

COGNITIVE SCIENCE SERIES
RESPONSIBLE RESEARCH AND INNOVATION SET



Volume 3

**From Ethical Review
to Responsible Research
and Innovation**

Sophie Pellé and Bernard Reber

ISTE

WILEY

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Responsible Research and Innovation Set

coordinated by
Bernard Reber

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Foreword

The third volume of this set of books continues with the reflection initiated on *responsible research and innovation* (RRI). Several aspects make it different from the previous two. Firstly, it presents several case studies: research projects, an inclusive assessment for the evaluation of controversial technologies to sociopolitical experiences recruiting up to 126 European citizens to evaluate whether research on the brain should be promoted or avoided. Offering a strong philosophical consideration (both political and moral philosophy), it provides one of the most comprehensive descriptions to date of works on RRI¹. Project GREAT is considered to be one of the most highly theoretical projects among those funded to compile good practices with regard to RRI across the world and to outline guidelines and indicators. This work is therefore favorable toward human and social sciences (HSS) since few philosophical works focus on this new concept. This series has

1 In several chapters, mostly Chapters 3, 4 and the first part of Chapter 5, more developed versions of reports are written by authors of this book within the framework of the project *Governance for Responsible Innovation* (Great); see: <http://www.great-project.eu/consortium/The%20Project/about-short>, accessed December 10, 2015. This project was funded by the Seventh Framework Programme of the European Union (programme for research, technological development and enhancement, contract No. 321480). We extend our appreciation to all members of the project and specifically to Robert Gianni and Philippe Goujon. We greatly benefited from the intelligent comments of Vincent Blok and Victor Scholten regarding the second part of Chapter 4. Philippe Bardy helped in drafting the above mentioned reports. We extend our gratitude to Pamela Gorini, project manager with the European Commission, who helped in verifying the accuracy of Chapter 1. Special thanks go to Virgil Cristian Lenoir who first reviewed the work, as well as to Richard Owen for his request to publish the results of project Great, especially those presented in this work.

attempted to convene major philosophers working on RRI following a variety of approaches expected to be as broad as possible.

This volume follows an analytical philosophical perspective and has attempted to structure RRI secondary research fields since they already proceed with a critical view or defend under different formulations the way it is briefly stated in research policy documents.

The structure chosen, which is also an originality of the book, directly reflects responsibility, much like the famous phenomenological invitation of Husserl and Merleau-Ponty to go “to the things themselves”. Indeed, we may be surprised, yet very little work or studies on RRI take the time to explicitly illustrate the powerful concept of responsibility, even when the aim is to promote such concept. Why not to be confident with the moral concept of responsibility letting it guide us?

There are two possible reasons why these various approaches dread such issues. The first is work sharing, which assigns the description of what is to certain sciences and confide to others to define what ought to be? And yet, responsibility does not content itself with this work sharing, which, if it provided a part of truth, is also an easy way out, or even make sure that the study of value judgments or normativity by HSS is quarantined as stated by the sociologist, Raymond Boudon [REB 11a].

The second is the fear of being arbitrary in choosing one conception of responsibility rather than another. We will demonstrate that we may well move toward the definition of different meanings of responsibility, at least 10, inspired by moral philosophy resources, without imposing a particular definition rather than another. These choices shall then depend on application contexts and the levels of quality we want to achieve. We could even say that these choices depend on circumstances as argued by Cristian Lenoir in Volume 1 of the set, seriously considering interdisciplinarity requirement and rationalities of spheres involved, including economic, political, ethical or scientific.

Our pluralistic approach will have the advantage of going through a moral innovation in several stages. First, we shall show how responsibility can be incorporated in the world of research and innovation. Then, we shall see through the recognition of different meanings of responsibility (10 types discussed on page 70) that some are more positive while others are more negative. The choice of a particular definition will therefore be important to reduce the tension between innovation and responsibility. A third level of

moral innovation shall be that concerning the compositions of different conceptions of responsibility, observing different sharing according to contexts.

The advantage of “going toward” responsibility is that it would not be overlooked, interfered with or diverted by other aspects as some of its components. The European Commission has precisely chosen to focus on a particular RRI pillar in order to present RRI based on six pillars. This will be discussed in Chapter 2.

Another originality of this book is to link RRI with ethical reviews (ERs). These are mandatory for any European project funded by the European Commission. And yet, it is surprising that works on RRI do not mention these ERs, whereas they may well be discussed through the existence of an ethical pillar in RRI. Moreover, Robert Gianni in his book, which is the second in the set, chose this pillar, which has become the keystone to all the other pillars. He chose to defend freedom. Here, we will elaborate on the possibilities of ethics with regard to substance, problems identified in research and resources to reflect on and justify them.

