just memorizing it, we should constantly work to build community (in classrooms and laboratories and departments and schools) around these new and improved conceptualizations of scientific integrity. It is in this step that we really move on from what students know to who they are, because it is here that they develop their professional identities and the values that will determine how they approach their professional duties. The goal is to help them build identities and values that will be impervious to the incentives that threaten to undermine scientific integrity. This new educational approach, combined with the best technical and systemic solutions, is the way forward toward more trustworthy scientific results.

11. Tracing Integrity -The Institutionalisation of a Concept in Danish Higher Education

Rachel Douglas-Jones (IT University of Copenhagen)
Lise Degn (IT University of Copenhagen)
Laura Louise Sarauw (IT University of Copenhagen)
Sue Wright (IT University of Copenhagen)
Jakob Williams Ørberg (IT University of Copenhagen)

Research integrity is widely debated, discussed, and described, written in to policy, guidelines and codes. But comparatively little is known about how these written declarations travel, become part of training and teaching, and inform everyday practice in different national settings. This paper presents material from a current research project based in Denmark, the aim of which is to ethnographically follow the 2014 Danish Code of Research Integrity into university doctoral training settings, and work long-term with PhD candidates as they reason about its relevance and applicability to their own research settings.

We regard integrity as possessing considerable interpretive flexibility, and examine its operation as a boundary object around which different interests gather. Our analyses of its political purchase are based both in the anthropology of policy and in a historical grounding of audit cultures within the academy. We contrast its international variation in meaning with the tendency in Scandinavia towards 'institutional isomorphism', drawing from institutions within Denmark where integrity is currently being written into policy structures and management incentives.

The first half of the paper presents the results of desk work tracing research integrity through international policy in order to contextualise the Danish Code of Research Integrity within the broader global initiatives and place its institutionalisation within the Danish ecology of universities and university colleges. From this, we put forward three distinct threads within integrity's account of itself: its focus on the trustworthiness of science, its cultivation of environments and cultures of integrity within sites of research, and the kinds of ideal researchers it seeks to generate for the future.

The second half of the paper describes the research design and early stage findings of our ethnographic study, focused on the PhD training courses for four different faculties at a single Danish university. Drawing on selected observations from trainings, we explore the different ways that the present situation of research is configured as problematic, the way that students are implicated in that situation, and the kinds of futures they are called upon to generate. This analysis develops into a preliminary overview of doctoral and early career subjectivities, with a focus on how we will follow the questions arising in training sessions through interview and observational work during 2018.

12. How to Teach Scientific Integrity?

Vincent Coumans (Radboud University Nijmegen, Institute for Science in Society)
Luca Consoli (Radboud University Nijmegen, Institute for Science in Society)
Hub Zwart (Radboud University Nijmegen, Institute for Science in Society)

The mission of the PRINTEGER project is to enhance research integrity by promoting a research culture in which integrity is part and parcel of what it means to do excellent research. Educational tools are key in promoting such a research culture. Hence, part of the PRINTEGER project is the development of a tool for teaching scientific integrity.

Several tools for education in scientific integrity already exist. These can be categorized in roughly two approaches. The first approach is the traditional format in which students are taught through formal courses. These courses consist of lectures and small-group discussions. In this format the emphasis lies on students getting familiar with the principles of research integrity and getting proficient in moral reasoning and solving practical problems. The second approach consists of interactive web-based courses individuals can take online (possibly in a classroom setting). The interactive video The LAB designed by the Office for Research Integrity is a prime example of such a web-based tool.

The classroom approach benefits heavily from the small-group discussions. However, this format demands involvement from both student and teacher, i.e. it demands significant preparing and continuous attendance. The online approach, on the other hand, has the definite downside of isolation; researchers that are unable to partake in a web-based course in a classroom setting are often left to their own perspectives and those of the web-based environment itself.

The tool that will be developed as part of the PRINTEGER project combines these two approaches, resulting in a tool with the (cost-)efficiency and the great ease-of-use of a web-based tool and the interactive, social component of the traditional format.

For the development of a prototype, the tool has been gone through several feedback-loops. In these loops various versions and variations of educational tools have been used in different teaching laboratories. These laboratories supplied feedback on these versions and variations, which, in turn, lead to refinements of the tool. The resulting prototype will be tested in the try-out sessions on the third day of the conference.

This presentation starts with a reflection on desirable properties of such an educational tool. Secondly, a strength-weakness analysis of several existing tools is presented. This analysis is based on the previously determined framework of desired properties. Subsequently, the results of the feedback-loops will be presented, focusing on the different versions of the tool and how the feedback lead to modifications. We conclude with an overview of a prototype of the educational tool. After this conference, it will take several additional feedback-loops to develop the definitive version of the tool.

Good Science II – Chair: Dr. Eric Breit

13. Achieving good science – a cross-disciplinary study

Sonja Jerak-Zuiderent (University of Amsterdam)
Jonna Brenninkmeijer (University of Amsterdam)
Amade M'Charek (University of Amsterdam)
Jeannette Pols (University of Amsterdam)

In public and scientific debates about scientific integrity, the differences between different scientific disciplines often remain implicit. As a consequence, research integrity policies to warrant responsible research often fail to address underlying differences and risk producing a 'one-size fits all' approach that necessarily speaks more to some disciplines and less to others. Second, and paradoxically, such a generalizing approach prevents getting a better understanding of what 'goods' science can deliver *through* its different scientific disciplines.

