RESEARCH MISCONDUCT AS WHITE-COLLAR CRIME

A Criminological Approach

RITA FARIA

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Introduction: 'I Committed Scientific Fraud, I Changed and Invented Research Data'

> 'Good afternoon, my name is Diederik Stapel. So, the first question could be: do you know me? And, unfortunately, for all the Dutch people in this train, you probably say 'yes, I know you'. But we never met, I don't know anyone of you, so I guess the conclusion should be: you know of me. You've read about me, you've seen me on television, but you don't know who I am. So, who am I? I'm Diederik Stapel, I committed scientific fraud, I changed and invented research data and, by doing that, I jeopardized the careers of many of my colleagues and I betrayed their trust in me. And I caused them pain and sorrow. That's who I am. Today. I invented data, I was fired from the university and I spent two years at home, being dazzled and confused, with pain and sorrow, and trying to understand what I did and what happened.'

These are the transcribed words of Diederik Stapel in the first seconds of a talk he gave in his first public appearance in two years,[1] after being accused of research misconduct (henceforth RM). The Stapel affair and others have been widely covered not only by the specialized scientific

[1] Available in Youtube: "Diederik Stapel on the Brain Train – What I lost and the importance of being connected", assessed August 2017.

media, but also by more generalist media like the BBC, and have brought 'fake research' to the front stage (Briggs 2017), or called Stapel a 'serial fabricator of data' (Jump 2015) in a clear analogy with serial criminals. In 2010, Stapel was accused of publishing 55 fraudulent papers and was fired from the University of Tilburg. A report from the three universities where he had worked shows how, over the years, the social psychologist pretended to perform research and collect data that never existed (Levelt et al. 2012). Nonetheless, Stapel ranks third on the Retraction Watch Leaderboard of retractions and is not an isolated instance. The cases of H. Schön (Reich 2009), H. Woo-Suk (Kakuk 2009), Poehlman (Dahlberg and Mahler 2006), and P. Macchiarini (Enserink 2016), have been widely cited. What the Stapel affair has brought to light is the concern over RM for Europe and for a wider audience.

With RM considered a form of misbehaviour or an infraction to a set of rules, eventually leading to formal and/or informal sanctions, it seems more than clear that criminology should play a role in producing empirical knowledge and formulating theories and concepts in order to best understand it. The main purpose of this book is, thus, to argue that criminology is especially well equipped to understand and research the topic of RM (and its counterpart, research integrity, or RI). Only timidly has criminological research been opening up to try to understand this particular form of deviance taking place inside laboratories, scholars' offices, and editorial boardrooms, rather than on street corners or in problematic neighbourhoods. It will be argued that criminology holds the conceptual and methodological tools to research this form of professional misconduct, especially by building on the study of occupational crime and deviance, as well as as organizational crime and deviance, usually a segment of the broader field of white-collar crime. Like other criminal and deviant behaviour, RM is assessed in conjunction with written or unwritten rules of conduct, with such rules being applied to specific groups of people interacting with their proximal and distant environment. Similarly to other criminal and deviant activity, RM may originate negative social reaction, in which case specific episodes and/or actors are selected by formal and informal social control mechanisms to suffer sanctions. In parallel with growing claims for the criminalization of some forms of RM, formal and informalsanctions have been applied

to actors considered to have committed different forms of RM. The deterrent or stigmatizing effects of such sanctions are being discussed, as well as their consequences in recidivism and prevention of future acts. Potential harms caused by fraudulent research have also been debated.

The book that follows intends to offer an analysis of RM in Europe, integrating it into the specific criminological strand of occupational and organizational deviance scholarship. Studies of occupational and organizational misconduct, usually part of the wider field of white-collar crime scholarship, have stressed the need to analyse individual factors, as well as organizational and systemic ones, to better understand a range of misbehaviours occurring at the heart of legitimate professions. This integrated analysis of different levels is key to helping make sense of why some people and organizations who seem to have a lot to lose end up committing harmful acts. It will be argued that this same rationale should guide the study of RM, or, in other words, the study of misconduct in research, committed by professionals in the course of their legitimate occupations while interacting with respected organizations in current societies.

As will, it is hoped, become clear in the following pages, RM has been a topic of study in a multitude of scientific areas, and while theoretical and empirical debate has been wide, empirical research on the topic is only now becoming more common. Even so, it remains scattered through different scientific fields, lacking in-depth and comprehensive approaches and theoretical explanations of why it occurs. RM may also be considered an epistemic analyser, or an apparatus for analysis (Agra 1986), in the sense that it may be seen as an element of the scientific system whose features and evolution help convey the development of the scientific endeavour during the twenty-first century in Western countries. Studying RM may also be an exercise in meta-research, by which researchers have come to evaluate and improve scientific research activity (Ioannidis et al. 2015). By looking at RM, one comes to understand the wider picture that surrounds fraud or questionable practices when performing research. This implies looking at a complex landscape, the one of scientific research in Europe, that seems to have been taken for granted for a long time and is now shaking on its foundations. In order to fully understand why some people commit

RM, one has to look more deeply and go beyond the 'bad apple' theory and into the wider system of twenty-first-century science (Drenth 2015). This means considering the reward systems of scholars, laboratories and departments; financial constraints and competition for funds; organizational features of present-day universities and research centres; prevention and sanctioning mechanisms of misconduct; scientific journals and their editorial and commercial criteria; the collapse of the traditional peer-review system and of the idea of science's self-correcting nature; the crisis of reproducibility; open-access movements; social impact of scientific research; social harms caused by fraudulent research; and so on.

At this point, readers who opened this book in search of criminological white-collar theories and concepts applied to RM may be becoming more and more uncomfortable. Some readers, while experts on markets, financial institutions, regulation and governance, and the like, may not feel prepared to now look into science and its broad context. On the other hand, readers from non-criminological fields, more used to descriptive studies about misconduct, will start to scratch their heads, wondering why on earth someone would to go so far as to open the scope of enquiry to debate, for instance, stigmatization, social control, or the like. What is more, readers may not be fully convinced about the pertinence of studying researchers and universities in the same way that corrupt politicians, or wealthy and greedy CEOs, have been studied. Nonetheless, the book may be of interest to, and considered ground-breaking by, criminologists, especially those concerned with white-collar crime and occupational and professional deviance, who will become familiar with a new topic of research, that is, fraudulent science. It will also be a valuable resource for those who have no criminological background but are interested in RM and ways to prevent and regulate it. As such, the book may be of interest to all those scholars (both junior and senior), researchers, scientific managers, and decision-makers concerned with issues surrounding the research endeavour and, especially, RM. Given that the results to be presented draw from and may be applied to any science and discipline, the conclusions may be useful across disciplines. In particular, the research and conclusions to be presented could be used to better orient the content of training materials

for prevention of RM, in the sense that, being founded on the collected data, they point to meanings, processes, and strains felt by individual actors in organizational contexts, and to the ambiguities and inconsistencies of social control mechanisms currently being developed.

The book thus intends to present the results of an extensive, qualitative study of RM in Europe. The study analysed European scholars' perceptions of and concerns about RM, perceived organizational constraints and modes of adaptation to pressure to produce, lack of resources and alternatives, and competition. The research described in the following pages originated also in an analysis of a set of supra-national formal documents which convey the ambiguities in what is and what is not considered wrong in research, as well as protected interests from multiple actors in the field, including policy-makers. From this analysis, a point will be made about the political efforts to curb RM as a potential risk generated by the opening of the European scientific market.

The book will be divided into the following sections. Chapter 1 will make the case for criminology to study RM, while using what has already been produced to investigate other types of occupational or organizational crime and deviance. Empirical studies and theoretical developments will be presented, and a final section will argue about what criminology would gain from researching this type of misconduct. It will be claimed that using RM as topic of criminological research would greatly add to criminology's social utility and offer a critical approach to some of the most pressing current problems surrounding science.

Chapter 2 provides an overview of what RM has been considered to be by the relevant scientific literature. As will be shown, debates about definitions and content of RM abound. Acronyms and abbreviations such as FFP, QRP, and CoI will be presented. It seems to be agreed that there is no consensus on what RM is, or about its causes and consequences. The lack of evidence about such causes and consequences probably stems from the fact that empirical research is still sparse. Existing social control mechanisms of RM, especially in the USA and Europe, will also be presented by way of reviewing what other scholars have produced on the topic. Some results concerning the peer review

system, especially its frailties, as well as research and the efficacy of education towards integrity in research, or responsible conduct of research, will be presented. Limitations and bias in existing formal and informal social control mechanisms will also be offered.

The next chapter will describe, although briefly, the methodological choices and challenges presented to the author while conducting her research on the topic of RM. For a junior scholar, researching at 'home' (instead of in shooting alleys or youth courts), and interviewing older and more powerful colleagues, raised some issues that had to be tackled concerning reflexivity and immersion in the field. It will be argued that 'researching up.' within organizational professional settings and using qualitative methods with professionals are also matters of concern for white-collar crime scholars.

Results of the empirical investigation will be presented in Chapters 4 and 5. First, the perceptions of RM conveyed by scholars will be offered; here, it will be possible to visualize the range of behaviours and situations that scholars problematize as comprising misconduct. From different types of plagiarism to conflict of interest (henceforth CoI), accounts of interviewees will be provided. Then an in-depth analysis will show the organizational mechanisms constraining individual action that may lead to RM. Chapter 5 will specifically provide insights into existent and non-existent social control mechanisms for preventing, detecting, and sanctioning RM. The analysis conducted will reveal the ambivalences and incongruities found in Europe to control a perceived risk (misconduct) whose features scientific stakeholders know little about, but feel may endanger the project of opening up the European scientific market.

The final chapter will go on to discuss the need for further research on RM and its potential social harms, and will present proposals for intervention. The central argument of the book, that RM should be considered a topic for criminology and studied by means of using tools familiar to white-collar, occupational, and organizational crime and deviance scholarship, will be stressed throughout. Future paths of criminological enquiry will also be proposed, together with suggestions for changes in the scientific system in order to intervene in and eventually prevent future RM.

At the end of this book, it is hoped, readers will conclude that there have been some efforts to produce systematic accounts of RM. Moreover, some valuable criminological works have proposed it as a topic of enquiry. Nonetheless, this book is, to the best of the author's knowledge, the first attempt at an in-depth study of RM from a criminological standpoint, looking at perceptions about problematic behaviours and situations, definitional ambiguities, organizational context, proposed mechanisms for its social control in Europe, and the current status of European science in a competitive and globalized world. Moreover, all this will be made possible by the conceptual, theoretical, and empirical tools developed by white-collar, occupational, and organizational scholarship.

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1

Why Should Criminology Study Research Misconduct?

In this chapter, the need for a criminological approach in order to study and better understand RM will be defended. It will be argued that criminology is especially well equipped, from a theoretical and methodological point of view, to produce empirical knowledge about RM, and to sustain theories about its causes, processes, and harms, as well as about the formal and informal social reactions to it. Specifically, much of what has been produced about white-collar crime, in its sub-dimensions of occupational and organizational crime, may be applied to the topic of RM. In fact, much has been written about deterrence, sanctions, and rules, as well as about the causes of this kind of deviance—and most of these accounts, to be presented in Chapter 2, have been conducted by scientific fields outside criminology. Nonetheless, criminology is the disciplinary field better prepared to debate and study numerous dimensions of transgressive, deviant, or criminal behaviour. Moreover, while criminology has produced research on the topic, although timidly, research on the topic of RM is still widely concentrated in other disciplinary fields. For this reason, the book will argue for the need for criminological knowledge about these issues, and in this respect it identifies an area of criminological intervention and research still to be systematically explored.

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It will be shown that there is ambiguity not only about what is considered problematic about RM, but also about who is concerned with the situation. At the same time, an 'infra-penality' (Foucault 1975) seems to have been in the making over the past few years, at least in Europe. This 'infra-penality' refers to the diversity of rules and regulations, and disciplinary measures applied to the scholar, currently in place for tackling RM. This statement also enables a preview of the main results of the research to be presented in the chapters that follow. This chapter will, firstly, summarize some of the studies produced in the criminological field about RM, but also pinpoint its current limitations. Secondly, several analogies will be made between researching RM and other topics typically falling under studies of white-collar crime: comparisons will be drawn with conceptual conundrums, methods of research, the interaction between professional or occupational roles and organizational settings, ambiguity in rules and regulations, social control, and harms and victimization. Before all that, however, a brief reflection will be provided on what, precisely, this thing called criminology is.

1.1 The Relevance of Criminology

As will be shown in the next chapter, RM may comprise fabrication and falsification of data plagiarism, as well as other questionable research practices (henceforth QRP). It thus has to do with specific forms of misconduct committed by specific professionals at the heart of a concrete professional activity, scientific research, which, in turn, usually takes place within legitimate professional and organizational settings, such as higher education institutions (henceforth HEIs). In criminology, the topic of RM has been slowly but steadily entering the realm of enquiry. Nonetheless, if one wishes to review criminological literature on the subject, some questions about what criminology is should first be posed. Its epistemological frontiers with other fields are quite flexible, and, for some authors, criminology may be seen both as a field of study and as an activity of knowledge production (Pires

1995). In the first case, there are several scientific disciplines producing knowledge on a shared theme: understanding crime and crime control. In the second case, criminology is regarded not so much as an autonomous science, but more as a disciplinary field sharing its topics, methods, and domain of enquiry with other sciences, such as psychology or sociology, but also with law and ethics, while embracing an autonomous process of institutionalization and of academic and professional scholarly activity.

Garland (1994) considers criminology to be 'a specific genre of discourse and inquiry about crime' (p. 7) that has emerged during the modern period owing to the convergence between what may be called a scientific project (as initially proposed by Lombroso) and the governmental project. The first promised the possibility of producing empirical knowledge about the causes of crime and the criminal man; the second project aimed to understand patterns of crime in order to assist the criminal justice system. However, recent changes in the 'landscapes of crime, order and control' (Loader and Sparks 2012, p. 4) have demanded new epistemological and theoretical reflections about criminology's expansion in different dimensions, including its growing autonomy, meshed with a lack of paradigmatic unity, as well as national particularities (Swaaningen 2006). This lack of unity had already been recognized in the sense that, since the appearance of labelling theory, criticism has been showered over the positivistic (and neo-positivistic) traditional approaches to the study of crime and deviance. Instead, new research was showing that 'there was no objective reality to reflect, only a process of ongoing action and reaction, of contested meaning changing with audience and meaning' (Ferrell et al. 2008, p. 37).

It is not intended to provide an overview of epistemological debates about the scientific status of criminology, or of its historical development over the last 200 years, and it suffices to say, for now, that the definition of a criminological study or research is open to discussion. Nonetheless, the present work (along with the empirical research to be offered in the following chapters) does conclude that RM should be considered a topic of research for criminology. One last word on the complicated issue of what criminology is and whether RM should be

considered one of its topics of enquiry: by assuming that crime has no ontological reality, and that deviance is in the eye of the beholder (Becker 1966), this work on RM shares the idea that studying it has to 'take into consideration the social processes that problematize scientific practices (behaviours) as not acceptable or deviant' (Buggenhout and Christiaens 2016, p. 3). Or, as Hulsman (1986, 1998) puts it, one should understand that, rather than crime or deviance, there are situations, and that these are interpreted differently, with some being interpreted as problematic by some of those concerned with them. The actors engaged in problematization of RM, as well as the meanings assigned and mechanisms operating to problematize RM, are at the core of the empirical research to be presented in Chapters 4 and 5.

What results is that, if one regards RM as a situation or set of situations that may or may not be considered problematic by different actors, one will not only be interested in looking at patterns of behaviour, incidence, or prevalence. One will also be interested in enquiring about how all those who intervene in the scientific system, all those who take part in the process of attributing meanings and all those who construct social processes, such as naming and reacting (eventually through shaming) or not reacting at all to RM. This is especially true when such processes occur inside legitimate organizations and in accordance with professional and deontological rules and, thus, within specific frames of subjective interpretation of individuals who are influenced, to some extent, by their organizational surroundings (Crozier and Friedberg 1977). More recently, Hillyard and Tombs (2004), arguing for zemiology instead of criminology, have continued criticism of using the notion of crime, replacing it with the Social Harms approach. This states that there are situations and behaviours worth studying even when they do not count as crimes, simply because such situations and behaviours cause harms and because crime is the product of power relations that, in turn, are not sufficiently focused upon by traditional criminology. The final pages of this book will help to explain the usefulness of this approach by framing the consequences and relevance of the topic of RM.

1.2 Criminological Studies of Research Misconduct

In this section, several authors in the field of criminological enquiry will be presented who have already produced insights or studies on RM. Thus this book does not offer a new criminological account of RM; what it offers is a systemic and complex criminological approach to RM, in effect the first of its kind, by means of integrating its study with white-collar, occupational, and organizational scholarship. It is intended, then, to show that criminology authors and researchers should persist in their attempt to study RM in its various dimensions, and, similarly, that RM may prove to be a new and innovative topic of research for criminology, one by which it will continue proving its usefulness and social relevance. Likewise, criminology, especially occupational and organizational scholarship, has the necessary conceptual, theoretical, and empirical tools to help reveal more about this specific type of misconduct or misbehaviour taking place in scientific research, especially at a time when there are growing claims that RM should be considered a crime and dealt with by means of formal social control mechanisms.

While Merton with his anomie theory is mandatory reading for all those wishing to understand some forms of street crime, this author also dealt with RM and the scientific endeavour. He believed that there was an effective system for policing science through peer review, and that the rules of organized scepticism, disinterestedness, universalism, and communalism not only helped achieve the goal of creation of certified knowledge, but were also simultaneously associated with what is 'believed right and good' (Merton 1973, p. 270), shaping the scholar's ethical, moral, and professional behaviour. Nonetheless, some dysfunctional consequences may appear if, and when, scientists emphasize originality and priority of discoveries over those rules, especially when the race for priority and novelty (eventually by means of publication) is considered an end in itself instead of a path for advancing scientific knowledge. In other words, Merton recognizes the existence of a pressure to win which is distributed differentially according to opportunities

available in science's social structure, in such a way that the 'great concern with the goal of recognition for originality can generate a tendency toward sharp practices just inside the rules of the game or sharper practices far outside' (Merton 1973, p. 308).