We shall, however, discover that these ER are ethical in name only. Indeed, each funded researcher is not given the choice to respond or not. They fall under the law. Under the subject covering the relationship between law and ethics, we shall discuss the need to structure the ethical levels we are talking about including the different moral theories. Here, we will also defend a pluralistic approach, a third way between monism, which only defends a theory or set of hierarchical values and relativism, which is based on something other than the normative dimensions discussed to avoid talking about it.

Despite these limitations, ER and RRI could support one another. In this way, ERs might be more responsible inspired by resources of moral responsibility and not only law. Certainly, we shall see that they do not have the same views about ethics. RRI has a broader view of things, capable of questioning research policies and the use of technology, whereas ER sticks to the protection of people – including researchers – or animals involved in research as well as the environment, places (and thus applicable laws) where such works are carried out and dual use or misuse.

Alongside this well-established ER practice, not only within the European Commission but also in many research institutions, we have also utilized works on participatory technology assessment (PTA). They have over 30 years of experimentation, and have produced more than 50 participation

procedures and devices. This endowment has to invigorate the first RRI pillar: the participation of stakeholders and/or citizens. PTA is much more advanced since it can provide criteria for assessing the quality of debates. As for ERs, PTA must be part of the scene when RRI enters without having to reinvent the wheel. PTA could also be more consistent and achieve better quality if reconfigured by responsibility. Based on its various meanings, responsibility will be embodied differently, both in participants' choice of assessment and in the way mechanisms break down responsibilities according to their phases in the process.

We clearly attempted in this work to distinguish participation from deliberation, which is often confused in the literature. We advocate a linkage between a double deliberation, we should be ethical, relating to problems to be solved while taking into account ethical pluralism, and the other collective, focusing on cooperation procedures among participants, with differentiated or non-differentiated responsibilities.

The next work in the set will provide a more theoretical re-examination of all these issues relating to an ethical, political and interdisciplinary deliberation, under the two constraints of ethical pluralism and meta-principle of precaution.

Bernard REBER
April 2016

Introduction

Could and should research and innovation be responsible? The question is now asked, especially in Europe, with regard to the concept of *responsible research and innovation* (RRI). However, research and responsibility do not seem to belong to the same world, nor have the same requirements. The issue of knowledge versus ethics is almost as old as Plato's opinion when he felt that science was coming to a consensus more easily than ethics, or to put it another way that ethical disagreements could separate the best of friends. Things have changed since the end of World War II. The errors of this disastrous period, and also the power of new technologies, sometimes accompanied by controversies broadcasting in the public sphere, have started to blur this separation between science and ethics.

A closer look shows that research and innovation already comply with many types of responsibilities that we will need to explain. What is new with RRI is that the choice of research and the way it is conducted is now implemented more reactively (*responsiveness*). If this is already true for innovation, research must still strive to improve its responsiveness, both for these choices and means.

However, another form of responsibility, specific to research ethics within the framework of projects financed by public funds, particularly European, is not endowed with reflections on RRI. Besides, how did such a conception come so abruptly to some like a thunderclap?

The 20th Century witnessed an unparalleled development of science and technology, and also the emergence of new issues and challenges. Climate change, discovery of nuclear energy, bovine spongiform encephalopathy scandal or exploitation of genetically modified organisms (GMOs) have

resulted in mistrust and, in the latter case, sharp resistance from European citizens. These controversies and upheavals have increased the need to think of new ways to support and “govern” technological and scientific development.

In the 1970s, various technology assessment (TA) methods were developed to guide technoscientific progress, help governments to better anticipate the social consequences of science and technology and enable citizens to better understand developments. Human and social sciences (HSS) researchers, sometimes in the form of expert committees, have been assigned the task to identify ethical issues and suggest possible answers. Leading bodies of this movement, including institutions such as the *Office of Technology Assessment*, created in 1972 in the United States, the Danish Board of Technology (created in 1986) or the *European Parliamentary Technology Assessment* (created in 1990) were established, with the task of advising parliamentary institutions faced with new scientific and technical challenges. These tools designed on the basis of critical reflection of selected experts helped to determine, in addition to purely technical assessment, some previously neglected ethical issues, and to suggest elements of response that could assist authorities in their decision making. Also based on expert assessment, bioethics committees were formed to try to discuss difficult issues in the (bio) medical field. These committees often including lawyers, theologians, religious experts of recognized denominations and medical field actors strive to offer a serious reflection on complex subjects usually found at the borderline between life and death.