In this project we start rather differently: We suggest that it is important to attend to what goes well within a range of disciplines and that we otherwise might risk to loose with a singularizing focus on what goes wrong. Based on ethnographic studies of five scientific fields, we explore what constitutes 'good' science in daily research practices, how scientists work hard to achieve this, how they act in situations where it is threatened, how the 'goods' and the 'bads' are negotiated, and where, when and how such frictions between 'goods' and 'bads' can lead to 'good' science. Through in-depth analyses and with the help of those we study, we hope to appreciate each of these five disciplines with their particular organization, particular styles of knowing and objects of knowledge: deductive science (mathematics), experimental science (chemistry), interpretative science (philosophy), interpretative social science (anthropology) and statistical and applied science (medical sciences). We aim to specify, first, how 'goods' emerge in everyday practices within the different disciplines; second, how they are at stake, through what kind of frictions and dilemmas and third, what kind of innovative and creative solutions have been developed to prevent destructive tendencies; like for example, departmental focus on collaboration amongst scientists in order to ward off competitive tendencies outside the department. Relying on our first interviews, one focus group discussion and first observations in these fields we will come up with some preliminary findings on how scientists try to achieve the 'good' in their daily scientific work. In this way, we hope to specify how more general concerns, for example, on competition, interdisciplinary research, or data-management, play out in the respective disciplines. This might contribute to a vocabulary that helps to develop and sustain the 'goods' in the different scientific disciplines not in absolute and generalizing terms, but rather as everyday responsible research practices.

14. Towards a Multiple-C account of Scientific Integrity

Jos Kole (Radboud University Medical Center)

Objective

To develop a conceptual framework of scientific integrity – called a Multiple-C approach – that does justice to its many dimensions in order to enable new integrative research about scientific integrity and stimulate innovative education to foster scientific integrity.

Method

The methods used in this paper may be call 'conceptual analysis' and 'philosophical argument'. Before we can enter research after scientific integrity and develop educational strategies, we should have a clearly defined concept of scientific integrity and its correlating concepts. In philosophy, the method of conceptual analysis is a common method to explore the meaning of key-concepts and their relation to other concepts. Definitions of key-concepts are based on arguments, related to theories about scientific integrity. This Multiple C-approach will be demonstrated with respect to specific cases of scientific integrity and scientific misconduct.

Results

The result of an argument-based conceptual analysis of scientific integrity is that the concept of scientific integrity is defined in a network of related concepts, by coincidence, all starting with a C. So, scientific integrity is a matter of competence (skills of proper research) and character (virtues of the good researcher), but also of a collective code (of conduct) and climate (culture of integrity within research institution and scientific community). To cultivate a character and foster a fruitful climate of integrity, reflective deliberation (conversation) about specific cases is necessary. A proper interpretation of these cases requires that they are not considered in isolation but as embedded in a social, economic and political context. An analysis of the relations between these Concepts supports the development of new research and educational strategies. It also prevents too narrow and one-sided approaches towards scientific integrity.

Conclusion

The conclusion is that the concept of scientific integrity needs a Multiple-C approach in order to do justice to its multiple dimensions. Connections between the divers correlating concepts reveal new research questions and educational strategies.

15. Policy Instruments: Insights from the EMBO Research Integrity Initiatives

Sandra Bendiscioli (EMBO)

Honesty, accountability, professional courtesy and fairness, and good stewardship are the four fundamental principles of research integrity, as defined in the Singapore Statement on Research Integrity (http://www.singaporestatement.org). Finding an international agreement on these principles and putting them down on paper was an important achievement of the 2nd World Conference on Research Integrity that took place in Singapore in 2010. But a major challenge continues to be how to integrate them in scientists' everyday work in the lab.

This is why EMBO initiated a series of workshops to discuss research integrity issues and encourage responsible research practices among life scientists in Europe. The workshops are planned and presented in close collaboration with EMBO Members at different European institutes. To the same aim, EMBO requires all scientists funded through its Long-Term Fellowship Programme to complete an online training course on research integrity as a condition to obtain the funding. About 350 EMBO Fellows have now taken the course.

This presentation will report on our observations from the discussions at the research integrity workshops and from the comments of the participants regarding the online course. A summary of some of the concrete actions taken at the host institutes will be presented. We hope that this will provide useful insights into how to establish a culture of research integrity within the scientific community.

As an international organization that promotes excellence in the life sciences and represents an elected membership of more than 1700 leading scientists, EMBO supports scientists at different stages of their careers, funds scientific courses and workshops, and publishes scientific journals. A major goal of the organization is to create an environment where scientists can work according to the highest scientific standards and principles of research integrity.

We take a pragmatic approach to research integrity and emphasize that the ability to follow its principles is not an indicator of a person's moral status, but rather a set of skills that are acquired through effective training and supervision, and that must be supported with appropriate institutional measures. The workshops introduce the values of responsible research, explain internationally accepted definitions of misconduct, highlight questionable research practices and discuss the importance of mentoring young researchers. Misconduct cases that have been discussed publicly are used to illustrate the importance of honouring the principles of responsible research. A considerable amount of time is dedicated to the analysis of scenarios and to discussions with the participants, mainly senior post-docs and young PIs.

The workshop discussions and some of the comments on the online course have highlighted a general lack of awareness of what constitutes responsible conduct, particularly with respect to laboratory work, and of the consequences of inappropriate lab practices. This probably reflects the heterogeneity of guidelines on research integrity within and between European countries, or the lack thereof entirely. But at the same time, and more importantly, the workshops showed that there is a desire and eagerness to discuss dilemmas and uncertainties in scientific research and to implement

institutional measures to support scientists to acquire and use the skills necessary to follow the highest scientific standards in their daily work.