While Merton acknowledges the existence of situations of data forgery (considered to be the most serious form of RM), as well as data trimming and cooking, he deems them to be less frequent than minor forms of fraud, such as plagiarism. Nonetheless, allegations of plagiarism may be used as weapons for power-plays inside academia: 'Reinforced by group loyalties and often by chauvinism, the controversy gains force, mutual recriminations of plagiary abound, and there develops an atmosphere of thoroughgoing hostility and mutual distrust' (Merton 1973, p. 314). The author goes on to criticize milder forms of deviance, such as the 'itch to publish', exacerbated by quantitative rankings. While peer review should be considered the correct way of policing science, Merton does not deny the potential for bias, malpractices, and CoI of reviewers and editors. If, on the one hand, '[T]he culture of science is … pathogenic' (Merton 1973, p. 323), on the other, the author seems to be a firm believer that, and contrary to what happens with anomie in society (Merton 1968), in general:

> the institution of science continues to have an abiding emphasis on other values that curb the culturally induced tendency toward deviation, an emphasis on the value of truth by whomsoever it is found, and a commitment to the disinterested pursuit of truth. (Merton 1973, p. 321)

In contrast to Merton, other authors using criminological studies and theories have outlined the frailty of formal and informal social controls in scientific research, and the need to create situational prevention mechanism in science (Adams and Pimple 2005; Ben-Yehuda 1986; Ben-Yehuda and Oliver-Lumerman 2017; Zuckerman 1977). Authors conclude that most situations of RM have offered opportunities for offenders owing to poor effective supervision (meaning ineffective guardianship), poor social interaction, and poor informal social

control. Prevention of RM could also be accomplished by means of design of an early intervention system, or 'a data-based tool designed to identify officers whose performance exhibits problems, and then to provide interventions, usually counselling or training, to correct those performance problems' (Walker 2003, cit. in Adams and Pimple 2005, p. 234).

Criminological literature has also offered other explanations for RM. Usually, authors dismiss the use of criminological theories that look at individual psychology or features, because some of the features attributed to offenders such as 'imagination, boldness, self-assurance, single-mindedness, and disregard for orthodoxy' (Hackett 1994, p. 247) may also be found in successful scholars. They usually argue for the abandonment of the 'bad apple theory', and insist that 'there are structural, as well as personal, incentives in science to commit deviance' (Ben-Yehuda 1986, p. 3). Thus deterrence of potential offenders cannot be expected to be effective when the probability of being detected and severity of sanctions are low. Simultaneously, pressure (to publish or obtain funding), poor mentoring, and competition felt by academics may lead individuals to commit RM. The scientific system is teeming with pressure, disjunction between goals and means, and moral deregulation caused by weaker rules in a changing environment. For Ben-Yehuda (1986), it is Matza's control theory that should be used to understand how people become deviants when they enter a drift situation created by cynicism in the scientific endeavour. Davis (2003), inspired by Sellin and Merton, considers cultural elements in explaining RM, concluding that cultures exist which place too much emphasis especially on the foreign researcher achieving productivity, even if it involves cutting corners to achieve rewards instead of using legitimate means.

Walker and Holtfreter (2015) go through several theories reflecting upon RM, such as R. Akers's Social Learning Theory and Sutherland's Differential Association. They discuss socialization mechanisms, communication of definitions favourable to RM, the 'publish or perish' ethos causing differential reinforcement, and imitation via mentoring relations. They then consider Hirschi and Gottfredson's Self-Control

Theory, arguing that RM fits the definition of crime provided by the authors but speculating that scholars may have higher levels of self-control than the general population. They thus hypothesize that there are subsample variations within academia. Discussing Routine Activity Theory (RAT), Walker and Holtfreter mention that researchers committing RM are motivated offenders, while a particular problem emerges if one considers that most of the victims of RM are also supposed to fill the role of capable guardians (peer reviewers, colleagues, etc.). Strain Theory could also help explain RM with regard to pressures felt by scholars, such as pressure to publish or obtain grant income, and overall competition.

Vaughan (1999b) has looked into organizations, considered as meso-level structures where scientific research takes place and where techno-scientific knowledge is being produced. The author concludes the following about the role and influence of such organizations in the facilitation of deviance and crime:

> Organizations can complicate and manipulate the entire knowledge-production process: configuring people, objects, technologies and work practices; transcending infra- and interorganizational boundaries by creating an alternate reality of signs and symbols; limiting knowing in some directions while encouraging it in others; valuing some kinds of information and discounting others, depending on the goal; constructing alternate arenas where discourse takes place that define the kinds of exchange that are admissible; requiring classification systems and standardized documents that regiment, restrict and reduce experience and understanding into easy digestible and communicable abstractions from more complex, dynamic interactions and situational logics. (Vaughan 1999b, p. 931)

It is at the heart of such organizations that interactions among researchers are stabilized, with specific social roles and communications. Inside these organizations, strategic options for the professional group are designed, alliances built, power and resources distributed, hierarchies organized, and social control activated. That is why, according to Vaughan, such organizations, also considered as meso-structurers of

knowledge production, have to be understood, for they are the terrain for individual choices and strategies, including possible misconduct. However, organizations also suffer other influences from external and environmental factors. In sum, integral and responsible science does not depend solely on individual choices; rather, it is shaped by the organizational environment. These lines of reflection can already be found in Hackett in reference to professional strategies, as well as organizational and external influences over the research process:

> Within the university, scientist's work fall increasingly under the purview of professional managers, accountants, technology transfer agents, public relations specialists, and development officers. Such interactions also occasion tests of strength between professions wishing to impose their standards on common but contested turf. (Hackett 1994, p. 254)

More recently, Müller (2015), by analysing interviews conducted with Diederik Stapel as well as documents on the case, has considered the working environment that allowed Stapel to perform RM. Competition and an emphasis on publication in high-ranked journals, as well as the 'normality' of QRP in social psychology, make for an attitude of 'indifferent tolerance' towards RM. Scheff applies the concept of 'gang' to groups of scholars, stating, 'Just as members of street gangs earn most of their livelihood from theft, academics gain most of theirs from careers' (Scheff 1995, p. 157). Such gang association can have a massive influence upon the development of scholars' careers, for instance by softly manipulating peer review in grant-awarding procedures and merit assessment, providing emotional rewards, and helping create clans around specific scientific approaches.

A somewhat different but very interesting and rich strand of research by scholars pertaining to the study of crime and deviance has to do with the policing, or silencing, of criminological research, which is seen as a way of limiting its autonomy and independence towards policy-making. Authors early on expressed concerns about what was considered to be the policing or censorship of criminological knowledge, or 'offensive' and 'defensive' control of criminological research (Brusten 1981; Brusten and Outrive 1981; Brusten and Ponsaers 1981; Squires 1981).

'Offensive control of research' occurs when government and state agencies try to stimulate, fund, or organize the scientific work favouring the legitimation of public policies and administrative crime control, and 'defensive control of research' takes place when those same actors try to constrain or obstruct research considered harmful for personal and institutional interests (Brusten and Outrive 1981, p. 18). More recently, scholars have mentioned the censorship of criminological research stemming from funding bodies, especially governmental ones, but also from within academia (Brickey 1989; Hope and Walters 2008; Presdee and Walters 1998; Yeager 2008). Walters interviewed criminological scholars and concluded that they react negatively to what they consider a form of 'censorship of criminological work from within academia' (Walters 2003, p. 117). Tromp (2010) has equally raised the issue of interference from political power in research results, especially in the case of commissioned research where the commissioner considers results obtained to be negative or detrimental to their policies and actions. Bunt (2015) and Swaaningen (2006) also raise concerns about limitations placed upon free and independent research in criminology.

Broadening the scope of enquiry, Georgoulas and Voulvouli (2015) reflect on crime taking place inside HEIs in Greece. Such crime, instead of harming universities, favours them and occurs because of the commodification of research. In such an environment, they argue, biased assessments, nepotism, and patronage thrive, and researchers have to engage in toxic relationships with private actors. Nelken (2009), by means of comparing Italian and British procedures for appointing scholars, mentions corruption as a mode of governance inside HEIs. In this way, he draws attention to the ambiguity of rules, loyalty networks, and implicit criteria for appointing scholars. Corruption in higher education is also the topic of enquiry for authors such as Altbach (2004) and Waite and Allen (2003). Waite and Allen provide vivid examples of misconduct, abuse of power, CoI, and misuse of funds, claiming the need to consider degrees of corruption. CoI between research and companies, and the consequent production of environmental and health harms against the population, is also being studied by Budó (2016).

Several authors from the criminological field have drawn attention to the current scientific environment, where ethics and integrity

are pushed aside while bureaucracy, control over research, standards for efficiency, and management flood HEIs (Winlow and Hall 2012), mimicking the neo-liberal model in place in for-profit corporations. Additionally, some criminological accounts enumerate all the new rules that researchers have to comply with and that may be producing unwanted consequences: bibliometric rankings, journals' impact factor for publication, the need for a 'quick-fix' science that races after funding goals, overburdening of researchers with multiple tasks, SWOT analysis, and others. Before claiming the need for a 'slow science', Gutwirth and Christiaens (2015a) show how scholars who feel the need to produce measurable outputs (such as publications or positive results) will explore the grey area of 'creativity' to produce more highly valued work. It is the collective functioning of scientific practice that affects the individual researcher, leading to RM. The current knowledge economy is, then, to blame for known cases of RM and, simultaneously, new forms of controlling and disciplining scientific research are appearing (Gutwirth and Christiaens 2015b). Following similar reasoning, Beyens and Swaaningen (2015) relate RM to a production-oriented academic culture and point to the undesirable consequences of this new culture of distrust and control in HEIs. Verhaeghe and Willemsen (2015) also show how neo-liberal meritocracy, ruling productivity in research through quantitative criteria, may lead to RM.

More recently, RM, especially in the form of fabrication, falsification, and plagiarism (henceforth FFP), has been discussed as more than 'mere' deviant behaviour, in the sense that some authors argue for its criminalization. Redman and Caplan (2005) claim that there should exist no moral exceptionalism in the profession of scientific research, and that efforts should be made to improve external and institutional oversight. In the end, criminalization should be considered an available option for dealing with RM, with criminal sanctions serving as mechanisms for deterrence and promoting due process. In the same way, some authors defend harsher criminal sanctions against RM, better protections for whistle-blowers, and the creation of due process standards for RM investigations. The claim is that stricter criminal statutes for FFP, namely prison sentences and withdrawal of licences, would deter offenders and have a prophylactic effect by preventing new acts, as well

as encouraging whistle-blowers to report. In the end, '… criminalization could benefit scientists and the public by strengthening support for scientific research and increasing confidence in the products of the research industry' (Sovacool 2005, p. W4). More recently, authors have questioned the symbolic sanctioning of RM by scientific journals, drawing parallels between this and state intervention in criminal behaviour (Hesselmann 2018).

Pickett and Roche (2017), by way of investigating public opinion about the moral wrongfulness of and sanctions for data fraud and selective reporting, show how there seems to exist a strong disapproval among those questioned. Community members endorse the need for formal legal punishment to be applied to cases of falsification and fabrication, while in respect of selective reporting, they defend fines and bans from future funding. Finally, Hesselmann et al. (2014) refer to the importance of using criminology's methodological tools for researching RM. They mention how the concept of dark figures, usually used by criminology to study other types of crime, as well as lessons learned about qualitative analysis for the study of social processes of negotiating perceptions, definitions, and situations, should improve research about RM.

> We can, thus, learn from Criminology that measuring rates of misconduct should separate at least four different processes related to misconduct. What we can measure depends on the actual occurrence of misconduct (1); the detection of misconduct (2); the sentencing of misconduct (3); and the recording of misconduct (4). The problem posed by the entanglement of these four processes reaches much further than just an underestimation of the prevalence of misconduct. (Hesselmann et al. 2014, p. 64)

All this considered, criminology has been paying growing attention to the topic of RM. However, research is still scattered across different dimensions of the topic, such as the frailties of social control, organizational and political-economic context of research, and the pressures imposed upon researchers, especially criminologists. Empirical studies have been scarce. Nonetheless, it should be noted that criminology is

especially well equipped with conceptual and methodological tools to study problematic behaviours and practices in scientific research and higher education. This has already been done with respect to other professional and legitimate activities; one has only to think about police misconduct (see for example Armacost 2004; Dean et al. 2010; Portera and Warrender 2009; Punch 2003; Wolfe and Piquero 2011). Thus criminology as a scientific discipline is well equipped to look at the aetiology of RM, either in search of the constellation of causes at its origin or from a critical standpoint by analysing the social reaction to these behaviours and situations.

1.3 Research Misconduct as White-Collar Crime

Some criminological research draws a parallel between RM and white-collar crime, or more specific forms of occupational and organizational crime. Ben-Yehuda (1986, p. 21) states that 'deviance in science resembles professional deviance, white-collar criminality and governmental forms of deviance.' In the same way, Croall (2001), discussing organizational crimes, refers to the fact that 'Scientists may face pressures to produce results quickly and to falsify findings' (p. 89), especially in organizational environments characterized by conflicting values and subcultures. Hodgkinson (1997, cit. in Croall 2001), mentions how a 'marketization anomie' has formed in science, where aggressive individualism and the search for profit seem to conflict with professional ethics. This also occurs where private actors interfere in scientific research, obtaining thereby legitimized knowledge through their links with science. White et al. (2009) show how corporate interests may interfere in the research process in cases of harmful activities condoned by the scientific enterprise. Internal industry documents and public statements related to the research activities of such industries show how mechanisms of moral disengagement come to attenuate guilt. Friedrichs has argued for the need to research CoI and RM of academics under the name 'occupational crime', considering this to be one of the core themes for European criminology (Friedrichs 2010, 2015).

Researchers have also outlined how methods, theories, and concepts usually used in white-collar, corporate, or organizational crime research may be useful in the study of RM (Nelken 2009; Thompson 2002; Walker and Holtfreter 2015; Yeager 2008). Interestingly, Yalcintas and Wible (2016) note how, since the screening of the film *Inside Job*, describing the causes and processes in the criminogenic financial American institutions that led to the 2008 world economic crisis, integrity in the scientific discipline of economics has been questioned. In light of the above discussion, and drawing upon the work of the aforementioned scholars, my main working hypothesis is that RM should be studied in criminology by using theories, concepts, and methods already developed by white-collar, occupational, and organizational crime scholars while studying other forms of fraud, professional misconduct, or organizational deviance. It seems crucial to use an approach considering crime, deviance, or problematic situations of professionals in the context of the organizations they work in. This means that one should examine the influence of the professional and organizational environment where human activities occur, as well as the wider context affecting the collective and individual goals of professions and legitimate organizations.

In the following paragraphs, it will be shown how and why the integration of the topic of RM into white-collar, occupational, and organizational scholarship would be beneficial. Such benefits will impact the development of knowledge about RM, while simultaneously influencing the growth of criminology. Criminology has the opportunity to be useful in an area which it thus far has not properly entered, one that is anxious for answers about causes and for intervention. This section does not claim to provide a systematic review of research on white-collar crime, but only to draw some analogies between this criminological topic and the new subject of RM. It will also allow readers to pinpoint some of the choices taken for the empirical research and consequent conclusions on RM to be presented in Chapter 3 onwards.

Firstly, criminological differential (or positivistic) traditional approaches tend to use reified concepts of crime or antisocial behaviour while, in contrast, RM demands a constructionist approach. Sutherland, the author responsible for the concept of 'white-collar crime'

(Sutherland 1983), believed that criminology should study 'the process of making laws, breaking laws, and reaction to the breaking of laws' (Sutherland et al. 1992, p. 3). The study of processes (instead of causes), law-making as a human creation, and social control is exactly what is needed in researching RM. This has been the strategy of much research about white-collar, occupational, and organizational crime, even if many of the studies end up studying criminal behaviour prescribed by law, such as corruption, or money laundering. Nevertheless, when compared with traditional research topics in criminology, such areas are still under-studied, despite an increase in attention to these issues (Coleman 2002; Huisman et al. 2015; Potter 2010; Robin 1974; Shover 2006; Simpson and Weisburd 2009; Will et al. 2013).

This means that RM should be studied by considering what is or is not deemed problematic according to a specific time and space, especially in professional organizations that have implicit (and ultimately explicit) changing professional rules of conduct. Ever since Sutherland's work, many scholars have taken this into consideration while studying white-collar crime. Authors have enquired into behaviours committed by higher social classes, elites, or the powerful which, while not necessarily considered crime and not falling under the criminal justice system, nonetheless cause harms (Costelloe and Michalowski 2009; Hillyard et al. 2004; Rothe and Kauzlarich 2016; Ruggiero 2015; Simon and Eitzen 1982). As Passas (2005) so nicely puts it, they are lawful but awful acts.

The foregoing also means that RM is a topic conducive to considerations about power, and power has, indeed, inhabited criminology and helped its theoretical and empirical development (Becker 1966; Crewe 2010; Henry and Milovanovic 2000; Hillyard et al. 2004; Pemberton 2004): not only power exercised by the offender over a victim, but the committing of socially harmful acts by those in power—categories into which many references to white-collar crime, crimes of the powerful or the elites, can fall. Power is also used for imposing social control and normalization mechanisms (Cohen 1985; Foucault 1975; Garland 2001); and power (or ability) is accorded to individuals for interpreting the world and positioning themselves in relation to the existing rules—resisting, accepting, fitting in, projecting themselves into the future

according to their experiences and their interactions with other actors (Crewe 2010; Matza 1969, 1995). It will become clear in Chapters 4 and 5 that power has to be taken into account when trying to understand why and how senior researchers abuse their subordinates' writings, or how and why bias in peer review may happen, as well as how social control systems over RM have been designed.