However, the 1990s added new concerns: the need to *include* civil society and *involve* various stakeholders. The hegemony of assessments performed by experts, ethics committees or analysis from social sciences researchers has become an object of criticism. What has been challenged is not so much the moral validity of efforts that these mechanisms mobilize, but the fact that they emanate from an overhanging perspective, impervious to how ordinary citizens assess technologies or research. For this reason, these experts’ analyses are now seen as insufficient resources to appraise the social acceptability and ethical desirability of science and technology. Since ethics committees only inadequately represent and reflect values and value systems of the members of society, they could not be the only source of fundamental normative decisions.

Eventually, TA methods have evolved to integrate participatory approaches in an attempt to incorporate the progress of science and technology in a more democratic framework. This is illustrated, for example,

by mechanisms such as PTA or interactive technology assessment. These mechanisms enable society actors not only to discuss but also at least test their values, or other moral elements (such as their moral intuitions, principles or standards on which they base) and even, in some cases, to shape the development of technology. Inclusion becomes a way to expand all the normative elements on which decision making is based (stakeholders value systems and not only of experts presumably representing them) or more generally to represent different areas of expertise.

Moreover, inclusion mechanisms help to reveal value conflicts or normative systems differences that exist between social actors – even in cases where individual responses to technological change simply show indifference. By revealing the various “valuations” (as seen by Dewey) of individuals, it becomes possible to initiate conflict resolution processes, without the actual need to aim at consensus only.

This new “social contract” between science, technology and society [OWE 13] has become a central element of science governance, presumed to reduce business failures, public reticence and major environmental, ethical or social damages. More generally, the idea prevailed that these new forms of governance could increase economic efficiency and above all political legitimacy, social acceptability and ethical desirability of science and technology. Different directions were followed, starting from different variants of TA, constructive TA and real-time TA, moving toward value sensitive approaches (*value sensitive design*), and passing through risk assessment, precautionary approaches or *new and emerging science and technology approaches*. It is also worth mentioning that in addition to these participatory approaches, some reductionist conceptions of ethics persisted, embodied by assessment of Ethical, Legal, Social Impacts or Aspects (i.e. ELSI or ELSA approaches) that emerged in the 2000s during the controversy over the development of genomics.

The RRI concept is therefore based on a long tradition of theories and practices promoting in various ways science and technology governance, which is not exclusively attributed to experts and decision makers. There are two other theoretical corpuses, although most RRI may not make reference to them, which equally opened the way for a method of considering ethics and responsibility, in the shaping of technology and innovation: corporate social responsibility (CSR) and sustainable development. CSR offers a framework for reflection to corporate stakeholders and a set of standards to take into consideration, in addition to their main goal – achieving profit – their impact on society, stakeholders involved, their environment and to adapt their

actions¹. Sustainable development brings together a heterogeneous set of theoretical practices and approaches that agree on the need to conserve resources (natural, human and social) threatened by our production, consumption and current trade practices.

Based on the participative turn that we discussed above and within the tradition of a more democratic governance of science, the idea of “responsible research and innovation” emerged [OWE 12, OWE 13a, OWE 13b, HEL 03, GUS 06, VON 11, VON 12, VON 13, STI 12, GRU 11]. This new concept was first introduced in the EC, in May 2011, during a workshop organized at the Directorate General for Research in Brussels. Shortly after (on May 23–24, 2011) another international conference, which was held at the Embassy of France in London, also gave way for a discussion on the bases of European approach to RRI, centered on the early involvement of civil society and the alignment of science and technology with the values of society.

RRI has been presented as a central element of research strategy program for 2020 (H2020) and several research projects have been funded to explore the concepts and tools². Meanwhile, the normative assessment of European Commission’s scientific projects remains committed to ethical reviews (ER) and is not yet organized around RRI. ER, discussed later, correspond to the process by which scientific projects are self-assessed and evaluated by ethics experts before validation. These evaluations are structured around several ethical themes (bioethics, ICT, experiments on human beings, etc.). The details will be outlined in Chapter 1.

Since moving from one to the other is sometimes mentioned, studying the comparison between these *ER* practiced by the EC for scientific projects and RRI concept stands as one of the primary objectives of this work. With regard to this, Chapter 1 details the content of ER such as currently designed by the EC. We shall see that these *ER* are very close to law since they mobilize quasi-legal standards (related to national and international legal standards of several levels of significance) that researchers must observe. We shall notice that even if they cover a wider range of issues (such as the relationship, essentially ethical, of human beings with their environment or toward animals), part of the reflection and justifications of the ethical work is

1 See [GIA 16] and especially [PEL 16b] in this series for more details on the relationship between RIR and CSR.

2 See Res-AGorA projects, RESPONSIBILITY, GREAT, CONSIDER and calls for projects such as [COM 13], for example.

still left hanging. In some way, they remain on the ethical sphere threshold. They could therefore be more responsible by moving from a solely legal responsibility to moral responsibility. We could understand both parts of the title of our book, research ethics and innovation, as responsible in the title of this book.