For more information on the EMBO research integrity initiatives: www.embo.org/science-policy/research-integrity

16. Proxy Economics – A transdisciplinary theory of competition with imperfect information

Oliver Braganza, University of Bonn

In many areas of society we rely on competition to better achieve societal goals. Ideally, competition motivates effort and directs resource allocation. However, due to imperfect information, competition generally relies on quantitative proxy measures in order to assess performance. This leads to an increasing use of such quantitative 'proxies' in modern societies. Examples include: in science, the publication count of an author; in healthcare, the number of patients treated or in economics, the profit achieved. Importantly, in many circumstances it may be possible to make decisions which optimize 'proxy performance' but not the actual societal goal. In such cases, individual decisions and cultural practices may shift away from the societal goal and toward the proxy. In fact, prominent voices have argued that this is precisely what has happened in the current scientific 'reproducibility crisis'[1]. Unfortunately, we lack a unified theory on the basis of which to assess such claims, perhaps because such a theory cannot be formulated within traditional disciplinary boundaries. Here, I develop an interdisciplinary theory of 'proxy economics'.

The central concept is captured by a law attributed to Charles Goodhart or Donald T. Campbell, most pithily phrased as: "When a measure becomes a target it ceases to be a good measure." While the original formulations of this law address policy and education, I propose it can apply to any competitive societal system: Any proxy measure in a competitive societal system becomes a target for the competing individuals (or groups). A progressive cultural evolution towards proxy-oriented practices may ensue, as has recently been proposed in a formal evolutionary model of scientific practices[2]. Notably, decreasing actual performance will remain hidden, as long as the proxy remains the central evaluative tool of the system. However, the degree to which this happens depends crucially on the psychological determinants shaping individual decisions and how they interact with systems-level mechanisms such as selection, and cultural/moral norms. Several psychological aspects can be deduced directly from the concept of proxy based competition. Namely, decision options are likely to systematically differ with respect to ambiguity, personal relevance and temporal distance. For instance, proxies are used to mediate competition precisely because the actual societal goal is difficult to measure, i.e. ambiguous. Together, these psychological properties are likely to give rise to 'bounded ethicality'[3].

The theory is developed around an agent-based computational model to provide a formal description of the minimal components required to capture the tension between moral/ social considerations and competitive pressures. Additionally, it explores the qualitative psychological, sociological and moral implications of the described process.

1. Bénabou, R. & Tirole, J. Bonus Culture: Competitive Pay, Screening, and Multitasking. *J. Polit. Econ.* **124,** 305–370 (2016).

2. Smaldino, P. E. & McElreath, R. The natural selection of bad science. *R. Soc. Open Sci.* **3,** 160384 (2016).

3. Pittarello, A., Leib, M., Gordon-Hecker, T. & Shalvi, S. Justifications shape ethical blind spots. *Psychol. Sci.* **26,** 794–804 (2015).

International Perspectives II – Chair: Prof. Dr. Gloria González Fuster

17. Promoting Integrity of Biomedical Research at Universities

Mikyung Kim (Seoul National University College of Medicine)

Currently, biomedical research is in crisis worldwide—from common methods that fail to generate reproducible results, to rampant research misconduct. The crisis has its roots in a variety of factors originating from the levels of researchers, research institutions, and industry. Universities, which have the highest stake in research integrity to fulfill their missions in education and research in relation to industry, should take the initiative to rectify the crisis with a collective, holistic approach targeting all three levels at once.

First, universities must improve education in professional and scientific ethics. Inadequately "careful" science by researchers can be much improved by educating early-career researchers about what are the common reasons for irreproducible research and research integrity. Having researchers precisely follow the author guidelines for journals, such as *Nature's* Checklists and *Science's* TOP Guidelines, would be complementary to such effort. A balanced focus between scientific aspects and human subject protection is also needed in education and training of clinical researchers as well as in IRB review process. Moreover, universities can mandate graduate students to perform replication studies in relevant areas as part of the dissertation submission qualification process.

Next, universities must establish a healthy and sustainable incentive and cost structure for themselves in order to promote high motivation and desirable behavior among researchers. Universities can examine whether their policies promote the winner-takes-all game that feeds perverse incentives to cut corners and commit acts of misconduct. In a pyramid structure of university laboratories, low-level researchers are predominant and experienced full-time staff researchers are limited. To avoid this pyramid structure, universities need to monitor the relative proportions of graduate students and post-doctoral researchers among all researchers and the allocation of funds among them. Universities, where research and training go hand in hand, should consider the de-coupling of training from research so that graduate students should be trained first, before participating in a government-funded research project. Universities also need to investigate critically the economic sustainability of their laboratory expansions, in the expectation of future funding. Furthermore, emphasizing the importance of metrics in hiring and promotion, hiring people for soft-money positions, and awarding cash bonuses for publication in high impact journals and for receiving sizable grants should be all discouraged institutionally.

Finally, universities must find their proper roles in relation to industry. The emergence of many virtual biotechnology companies and contract research organizations as potential competitors should not be ignored. It should be noted that the popular trend of sharing has already extended to wet-labs. Universities might need to determine whether they can compete with those new business models with respect to various qualities of experiments, such as reproducibility, efficiency, and productivity. Instead, in order to survive and prosper in this environment, academic institutions need to re-focus on their traditional missions of discovering original ideas and conducting field-changing research, by promoting freedom of research, and educating the new generation of researchers to lead good science and integrity.