In fact, criminologists have extensively researched the crimes and deviance of people holding legitimate professions, although some conceptual debates exist. Sutherland, in 1949, offered the definition of white-collar crime as a 'crime committed by a person of respectability and high social status in the course of his occupation' (Sutherland 1983, p. 7). The author acknowledged that the concept was not intended to be definitive: his intention was to underline the need to study those behaviours of people from the upper socioeconomic class, towards whom there was a systematic bias in criminal justice, for they were able to escape arrest and conviction. Nonetheless, such behaviours and practices were extremely harmful and caused enduring damages to social relations. The concept has been contested (Nelken 2012; Simpson 2013), and several alternative definitions have been created over the years, including occupational crime, elite deviance, business crime, and corporate crime. While authors may debate the specific designation, 'Criminologists who study white collar crime have generally been in agreement that it (1) occurs in a legitimate occupational context; (2) is motivated by the objective of economic gain or occupational success; and (3) is not characterized by direct, intentional violence' (Friedrichs 2010, p. 5). The same author goes on to point out that there exist specific behaviours or situations that ought to be treated as forms of white-collar crime, even in the absence of a formal law criminalizing them. They would, instead, be relevant for empirical enquiry once a series of dimensions are found together. Such dimensions include harm production, the respectability of the offender, and violation of trust, 'which then takes the form of misrepresentation, stealing, misappropriation, self-dealing, corruption, and role conflict – occupational crime, deviance, misbehaviour, misconduct, organizational, WCC' (Shapiro 1990, cit. in Friedrichs 2010, p. 10).

While there are currently some movements arguing for the criminalization of RM, the fact is that it can hardly be considered a crime.

Nonetheless, once again, criminological research on organizations and professions have come to develop and defend the need for the study of what can be called misconduct. This also helps to sustain the need for a criminological study of RM. Thus, and according to Passas (2005), misconduct 'entails avoidable and unnecessary harm to society, which is serious enough to warrant state intervention' (p. 773). This does not mean that the author of the current book necessarily defends the need to criminalize of some, or all, forms of RM. What this analogy intends is to argue for the need to produce criminological research on the topic, bearing in mind its complexity. Following the reasoning of Passas, there may exist externalities of legal practices, such as in scientific research, which are considered inevitable and which, in the end, may cause harms. Which kind of harms these are and whom they affect (for instance, the pressure to publish induced over the junior scholar in a precariat situation) are research questions worth asking.

Friedrichs (2002) considers occupational crime to be all illegal or non-ethical activities conducted for financial gain (or avoiding financial loss) by an individual in the context of a legitimate profession. According to the same author, occupational deviance would comprise those acts deviating from professional rules such as sexual harassment; and workplace crime would be traditional crimes committed at work, for instance an assault. Criminology has also used the concept of organizational or corporate crime connected with white-collar crime. In the present case, the concept of organizational crime will be used, rather than corporate crime, as 'an umbrella term for crimes of corporations and government agencies', not to be confused with organized crime (Friedrichs 2010, p. 192). For present purposes, Simpson's approach is especially useful: RM may be considered to be a set of 'offenses by legitimate organizations and respectable individuals. The illegal acts are prescribed by law (civil, regulatory, and criminal) and involve guile, deception, and concealment for illicit advantage while giving the appearance of legitimacy in the context of an organizational/professional setting' (Simpson 2013, p. 312).

In fact, while corporate crime refers to illegal and harmful acts committed by, or in behalf of, a for-profit company, business, or enterprises (Tombs and Whyte 2015), there is the need to expand from here.

Nonetheless, several authors mentioned in the previous pages argue that universities and research are increasingly following the neo-liberal model of businesses and managerial practices. Simultaneously, as it will become clear in the following chapter, HEIs are developing close interactions with private business, leading to financial CoI. What is more, governmental intervention in research and HEIs may also have deleterious effects, such as the changing of research results and retaliation against researchers bringing unwelcome news (Tromp 2010). In sum, the concept of organizational crime, or deviance, allows us to look at harmful acts and situations inside any kind of organization, independently of its public versus private nature, and independently of the expressed goals (making a profit versus producing knowledge). Nonetheless, several studies of corporate crime are useful in analysis of the organizational culture and ethical climate where RM takes place.

The current topic of research, RM, may allow criminology to regard these kinds of transgressive behaviour as equally relevant, as well as the dimensions of emerging discipline and regulatory models. It may help to access the process by which meanings are attributed, as well as the process by which specific behaviours are constructed as problematic. Criminology should not be considered a science about transgression; it should be regarded as a science concerning the norms and the universe of values people hold to. It is true that problematic behaviours occur when there is an opportunity for them and whenever individuals consider that choosing them will bring about benefits (Becker 1968; Clarke 1997). However, it is also true that such opportunities are socially constructed, and are interpreted according to and in interaction with the professional and organizational environment in which the individuals find themselves (Benson and Simpson 2009; Engdahl 2009; Vaughan 1999b), and ambiguity abounds. For this reason, criminology needs to continue to build knowledge about such processes for attributing meaning, especially with regard to how problematic behaviours and situations emerge in an organizational context.

The organizational context has been to blame for a series of misbehaviours and crimes, causing the idea of the rationality of the productive, profit-driven, organization to be questioned (Hochstetler and Copes 2001; Schulman 1989), to the extent that organizational crime

has been highlighted in its connection with an organization's internal culture, its ethical climate, its anomic condition, the normalization of misbehaviours, and the general interaction between individual agency and organizational constraints (Ashforth and Anand 2003; Linstead and Maréchal 2014; Morris et al. 2002; Shover and Hochstetler 2002; Simpson 2013; Vaughan 1999a, 2002, 2007; Vidaver-Cohen 1993). Apel and Paternoster (2009) state that 'white-collar crime is produced because there is a culture within an industry or within a firm/business that provides both the normative approval of illegal acts and a structure of incentives to reward compliance with these norms as well as punishments for noncompliance' (p. 17). Such a culture, norms, and reward structure would be learned by employees, just like any other set of norms and practices. The question to be asked would, then, be why 'good people turn bad' and, when in the right environment, turn to dirty work.

Lane (1953) for the shoe industry, Needleman and Needleman (1979), Braithwaite (1989), and Geis (1967) for fraud, Farberman (1975) and Leonard and Weber (1970) for the automobile industry, and Denzin (1977) for the liquor industry have all, according to Apel and Paternoster (2009), conducted empirical research on how companies create either cultures of compliance or cultures of resistance to rules and regulations. In the same way, Vaughan (2002) explains how corporations set up mechanisms and processes for the normalization of deviance. Concerning company culture, some of the existing studies have put forward inconsistent results. Trevino et al. (1999, cit. in Bussmann 2015) have shown that the formal implementation of a compliance programme had no effect on its own because it needed to be embedded in the culture of the company promoting it. Effective compliance with rules seems to be related to the quality of relations between the employees and managers, and 'effectiveness is also influenced by the perceived company culture, commitment and informal social controls backed up by internal normative company directives' (Bussmann 2015, p. 445). Research seems to confirm the relationship between perceived moral norms in companies, and the attitudes and behaviours of employees and studies reviewed by Bussmann show that organizations' perceived fairness and justice towards their employees have a clear effect on

the variables of work performance, job satisfaction, and commitment. Nonetheless, a strong commitment by individuals within an organization can lead to acceptance of the organization's unethical and illegal behaviours, and it is therefore crucial for companies to develop an ethical culture and climate.

As stated already, and as will be better understood when the results of the empirical research are reported, the organizational environment where RM occurs is of central importance. HEIs set goals and constraints and frame scholars' interpretations of what their professional role is and how should be pursued. They also create subcultures and facilitate interactions. HEIs may promote values towards integrity and awareness of RM, thereby creating environments where integrity thrives; or, on the contrary, they may create difficulties for the reporting of suspicious behaviours, allowing for CoI, bias, or poor mentoring.

On the dimension of personal features driving individual offenders to RM or any other form of white-collar, professional, and organizational crime (in this case, any form of harmful acts on behalf of the organization), studies show some interesting results that are equally relevant for the study of RM. As previously noted, research on the biological features of white-collar criminals has been sparse, and its results are mainly inconclusive (Benson and Simpson 2009; Cruz 2013). In research on personality traits and individual features of white-collar offenders, studies have shown varied results.

For instance, it seems that incarcerated white-collar offenders show strong tendencies towards conscientiousness, which may be partly due to the fact that most of criminals in the sample in question had acted in the interest of their company (Blickle et al. 2006, cit. in Bussmann 2015, p. 439). The studies conclude that, in sum, white-collar offender samples score more highly in neuroticism, hedonism and narcissism, and extroversion, and less well in conscientiousness, agreeability, and self-control. At the same time, entrepreneurship and some types of white-collar crime were correlated with risk-taking. However, the review concludes by pointing out the mixed results stemming from empirical research. Other studies show that the personality of white-collar criminals is characterized by lower agreeableness, lower acceptance of social norms and greater willingness to take risks, a lower sense of

responsibility, less trust in others, more anxiety, and lower self-control (Guedes and Cardoso 2013). Research into economic crime has also argued that there is a tendency towards economic criminal actions among at least three personality types: the positive extrovert, the disagreeable, and the neurotic (Alalehto 2003).

Usually, there are differences between white-collar criminals and 'street criminals' in the sense that the former have features closely linked to non-offending behaviour (Friedrichs 2010). Weisburd et al. (2001, cit. in Piquero and Clipper 2014) found that white-collar offenders were different from common offenders in terms of age, race, education, employment history, and age of onset, career length, and frequency of offending. On the other hand, this sample also revealed that prior arrests were common, and that there was a heterogeneous offence history and an inverse correlation between age of onset and arrest frequency. Meanwhile, 'serious' offenders (with more than three arrests) had a history of social instability and unconventionality (including towards employment, marital status, and substance abuse; cit. in Apel and Paternoster 2009). Most samples have also revealed that offenders had worked for the company for several years before arrest (Bussmann 2015). In sum, white-collar offenders are usually male, white, and more educated, older, and better settled in society than other non-white-collar offenders. Nonetheless, research has shown how results about individual, socio-demographic features of offenders may change according to the type of offence and, thus, to the variability between samples (Holfreter 2005).

The next chapter, reviewing existing research on RM, shows that not much is known about individual biological or psychological features of scholars committing FFP or QRP. Nonetheless, one can hypothesize that fraudsters in scientific research may share some psychological and socio-demographic features with fraudsters in other professional and occupational settings. It will be shown that some research finds a higher prevalence of RM in males than in females, and at various levels of the academic career ladder including the senior level. Additionally, recent reports relate scholars' mental health conditions and wellbeing to the research environment, with sources of stress rooted in today's working practices, especially among younger researchers (*Nature* 2016; Guthrie et al. 2017; Levecque et al. 2017).

Nonetheless, as it has been stressed, the individual features and subjective ways of interpreting the world that lead to RM should not be attributed only to a handful of 'bad apples', for the simple reason that individuals perform in organizational settings. Such settings, as already pointed out, may be central in preventing or allowing different offences (Ben-Yehuda and Oliver-Lumerman 2017). The relevant scholarly research on white-collar crime has looked at the interaction between the organization and the individual in a professional role, and Sally Simpson has summed it up quite well: 'the bad apple explanation for white-collar crime tends to deflect attention away from the structural and institutional conditions that give rise to systemic white-collar and corporate offending' (Simpson 2013, p. 321).

For instance, Apel and Paternoster acknowledge the possibility that persons with certain traits are attracted to specific industries in such a way that there are 'assertive mating processes' or 'selective processes' and that 'firms with lax moral cultures attract those with less demanding systems of personal morality' (2009, p. 18). Bussmann (2015) shares such views, according to which there may exist selection effects leading to certain personality traits being found in individuals working in specific organizational settings. The author nonetheless states that it is unknown how far company cultures shape their employees psychologically. What is more, a company culture not oriented towards integrity may encourage organizational cynicism in individuals and the corresponding negative behavioural reactions, such as corruption and other deviant behaviours. As Yeager points out, 'all corporate cultures, even those that are generally beneficent, may specify conditions under which laws may be broken as well as which laws may be broken under such conditions' (2008, p. 30).

Some of the traditional theories used to explain forms of white-collar and professional crime take into account such interaction between the individual and the workplace. Differential Association Theory, which was devised by Sutherland, is based on the assumption that criminal conduct is learned through differential and preferential contact of certain persons with definitions favourable to crime. Such definitions are disseminated throughout relevant social groups, for instance in the

working environment. In the same way, General Strain Theory, adapted to explain white-collar crime, also acknowledges that 'certain strains increase the likelihood of white-collar crime. Whether individuals cope with these strains through white-collar crime, however, depends on the characteristics of these individuals and their environments'. More recently, studies have taken into account how costs and benefits found at the organizational level are taken into consideration by the individual actor (Benson and Simpson 2009; Piquero and Connolly 2014).

As such, while studying RM, one should look at this complex interaction between individual features and the concrete working environment within specific organizations. The diversity of models of HEIs and research organizations in European countries and the regional differences in the European vision of scientific research pose some serious challenges in the study of RM and the possibility of generalizing from results. But such challenges have to be faced if one considers the recent efforts to open a 'European single market' for research through the so-called the European Research Area (ERA) and the creation of a single open-access model (Sitter-Liver 2006). Globalization is also a reality affecting RM, and although there is a trend for standardization of rules pertaining to European research, this is an area where diversity abounds (Hiney and Peatfield 2016).

Two final points have to be made in order to extend reflections about white-collar, occupational, and organizational crime to RM. The first relates to social control over such types of offences, and the second deals with the social harms and victimization that are generated by misconduct from and inside organizations and related to occupational roles in legitimate professions. It is clear that Sutherland's initial purpose when studying white-collar crime was to draw attention to the bias in the criminal justice system's failure to deal with harms caused by respectable people in the course of a legitimate occupation. As already mentioned, issues of power enter into the reasoning and reflection about such types of crime and deviance. Also, bluntly put, people in power have the ability to shape how society reacts to their own (or their peers') deviant acts. Lord and Levi show how European states feel the 'pressures to respond

to *some* white-collar and corporate *crimes* and scandals' (2015, p. 39),[1] indicating that there are selective processes at work. Some of these processes become visible when one asks not only what situations have been criminalized, but also how social control mechanisms react to offending or try to guarantee compliance with existing rules.

The literature on occupational and organizational crime on this point includes a wide debate and assessments of different compliance models created to curb it (Nelken 2012). On the basis of different theoretical explanations, the literature has discussed the adequacy of several compliance models, from criminalizing corporate non-compliance to Reintegrative Shaming, the Enforcement Pyramid, and Risk-Based Regulation. All of these models have presented benefits as well as shortcomings, and, in general, they all consider the state to be the predominant regulatory body (Mascini 2016). Alternatively, regulatory governance tries to involve a plurality of actors (including companies, interest groups, and individual citizens) in rule creation and rule enforcement. Special attention has been paid to companies' self-regulation and the way its shortcomings may be addressed by actively involving the community in demanding compliance and social responsibility (Mascini 2016). Concurrently, the threat of negative publicity and social stigma for offending organizations has been considered a valuable strategy via naming and shaming practices (Erp 2014). In this way, sanctioning mechanisms alone have proved inefficient, and preventive efforts, spread throughout a diversity of social actors, have been sought. Moreover, the ambivalence of the social reaction is undeniable (Nelken 2012). Consequently, command and control, or punitive approaches, are set against compliance, or persuasive, ones (Simpson 2013). Each approach hypothesizes deterrent effects in different ways and conveys different perspectives on the individual and organizational offender, their motivations, and their relations with state actors and guidelines. Studies of the causes of compliance have been produced and, again, the integration of different levels, from individual

[1]Italics in the original.

to organizational to the broader environment, has been put forward through a multi-level framework (Huisman 2014).

Such studies on social reactions, or social control mechanisms, are also extremely relevant in the study of RM, firstly because informal social control through peer review and replication has been put into question; and secondly because formal reactions to RM are being experienced in societies and countries with some degree of scientific development. Although assessments of effectiveness, deterrent effects, and the like are still to be performed, authors on RM have argued for proportional sanctions, a fair and due process, and protection of whistle-blowers, among other measures. This means that, to some extent, the traditional self-regulation system of science is being questioned for its inability to perform, and other, more severe models have been called into action. The empirical research to be presented in the following pages will explore the emergent mechanisms of social control of RM currently debated in Europe, and its results will, it is hoped, shed some light on the benefits and limitations they offer.

Victimization caused by the different forms of white-collar, occupational, and organizational crime is hard to estimate. While violent consequences, for instance in the environment or people's lives, may be easy to assess, many other harms are not (Friedrichs 2010). Moreover, even in the case of violence, victimization is sometimes framed as something other than the result of a crime. What is more, it is not usually interpersonally induced, and may be geographically or temporarily distant from the action, as part of an ongoing process (Whyte 2018). For this reason, studies of victims of corporate and white-collar crime have been hard to conduct. Many victims suffer small losses, while others are not aware that they have been victims, or blame themselves for what happened (Croall 2014). The notion of indirect victimization seems to also hinder research, and others may refer to harms caused that are very difficult to quantify, such as distrust in the economic or democratic system (Friedrichs 2010; Rothe and Kauzlarich 2018). The same seems to happen with RM. The following chapter will show that some studies exist of the financial costs of RM, but reflections about who or what is harmed by RM, and in what way, are still vague. Except for authors who have had their work plagiarized, most literature says nothing about victims.