Chapter 2 presents and analyzes two different approaches to RRI proposed by the EC; on the one hand, in the form of six pillars, and through academic literature, and on the other hand, in the form of five conditions. By entering into the details of these approaches and what they promote, it becomes possible to differentiate ER and RRI. Moreover, this chapter discusses at length one of the essential conditions/pillars of RRI on which all its promoters agree: the involvement of stakeholders and civil society members in research and innovation. However, we see that this pillar raises many challenges, primarily related to underdetermination of theory presently affecting the concept of participation within RRI approaches. Moreover, participation and deliberation are often poorly differentiated, the specific mechanisms through which “social values” can influence the development of research and innovation are left in the shadows and the criteria for assessing the quality of a deliberative process are ignored by RRI proponents. We defend the idea that a detour through deliberation theory (philosophy and political theory) may be useful in better thinking inclusion within RRI and contours of deliberation.

Chapters 3 and 4 attempt to fill other blind spots of RRI approaches: although the concept of “responsibility” is at the center of these approaches, there is no reflection about this concept. In effect, for the moment, the literature on RRI is based on conditions and/or objectives that innovation and research processes must meet and pursue. Yet, no study actually discusses what responsibility really means.

Chapter 3 presents 10 conceptions of responsibility that can be put forward by moral philosophy and completely discusses the first three of these conceptions. From a distinction between negative and positive meanings, we analyze the limitations of interpretations of responsibility based mainly on fear of punishment (as in the case of criminal culpability). Using several examples, we also look at the possible links between individual and collective responsibility.

Chapter 4 then proceeds with a detailed discussion of the remaining interpretations of responsibility (mostly positive) to show how they can be useful to RRI approaches. Beyond the only issue of positive versus negative,

this will involve suggesting some avenues for reflection regarding possible links between different conceptions to help the various RRI actors to develop their own interpretation of responsibility.

Finally, Chapter 5 involves testing RRI and particularly its governance mechanisms through several examples. First, we analyze four scientific projects (European and French) regarding their relationship to ethics, governance tools, conception of responsibility and inclusion mechanisms, which they do or do not mobilize. These examples illustrate different relationships to responsibility and various inclusion levels and quality. Second, we shall discuss two previous deliberative experiences in order to clarify what may work for RRI and also the difficulties encountered by concrete projects when seeking to involve stakeholders or ordinary citizens. The concept of RRI is sometimes considered an achievable goal, or an oxymoron, because economic and technological forces at work in innovation and research dynamics would prevent any possibility of real and argued ethical debate on responsibility. This chapter aims at showing how the oxymoron could be dissolved and by what mechanisms.

Before getting to the heart of the matter, it would be necessary to make one last comment on the terms “innovation” and “research”. The two processes feed off each other. They are however distinguished by several important aspects from the perspective of responsibility. In effect, their temporality is not the same. Research time, which is less connected to the need for the marketing of a product, is sometimes much longer than that of innovation. Moreover, time which corresponds to the evaluation of research can itself also be very long. Taking GMOs, for example, the time required for a robust understanding of the impacts of these technologies on the environment and health is not the same for their production (innovation). In addition, the *ethical* assessment time required to research their long-term *in situ* impacts also often exceeds that of innovation. This work generally takes both processes into account. However, since the work specifically provides an analysis on how the EC assesses and supports funded scientific projects, it does not discuss in detail the specific characteristics of innovation and their implication for a conception of responsibility³.

3 A future work in this set of books by Xavier Pavie will explore this.

Research Ethics Expertise

1.1. Introduction

Research ethics can cover very different types of problems: researchers conduct in their work, publication of their results, precautions to take against those involved in experiments, right up to results, reflected by the invention of new processes or technologies that may fundamentally alter societies or environments in which they will be transformed into innovations. Different ethical concepts shall therefore be applied according to the research activity considered, sections which are ever more complex and collective. We shall, for example, talk about integrity in research if we consider the individual conduct of researchers in their investigations and the publication of their results. We shall apply other conceptions, from bioethics with its lists of principles, to appraising a collective project in biomedical research in order to protect people and sick or healthy patients who are vulnerable or not. We may further expand the scope if we focus on good ethical practices relating to the use of nanotechnology.

If the emerging responsible research and innovation (RRI) conception is close to research ethics by the opening of scientific practice to stakeholders and anticipation on the use of research results, not just considered in the light of their commercial expectations, it should however not overshadow what already exists in ethics as expectations with regard to research practices. Indeed, to our knowledge, works on RRI are developed alongside, or in ignorance of *ethical reviews* (ER) which have nevertheless been required for several years now. In addition, they can be backed by a number of national European and even international legal texts.