18. Institutional Perspectives on Research Integrity in the Ukraine Universities: How the System pushes Misconduct

Iryna Degtyarova (EURODOC)

The definition of the academic integrity was formulated by the International Center for Academic Integrity as «a commitment, even in the face of adversity, to six fundamental values: honesty, trust, fairness, respect, responsibility, and courage»[1]. That means the academic/research integrity values must be institutionalized and transferred from the area of ethics to area of higher education governance and institutional management, i.e. implemented into academic routine and institutional practices.

There are different dimensions of academic integrity:

- *individual* – the level of personality (student, teacher, researcher, reviewer, rector, etc.). The core of integrity lies in their individual moral principles, value of their reputation and respect in academic community as individuals;
- *institutional* – tolerance/non-tolerance to misconduct in the institution, existence of relevant manuals, documents, internal regulations which promote integrity and prevent misconduct (e.g. university ethic codes, HR policies, researchers' freedoms and accountability);
- *systemic* – implementation and legitimacy of integrity principles in the legal acts, when it became not only ethical principle, but obligatory requirement. Sanctions for misconduct must be formulated;
- *collegial* – engagement of academic community into the promotion of academic integrity and non-acceptance of its violation (rectors', university associations, peer review committees, ECRs community, etc).

It's worth to stress, that individual and collegial dimensions consider personal/interpersonal relations and lie in the field of ethics and moral qualities of an individual or a group of individuals. But the systemic or institutional level must ensure the proper framework for protection and promotion of academic integrity. But what if the practice in higher education and science creates the conditions which push misconduct instead?

We did an empirical analysis of the HE practices in Ukraine (based on the law and institutional culture), and it showed, that there is a number of conditions which push researchers to violate integrity principles:

- *formal status* – traditional academic hierarchy (of scientific degrees and titles) inherited from the Soviet Union is based on formal status, that encourage people, ECRs first to strive for this status as soon as better, no matter by what means; system of personnel development and evaluation is also formalized;
- *working conditions* – lack of relevant technical, experimental and laboratorial base to conduct research, lack of possibilities to implement and test research ideas, general unsatisfactory conditions in everyday academic routine;

time conditions – time is misbalanced among teaching, research and organizational activities, it is critical for ECRs who are under the pressure of tough time requirements in doing PhD;

- *human resources* – HR policies do not consider Charter and Code, career counseling, or much attention to supervision and mentoring; lack of interdependence of the achievements with career development;
- *chances and possibilities* – only a small number of HEIs create conditions for research personnel development, the majority really don't care of them and even could block their development (block participation in different events), which demotivates ECRs, who search for these possibilities outside academia;
- *university bureaucracy* – requirements and procedures in PhD training and thesis defense, the number of documents for teaching process for faculty, complication from the university administration;
- *institutional management* – there is still misbalance in treating administration structures and research units; institutional flexibility and adaptability means accepting institutional culture with its hierarchy and informal relations.

These factors could be considered as a checklist for self-evaluation of the institutions when they strive to implement integrity practices. Institutional conditions must correlate with integrity measures and encourage all academic community to follow ethical principles.

[1] http://www.academicintegrity.org/icai/resources-2.php

19. Retractions Originating from Countries after the Soviet Union Collapse

Loreta Tauginiene (Mykolas Romeris University)

Retractions as one of the major mechanism of science self-correction are increasing annually at high speed (e.g. Cokol, 2008; Fanelli, 2013; Katavić, 2014; Steen, 2011; Steen et al., 2013; van Noorden, 2011). However, there is no evidence regarding countries that regained their independence after the collapse of the Soviet Union and that accessed the digitalization of science through international databases foremost and national and institutional requirements to publish in journals indexed in Scopus, Clarivate Analytics and/or other international research databases. This presentation gives a short overview of retracted papers published by researchers from these countries. Data of thirteen countries retrieved from such research databases as Scopus, EBSCOhost Research Databases, Science Direct – Freedom Collection and Taylor & Francis Online, and published on the website of Retraction Watch, were selected for analysis. Retracted papers date since 2008. Following this, 20 malpractices related to publishing and/or authorship were identified from nine countries, mostly from Ukraine (4 items), Armenia and Uzbekistan (3 items per each country). One item was chosen as it referred to an editor's behaviour in order to increase citations of the journal and his/her papers; in total, there were 19 items. Each item was entered in an Excel database and classified accordingly. Results show that retractions of the selected countries' researchers have commenced very recently. Eight retractions relate to duplication and six to plagiarism. However, this does not show the scale in comparison with papers published in mother tongue. Then fifteen papers were retracted at the request of the Editor-in-Chief or the Editorial Board, fewer (six papers) at the request of the Publisher. The majority of journals (79%) that retracted papers are members of the Committee on Publication Ethics. Half of papers (10 items) have no co-authorship with researchers from outside their native country, but retractions mostly have co-authorship with researchers from Canada and Russia (2 items each). Although it is not significantly prevailing, external co-authorship is noticed with fellow-countrymen and those who speak Slavic family languages. On one hand, this evidences the need for understanding of academic publishing and related practices. On the other hand, it demonstrates underdeveloped academic networking. Summing up, it is assumed that flawed works are underreported (Kakuk, 2009 as quoted in Steen et al., 2013) and different databases demonstrate different statistics of retractions. It is interesting that Retraction Watch reported most retractions. Furthermore, to encourage reporting flawed works necessitates finding local 'ambassadors' and empowering governmental bodies to unravel how many papers are originally in researcher's mother tongue or English, if papers are published in the latter. This has potential to predict the number of papers likely to be retracted in the future; therefore, further investigation is needed.