As with white-collar crime, violent consequences may be pinpointed, especially in clinical trials (Hedgecoe 2014), but, to the best of my knowledge, studies of victims and victimization of RM are still to be done. And while some authors point to the issue of loss of trust in the scientific process due to RM and to the commodification of the scientific system (Edwards and Roy 2017; Sztompka 2007), such consequences are hard to estimate. The Social Harm approach, which looks at a range of harms caused by non-criminal activity usually conducted by the powerful, would be useful in overcoming the limitations imposed by the fact that RM may not be considered criminal activity (Hillyard et al. 2004).

Finally, some instances of broader cases of fraud have been discovered that, while not addressed in the empirical research described below, may also be appropriate topics to study under the banner of white-collar, occupational, and organizational crime scholarship. Examples have been widely given of predatory conferences and journals operated by for-profit organizations in disguise, mimicking legitimate journals and events with the sole purpose of charging high publication and conference fees to pressured scholars (Carey 2016; McCook 2017b; McCrostie 2017; Memon 2017; Pisanski 2017). In the same way, peer-review scams, by means of identity theft or the invention of reviewers' identities, have emerged (Marcus and Oransky 2017; McCook 2017a). Recently, a market for counterfeit goods necessary for scientific research, such as antibodies or reagents, has been found, and concerns were raised about the robustness of research carried out with such products (Cyranoski 2017).

1.4 Applying White-Collar Crime Scholarship to Research Misconduct

From what has been stated in this chapter, it seems reasonable to suggest that RM should be treated as a topic of research not only for criminology in general, but for everyone interested in it, especially by using tools that criminological studies of white-collar, occupational, and organizational crime and deviance have already produced. Such tools stress the

need to conduct research that is not exclusively interested in the offenders' individual features, but rather takes into consideration the interaction with the organizational environment. What is more, the interaction and integration of these two dimensions of analysis seem vital if we are to understand what it is that drives professionals to commit misconduct, and what it is that drives organizations to condone or even promote such situations. Issues of power differentials, of respectability of offenders, and of bias in social reaction to such acts have also been widely acknowledged by criminological studies of white-collar crime. How is it that some situations are deemed criminal or blameworthy and others are not? It is essential to look at economic and social interests behind options to criminalize, or not criminalize, harmful acts. The same also goes for those social control mechanisms that tend to be much harsher for traditional street offenders than for occupational or organizational ones. The criminal justice system is simply not regarded as the most important or effective option available to assure compliance in legitimate organizations.

All these are issues that should be considered in researching RM when understood as problematic acts committed by respectable individuals (scholars, researchers) in the course of their legitimate professional roles, and in the context of socially and economically relevant organizations. At the same time, issues of victimization, costs and harms caused by both RM and other types of white-collar crimes are hard to quantify. However, consequences do occur: trust in relevant institutions and processes may diminish, and victimization will probably take place; one need only think of the likely consequences of CoI in the pharmaceutical industry (McHenry and Jureidini 2008; Solyom 2004).

The foregoing also means that treatment of RM as a topic of criminological research would greatly add to criminology's social utility and the critical approach to what is currently considered an issue of great concern. Such concern stems not only from scholars in different scientific fields, but, as it will become clear in the results of the empirical research to be presented, especially in Chapter 5, also from policy-makers wishing to dissociate the public funding of science from fraudulent science. In fact, and as Chapter 2 will show, the existing non-criminological research on matters such as rules, sanctions, fraud, misconduct, deviant behaviour, deterrence, prevention, dark figures, and the like lacks

the accumulated evidence-based knowledge that criminology has been producing over the last 200 years. This gap should be acknowledged, as well as this new opportunity for criminology to develop studies on such a recently emergent topic being embraced.

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2

What Is Research Misconduct?

The previous chapter showed how criminology has increasingly been debating and studying RM. Nonetheless, it also became clear that there is a general lack of empirical research and a need for better systematic criminological studies which will benefit from the theoretical, conceptual, and methodological tools that studies of white-collar, occupational, and organizational crime have produced so far. In this chapter, other, non-criminological studies will also be presented. The purpose is to present the discussions of concepts, methods, and results currently being produced by other disciplinary fields that, in turn, would greatly benefit from criminology. It will also become clear that the topic of RM needs in-depth and continued analysis, and that there is growing attention to it.

The Introduction has already mentioned some cases of fabrication of data, and cases of plagiarism within academia have been widely publicized in some countries, such as Germany (*The Guardian* 2013). Nonetheless, and as will be shown in the following pages, the concepts that have been put forward to encompass these and other behaviours and situations have been debated over recent years. Such debates

R. Faria, *Research Misconduct as White-Collar Crime*,
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concerning concepts and definitions not only are relevant from a theoretical standpoint, but impact upon empirical studies and theoretical explanations of the topic. In fact, empirical research on the topic is still rare, and one is left to wonder whether researchers are not really interested in studying the integrity of their own profession (Steneck 1999). In truth, the study of RM entails some difficult tasks. One has to navigate through the different formats of media used to debate the subject. When discussing a related concept, that of 'research integrity', Horbach and Halffman (2016) mention the existence of three types of documents in which integrity is discussed: scientific texts, policy documents, and newspaper articles. The same is true in relation to RM. While this chapter will focus on scientific texts, some examples of newspaper articles will be provided, and a proper analysis of policy documents will be presented in Chapter 5.

The second difficulty is the fact that authors debating and studying RM come from a variety of scientific disciplines. It became clear in Chapter 1 that criminology has been steadily looking more deeply into this topic, but, nonetheless, many authors currently researching the topic come from other scientific fields, and many studies focus upon misconduct in such fields (e.g., Kumar 2009). This has implications for the chosened concepts and methods used or the samples collected. It also means that many of those writings discuss matters such as rules, sanctions, fraud, misconduct, deviant behaviour, deterrence, prevention, dark figures, and the like, while lacking the accumulated evidence-based knowledge that criminology has produced on other areas, especially information related to occupational and organizational crime and deviance. The need for a criminological approach has already been fully elaborated in the previous chapter.

Therefore this chapter will try to answer the question 'what exactly is RM?' from conceptual, theoretical, and empirical standpoints. How has it been defined? What is known about it? How has it been explained? What has been done to prevent it? This will necessarily be a brief overview of some of the relevant scientific literature produced on the topic. It also will allow the presentation of preferred concepts, pinpointing of methodological limitations to research, and corresponding results.

2.1 A Place for Everything and Everything in Its Place

Up to the end of the twentieth century not much attention was paid to the topic of RM. A term search in leading journals such as *Nature* and *Science* reveals a growing number of usages from the 1990s onwards. It is not possible to state that RM was non-existent, but nor can it be assumed that there is more of it now than there was before. In fact, data on its frequency over time are rare. It would be wiser to state that problematization of RM, as well as regulation and detection efforts, seems much more present today than before.

In the current research, the choice was made to use the term 'research misconduct' in order to look at behaviours and situations committed by scholars in the course of their specific occupational role as researchers. It also allows the tackling of situations of misconduct promoted by the research environments in which such scholars work, namely in HEIs and research organizations. This book will thus not discuss acts committed by students, such as undergraduates, like cheating in examinations or plagiarizing in assessments, because students and scholars have different responsibilities towards their tasks, suffer different pressures from the organizational environment, and are in different developmental stages. It would be interesting to know whether scholars with a higher prevalence of RM were also cheating students: a study by Kalichman and Friedman (cit. in Steneck 1999, p. 172) observed that 15% of a sample of biomedical trainees admitted to cheating since entering university, and the same percentage confessed to fabricating data, selecting data to fit a hypothesis, or changing data to improve the chances of publication.

Simultaneously, I considered that RM should, somehow, be differentiated from other breaches of research ethics, in the sense that the former has to do with professional rules and regulations, while the latter are concerned with moral obligations to 'do no harm', especially when using human subjects, as well as ensuring confidentiality and informed consent. The current book therefore uses the definition of research ethics 'as the critical study of the moral problems associated with or that

arise in the course of pursuing research', while breaches of RI, such as RM, should be considered as infractions of 'professional standards, as outlined by professional organizations, research institutions and, when relevant, the government and public' (Steneck 2006, p. 56). It is, then, the connection of a person or group with professional formal and informal rules, professional tasks and goals, the working environment, and working peers that will be the focus of exploration in the following chapters. These dimensions are also vital to an understanding of the need to study RM as white-collar crime, namely occupational and organizational crime or deviance, as argued above. Nonetheless, as in any other social process ingrained with interpretations of specific situations, distinctions are difficult to make.

Some of the existing literature refers to RM and equally to 'scientific misconduct', 'fraud' (Friedberg 2006), 'scientific misbehavior' (De Vries et al. 2006; Ulrich et al. 2015), or 'detrimental research practices' (The National Academies of Sciences, Engineering, & Medicine 2017). The subject has also been approached from a perspective stressing the set of positive values and principles that should be fostered by scholars and research environments, such as academic integrity or responsible conduct of research (henceforth RCR). Even in this case, 'the predominant focus in the literature is on investigating and illustrating a perceived *lack* or *absence* of academic integrity' (Macfarlane et al. 2014, p. 342).[1] The choice between approaches that challenge wrong behaviours and approaches that promote the integral way of doing science may reflect a will to punish and regulate situations or, on the contrary, to encourage the adoption of professional core values (Horbach and Halffman 2016). Nonetheless, the controversy about defining RM is very real.

If this is so, what falls under the definition of RM? It is the current book's perspective that more important than the term used to refer to the behaviours and situations considered problematic is the knowledge of what exactly are such behaviours and situations, and why are they considered negative, harmful, or challenging. The existing body of work

[1]Italics in the original.

about this subject may be divided in two groups: one insisting that misconduct committed by researchers is limited to FFP; and another group claiming that there are grey areas that, while not as serious as FFP, seem to be more frequent, the so-called QRP. There are thus strict as well as wider definitions of RM. Strict definitions that include only FFP have been widely used, but not without criticism (Fanelli 2009; Franzen et al. 2007; George and Buyse 2015; Goodstein 2010; Redman and Merz 2005; Resnik 1996). Such definitions tend to follow the one suggested by the USA's National Science Foundation (NSF), standing for:

> fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results. Fabrication means making up results and recording or reporting them. Falsification means manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research process is not accurately represented in the research record. Plagiarism means the appropriation of another person's ideas, processes, results, or words without giving appropriate credit. (Kretser et al. 2017, p. 166)

Similar definitions have been used by the USA's Office of Research Integrity (ORI), which is responsible for overseeing and regulating RI activities, or by the Wellcome Trust in the United Kingdom. According to authors, the use of such definitions matches the scientific community's standards about fairness, has deterrent effects, and is effective. If 'other serious deviations' were allowed in the definition, that would facilitate political interference into the research process: 'A more minimal culpability standard (in this case limiting RM to FFP) significantly limits this control' (Koppelman-White 2006, p. 233). It will be noticed that empirical research into FFP will lead to different results about prevalence of behaviours when compared with research that include forms of QRP. Lastly, most authors who embrace such strict definitions require an intention on the part of the offender to mislead or defraud, thus isolating such intentional acts of fabrication or falsification of data from honest mistakes or unintentional errors, sloppy science, or breaches of the etiquette of science (Else 2017; Resnik 2003; Zuckerman 1977).

Nonetheless, between outright fraud and honest mistakes, a large grey area has come under the scrutiny of researchers. Expressions to be analysed below, such as ghost-authorship, CoI, self-plagiarism, and, more recently and still under-studied, P-Hacking[2] and HARking,[3] have populated scientific journals and magazines. Such a wide definition of RM would include a vast array of behaviours falling short of accepted integrity and scientific standards and has been disseminated in several countries. Jaffer and Cameron (2006) consider misconduct to be any action or omission in which the author has clear intention to deceive, including plagiarism, forging, cooking, trimming, misuse of statistical techniques, irresponsible authorship, and redundant publication. Some authors also consider it to be a creative mechanism, in the sense that '[T]he scientific process offers an amazing variety of creative mechanisms ('production processes') by which one can achieve preferred research outcomes' (Feigenbaum and Levy 1996, p. 264; Honeyman-Buck 2016). Sieber (2012) includes inadequate methods, biased results, and abuse of power over colleagues as forms of misbehaviour. Thompson alerts us to the need to study a vast array of situations and behaviours, including:

> disrespect for institutional authority; arbitrariness; patronage; nepotism; favouritism; corruption; partisanship; conflicts of interest; circumvention of established institutional principles, policies, procedures, and practices; disregard for the truth and the free spirit of inquiry; abusing academic freedom; conduct not consistent with the formal and informal mission and goals of the university; basing key personnel or related decisions on factors extraneous to the principal of merit; or performing other unsanctioned or prohibited institutional activity. (Thompson 2002, p. 76)

[2]P-Hacking refers to the misreporting of true effect sizes in statistical analyses to produce significant results (Head et al. 2015).

[3]HARking is the practice of hypothesizing after data have been analysed and results known (Butler et al. 2016).

As such, QRP have progressively entered the literature and stand halfway between FFP and RCR (Agnoli et al. 2017; John et al. 2012; Steneck 2006).

As already mentioned, the literature has debated misconduct and bias in collecting, analysing, and presenting research data, with authors raising concerns over fabrication, falsification, cooking, forging, or trimming of data, whereby:

> forging is the invention of some or all of the research data that are reported including the description of experiments that were never performed … . Cookingrefers to retaining and analysing only those results that support the hypothesis being investigated and ignoring data which may weaken the results. Trimming involves smoothing the irregularities in the data to make the results look more convincing for publication. (Jaffer and Cameron 2006, p. 123)

It has already been shown that most of these misbehaviours fall under the FFP triad and are deemed very serious for the scientific enterprise, although rare (Claxton 2005; Dahlberg and Mahler 2006; Franzen et al. 2007; George and Buyse 2015). More attention is, thus, being given to the grey area or QRP, 'the steroids of scientific competition, artificially enhancing performance' (John et al. 2012, p. 524). These QRP include several forms of cutting corners while conducting research and overall deviations from the etiquette of science. In this book, for the sake of comprehension, a (non-exhaustive) typology based on the kind of task or role and its corresponding misconduct will be proposed. The aim is to help readers to categorize behaviours and situations that have been widely discussed by the literature.

Firstly, some authors have specifically drawn attention to irresponsible authorship practices. Here, one can find literature on plagiarism in its more traditional sense, usually recognized as wrong and close to theft (Enders and Hoover 2004; Kock and Davison 2003; LaFollette 1996; Stearns 1992). But other forms of plagiarism may exist. Solomon refers to:

> … the 'guest,' whose name appears for honorary rather than intellectual reasons on a list of authors; the 'ghost,' who writes papers that are

> attributed to more well-known scientists; and the 'grafter,' who appears at the end of a list of authors for making negligible contributions to a project. (Solomon 2009, p. 478)

Ghost-authorship has been indeed discussed in the literature, as well as honorary authorship, self-plagiarism, redundant publication, and salami-slicing (Cronin 2001; Cronin et al. 2003; Garfield 1987; Hauptman 2008; McHenry and Jureidini 2008; Sivasubramaniam et al. 2016). Finally, ghost-authorship may be connected with other questionable practices, such as the dissertations market (Osipian 2012) and CoI (Mullins and Nicas 2017). Nonetheless, misconduct in authorship may appear in several forms, which, in the end, pose the question of what an author is.

CoI are situations 'in which an individual or organization has competing primary and secondary interests [which] may strongly predispose an individual or organization to exploit a professional or an official capacity in some way for personal or organizational benefit' (Claxton 2007, pp. 558–559). These are undisclosed situations that are born from relationships between HEIs (or research organizations) and funding agencies, corporations, or government, biasing scholars' judgements about their research and endangering scientific autonomy and freedom (Campbell et al. 2004; Dinan et al. 2006; Elliott 2008; Lipton et al. 2004; Resnik and Shamoo 2002; Tereskerz 2003). Especially in pharmaceutical and medical areas, CoI may be the cause of serious harms to the health of patients and consumers (Abraham 1994). And, recently, some suspected CoI have been emerging in relation to major companies such as Google (Mullins and Nicas 2017).

Finally, authors have questioned activities and situations in what has been traditionally considered the policing mechanism of science: the peer-review system (Stroebe et al. 2012). The literature has questioned its practices by raising awareness of potential bias in the publishing and grant-awarding processes, coercive self-citation from journal editors, ethical transgressions by reviewers, and even instances of fake peer review (Belluz et al. 2016; Dadkhah et al. 2017; Edmond 2008;

Marcus and Oransky 2017; Reale et al. 2007; Resnik and Elmore 2016; Shibayama and Baba 2016). In sum, peer review not only seems to have lost its ability to detect fraudulent research, but has also seen its own ethics and integrity questioned.

2.2 What Exactly Is Known About Research Misconduct?

Now that the conceptual debate about RM has been identified, it is time to turn to the evidence about this topic. What is known about its prevalence, incidence, and processes, the efficacy of prevention and sanctioning, or the harms caused by it? Empirical research on RM is becoming more and more frequent, and funding agencies have started commissioning such research.[4] Nonetheless, there is still much to discover about the topic. What is more, difficulties arise because of a number of constraints. First of all, there is no clear definition of RM, and conceptual ambiguity abounds (Horbach and Halffman 2016). In addition, studies are conducted by different scientific disciplines with varied epistemological and methodological traditions. Another difficulty has to do with the fact that official data are not systematically collected or disclosed among countries and HEIs, which leads researchers to look for other sources providing insight about RM, such as retractions or corrections in scientific journals (Fanelli et al. 2015; Hesselmann et al. 2016). Under-reporting of cases of RM is, then, thought to be common.

