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RESPONSIBLE CONDUCT OF RESEARCH IN THE CHANGING LANDSCAPE OF SCIENCE

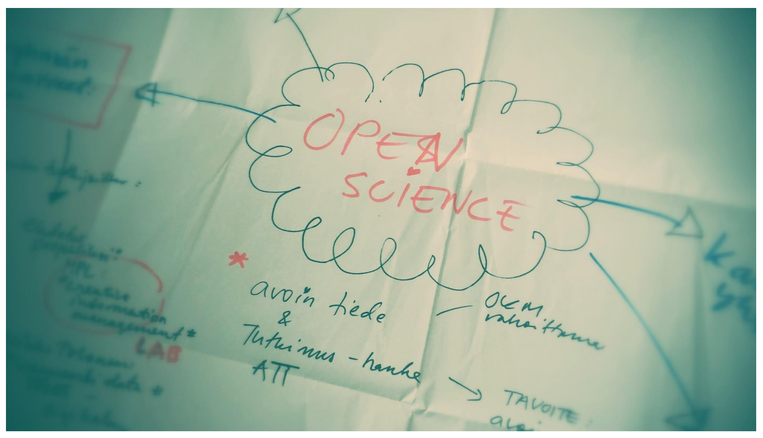
RESEARCH INTEGRITY 2.0?

Science 2.0 is a concept that refers to new digital research methods and resources, like big data and computational methods in humantities and social sciences. Open Science on the other hand is a movement that through digitalization tries to make research more accessible, sustainable and fair.

I argue that the key documents defining responsible conduct for research (RCR) and its breaches were created with the 'Science 1.0' in mind: for a world where research is conducted using more or less local and institution specific infrastructures that are closed for outsid use, and where research processes are kept private and hidden, until the results can be published according to field specific practices, usually as toll access journal articles. This doesn't automatically mean that the guidelines have become outdated, but I feel the questions needs to be asked: do we need Research Integrity 2.0 to better reflect the world of Science 2.0?

THREE PERSPECTIVES TO ACADEMIC SELF-REGULATION

In my dissertation I will take a look into the past, present and future of academic self-regulation on research integrity through examples from recent history. I ask what effect do the RCR guidelines and policies have? How have they come to being and whose voice speaks in them? How adaptable are they to changes in the scientific landscape? I approach these questions through a series of case studies:

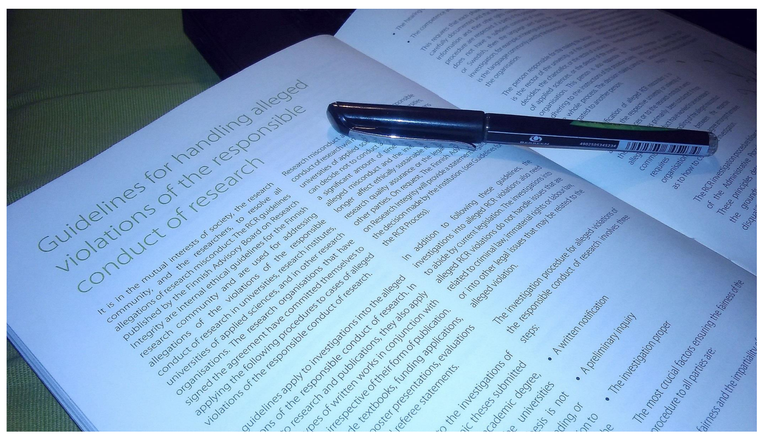


I. Forming and implementing RCR bottom-up: RCR in the context of open research collaboration, cases NMR Lipids blog, Polymath project and SOMUS project.
II. Forming RCR top-down: the case of the Finnish Advisory Board on Research Integrity and its RCR guideline.
III. Implementing RCR top-down: the case of the Finnish research community and its process for handling suspected research misconduct

The primary sources used in this research consist of archival documents, interviews and online materials, such as blog content. The chosen methodological approach is multidisciplinary, drawing from many traditions, including social science history, sociology, digital humanities, even legal science. For discovering the power relations behind the RCR defining process I will use conceptual tools such as field theory and discourse analysis. Theorizations on oral history provide guidance in both conducting and breaking down the interviews. Contextualization and building comparisons are central to every social science historians toolkit.

HANDLING OF RESEARCH MISCONDUCT IN FINLAND

Drawing the line between good and bad in scientific practices in Finland has since 1992 been the responsibility of the Finnish Advisory Board on Research Integrity (FABRI). Practically the entire Finnish research community has committed to following its guideline, the *Responsible conduct of research and procedures for handling allegations of misconduct in Finland*, through signatures from all of the major research organizations. The Finnish system has no comparison anywhere in terms of longevity and national coverage, making it an interesting possible best practice case for other nations.



While FABRI coordinates what is supposed to be a self-regulatory system aimed at safeguarding the integrity of Finnish research, it is in fact an initiative governed and appointed by the Ministry of Education and Culture. I ask what does self-regulation mean in this context, who regulates whom, how and for what purpose? I claim that the process of defining the RCR guideline offers a unique view to the power relations of Finnish science and more generally to the interplay between state and academia. In order to better understand the Finnish choices and developments and their implications I will draw comparisons to other national systems.

The number of documented instaces of research fraud have been steadily low throughout FABRI's existence: during 1998-2002 there was on average less than three research fraud cases per year, more recently, two in 2010, three in 2011 and five in 2012. A widely publicized misconduct suspicion from early 2016, involving millions of euros in funding, has ignited a heated discussion concerning the FABRI system and whether it is robust and efficient enough. My research aims at evaluating the strengths and shortcomings of the Finnish model and exploring the gray areas of research practices through anonymous researcher interviews.

OPEN COLLABORATION CASES

One argument that is often used to promote open science practices is that they add transparency and therefore the integrity of research. So far we have had very little actual evidence to back that claim up. Open science collaboration projects are living laboratories of RCR. What kind of practical examples and even innovations do the online collaborations offer for the discussions concernign research integrity and open science? The practices of the three chosen cases will be reflected against key RCR documents, such as the *Singapore Statement on Research Integrity* and relevant national guidelines.

NMR Lipids project is an open collaboration research project in the field of biophysical chemistry. The projecte is progressed through comments in the blog and using GitHub organization. The main results are also published in traditional peer reviewed scientific journals. The authorship of these publications in based on the self-assessment of the contributors.

Polymath project (the original) was a collaboration among mathematicians in solving an especially challenging mathematical problem. It was started by Tim Gowers as a social experiment on his personal blog. It has since stemmed several follow-up projects.

SOMUS (Social Media for Citizen Participation) project experimented with and studied ways of conducting academic research openly and transparently, for example by using social media and allocating flexible funding to he Open Research Swarm community to execute microtasks. Free online tools were used for team work and communication during the project.

OPEN QUALITATIVE HUMAN DATA

I am committed to the principles of open science and have adopted an open-by-default attitude towards the outputs of my research. Since my research deals with human subjects, being open requires sensitivity and thorough reflection concerning ethical issues. My research plan has passed an ethical review at the University of Helsinki. I would like to share openly whatever data I can, but there is very little precedent in open qualitative non-anonymized human data. This means that there are many issues to be tackled. For example according to the Finnish Data Protection Ombudsman's interpretation of the Finnish law, so called broad consent given by research subjects to use data related to them for unspecified further research, is not legally valid. This makes it currently impossible for me to archive and share my data in Finland. I am planning on challenging this interpretation by storing and sharing data through Zenodo, a service maintained by CERN and not bound by Finnish law. Ombudsman's opinion, if allowed to stand, will significantly hinder researchers of contemporary history from participating in the open data community and its discussions.