20. Success, Integrity, and Cultures in Academia: Voices of Belgian Researchers and Research Students

Noemie Aubert Bonn (Hasselt University)
Wim Pinxten (Hasselt University)

Objective: In the past few years, issues of research integrity have gained sufficient visibility to become an important topic of scientific investigation. Average prevalence of misconduct and questionable research practices have been established, potential determinants for misconduct have been identified, and approaches to promote integrity have been proposed and assessed empirically. Nonetheless, while research on research integrity found that issues embedded in the research system (e.g., competition, pressure, incentives, etc.) play a role in research misconduct, most approaches target researchers awareness and compliance rather than the system itself. In a first step to target issues within the research system, this project attempts to explore existing conflicts between research integrity and attributions of success in academia.

Design: Using focus groups with researchers and research students from the medical and life sciences faculties of several Belgian universities we explore perceptions of success in science and question how current attributes of success align with research excellence, quality, and suboptimal research practices.

Results: The project is currently ongoing and preliminary results from a minimum of four focus groups (N = around 24 researchers and research students) will be presented at the conference. Although the results are based on the Belgian academic context, we consider that our investigation is comprehensive enough to provide insights that will prove relevant for a broad range of research contexts.

Discussion: Better understanding where good research practices conflict with attributions of success and career advancements is essential to initiate a sustainable change to promote integrity in research. The current investigation, which aims to obtain insights from researchers and research students, is the first step of a broader research project in which we will compare such perceptions to those of different research actors, such as funders, university administration, and editors. Identifying conflicting expectations and understand where research actors differ in their interpretation of research excellence will better equip us to align success expectations with integrity and to build realistic and sustainable approaches to inherently fosters integrity in research.

Integrity narratives – Chair: Dr. Luca Consoli

21. The Shifting "Self" in Discourses on the "Self-regulatory Capacities" of Science. Investigating Narratives on who should care for Research Integrity

Ulrike Felt (University of Vienna)
Florentine Frantz (University of Vienna)

Over the last decade we witnessed a growing concern over issues of research integrity within contemporary research systems. This was triggered by the perception that numbers of "obvious" transgressions of acceptable academic practice were rising, by concerns around the number of retractions of academic papers and obvious flaws in the peer review system, by undue influence of those constructing studies on their epistemic outcomes, but also by the recent concerns captured by the label of "reproducibility crisis". All this comes at a time when notions such as excellence and relevance have moved high on the political agenda, the promise of science and innovation for societal progress is omnipresent and the above-mentioned phenomena were increasingly identified as potentially threatening these values.

This paper contributes to an understanding of this phenomenon through looking at the shifting ideas of who should be active in caring for research integrity. To do so, we investigate the debates around research integrity (in its widest sense) in two of the leading science journals Science and Nature from the 1980ies to today. These journals are interesting as they are highly relevant hybrid actors in the research system (speaking to the community, for the community and about the community of researchers). It thus seems relevant to study how they frame the problems at stake, the reasons why they see them to occur, who should care for issues of research integrity and, finally, how responsibility gets distributed in the different problem areas identified. It will also be important to see how the narratives on research integrity get connected to changes in the research environment.

Our attention will specifically focus on the very meaning of the "self" in the ideal of "the self-regulatory capacity" of the researcher community. We will show how what gets conceptualized as "the research community" was gradually enlarged by integrating diverse institutional actors (funding agencies, journals, Offices of Research Integrity), thus distributing responsibility in new ways. Following these changes over time, will allow to diagnose relevant changes and how they impact the ideal of self-regulation. Identifying these shifts and the underlying reasons has the potential to better grasp how concerns over research integrity are deeply entangled with transformations in the overall research system and the values and actors which drive it. These observations, in turn, might then be a crucial ingredient when thinking about actions to be taken towards transgressions of research integrity.

This paper will build on research undertaken in the framework of the project "Borderlands of good scientific practice" funded by the Research Fund of the Austrian National Bank (PI: Ulrike Felt) and carried out at the research platform "Responsible Research and Innovation in Academic Practice" at the University of Vienna. It uses a body of articles published on issues of research integrity in Science and Nature between 1980 and 2017. In our analysis we embrace a narrative approach and look into the ways in which articles around transgressions of research integrity are constructed, the plots they follow, the recurrent elements they use and the valuation practices they perform.

22. The Completeness, Correctness and Depth of 'On Being A Scientist'

Vincent Coumans (Radboud University Nijmegen)
Luca Consoli (Radboud University Nijmegen)
Hub Zwart(Radboud University Nijmegen)

The development of an educational tool for scientific integrity courses is an important part of the PRINTEGER project. Several formats for these tools already exist. An important example is the film 'On Being A Scientist', produced in 2016 by Leiden University. Aimed at raising awareness of scientific integrity and preparing future and early stage researchers for the scientific integrity issues they can encounter, this film displays elements of scientific integrity and scientific misconduct in interwoven storylines.