To add to these difficulties, fabricating data, plagiarizing other people's work, cutting corners, and universities' inability to tackle misbehaviours are usually sensitive topics, and people and organizations do not feel comfortable talking about them, owing to a need for social desirability (John et al. 2012; Karabag and Berggren 2016; Lee 2011). A review conducted by Macfarlane et al. (2014) shows how most

[4]e.g., PRINTEGER, a project funded by the European Union in the framework of Horizon 2020.

empirical studies collect data by means of questionnaires and surveys,[5] followed by document analysis and, much less frequently, interviews, focus group observation, case studies, and historical research. Usually, samples are composed of researchers or academic staff, and, to a much lesser extent, other actors concerned with the phenomenon, including members of the public (Pickett and Roche 2017).

Research Misconduct in Numbers

A meta-analysis by Fanelli (2009) showed that 2% of the sample questioned admitted to having, at any given moment of their careers, fabricated, falsified, or changed data. Fang et al. (2013), by analysing retractions on a PubMed database, concluded that 67.4% of retractions occurred as a result of misconduct, including 43.4% for fraud or suspected fraud. Another study showed that one in ten of the sampled researchers had introduced faked data in their scientific records and that 'the majority of research psychologists' engaged in selective reporting of studies, did not report all dependent measures, collected more data after determining whether the results were significant, reported unexpected findings as having been predicted, and excluded data post hoc (John et al. 2012, p. 527). The study by Tijdink et al. (2014) showed that 70% of researchers questioned admitted giving authorship to people who had not worked on the research, while more than one in four deleted data or results to confirm a hypothesis. Simultaneously, 15% of the same sample admitted to having fabricated, falsified, plagiarized, or manipulated data in the past three years. In addition, Martinson, Anderson, and De Vries (2005) show that respondents more frequently revealed having committed behaviours such as changing the design, methods, or results of a study as a reaction to pressure from funding agencies (15.5%), or to dropping observations or data points on the basis of 'gut feelings' (15.3%).

[5]A specific questionnaire was produced exclusively for the purpose of enquiring about RM, the Scientific Misconduct Questionnaire (Broome et al. 2005).

Results seem to show that FFP is less frequent than QRP. Because of the rarity of FFP, studies have considered that selective reporting, selective citing, and flaws in quality assurance and mentoring are deemed more serious problems, with plagiarism being considered to be common but to have little impact on truth (Bouter et al. 2016). The frequent incidence of plagiarism is quite visible when retracted papers are analysed: Stretton et al. (2012) mention that, in their sample of publications retracted because of misconduct, close to half were retracted because of plagiarism, and the remainder because of falsification or fabrication (52.1%), author disputes (2.3%), ethical issues (2.3%), or unknown reasons (1.4%). Clearly, studies conducted by way of survey tend to produce different results from those using retractions. One qualitative study concludes that, in academic–industry relationships some risk of CoI may, nonetheless, appear. The paper mentions the following cases: faculty members serving as highly paid consultants for a company; channelling research funding from companies belonging to a specific scholar to his or her protégés (often former graduate students and fellows) at the same department; and scholars serving as consultants, scientific advisors, equity holders, and owners of companies that also support research being conducted by faculty members whom the leader supervised (Campbell et al. 2004).

Nonetheless, it seems that proof of the growth of RM over the years is yet to be produced. While it is undeniable that retractions of scientific papers due to RM are on the rise (Hesselmann et al. 2016), the truth is that such phenomena should be considered as an enhancement of scientific journals' control practices. On the other hand, there is no long-term analysis of the evolution of RM, even in its plain form of FFP.

Features of the Researcher and the Research Environment

Fanelli et al. (2015) show that scientific misconduct is more likely in countries with no RI policies, where individual publication performance is rewarded with cash, and in the earliest phases of a researcher's

career. In contrast, Fang et al. (2013) concluded that RM occurred across the entire career spectrum, from trainee to senior scientist, and that two-thirds of the individuals found to have committed misconduct were male. DuBois et al. (2013) report that cases usually involved repeat offences (68%) by an individual acting alone (90%) across an average of 3.8 years. More qualitative approaches show how researchers justify why some forms of RM may happen, namely through ambiguity in judging their wrongfulness, a lack of clear principles and codes, and a sense of non-existent negative consequences (Johnson and Ecklund 2016). Where retraction occurs, researchers accused of RM may try to convey apologies, by means of linguistic strategies, in order to minimize guilt (Souder 2010). Kornfeld and Titus (2016) argue for a need to look at psychological factors motivating researchers to conduct RM. A previous study by Kornfeld, reviewing 146 accounts of people found guilty for RM, classified them as:

> the desperate, whose fear of failure overcame a personal code of conduct; the perfectionist, for whom any failure was a catastrophe; the ethically challenged, who succumbed to temptation; the grandiose, who believed that his or her superior judgement did not require verification; the sociopath, who was totally absent a conscience …; the nonprofessional support staff, who were unconstrained by the ethics of science, unaware of the scientific consequences of their actions, and/or tempted by financial rewards. (Kornfeld 2012, p. 3)

Some authors try to uncover what factors pertaining to the research environment may lead individuals to commit RM. Consoli (2006) suggests that daily scientific practices are structurally permeated by chronic problems, and the findings of Martinson et al. (2006) show that scientists believing themselves to have been treated unfairly in their organization are more likely than others to behave in ways that compromise the integrity of science. Mentoring has been considered to decrease the odds of younger researchers engaging in some forms of RM, except for mentoring about financial issues and professional survival, which increased those odds (Anderson et al. 2007). Poor integration into the research environment may also help to explain why

RM was most prevalent among community research workers when compared with regular researchers (True et al. 2011). Additionally, DuBois et al. (2013) concluded that 28% of cases of RM involved failed initial attempts to report it, whereby either reported suspicions were not investigated or no finding was initially made, leading to the continuation of the behaviour. Edwards and Roy (2017) mention the existence of systemic risks to scientific integrity, generated by perverse incentives for researchers, such as the emphasis on quantitative metric performances and the creation of hypercompetitive funding environments.

Regulating, Detecting, and Sanctioning Research Misconduct

Formal and informal social control of RM may be studied as a variable influencing the rates of RM, or in terms of its effectiveness in accomplishing the goals or outcomes it sets out. It is important to determine whether such mechanisms fulfil their function of prevention, deterring potential offenders, and reducing recidivism or whether, on the other hand, they produce negative and unwanted consequences, such as stigmatization, spending of public money, or facilitating RM.

Informal social control over RM may be provided by the scientific community, and especially by peers. The literature acknowledges that there is no such thing as an isolated specialist, and that robust, repeatable, and reliable knowledge is the product of a collective practice (Ben-Yehuda and Oliver-Lumerman 2017; Latour 2005). It is the scientific community that provides scholars with the normative framework for their tasks. And while Merton believes that 'Scientific research is typically, if not always, under the exacting scrutiny of fellow experts' (1973, p. 311) and is based on the principle of communalism, certain authors have revealed some of the perverse mechanisms of this community. Mulkay (1976) refers to the existing 'counternorms', meaning that the community also provides its members with an interpretive background and codes, creating loyalty systems and justifications for wrongful actions. In theory, the scientific community is also vital in

distributing rewards throughout its structure and acknowledging credit to researchers (Latour and Woolgar 1988). From this perspective, scientific communities also define what is considered a problematic behaviour, either detecting, sanctioning, and stigmatizing deviants or justifying misconduct.

Nonetheless, the literature reveals that the scientific community may also host a number of problems, especially at a time when professional instability abounds, when structural differences deepen and researchers feel as though they are losing control over their work. Recent authors comment on opportunistic collaboration in an era of 'hyper-authorship', sloppy refereeing, and the creation of research elites legitimized by rankings and impact-factor assessments (Becher and Trowler 2001; Cronin et al. 2003). Simultaneously, it seems that the scientific community values self-promotion and allows for the 'gentlemen's club' mentality to prosper,[6] with unequal power distribution between groups of scientists and academic disciplines, and a small number determining what is or is not relevant scientific knowledge (Becher and Trowler 2001). This is a community or group that may blend technical with personal assessment of peers and that, necessarily, has to relate to other social groups outside academia (publishers, sponsors, and politicians) through the building of alliances and negotiation (Latour 2005).

In sum, social control by the scientific community is not free from bias or from loyalty and power networks and the promotion of non-scientific interests. A recent example is the reported practice of scholars forming 'citation cartels' (McCook 2017b). In fact, while replication and peer review have been considered the traditional police of science, concerns over its functioning have been more and more frequent. The lack of stimulus for reproducibility of studies and the finding of a high rate of unreproducible studies has been recently red-flagged (Begley et al. 2015; Buranyi 2017; Jump 2015; Lee 2011; Munafò et al. 2017). On the other hand, problems in peer review have been systematically

[6]Gender bias in research and HEIs has been widely acknowledged. A recent bibliography is available for those interested in learning more about the subject: Savonick and Davidson (2016). See also Nowotny et al. (2001).

exposed. While one of the first attempts may have been the experiment reported by Sokal and Bricmont (1997), some literature has repeated the mantra that peer review often is unable to detect RM owing to the lack of access to raw data (Kumar 2009). Adding to this, authors mention inadequate review, such as the inability of reviewers to detect simple mistakes and methodological flaws, let alone fraud; inconsistent and even contradictory reviews that lead to papers being published more out of luck than out of merit, with 'IRR [inter-rater reliability] for the overall decision (reject vs. accept/revise) … barely better than chance' (Resnik and Elmore 2016, p. 172); and lack of impartiality or bias in review, based on factors such as existence of positive findings, gender, reputation, institutional affiliations, and nationalities of authors, controversial or innovative research, or reviewer CoI (Jurkat-Rott and Lehmann-Horn 2004). Finally, reviewers' failure to adhere to ethical standards may lead to personal attacks, intentional delaying of papers, stealing of ideas or methods by reviewers, or demands that authors reference some of the reviewer's previous work (Resnik and Elmore 2016).

Shibayama and Baba (2016), for instance, concluded that approximately half of the respondents receiving instructions for revision felt these were inconsistent with their own scientific beliefs but that, in such situations, the majority followed the instructions. These authors consider this to be a stance of dishonesty and found that it was more common among associate professors than among full professors; this could be explained by the pressure for publication that is concentrated in mid-career scientists. In parallel, a systematic review of grant-giving peer-review processes has concluded that there are no available studies assessing the impact of peer review on the quality of funded research, that open peer reviewers behave differently from blinded ones, and that practices aimed at controlling and evaluating the potentially negative effects of peer review should be implemented (Demicheli and Di Pietrantonj 2007). More recently, reports on phony peer review have emerged (Dadkhah et al. 2017; Marcus and Oransky 2017), but even without this evidence, it seems that the peer review system has been broken along the way (Belluz et al. 2016).

What about formal social control of RM? Are there organized structures designed specifically to regulate, detect, and ultimately sanction

RM? It seems that the studies conducted so far show the ambiguity and diversity of reactions, and an absence of stable and universally supported definitions of RM and organizational and institutional reactions to it (Hesselmann et al. 2016). Edwards and Roy (2017) mention that 'there are incentives throughout the system that induce all stakeholders to "pretend misconduct does not happen"' (p. 56), and that a system for reporting and dealing with RM is yet to be properly developed. Lee (2011) states, on the other hand, that there are institutional policies designed and in place, but that their contents and uses are ill developed. HEIs may even choose not to report problematic situations, fearing reputational damages (Drenth 2015). While it is believed that the existence of accessible and visible RM policies in HEIs, with rules about detection and sanctioning procedures, have deterrent effects, studies have shown that their accessibility is not as good as it should be (Lind 2005). Concerning regulation across Europe, Godecharle et al. (2014) concluded that there is a wide heterogeneity in the behaviours being regulated, except for FFP. Diversity is also dominant in the identification of mechanisms used to deal with RM complaints, with some HEIs enacting self-regulation and internal control mechanisms while others sustain external controls and promote the intervention of traditional mechanisms of social control, such as the police and the criminal justice system.

Organizations may also play a role in making it easier for whistle-blowers to report RM (Kumar 2009; Redman and Caplan 2015). When reporting of RM does occur, degradation rituals performed by peers may have deleterious effects, not only by exacerbating the formal consequences of the allegations, but also by preventing whistle-blowers from coming forward more frequently. In fact, research seems to show that those blowing the whistle may suffer severe retaliation or professional and personal consequences for having done so (Jaffer and Cameron 2006; Kumar 2009; Redman and Merz 2005). This and other reasons make it difficult to regulate, detect, investigate, and sanction RM, turning RM into a case of 'institutional wrongdoing' (Sieber 2012), namely when an HEI's directors or managers do not deal properly with RM and thus limit the possibility for the allegations to be investigated by means of fair and impartial procedures. When a case of

RM takes place, individuals tend to react differently, either intervening personally or calling upon higher-ranked colleagues or staff. What is also relevant, is that they eventually report having suffered retaliation after the detection and having experienced strong feelings of stress during the whole process (Sieber 2012). What is more, power differentials between the offender and the person detecting RM may impact on the outcome, with studies showing that where the participant is in a subordinate position, he or she may react (i) by stepping aside and forwarding the situation to a legitimized third party, (ii) by submission to authority and doing nothing in order to avoid trouble with a superior, or (iii) by resisting and confronting the superior (Gibson et al. 2014). Above all, research shows that there is no consensus on how to proceed when detecting RM.

Research has also tried to assess the working of formal procedures for investigating RM allegations. Some years ago, Wilson et al. (2007) showed how responsible institutional officials in US universities struggled with difficulties in investigation owing to problems with records and accessing data. These obstacles were so extensive that 80% of the sample knew of at least one case that was impossible to solve owing to insurmountable problems in collecting evidence. The authors state that the probable cause was the lack of written rules on good practice for record keeping, or, in other words, an organizational environment which was unhelpful for investigating RM. Keränen (2006), on the other hand, discusses the discretionary decisions taken against offenders for RM, whereby people who committed the same act may be sanctioned differently, especially owing to external factors outside their control, in a 'moral luck' situation. The author claims that sanctioning mechanisms do not take account of the 'seriousness continuum' of situations, and this implies that the application of sanctions do not meet the principles of proportionality, justice, and equity. Taking a similar stance, Cabbolet (2014) also treats as a form of RM the breach of duty of committees for scientific integrity when condoning RM.

Finally, some studies try to determine how other actors in the scientific system, outside HEIs, have tried to regulate RM. In a sample of 50 scientific journals, Redman and Merz (2006) found that only seven of them had written rules on the topic while, simultaneously, proposing different investigatory procedures to be taken in cases of suspected RM.

Written penalties were to be found in four of those seven journals and ranged between manuscript rejection, publishing errata, retraction, and letters of reprimand. A study of scientific societies showed that the bigger they are, the more likely they are to have some kind of written regulation on RM, but, overall, their codes were very heterogeneous (Iverson et al. 2003).

What can be concluded from this very brief overview of existing research on social control mechanisms for regulating, detecting, and sanctioning RM? The literature shows the lack of consensus and uniformity about what is viewed as RM and how to deal with it, be it in Europe or in the USA. HEIs, countries, and scientific societies have offered different definitions and different rules on how to prevent, detect, and sanction it, and omissions and loopholes abound. Studies also show how important the organizational environment in HEIs may be in promoting scientific integrity and preventing misconduct or, on the contrary, condoning it by, for instance, not allowing fair decisions to be made or retaliating against whistle-blowers.

Prevention of Research Misconduct and Promotion of Integrity

RI has become a priority in various countries and HEIs in recent years. Efforts to promote RI, raise awareness about ethical and professional principles for researchers, and prevent and detect RM have become commonplace in many countries (for a general overview see Bretag 2016). As previously mentioned, there is ambiguity about what RM is. In the same way, a lack of consensus still exists about what scientific integrity, or RCR, means (Kalichman et al. 2014). Nonetheless, various HEIs and research institutions have made serious efforts to address these topics.

The research on this subject shows that training and educational materials are extremely varied among HEIs (DuBois et al. 2010). For instance, training materials overlook data and results on misconduct stemming from epidemiological and social scientific studies, and several topics seem to be neglected, such as the role of the HEI in the

promotion of an organizational culture favouring integrity, or rules about the use of public funding (Heitman and Bulger 2005; Kon et al. 2011).

Specifically, training on RI, or RCR, has been considered one of the most important means to prevent future misconduct and informs researchers about 'rules, regulations, and professional practices' (Steneck 2007, p. xii, but see also Resnik 2014). Training has also been thought to help researchers in ethical decision-making, and this seems to be true especially of training designed for undergraduate and postgraduate students. Nonetheless, the reports and studies produced so far tend to recognize the variety and disparate nature of training offered across European countries (Hiney 2015). What is more, empirical studies (specifically meta-analysis and reviews) on the effectiveness of training have produced inconclusive results, according to course content, delivery methods (meaning the format of the programme), and type of evaluation study (Marusic et al. 2016). Some research even goes so far as to suggest that training may have negative effects, in the sense that 'course participants were more deceptive, retaliatory, closed, and neglectful of personal responsibility in their responses following instruction …' (Antes et al. 2010, p. 8). Authors have therefore proposed shifting the focus from RCR training and education to 'RCR culture building' (Kalichman 2014) or considering the broader research environment (Plemmons and Kalichman 2017).

Apparently, even in the presence of training guidelines on RCR, programmes may be highly dissimilar, with ill-defined content, format, and goals (Kalichman 2013). This means that groups of trainees with similar characteristics and needs may be subjected to different content. Such a situation, in turn, may have consequences in the deepening of non-consensual ways of identifying, thinking, and reasoning about professionalism and integrity in research. Thus recognizing differences in the application of training and education mandates and guidelines has been a way of identifying not only shortcomings, but also successful cases and proposals for future improvements (Resnik and Dinse 2012). In fact, literature on academic integrity has shown that different groups of academics may disagree on how to teach academic integrity and how learners address it (Löfström et al. 2015). Hyytinen and Löfström

(2017) have concluded that, in the teaching of research ethics and integrity, academics may have different approaches to misconduct (some being proactive and others reactive), as well as varying conceptions of how to teach such topics. This may, once again, impact on the content, expected outcomes, resources used, and interaction with trainees, with the potential for variation of training within the same institution and for similar groups of trainees.