Two aspects of 'On Being A Scientist' make this an interesting example for educational tools. Firstly, the film is of high-quality, as it is directed by a professional director and features famous Dutch actors. One can argue that such a high-end fictional film is beneficiary for conveying ideas. Secondly, a key element of this film is the emphasis on grey areas of scientific integrity (in contrast to straightforward notions as fabrication of data).

However, concerns may be raised that a fictional film as 'On Being A Scientist' only gives a superficial account of scientific integrity. Especially when a film with a playtime of less than an hour focuses on grey areas that require even more nuance than the straightforward issues of scientific integrity. Hence, we raise the question: what is the quality level of the content?

To answer this question, we evaluate the treatment of the scientific integrity elements on three axes: completeness, correctness and depth. For assessing the completeness of the film we compare the treated topics with the European Code of Conduct for Research Integrity (ALLEA, 2017). Assuming this code of conduct gives a comprehensive picture of the topics of scientific integrity and scientific misconduct, one can assess how much of the code of conduct is represented in the film.

The correctness of the film is measured by verifying claims from the film. In the film a wide range of claims is made, implicitly and explicitly, about the occurrence of scientific misconduct. These occurrences will be validated on the basis of a literature study. Lastly, the depth of the content is determined by evaluating the occurring items and themes along multiple axes.

This presentation starts with a summary of the film 'On Being A Scientist' in which we also identify several themes and claims regarding scientific integrity as displayed in the film. Subsequently, the methods and preliminary results will be shown regarding the completeness, correctness and depth of the film. We conclude the presentation with the analysis of some interesting themes from the film.

23. Tragedy of Collaboration: Collaboration as a Road to Misconduct?

Justus Rathmann (University of Zurich)
Heiko Rauhut (University of Zurich)

The influence of and mechanisms behind collaboration on research performance is still up to debate. Fake data, fraud and plagiarism, among others, induce doubts concerning the integrity of both the research and the researchers. The U.S. Code of Federal Regulations[1] classifies such norm violations as scientific misconduct. Retractions can be considered an arising institution making scientific misconduct visible to the public (Hesselmann et al., 2016)[2]. A steady increase of retractions since the end of the last century with an acceleration since the 2000s is reported. We examine the influence of the size of the research team, operationalised by number of co-authors of a given article, on the probability of a retraction as an indicator for the researcher's integrity. Auspurg & Hinz (2011)[3] demonstrate that single-authored articles are more inclined to publication bias than multi-authored articles implying a form of social control in research teams. Similarly, the so-called 'wisdom of the crowd' effect indicates groups of individuals to make better decisions than single experts, bearing in mind that this effect can be undermined by social influence (Lorenz et al., 2011)[4]. Therefore, hypothesis (1a) can be deduced: A larger group of co-authors decreases the probability that an article is retracted. On the other hand, scientific collaboration can be seen as a collective good following Olson (1965)[5], then, a larger team could lead to lower individual commitment since the individual marginal return of the collaboration is decreasing with the group's size (Isaac and Walker, 1988)[6]. Furthermore, it is known from social psychology that the probability of somebody volunteering is negatively correlated with the group size, visible in the so-called 'diffusion of responsibility' (Darley & Latane, 1986)[7] and the 'volunteer's dilemma' introduced by Diekmann (1985)[8]. Subsequently, hypothesis (1b) can be deduced: A larger group of co-authors increases the probability that an article is retracted. Retracted and similar non-retracted articles are sampled from the Web of Science (WoS) to a dataset, in which the retractions serve as a treatment and the regular articles as the control group. In order to maximise the similarity of the articles, we use bibliographic coupling to match articles from the same year sharing the maximum number of citations. Subsequently, we are able to construct counterfactual conditionals on the basis of the number of co-authors of a given article. Decullier et al. (2014)[9] find that can take up to 35 months for articles to be retracted and databases updated. Therefore, only articles published until 2012 are used for the sample. A logistic regression is

[1] 1 Code of Federal Regulations (2017), 'Research Misconduct', 42 C.F.R. §93.103
[2] Hesselmann, F., Graf, V, Reinhart, M. & Schmidt, M. (2016), 'The visibility of scientific misconduct: A review of the literature on retracted journal articles', Current Sociology, 1-32
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[7] 7 Darley J. M. & Latane, B. (1986), 'Bystander Interventions in Emergencies: Diffusion of Responsibility', Journal of Personality and Social Psychology 8
[8] 8 Diekmann, A. (1985), 'Volunteer's Dilemma', Journal of Conflict Resolution 29, 605-610 9 Decullier, E., Huot, L. & Maisonneuve, H. (2014), 'What time-lag for a retraction search on PubMed?', BMC Research Notes (395)7
[9] Decullier, E., Huot, L. & Maisonneuve, H. (2014), 'What time-lag for a retraction search on PubMed?', BMC Research Notes
(395

conducted using the binary variable, whether an article has been retracted, as the response variable and the number of co-authors as the main predictor variable. Furthermore, covariates found to be relevant in previous research, for instance, the country of origin of the corresponding author, the field of research, and the Journal Impact Factor are included in the model (Hesselmann et al., 2016).

24. Research Integrity as a Part of Scientific Responsibility. Results from a Qualitative Interview Study with Natural Scientists

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Anna Deplazes Zemp (Institute of Biomedical Ethics and History of Medicine Zurich)
Nikola Biller – Andorno (Institute of Biomedical Ethics and History of Medicine Zurich)

BACKGROUND

Research integrity can basically be understood as a concept to describe the ethical attitudes (virtues) expected from a researcher. Honesty, accuracy, efficiency, and objectivity, for example, are such ethical attitudes which express expectations towards the researchers` actions. Thus, from a broader viewpoint, research integrity can be understood as a part of (moral) responsibility researchers are expected to bear as professionals.