Harms and Costs

One way to address the need to prevent, regulate, and sanction RM is to try to understand its harmful consequences. Mongeon and Larivière (2016) show how collaborators suffer consequences in their productivity rates when their co-authors commit RM and papers have to be retracted. Papers retracted for RM nonetheless continue to be cited in the literature and, according to Neale et al. (2010), fewer than 5% of the citing papers studied indicated any awareness that the cited article had been retracted or named in a finding of misconduct. In the same vein, Stern et al. (2014) concluded that researchers experienced a median 91.8% decrease in publication output and large declines in funding after censure by the ORI. They also calculated that papers retracted owing to RM accounted for approximately $58 million in direct funding by the US National Institutes of Health between 1992 and 2012 (less than 1% of their budget over this period) and that each article accounted for a mean of $392,582 in direct costs (USD $423,256). Studies have identified the types of costs (investigative, losing of grants, administrative penalties, and retraction costs) potentially generated by RM cases, one study concluding that 'Total economic cost of research misconduct for the 17 cases in the sample using model assumptions was calculated to be $8,592,390' (Gammon and Franzini 2013, p. 92).

There is still a need for more research about the harms and victims caused by RM. There are already some examples of harms caused by several instances of RM. Paolo Macchiarini has been accused of RM, and the implants he devised seem to have caused the deaths of several

of his patients (Rasko and Power 2017); the fake connection of vaccines and autism, the product of a retracted scientific paper, seems to be one of the causes of a wide anti-vaccine movement with severe impacts on health (Deer 2011); and the financial economic crisis of 2008 may have had, as a distant cause, undisclosed CoI on the part of economists working in relevant financial institutions and supervisors (Carrick-Hagenbarth and Epstein 2012). It has been argued that several situations and actors suffering harm should be considered:

> The possible ripples of negative consequences of an act of research misconduct range include harms to the researcher him or herself, harms to the community of researchers, harms to the scientific establishment, harms to the institutions in which the action was committed, harms to those who participated in the research, harms to the agencies that sponsored the research, harms to those whose lives are affected by the research, and harms to the general citizenry. (Keränen 2006, p. 191)

2.3 Research Misconduct: Looking into the Shattered Glass

So far, this chapter has offered a review of what some of the existing literature considers RM to be. It has also shown how authors have raised concerns about FFP and drawn attention to a number of QRP, including CoI, biased peer review, and authorial disputes other than plagiarism. There seems to be, then, a constellation of behaviours that are red-flagged as deviations from a set of rules for integrity or responsible conduct while conducting research. Nonetheless, the exact definitions and features of such behaviours, harms caused, data on their prevalence or incidence, and individual and organizational causes for offending seem to be lacking or, at best, scattered and unsystematic.

It is true that the past few years have witnessed a growing body of research and questioning on the topic of RM and its social control, including meta-analysis and systematic reviews. But because of methodological difficulties in accessing official data on RM, the fact that people usually do not like to discuss sensitive topics, and the predominant

use of surveys and the generation of quantitative data, among others, we have only a partial account of the subject. What is more, much of the literature and many of the practices addressing RM start from an implicit assumption about the ontology of behaviours, 'denying social constructionists influences by those defining problematic scientific behavior' (Buggenhout and Christiaens 2016, p. 7). As stated in the previous chapter, criminological enquiry, especially in white-collar, occupational, and organizational scholarship, is used to considering the social construction dimension of deviance and crimes. It is also especially well equipped to produce research on individual factors, as well as on organizational features that may lead to pressures to cut corners. Finally, criminology is already sufficiently mature to overcome many of the methodological difficulties identified so far in research produced by other disciplinary fields. The chapters that follow will help to fill the gap encountered so far, in the sense that they present in-depth, qualitative research on the topic of RM, guided by criminological knowledge and reasoning.

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3

Good Luck with the Research That Will End Your Career

In this chapter, an account will be given of the methodological choices and procedures that enabled the empirical research on RM whose results will be presented in Chapters 4 and 5. A research design mainly centred on qualitative methods was chosen. As already stated, the existing research into RM, especially at the time when this project was started, was mainly quantitative, based on the use of surveys or focused upon decisions enacted by institutions such as the ORI. For this research, there were two main aims: the first was to access scholars' perceptions of RM, bearing in mind that conceptual ambiguity abounded in the literature; the second was to uncover social reactions to RM by accessing the development, or process of creation of social control mechanisms in Europe, at the turn of the twenty-first century.

The paragraphs that follow will give a brief account of specificities to be taken into consideration when conducting qualitative studies, as well as the research design, sampling procedures, and analyses conducted in the current research on RM. In addition, some of the challenges found when researching one's own peers and working environment, as well as solutions found to overcome such challenges, will be described. As with many qualitative studies, reflexivity is and was needed to better

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make sense not only of the data, but also of the concrete positioning of the researcher towards the data. The transcribed sentence that forms the title of this chapter, 'Good Luck with the Research That Will End Your Career', was probably spoken as well-intentioned advice by one of the interviewees in my sample, off the record, when saying goodbye. Nonetheless, it reverberated in me for some time and raised many of the issues that will be developed in the following pages.

Another point that should be noted has to do with known difficulties in conducting empirical research on white-collar, occupational, and organizational crime and, thus, on RM. The limitations of official crime statistics on these and related topics (Maguire 2012; Walburg 2015), the lower levels of enforcement when compared with other forms of deviant and criminal behaviours (Nelken 2012), and the multiplicity of agencies regulating stances of occupational and organizational offences (Friedrichs 2010) have led researchers to use other approaches to collect data on such forms of misconduct. Researching powerful actors is already difficult, as will be shown, especially when asking about sensitive topics such as those that may give rise to criminal prosecution, or situations considered wrong or harmful. In addition, asking what people feel about how things work in their organization may hinder spontaneity because they may fear reprisals. Powerful actors also have 'a lot to lose' and may be protective of sensitive information. The literature also reveals that asking people about white-collar crimes may give rise to very elaborate neutralization techniques or language constructs used to justify behaviour, avoiding labelling, responsibility, denying the existence of victims or harms, criticizing the fairness of the law, or appealing to higher loyalties (Schoultz and Flyged 2016). Issues such as the invisibility of deviant and criminal behaviours (which usually have no witnesses and no records), as well as potential negative reactions to research, should also be considered. On this last point, it may be necessary to ask whether someone is protecting the researcher, because the powerful may retaliate (Alvesalo-Kuusi and Whyte 2017; Friedrichs 2010; Israel and Gelsthorpe 2017; Tromp 2010).

It will be argued that all these difficulties must be taken into consideration when one studies RM, which, in turn, further proves the point concerning the need to study RM by means of what white-collar,

occupational, and organizational scholarship has produced so far. Thus the current research also pleads for the overcoming of restrictions on data collection, specifically about RM, and defends a comprehensive and broad approach to the topic. First of all, and bearing in mind that this book may also be used by junior researchers in criminology and other social sciences, and that the topic may be of interest to scholars from the exact sciences who are not accustomed to the use of qualitative methods, some thoughts will be offered on the specificities of using qualitative methodologies.

3.1 Using Qualitative Methods and Assessing Their Quality

As previously mentioned, the topic of RM includes an array of problematic practices in scientific research, from FFP to QRP. The research conducted did not enquire about problematic behaviours committed by scholars outside their professional roles (for example, domestic violence), or about those behaviours that occur in the workplace but are not directly connected to their professional duties, roles, and competences in scientific research (as in the case of sexual harassment).[1] The research described here thus considered only those problematic behaviours and practices committed by individual actors with professional ties to European HEIs, in the course of their occupation and because of it. PhD students were included because, generally speaking, they already conduct some of the central tasks of production and dissemination of scientific knowledge, and may eventually be appointed to academic positions. Problematic practices committed by collective actors, such as HEIs or social groups (e.g. departments) existing inside HEIs, were also considered for research. This implied looking at instances where individual actors give meanings to the reality they move in, in accordance with the organizational

[1]While a minority of interviewees raised concerns about scholars committing sexual harassment, this misbehaviour has not been acknowledged as a form of RM by the literature. Nonetheless, and in view of the shifting nature of RM, more recently some voices have asked for sexual harassment to be included in the list of situations labelled as RM (Kuo 2017).

environment, surrounding culture, and wider interactions they are presented with. The intersection between individual agency and organizational structure and culture has already been sufficiently addressed in the previous chapters. This meant, in turn, that scholars were interviewed in order to determine their individual perceptions of RM, in connection with their own perceptions of organizational features, and also that a document analysis of European social control systems of RM was conducted. It is hoped that the intersection of the two levels, or dimensions, will produce a comprehensive and broad account of what is considered RM in Europe, its ascribed causes and consequences, and the social reaction to it.

While it can no longer be argued that criminology (or any social science, for that matter) strives to achieve the values of scientific truth, objectivity, and neutrality (Noaks and Wincup 2004; Wincup 2009), it needs to access human values, shared meanings, and the context and environment of human action in connection with rules and behaviour patterns. Thus, there is a need to develop and apply research methods that are considered flexible and well suited to the research topic (Giorgi 2012). For the current study, qualitative methods were chosen, especially because they are better suited than others to producing knowledge about unexplored social phenomena, or about populations that are hard to get in touch with (Arsovska 2012), such as elites and professionals working in closed or semi-closed organizations. Qualitative methods, or the use soft data (Walliman 2011), are especially suitable for an approach that is interested in the actors' words and meanings, and the surrounding culture and environment, without forgetting structural dimensions and systems of thought (Pires 2004). They also facilitate understanding the attribution of individual meanings and strategies, power games, negotiation, patterns of action, constraints, and processes of socialization inside organizational structures (Crozier and Friedberg 1977).

The social sciences, criminology included, collect empirical evidence about the social world, and social researchers take a specific stand while observing social phenomena: openness to opposing hypotheses, constant movement across topics, theories, and methods, using the research question as a signpost indicating which way to go (Davies 2011; Davies

and Francis 2011). Scientific research relies on critical thinking, and the opposition between positivism and constructivism has shaped the use and development of qualitative methods over time (Pires 1997a; Seale 1999), namely by assuming that research topics are constructed disciplinary phenomena and are socially pre-constructed. What a researcher obtains is always approximate knowledge that will be verified and corrected in the long run. Empirical research and scientific knowledge reduce information and organize a certain way of reading reality, independently of the (qualitative or quantitative) methods being used, and therefore the researcher must adopt a position of modesty, acknowledging that the results obtained will never be able to cover the whole of social reality and, will consequently, be generalized from a given sample to the whole of the population (Warr 2016).

The question of whether scientific knowledge can produce truth seems harder to answer when one is trying to access social actors' subjectivities and the meanings they attribute to the world in which they find themselves and where they permanently reconstruct themselves. Predictability is, thus, an illusion, and one should rather look at the creativity, discovery, curiosity, and reflexivity of social actors (Pires 1997a). Researchers must, then, move towards the real or metaphorical place that the Other occupies, eventually combining their experiences and expectations and understanding that 'staying close to the data is the most powerful means of telling the story' (Janesick 2000). As many methods handbooks state, researchers should be able to make choices about their degrees of involvement and participation in the activities under study, the methods to use, the theories to adopt, and the critical stance to have. These also include the freedom to recognize any theoretical and methodological limitations encountered (Pires 1997a). As already mentioned, this positionality and reflexivity in researching peers and RM will be described later.

Qualitative methods tend to be used in processual practices of co-production of data and interpretation (Poupart et al. 1997; Walliman 2011). Data are expected to provide concepts, theories, or patterns, by means of open-ended processes of research and interpretation, with improvisation moments, while the topic is constructed during the ongoing process of research (Janesick 2000; Pires 1997a).

Qualitative research is especially concerned with interpreting social action, and qualitative methods are well suited to giving accounts of complex subjects (organizations or social groups) or hidden subjects, by describing in depth the relevant aspects of social life, shared culture, and lived experiences (Pires 1997a).

Traditional challenges with the use of qualitative methods may include one or more of the following. First are the large amount and complexity of data produced, a risk that the researcher will be considered a spokesperson for social groups under research, and the time spent in collecting and analysing data (Janesick 2000). Secondly, challenges may include the indeterminacy, singularity, or diversity of natural contexts where phenomena take place. There is also the need to admit that research will always be partial and subject to change, thus avoiding the drawing of conclusive theories. Finally, researchers have come to argue that time, flow, change, and evolution should be taken into consideration, and this is why they must try to have lengthy contact with the topic of research. All of this will affect how they build samples and select instruments for collecting data, while considering subjectivity and assessing validity and reliability criteria (Noaks and Wincup 2004; Seale 1999; Silverman 2000; Strauss 1994; Walliman 2011).

Qualitative methods allow access to the subjective views of the actors being researched, while also taking the researcher's subjectivity into consideration. In fact, some elements of the research process are the outcome of negotiation between the researcher and the researched. How then can researchers ensure that they are conducting the best research possible? Laperrière (2012a) mentions the need for researchers to have a 'total experience', acknowledging their values and feelings, instead of pretending to be a tabula rasa. Researchers should express their methodological choices and interpretative frameworks, and their social positioning. They should exercise self-criticism and transparency, and adopt a stance of critical listening towards the actor being researched. Robust qualitative research would, then, be associated with the quality of data obtained, and their adequacy and comprehensiveness. Researchers are expected to ensure that they offer a proper interpretation fitting the data, systematically checking it and strengthening it by means of

triangulation. Data and interpretation should agree (Laperrière 2012a). Thus knowledge produced by a qualitative approach cannot be dismissed as being subjective, because it can in fact be verified and changed (Pires 2012).

Validity is the degree of trust in results and conclusions of empirical research; it is concerned with the coherence of the methodology used, and the extent to which the explanation obtained fits the data (Janesick 2000). Internal validity checks the possibility of causal relations between variables; external validity refers to the possibility of generalization of results; and a check of ecological validity will determine whether the conclusions are applicable to other situations or were obtained in unique or artificial conditions. In qualitative research, a check of internal validity will assess whether the data fit or agree with the interpretation. The researcher is expected to carefully look for all things that may threaten the consistency of arguments presented (Seale 1999). The theory that emerges, obtained after exhaustive codification and saturation, will be valid if it is adaptable to the development of future knowledge. External validity, in qualitative research, refers to the generalization of results to other non-studied populations, places, or times. But the researcher should look for a semiotic representativeness, and not a statistical one: in other words, a representation of essential social processes and not of specific characteristics of researched situations.

Reliability, on the other hand, refers to the degree to which concepts and measures are well defined, consistent, and reproducible (Davies et al. 2011), ensuring that results are not due to mere chance and raising questions about stability, coherence, and predictability (Silverman 2001). However, in qualitative research, instances of randomness and contingency, including so-called 'negative cases', should also be acknowledged. In this sense, qualitative research results should ensure adaptability to other situations, in such a way that research procedures may eventually be used, revised, and assessed by other researchers in the future. In this way, it will be ensured that results may be reproducible in formally identical settings or situations. These, in turn, are hard to obtain in real-life social settings and conditions. Internal reliability may also be used, by which several researchers proceed to code themes in order to ensure the degree of shared research assumptions, as well

as external reliability or the possibility of replicating the same results in different studies, but '[T]he expectation of complete replication is a somewhat unrealistic demand' (Seale 1999, p. 42).

A way of making the data and its interpretation more robust is to apply *triangulation*. Triangulating means combining different analytical strategies to allow the exploration of different dimensions of the data (Noaks and Wincup 2004, p. 125). Data triangulation is a procedure using different data sources in order to confirm information, allowing stronger fitting of data into theory and producing richer descriptions (Noaks and Wincup 2004; Seale 1999). Researcher triangulation means using several researchers to build data categories or register observations; an agreement among them on the data will indicate valid data and theory. Theoretical triangulation, on the other hand, refers to the procedure of data being approached with several theories (Seale 1999). Additionally, methodological triangulation is obtained by using various methods to study the same problem (Janesick 2000). In the current research, for instance, scholars' perceptions of social control of RM will be triangulated with document analysis carried out on documents regulating RM in Europe.

Finally, theoretical *saturation* is reached, and analysis of specific categories comes to an end, when, after a category emerging from the data has been found and characterized, new data do not add any other new properties. Empirical saturation, on the other hand, relates to data (rather than emerging categories) and is found when the researcher concludes that the last data collected bring no more new or relevant information, meaning that data collection can end. Saturation is used as a measure in assessing the adequacy of the methods employed, indicating when to stop collecting data and allowing for the generalization of results to the population to which the sample belongs (Pires 1997a).

3.2 Interviewing Scholars on Research Misconduct

The following paragraphs will briefly describe the procedures of preparing, conducting, and analysing interviews with scholars. The several steps undertaken will be presented and justifications provided for methodological choices. Potential bias will also be pinpointed. This section is, thus, essential for readers to assess the empirical procedure used and understand the interpretation of data accordingly.

A *semi-structured interview* was considered the most effective tool for collecting data on scholars' perception of RM, because it allows the researcher to restate questions, explore unpredicted dimensions, and access large amounts of information provided by interviewees (Davies et al. 2011; Fontana and Frey 2000; Silverman 2001; Wincup 2009). Interviews are expected to be conducted in such way as to allow spontaneity and the cooperation of the interviewee, who should feel at ease to speak about different topics, including emotional ones. For that purpose, there are necessary elements of staging that require the right choice of time and place, recording instruments, dress codes, and the role of the interviewer. Anonymity must be guaranteed, as well as empathic listening and a warm relationship according to existing social conventions. Leading questions and interruptions should be avoided, moments of silence are to be respected, and techniques for probing and redressing questions should be used (Poupart 2012). Bias in the interview context may result from a variety of factors: it may be due to how questions are put or how sound is recorded, but also to the interviewer's features, actions, attitudes, or social and demographic characteristics. Bias in the collecting of data due to the interview itself may also occur as a result of the context of the interview, for instance, or the location chosen for it. The researcher must be aware of all potential biases arising in an interview situation and try to minimize them as far as possible. In the end, interviewing involves more than paying attention to the oral message; it is 'a wholly engaged encounter, a means for making accessible the multiple intersections of material contexts that collude in productive formations of meaning' (Kuntz and Presnall 2012, p. 733).

In order to decide who will be interviewed and who will be omitted, the researcher has to deal with the sampling procedure. There are many ways of choosing which source of data will be used, how many interviewees will be selected, and what their characteristics will be. Usually, in qualitative research, the method is a non-random theoretical sampling, according to specific features to be analysed that are predefined at the start of the research, such as gender, age, or profession. Such features are also guided by the theory that is emerging, if the Grounded Theory for analysis is used (Strauss 1994). The current research took into consideration what Pires proposes about a sampling, considering it as any operation trying to constitute an empirical corpus for research. As such, Sampling aims to look at a small amount of something to clarify general aspects of a problem. However, in qualitative research, 'it is futile wanting to build upon formal criteria for sampling' (Pires 1997b, p. 155), and the empirical corpus must make sense in connection with the research topic and the research structure. Usually, a conventional structure of research does not grant access to the whole population (P), and so an operational sample (A) is collected. Nonetheless, some research demands that an open structure of research is used when one is analysing the whole of the population (P), going directly from the empirical corpus to the theoretical level. Here there is a continuum of analysis, with a relational nature (and not a predefined one) between sample and population, where the population (P) is termed a 'universe of analysis', and the 'general universe' consists of other populations where the theory applies. This will imply different ways of generalizing results.

The same author (Pires 1997b) also suggests that sampling can be done differently, according to a single case of microsocial unities, or of actors or places (life stories, for instance), or to multiple cases of microsocial unities. This takes place in cases of homogeneous groups that have a minimum of internal difference and diversity, but also when comparing a small number of different cases, or in negative case situations. In these cases, actors are treated as informants or representatives of a social group or subculture (Ruquoy 1995), and the researcher should look for internal (intra-group) or external (inter-groups) diversification until saturation is reached. In the current research, it was decided to make an effort to diversify the features of a

fairly homogeneous, professional, group, and to put in place a theoretical sampling procedure.

Therefore, in the current research, semi-structured interviews were conducted, aiming to access scholars' perceptions and attitudes towards problematic behaviours and situations regarded as RM (either FFP or QRP). Interviews and sampling techniques were intended to access the perceptions and attitudes of a rather cohesive professional group, belonging to a specific professional subculture, as if they were elements of a range of values and practices. The interviewees were, then, treated as informants, which allowed access to specific information, as well as the context of such information, and a critical analysis of beliefs and practices. The informant-interviewee is, then, considered to have special knowledge and sensitivity on issues the researcher is interested in and can thus provide a better account of phenomena: in this case, RM in its varied forms, as well as perceived causes and consequences. It thus followed that, in order to access a broad spectrum of situations and problems and in-depth understanding of phenomena, the current study had to look for diversity in the sample, specifically by means of internal diversification inside the same group. According to Pires (1997b), the snowball technique may be especially useful for this, and this technique was in fact used when I had no available network to reach interviewees. In sum, 27 interviews were conducted, and internal diversification or *theoretical sampling* was performed around a number of axes, as detailed below.

The countries where the interviewees were working. Interviews were conducted in the following countries and for the following reasons. Portugal was chosen because a previous exploratory research project (Faria 2009) had been conducted in this country that was worth continuing and improving, and also because of easy access to interviewees owing to geographical proximity with the researcher. The country was also used to represent southern European countries. In all, thirteen interviews were conducted. The United Kingdom was selected especially because its science model is considered to be very close to the North American one and may be considered representative of Anglo-Saxon countries (Becher and Trowler 2001; Hedgecoe 2012; Nowotny et al. 2001). Four interviews were conducted, but the fourth had to be discarded owing

to problems with the sound recording device, thus leaving a total of three. Belgium was considered to be representative of central European countries, with special connections with the continental and French tradition of scientific research. The fact that the author of the research and the supervisor had a strong professional network there facilitated contact with potential interviewees. Six interviews were obtained in Belgium. The Netherlands holds a special position in northern Europe thanks to its high levels of scientific development, which is closer to the Nordic models of scientific activity and models. Four interviews were conducted during a research stay in the country. Switzerland was used for one 'deviant case', because the country is not part of the European Union, owing to its specific linguistic and economic situation. Only one interview was conducted, with an interviewee who ticked all the boxes of the theoretical sampling procedure. As the results showed, this 'deviant case' did not deviate very much from the rest of the sample on accounts of RM.

Academic ranks were taken into consideration while creating the sample. The final sample was composed of full professors ($n = 11$), associate professors ($n = 5$), assistant professors ($n = 4$), junior researchers ($n = 3$), senior researchers ($n = 2$), an assistant lecturer ($n = 1$), and a post-doctoral researcher ($n = 1$). The high number of full professors may be explained by a number of hypotheses. On the one hand, using the snowball technique may have meant that older, higher-status, and better-known colleagues were suggested to be interviewed. Full professors may also be considered especially sensitive and aware of the topic, in view of their roles as gate-keepers, and thus more prone to accept invitations to be interviewed on the topic.

The scientific and disciplinary fields. An in-depth perspective on each scientific field was not intended, but rather it was considered that actors working and researching in different scientific fields may have varied perspectives on the topic of RM, existing rules, or social control mechanisms. In fact, Becher and Trowler (2001) mention the existence of academic tribes with various territories and cultures. The differential distribution of power among fields, which may influence their autonomy and framework, should also be considered. This means that disciplinary power and control relations will influence the knowledge

produced by a specific scientific community, especially when directed outwards to external powers. In addition, scientific and disciplinary fields have evolved in different social contexts and have different cultural attributes. They have diverse identities, 'define their own identities and defend their own patches of intellectual ground by employing a variety of devices geared to the exclusion of illegal immigrants' (Becher and Trowler 2001, p. 47). According to the academic tribe's territory, individual actors may be presented with different ways of handling RM. 'Convergent' disciplinary communities have strong borders and feelings of belonging, in such a way that 'deviations from the common cultural norms will be penalized and attempts to modify them from the outsider will be rejected' (Becher and Trowler 2001, p. 59). 'Divergent' disciplinary communities, on the other hand, are not well defined, lacking feelings of cohesion and identity, and have loose borders, and will not penalize deviations from rules so strongly because the rules themselves are not as clear as in other disciplines. In all, the sample used for the current research was composed of 17 interviewees from the so-called social sciences and 10 from the exact sciences. When regularities and distinctions were searched for at the data analysis stage, it was found that another cut had to be made in order to distinguish between interviewees from the social sciences and those from law and philosophy (see Table 3.1).

Gender. Finally, the theoretical sampling procedure also took gender into account. Several authors claim that the scientific community is still highly discriminatory against women, who seem to have fewer opportunities than their male counterparts: '[G]ender regimes in universities have traditionally been profoundly unwelcoming to women and had allowed the unacknowledged exploitation of their work' (Becher and Trowler 2001, p. 19). This considered, gender was also taken into account in order to diversify the sample, which was eventually composed of 14 male and 13 female interviewees. As expected, male scholars are more strongly represented at the top of the academic career ladder and women are to be found in academic posts closer to the bottom.

In order to obtain data from the sample, an *interview script* was created. It had already been tested previously in an exploratory piece of

Table 3.1 Sample of interviewees

Academic rank	Scientific and disciplinary field			Total
	Exact sciences	Social sciences	Law/philosophy	
Full professor	4	6	1	11
Junior researcher	0	3	0	3
Assistant professor	2	1	1	4
Associate professor	2	3	0	5
Assistant lecturer	0	0	1	1
Senior researcher	1	1	0	2
Post-doctoral researcher	1	0	0	1
Total	10	14	3	27

research (Faria 2009; Faria and Agra 2012), and consisted mostly of open-ended questions. Special attention was paid to the fact that RM may presumably be considered a sensitive topic. This means that people may feel uncomfortable discussing it or confessing to different kinds of misbehaviour or breaches of occupational roles and duties, may fear retaliation, or may feel the need to respond according to social desirability (John et al. 2012; Karabag and Berggren 2016; Lee 2011; Macfarlane et al. 2014). This, in turn, may hinder spontaneity and honest responses from interviewees. Thus any kind of questions referring to self-reported RM was deliberately omitted. The interview script covered the following dimensions of analysis: (i) characteristics and types of behaviours and practices that interviewees considered to be problematic and labelled as RM, thus referring to the need to understand what it is that interviewees problematize, and its perceived frequency and processes; (ii) the seriousness accorded to RM, referring to the aspect of disapproval or blameworthiness attributed, aiming to understand the behaviours that were considered more or less serious or more or less censured by the interview; (iii) ascribed causes of RM, be they individual or organizational (or other); and (iv) perceived consequences of RM, discussing the formal and informal social control mechanisms known.

The first questions of the interview script were intended to collect socio-demographic and professional data about interviewees, and to probe interviewees on the topic of research. The next group of questions comprised the bulk of the interview (Ruquoy 1995): interviewees were asked about their knowledge of situations of data fabrication,

plagiarism, biased peer assessment, and CoI. The final question was an open-ended one, allowing interviewees to add new information not previously requested, and used to sum up what had been previously said during the interview (Mikecz 2012; Poupart 2012; Ruquoy 1995). All interviews conducted in Portugal, one in the Netherlands, and another with a Portuguese scholar working in the United Kingdom were conducted in Portuguese; the interview with the Swiss scholar was conducted in French; all others were conducted in English. Although all the interviewees were familiar with the English language, there were different levels in their understanding of questions. One should not discard a probable bias caused by interviewees having to express themselves in a second, non-native, language. The same goes for the author of this research. The last point about language also concerns the transcriptions to be found in the next chapter. The transcriptions are presented in English where the interviewees used English, and translated into English where they used another language. Nonetheless, minor grammatical adjustments were made to the interviews carried out in English with non-native English interviewees in order to improve readability and comprehensibility.

Prior to the interview situation, all interviewees were contacted by email, or personally whenever geographical proximity allowed it or when they were already part of the researcher's personal and professional network. In all situations, the topic of research was clearly explained, permission to sound-record was requested, informed consent was provided orally, and all guarantees of confidentiality and anonymity were provided. The interviews lasted between 45 minutes and two hours, and one hour and 15 minutes on average. They were transcribed, yielding around 500 pages of text.

3.3 Analysing Documents on Research Misconduct

The document analysis conducted in the current study was intended to access the emerging European social control system for RM. The purpose was to determine what mechanisms, if any, are being designed,

and which implicit and explicit justifications are found for such mechanisms. The results will be presented in Chapter 5, and the following paragraphs will summarize the research design options, sampling procedures, and challenges faced.

This part of the study was conducted by means of document analysis (Atkinson and Coffey 1997; Bowen 2009). What is a document and how can it be considered a source of data? Documents (public and/or private) are produced by third parties, with no intervention by the researcher. They may be accessed in order to extract data for subsequent analysis, and, usually the literature sets apart primary sources—documents produced by those directly intervening in the facts being studied—from secondary sources—documents produced by people who did not directly participate in the phenomenon being documented but who have reproduced it afterwards (Prior 1997, 2008; Semmens 2011; Silverman 2001; Wincup 2009). In criminological studies, the documents considered most relevant are usually those produced at the different stages of the criminal justice system but, independently of their nature and the context that produced them, documents have to be assessed for authenticity, credibility, representativeness, and meaning (Cellard 2012; Saint-Georges 1995; Wincup 2009). Documents are considered the best materials with which to analyse past events and to produce data in a non-intrusive way.

Nonetheless, documents disseminate messages and meaning, build knowledge and behaviour patterns, and play a part in defining the world of individual and collective social actors. This considered, the current stance of document analysis considers that 'documents are used to and integrated into various kinds of knowledge networks … are exchanged and circulate within such networks' (Prior 2008, p. 824). Consequently the study conducted and described here looked at how messages are conveyed by a corpus of documents, and also at how documents are used and transformed by individual and collective actors, considering simultaneously how they may shape human and organizational action. The research, thus, tried to determine 'how documents as "things" function in schemes of social activity, and how such things can drive, rather than be driven, by human actors' (Prior 2008, p. 826). Documents were considered to produce specific effects, especially when testing the construction of an 'infra-penality' (Foucault 1975)

and attempting to regulate behaviour. Documents are not only testimony of what has happened: they also have the potential for guiding future action and creating new behavioural patterns, communicating the dominant vision about a problem that has emerged from negotiation, and establishing classifications, hierarchies, and solutions. Documents and texts stabilize the order of things and carry with them a vision of the world and of the respective modes of behaviour. They play a role in building human action and may mirror knowledge and action networks. Documents are also used to justify future paths of social action, while allowing insight into conflicting visions of a controversial subject or topic. They can 'drive and shape political, economic, medical and scientific activities just as much as do humans' (Prior 2008, p. 833).

Documents were therefore used in the current study as a source of data about mechanisms specifically created to address RM, in articulation (or, better yet, triangulation) with data provided by scholars' interviews. The analysis was conducted on official documents intended to be applied at the European level, specifically designed to debate RM as well as RI, thus allowing an articulation with the views on the topic provided by individual actors in an organizational context. The current scientific system does not exist in a vacuum, nor is it solely located in HEIs. It is influenced by, and provides and gives feedback to, external social systems, namely supra-national organizations concerned with scientific policy-making. This is especially relevant in Europe when the European scientific system is being promoted as the fuel for economic and social development, and efforts are being made for the creation of the ERA and funding procedures.[2]

The Corpus

By means of a theoretical sampling procedure, 13 documents were retrieved for analysis. Documents included in the sample had to meet the following inclusion criteria. The *geographic criteria* required that

[2]In 2014, the President of the European Commission (EC) in office stated that 'The European Union remains the largest knowledge factory in the world: it accounts for almost a third of global science and technology production. And despite the crisis, Europe and its Member States have managed to maintain this competitive knowledge position.' The report 'The future of Europe is science: a report of the president's Science and Technology Advisory Council (STAC)' is available online at the EC website.

documents in the sample had been produced and issued by organizations involved in the formulation of European scientific policy. While most of these organizations are independent, they may come together (as will be shown) to try to solve common problems, such as RM. The documents considered in the sample were also potentially to be applied to the European science system. An exception was made for documents issued by the Organization for Economic Cooperation and Development (OECD) owing to the very visible fact that most documents from other issuers mentioned the relevance of this world-wide organization for the task of controlling RM. The *issuer criteria* required that documents included were issued by specific supra-national organizations directly concerned with scientific research, namely the European Science Foundation (ESF), the All European Academies (ALLEA), the European Commission (EC), and the OECD for reasons already mentioned. The variety of organizations enriched the analysis and allowed for the possibility of studying different institutional practices, conceptions of RM, and social control mechanisms. The *time lapse criteria* required that documents under analysis were issued between 2000 and 2015. This deliberate choice was due to the fact that the reviewed literature pinpointed a growth of the phenomenon (or concerns about it) since the early twenty-first century. In addition, more recent documents were easier to access and were more up to date with current concerns and systems, notably the effects of the economic crisis that has impacted upon the world since 2008, with constraints on the scientific endeavour. A historical document analysis of the European scientific system was never an aim of the research undertaken.

The *topic criteria* stated that documents included in the corpus had to deal explicitly with RM. This implied a long process of excluding all documents that fulfilled the previous criteria but that dealt with other topics, such as higher education teaching, practices, and curricula. The only exception was made to include Document 8 (see Table 3.2), which does not mention specifically any kind of RM but was widely referenced by all other analysed documents. The *prescriptive criteria* stated that the sample had to contain documents in the form of codes of practice for action, guidance, or regulation. Documents such as conference proceedings or descriptive reports issued by those institutions were left

out because they had not been produced with the main aim of guiding action, describing guidelines and good practices, proposing rules and regulations on RM, and improving the communication of problematic situations and events, even when their respective titles omitted words such as 'code.' The *accessibility criteria* meant that documents included in the sample had to be available online and via open access. The final sample comprised only 13 documents because all criteria had to be met simultaneously: otherwise it would have comprised hundreds of documents, and a qualitative analysis would not have been the most suitable. Finally, the *application criteria* stated that documents regulating RM in Europe, found online and issued between 2000 and 2015 by the aforementioned supra-national organizations, would become part of the sample only if they were intended to be applicable to and regulate research conducted in every discipline and scientific field, and were not directed to specific ones.

Issuing organizations. The supra-national organizations found to be producing documents fitting the sampling criteria (sometimes in cooperation with each other) will be briefly described. ALLEA was founded in 1994, and is considered to be a federation of European academies; it includes 58 scholars from 40 countries from the Council of Europe, drawn from different scientific fields. The ESF was founded in 1974 with the goal of making progress in research and innovation; it offers services to the scientific community (for instance, peer review), and cooperates with the EC in the actions of the COST-European Cooperation in Science and Technology. Recently, some of its tasks have migrated to Science Europe. The OECD was established in 1961 and includes several member states, aiming to promote public policies for social and economic well-being. It gathers and analyses data in order to understand a variety of social and economic phenomena. The EC is one of the elements of the European Union, and its task is to prepare legislative proposals, guarantee policies, and distribute funding. Science and technology fall under its jurisdiction, especially in funding awards for the Horizon 2020 framework currently in force. It also comprises a European Group in Ethics in Science and New Technologies. The features and chronology of the documents retrieved and analysed can be consulted in Table 3.2.