To entirely understand the moral ideals determining the ethical expectations towards scientists, research integrity should be embedded in a broader concept of scientific responsibility which also includes ethical attitudes, principles, and rules, relevant outside of the scientific system. Under this premise scientific responsibility can be differentiated in (1) internal responsibility in terms of research integrity which is directed towards peers within the same social system (science) and (2) external responsibility in terms of a scientific social responsibility directed to other stakeholders within the society.

METHODS

We conducted semi-structured qualitative expert interviews with senior scientists and engineers from various disciplines, like biology, chemistry, physics, or biological engineering. The interviews have been analysed by a grounded theory approach and a theoretical framework understanding responsibility as a relational concept which entails at least four related elements:

1. The bearer of responsibility (Who?)
2. The recipient of responsibility (Towards whom?)
3. The normative framework (Why?)
4. The specific action (What?)

RESULTS

First results show that the interviewed scientists focus strongly on various aspects of research integrity as their perspective on responsibility. In contrast, aspects of social responsibility are either discussed implicitly or rather briefly. With the help of the responsibility framework presented above and the statements of the interviewees, a complex set of aspects of scientific responsibility will be carved out. To illustrate these considerations one task expected from scientists, presenting their scientific work to the public, will serve as an example. The guiding question will be: “Who is responsible to inform which parts of the society about which aspects of research under which normative premises?”

DISCUSSION

Within complex relationships between professional actors (e.g., scientists) and social systems (e.g., science or mass media), responsibility cannot be analysed in a unidirectional way. Instead, the

interdependences of these relationships need to be analysed to clarify expectations towards scientists and therefore their responsibilities. Further, these complex interdependencies should not serve as an excuse for the individual researcher to avoid taking individual responsibility. In fact, a detailed analysis of the distinct responsibilities is necessary to give guidance to take individual responsibility.

Integrity Practices – Chair: Prof. Dr. Serge Gutwirth

25. Organizational influences on research misconduct: Insights from a multinational survey

Svenn-Erik Mamelund (Oslo and Akershus University College of Applied Sciences)
Eric Breit (Oslo and Akershus University College of Applied Sciences)
Ellen-Marie Forsberg (Oslo and Akershus University College of Applied Sciences)

Research misconduct is generally been studied as an individual phenomenon, and subsequently treated with individual-level cures, i.e. punishing or removing the "bad apple". Although it is not easy to draw a clear line between individuals and organizations, an organizational conception draws attention to questions regarding the "bad barrel". Even though some studies have theoretically explored the organizational influences on research misconduct, there is limited empirical evidence of these influences.

The aim of this paper is to add to these (early) conceptual assumptions by empirically exploring hypotheses about organisational factors influencing research misconduct. Based on a review of the literature on organisational misconduct, we hypothesize that the following factors will be positively related to misconduct: (a) work satisfaction, (b) identification with the values of the workplace, (c) workplace socialization, (d) managerial emphasis, (e) availability of information, (f) provision of courses or arenas of discussion, (g) conflicts of interests, and (g) workplace pressure.

In the paper, we will test these hypotheses doing multivariate analysis on unique survey data from 8 institutions across 7 European countries (N=1126) and control for variables including age, gender, education, scientific field, academic position, and experience. We have two dependent variables: First, research misconduct as defined by fabrication, falsification and/or plagiarism (FFP). Second, "questionable research practices" (QRP), such as selective dropping of data, selective reporting of (dependent) variables, falsification of bio-sketch or personal references, non-disclosure of conflicts of interests, and pressure from study contractor to alter presentation of findings.

26. Distinguishing between Incompetent Research and Research Misconduct

Hugh Desmond (KULeuven)
Kris Dierickx (KULeuven)

The lack of definitional clarity of 'scientific misconduct' is an ongoing point of contention (Steneck 2006, Fanelli 2011, Salwén 2015, Horbach and Halffman 2016). A particular issue is how to distinguish between incompetent research and research misconduct. In this paper we first identify two common frameworks and argue that these either face the problems of operationalizability and implementation, or are excessively broad. We then propose a new framework that analyzes the distinction in terms of scientific methodology.

The two most common frameworks are what we call the 'behaviorist framework' and 'intentionality framework'. In the latter framework, misconduct is strictly demarcated from incompetence by means of intentionality: misconduct refers to scientific failures that are consciously undertaken with the intention to deceive the scientific community. The largest difficulty facing the strict model is that intentionality is, in general, very difficult to establish, and often can only be established in cases of behaviors of fabrication, falsification, and plagiarism. Thus, while the intentionality framework offers a very clear demarcation between incompetence and misconduct, it is difficult to operationalize and implement.

By contrast, in the behaviorist framework is easy to operationalize but is either excessively broad or slides into an intentionality framework. For instance, in the Swedish Research Council's 'Good Research Practice' document research misconduct is defined as entailing "actions or omissions in research, which – consciously or through carelessness – lead to falsified or manipulated results…". This definition is very broad, and categorizes all forms of incompetence as misconduct. While this makes the framework easier to operationalize and implement, it is doubtful whether it is desirable or even realistic to evaluate degrees of scientific failure as degrees of moral failure.

However, not all behaviorist approaches are as broad as the SRC's. For example, in the ALLEA European Code of Conduct for Research Integrity, specific behaviors are categorized as misconduct (see also Martinson et al. 2005), such as "withholding research results", or "misrepresenting research achievements" (ALLEA: 8). The problem here is that speaking of 'withholding' or 'misrepresenting' presupposes that a certain intention has been established. In this way a behaviorist framework can face the same problems as the intentionality framework.

As alternative we propose the 'methodology framework'. Instead of defining misconduct as a behavior or an intention, it should be defined as a biased methodology that can only be explained by the motivations researchers often have for misconduct, such as personal gain etc. Incompetence, by contrast, is a faulty methodology. The difference between misconduct and incompetence is that the methodological errors in the former are systematic and consistent, suggesting that the errors are not a mere coincidence. Thus misconduct can be established by a thorough analysis of the methodology followed by a researcher.

In the paper we consider different types of methodology, and argue that the methodology framework avoids the problems of operationalizability while not being excessively broad. Furthermore, it allows for a domain-specific approach to cases of misconduct. Since different

scientific domains typically employ different scientific methodologies, what counts as misconduct in one domain may only count as incompetence in other.

27. The frequency of scientific plagiarism measured by a text matching software: A systematic review and meta-analysis

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The aim of this study is to assess the frequency and characteristics of plagiarism in a scientific community with purpose to incite discussion about definition of plagiarism and measures to prevent plagiarism. A systematic review of published scientific studies that detect the frequency of plagiarism in scientific articles using text matching software is conducted.

Literature search of 35 bibliographic databases, 5 databases of gray literature and 9 scientific journals yielded 9 956 articles about plagiarism published until the end of year 2016. After screening the abstracts, 9520 articles were excluded because they did not report frequency of plagiarism or did not use text matching software. Eighty-five full text articles were assessed for eligibility. Fifteen studies that measured frequency of plagiarism in scientific papers using text-matching software were included in qualitative analysis, while 10 studies with most similar and precisely described methodology were eligible for meta-analysis. Studies included in the review were conducted in period from year 2007 to 2016. Almost a million scientific articles (published articles or manuscripts submitted to journal or conference) were checked for plagiarism. Analyzed articles can be placed within research areas such as medicine, computer science, economics and physics. Process of plagiarism detection differ in several points such as the number of analyzed papers, the magnitude of content to which papers are compared, the precision of a text-matching software used, the level of scrutiny of the manual interpretation of similar text, and number of criteria used to identify plagiarism.

The results indicate high rate of plagiarism in scientific papers and absence of a unified process to determine plagiarism in a scientific article. A meta-analysis estimated that 29% (95% CI: 17% - 45%; N=10 studies) of analyzed scientific articles have instances of plagiarism. Minor (technical) plagiarism (e.g., copied small amount of text or similar description of standard processes in method section) is more often detected than major plagiarism (e.g., verbatim copy of large amount of text or copied results, original ideas and arguments). Statistically lower frequency of plagiarism is estimated in studies that identify plagiarism using more than three criteria then in studies that use three or less than three criteria. Although authors agree that extent of similar text is the first criterion for defining plagiarism, they cannot agree on an amount of a similar text that indicates plagiarism and how to interpret additional criteria such as originality of similar text.

Keywords: Plagiarism, scientific misconduct, text-matching software, research integrity

28. Promoting Research Integrity Through Student Led Academic Integrity Movement: Evidence From Nepal

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The issue of research integrity has persistently been a timeless discourse in higher education institutions across the globe despite some local practices to deal with it. The problem, as a problem of core values, appears more evidently in the universities in underdeveloped countries like Nepal, where no consistent approach prevails across universities and their campuses. Moreover, there are often clear disconnects between 'what is said' and 'what is done' as fair procedures in conducting academic research. As a result, universities have been facing critical ethical challenges in conducting and evaluating research. In this context, this paper investigates how Nepali universities are promoting research integrity and preventing research misconduct across their campuses. Adopting a case study methodology, this paper explores how student-led academic integrity movement in a university campus has fostered research integrity among scholars across the university. The data in the form of 'texts', 'interactions' and 'talks' were collected through open interviews with higher education students (master to doctoral) and faculty at a university campus in Kathmandu. Moreover, one round of student and faculty workshop each was conducted at the campus to develop academic integrity indicators as best practice indicators for promoting research integrity in the case study university. The study further explores the institutional response and roles to further strengthen the integrity movement. The study reveals that the university also facilitated the process by adopting an open approach that valued open inquiry and respectful dialogue with the students' body – resulting in the formation of an 'Academic Integrity Alliance' of students in a university campus. The alliance was later institutionalized and provided with logistical support to conduct its integrity building activities. Out of the preliminary findings of the case study, a round of student and faculty workshop was held to frame some ethical guidelines which were later revisited by academic leaders through forward-oriented discussions on concrete ethical concerns and their socio-academic impact, and developed academic integrity policy of the university. This study argues that research integrity is not something enforced by the university, rather it is a culture of collective scholarly awareness that needs to be cultivated across academia. Moreover, the facilitative role of the university leaders in developing integrity indicators and thereby also institutionalizing those indicators as part of university response to research ethics resulted in a robust university-wide framework for promoting the core values of academic integrity (honesty, trust, fairness, respect and responsibility) among its students and faculty. This study concludes that research integrity matters – it matters most in academia – and thus, research institutions and higher education institutions, especially those where research integrity is often taken for granted, need to develop a strong framework for conducting and evaluating research, no matter who initiates this movement.