Table 3.2 Sample of documents analysed

Year	Number	Title	Issuing organization
2000	18	Good scientific practice in research and scholarship	ESF
2003	17	Memorandum on scientific integrity	ALLEA + Royal Netherlands Academy of Arts and Science + Netherlands Organization for Scientific Research + Association of Universities in the Netherlands
	8	Report of the workshop on best practices in international co-operation	OECD—Global Science Forum
2005	14	European charter for researchers and a code of conduct for the recruitment of researchers	European Commission
2007	7	Best practices for ensuring scientific integrity and preventing misconduct	OECD—Global Science Forum
	6	Research integrity: global responsibility to foster common standards	ESF + ORI
	3	Final report to ESF and ORI. 1st World Conference on Research Integrity: fostering responsible research	ESF + ORI
2009	15	Investigating research misconduct allegations in international collaborative research projects	OECD—Global Science Forum
2010	10	A comprehensive strategy on how to minimize research misconduct and the potential misuse of research in EU funded research	EC
	4	Singapore statement on research integrity	WCRI
	2	Fostering research integrity in Europe	ESF (member organization, Forum on Research Integrity) + ALLEA

(continued)

Table 3.2 (continued)

Year	Number	Title	Issuing organization
2013	5	Montreal statement on research integrity in cross-boundary research collaboration	WCRI
	11	Ethics for researchers, facilitating research excellence in FP7	EC

Finally, some *potential biases* have to be taken into consideration. Firstly, the internet was used to retrieve documents, and, as thus, bias could occur through the existence of relevant off-line documents that were not found in the online search. Secondly, documents under analysis were assumed to be issued by specific collective, supra-national organizations (e.g. the ESF), but these organizations may have attributed different importance to different documents. One of the ways to determine the relevance and official status of a documents is to ascertain the existence or non-existence of formal elements such as logos, dates, and images, signalling its greater formalization and importance. Lastly, documents included in the corpus had to be in the public domain, which meant excluding any relevant documents that organizations might have produced and issued but kept confidential. The absence of information about such documents limits the conclusions of the current empirical research to those that were publicly accessed and analysed.

The document analysis was conducted in several dimensions (the results will be described in Chapter 5). The first dimension concerned problematized situations of RM, and was intended to identify those problematized situations considered to be RM by describing what fits inside each situation, as well as identifying the designations used. The second had to do with existing evidence about RM and was intended to examine the knowledge produced on the topic of RM and put forward by the documents, namely its causes, processes, consequences, prevalence, and frequency. The third dimension aimed to identify the actors and networks of actors involved in the design of control mechanisms, in order to determine which individual and collective actors

are interested and involved in the production of regulation of RM. The fourth dimension of analysis conducted on the selected documents aimed to enquire about the emerging proposed models of social control of RM, in order to reveal its general features in terms of regulation, detection, procedures, and the sanctions being designed to address RM. Finally, the documents were also analysed in search of justifications for the enactment of control solutions, the rationalizations and arguments presented for regarding some events as RM, and the values and interests protected by proposed regulation solutions. In this respect, I have followed closely the dimensions prescribed by Ritchie and Spencer (1994) for the analysis of applied policy: context, diagnosis, and strategies.

3.4 Analysis of Interviews and Documents

In order to interpret and make sense of the data obtained through the interviews conducted with scholars, as well as through the sample of documents described, an analysis was conducted in line with the guidelines of so-called Grounded Theory (Strauss 1994). All the different stages of codification (open, axial, and selective) usual in this approach were conducted, although in the present book an account will be given only of the final results, including some more descriptive stages, as well as the main categories found by applying the aforementioned stages of codification. Grounded analysis aims at the discovery and creation of a theory or explanation, based on the data gathered and by means of systematic inductive guidelines and continuous dialogue between data collection and analysis (Charmaz 2000; Laperrière 2012b; Seale 1999).

In the current research, coding and creating categories were developed in parallel with the sampling and data collection procedure, while creating memorandums and visual diagrams for better interpret data and for generating of hypotheses to further confront with data. Part of the data analysis was performed with the help of software for qualitative data (NVivo), especially in managing and storing data. SPSS software was also used to generate some descriptive statistics of the categories found.

3.5 Challenges in Researching Research Misconduct

In the final sections of the chapter, some reflections will be provided on the challenges encountered while conducting the current empirical study of RM. A first set of challenges had to do with the fact that data was obtained, to a large extent, from elite and powerful actors, such as scholars, and also by assessing scientific policy-making documents produced by supra-national organizations. The second set referred to the positionality of the author of this study towards the topic under analysis and the results obtained.

Researching the Elites and the Powerful

Scholars may be considered to comprise part of the intellectual elite of countries and organizations. They are articulate and used to debating ideas; they are likely to be socially well adjusted, performing socially significant tasks outside academia, used to giving their advice as experts, and called upon to solve particular problems. Some adjustments had to be made to the rules of thumb of qualitative criminological research, as it was difficult to find literature on how to question the powerful on sensitive topics. In contrast, the criminological literature has reflected extensively on how to interview more vulnerable social groups (e.g. Deakin and Spencer 2011; McNeeley 2012). As a consequence, methodological adjustments had to be made because power imbalances would probably show up, with the author of the current study 'researching up' (Mikecz 2012; Stephens 2007). For instance, the location of the interviews was usually the interviewee's or the author's workplace. When an interview took place in the scholar's office, he or she was alone during the interview, and apparently felt comfortable with engaging in conversation on RM. Nonetheless, the literature on researching elites and the powerful tends to warn us that such situations may unbalance the power dynamics between researcher and interviewee.

Given that the interviewees were highly qualified individuals, the responses obtained were quite rich and clear. In fact, and contrary to

most advice on conducting interviews, the author of this research had to make ongoing efforts to use jargon, in other words the scientific nomenclature of the interviewees' disciplinary fields, and to adjust to each interviewee's expertise, which also proved challenging. The ability to adapt to the flow of the 'conversation' had to be improved owing to the fact that these elites are very articulate. The interviewees' communication skills, and the fact that these individuals are used to communicating with the public, could lead the researcher to lose control of the interview. The literature mentions that elite interviewees can adopt paternalistic tones due to status differences, to have a tendency to dominate the interaction, or to provide 'politically correct' versions of the issues questioned (Mikecz 2012; Stephens 2007). Interruptions from secretaries or colleagues also occurred, attesting to the interviewees' importance in their social and professional networks, but also endangering anonymity and spontaneity because someone else would know that the person was being interviewed. All of these issues had to be addressed in situ, and the analysis conducted took them into consideration.

As a consequence, some issues were raised in relation to status similarity or dissimilarity and power imbalance between researcher and interviewee. The author of the current research belongs to the same professional group as the interviewees and is, thus, familiar with its professional and organizational features. Nonetheless, it was useful to reflect on what Davies et al. (2011) consider to be the role of 'insider research', when research is conducted inside the group the researcher belongs to, and some advantages that arise from this situation. The shortcomings from this relate to the potential for a lack of critical insight from the researcher, when what is already known is regarded as a fact and little or no problematization of phenomena being researched is undertaken. To avoid this, the researcher presented herself as a PhD student in order to obtain some differentiation from the interviewees. However, that may have encouraged more paternalistic responses from older or more senior scholars.

Mikecz (2012), notes that the elite interviewee is always more powerful than the interviewer, and, to fight this, interviewers may feel the need to exaggerate their skills, professional credentials, or affiliation. In the course of the current study, the author felt herself to be better

received by interviewees when she clearly stated her credentials (the names of her supervisors or the snowball contact) and institutional affiliations. There had to be no real conflict between insider and outsider researcher (Alridge 1993, cit. in Stephens 2007; Mikecz 2012), but the author found herself on a continuum between insider and outsider, which helped her to obtain original perspectives on the topics under scrutiny. In sum, the author felt like an insider because she was knowledgeable about the practices, working environment, and constraints being described. This insider knowledge allowed better and deeper insights during the data analysis. Nonetheless, the author was, at the same time, something of an outsider, in the sense that the interviewees were treated as experts and elites, most of them in the higher ranks of academia.

The analysis of the scientific policy-making documents, while being a non-intrusive way of collecting data and traditionally used in researching case studies of white-collar, occupational, and organizational crime and misconduct (Friedrichs 2010; Piquero and Clipper 2014), has some limitations. A large number of documents on a specific topic, or case, may make it harder to conduct a systematic and in-depth analysis. This justifies the choice of a long list of inclusion and exclusion criteria that documents had to meet in order to qualify for inclusion in the corpus. In fact, a simple online search for documents about RI and ethics on the EC website retrieved more than 300 documents, including directives, protocols, and conventions, and covered experimenting with animals, genetic modification, and the like. Had the author not imposed, for instance, the prescriptive criteria, then the diversity of documents would have hindered the study. Another relevant point, which will be confirmed in Chapter 5 when presenting results of the document analysis, is that different documents issued by the same organization may be contradictory and offer opposing views of facts, opinions, or motivations for action. In addition, given the variety and number of elite and powerful actors (experts, policy-makers, economic stakeholders, professional associations, and the like) involved in the design of social control of RM, as well as their respective interests and motivations for acting, one should not be too surprised at all to find ambiguities among the documents. All of these challenges have also been described in research

on white-collar, corporate, and occupational crime (e.g. Wingerde 2015), which maintains the main argument of the current book: such scholarship is crucial in order to better understand the pressing topic of RM.

3.6 Researching Your Peers and How It Changes You

As already suggested in the preceding paragraphs, it is the author's understanding that the methodological, theoretical, and epistemological positioning of the researcher should be clearly stated. This is particularly important when there is no relevant previous research on the topic. One should not pretend that researchers are axiologically neutral and objective in their research, or that the researched reality has no influence on them and vice versa. This is especially true when the researcher is in contact with other actors, and when communication is submerged in specific historical, social, political, and economic contexts which are able to shape what is told and thought.

In the current case, I, the researcher, share something very significant with the actors and practices being studied. I am not an external observer of the practices and roles of the academy; rather I have worked at a public university, trying to fulfil the goals of teaching and researching, looking for peer recognition, knowing all too well the professional concerns and successes of my colleagues and the demands facing HEIs. Given that '[W]e are not just describers of the world. We are actors in it' (Byrne and Callaghan 2014, pp. 65–66), and that I am not an outsider to the sphere I have researched, I would not leave it at the end of the empirical process. Instead, I was (and still am) an agent, or actor, of the practices I wished to understand, working in HEIs with other scholars on a daily basis. I have my own professional expectations and concerns, and these are directly related with the scientific system and research practices currently in place in Europe. Throughout the study now being described, and while not performing participant observation, I joined activities, and learned codes of conduct and action procedures

for different situations. I also asked myself whether this immersion in the field of enquiry would have negative outcomes in terms of my own ability to look anew at the phenomenon I intended to study. Sometimes, I also considered my close connection with the field as a positive thing, allowing me to understand better what interviewees told me. But these doubts were constantly present.

This proximity had the potential to create methodological limitations or biased interpretations. The interviewee's remark 'Good luck with the research that will end your career' could also be considered an alert for the potential dangers or risks of being so close to the field. These risks of studying such a topic could have affected my professional career. Several times it also happened that colleagues would try to get my attention in corridors or at meetings, 'complaining' about alleged RM situations that had happened to them, and trying, in this way, to ask my 'expert' opinion about the case in order to legitimize their own judgements and practices. In sum, I, author of this study, while conducting my research, never lost sight of my role as a scholar; and, as a scholar, while teaching or trying to publish, I never forgot my research topic. Most of all, I sought to exercise judiciousness and parsimony while moving on both sides of the same role. For these reasons, I viewed interviewees and the scholars being presented in documents in the same way as I conceive of myself. Actors are considered capable of reflexivity, introspection, planning future actions, awareness of their belonging to a wider social world, self-criticism, and change. The author of this book and the actors and practices mentioned throughout the research endeavour shared some occupational features, while being different with respect to others.

In order to conduct comprehensive qualitative research, especially during the period of interviewing scholars, I designed a series of strategies to overcome any potential limitations to my observations caused by my proximity to the field. In fact, I was conducting what I conceived as 'looking-glass' interviews,[3] which refers to the received heritage from

[3]This designation is largely influenced by the concept of 'the looking glass self' by Cooley, one of the most important authors from the school of thought of symbolic interactionism. I wish to thank Olga Petintseva for her time discussing these issues with me and which encouraged me to use such designation.

the interactionist approach, while acknowledging my own orientation towards the interviewees. The interviewees and I shared many things considered to be regular duties in scholars' roles: lecturing, looking for funding, having tight schedules, assessing students, sitting on boards, writing, and so on. Consequently I knew I was researching my own (professional) world, accessing interpretations and receiving communications about my own (professional) organization, and hearing about the same opportunities or constraints that I knew of. What is more, when an interview ended or the document analysis was suspended for the day, I would not go back to a different 'world', but to my own office, where I would continue to perform the same tasks that I had been hearing or reading about. I had to return every day to the same organizational environment that the participants, and the documents under analysis, claimed was somehow responsible for RM, or one that was similar. All of this made me, as author of the current research, more aware and more critical of everyday common research practices, but also of everyday potential QRP. Another doubt came to mind: once the results were made public, I would still probably be working in the same environment; would colleagues change their perceptions about me?

Consequently, mechanisms had to be devised in order for me to maintain some degree of 'objectivity' (or stay afloat), while looking for an original perspective and making the work interesting, not forgetting the need to keep my own motivation despite advice about potential negative risks to my career. Most of all, reflexivity was an essential tool in order for me to position myself as a scholar researching the potential RM of other scholars and organizational environments.

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4

What Do Researchers Know and Perceive About Research Misconduct?

In this chapter, results of the empirical research conducted on the topic of RM will be presented.[1] As has been mentioned, a series of interviews were conducted with European scholars, and a qualitative, grounded analysis undertaken. This analysis gave insight into what situations interviewees consider to fall under RM or, at least, to be problematic and reproachable. It also facilitated an account of the perceived processes and causes enabling such situations to take place. Finally, the main categories found while analysing the accounts of the interviewees will enable an understanding of how individual interpretations of the organizational culture may account for RM.

[1]Some preliminary results of the study presented in this chapter have already been published in English, in Faria (2014, 2015).

R. Faria, *Research Misconduct as White-Collar Crime*,
https://doi.org/10.1007/978-3-319-73435-4_4

4.1 Authorship Practices: 'The Hunger for Publications' (S16)

Under the heading of 'authorship practices', interviewees were asked about problematic practices, such as plagiarism and other forms of abusing authorship that the literature reviewed in Chapter 2 has already pinpointed. Plagiarism and self-plagiarism were expected to be described by the interviewees. Nonetheless, the variety of situations that interviewees mentioned revealed the grey or nebulous areas and difficulties in identifying which situations fall under RM. When asked about plagiarism, interviewees reported a wide variety of practices considered to be problematic. This variety relate to the number of situations reported, but also to the diversity of situations described. One interviewee alone mentioned having known of situations of 'traditional' plagiarism, plagiarism performed by PhD students, and self-plagiarism. Most remarked upon the topicality of these practices, having reflected upon situations occurring that same morning (S3).

Subjects were clearly aware of the topic. They reported different situations, explained each of them in detail, and mentioned efforts made to detect such incidents (S11). They also talked about software for plagiarism detection that existed in their respective HEIs, while confessing they were 'not really confident about this software as a control' (S8). Even those interviewees who knew of no such situation admitted to plagiarism being common: 'I don't really remember exactly. But I think it happens' (S15). While some interviewees had been involved in plagiarism cases as victims, others had heard of cases by word of mouth and rumour. This fact means that even with no direct knowledge of such situations, someone else had told them about them. This, in turn, may be a pointer to the seriousness attributed to plagiarism and the interviewees' awareness of its wrongfulness. In fact, communicating situations through peer interaction helps in defining what is considered to be a problematic situation and helps to reinforce rules of behaviour and interpretive frameworks (Faria and Agra 2012). Situations are known about, and the example considered to be problematic is disseminated through communications and passed around, helping colleagues to interpret and label the situation.

In the analysis conducted, several types of problematic authorship practices came to light. Moreover, while some of the sample of interviewees agreed in considering some situations as wrong outright, other situations had more ambiguous tones and were not necessarily identified as wrong or problematic. Each of the scenarios will be described below.

'Traditional' plagiarism. Fifteen interviewees mentioned having known of situations where a scholar copies part or all of someone else's work without giving proper credit, usually in scientific papers (S7). Plagiarism can range from 'obscene' appropriation to the use of small fractions of text (S7, S17). But even in these situations, blame is not unanimous: S4 was plagiarized but felt nothing was to be done because it was 'irrelevant'; had it affected results or conclusions sections he or she would have felt it to be serious.

Plagiarism in PhD dissertations was considered to be somehow different from the traditional form, owing to the status of the 'offender' and to the control mechanisms that take place at the PhD viva. Ten interviewees mentioned having known about such situations in PhD dissertations (S12) or even earlier in the PhD process: '… it was a PhD project financed in this way and then he came to the meeting with a research proposal and big chunks of that had been taken from my research proposal, without quotations' (S17). Sometimes plagiarism seems to be recurrent in the same PhD student (S18). The interviewees assumed that PhD students are still being socialized and are still in the process of being trained in the rules of research and, thus, need effective supervisors and mentors, capable of offering advice on ethics and integrity (S22). Nevertheless, there was the impression that social control mechanisms may be failing owing to the fact that PhD students are currently overburdened and supervisors have too many tasks at hand. This means that there are not enough opportunities for hands-on responses to PhD writing difficulties. In addition, specialization of topics and fields may make it difficult for supervisors to know about past work and detect plagiarism of literature with which they are unfamiliar (S7).

Exploiting students and/or assistants' work, whereby senior scholars 'commission' tasks to the junior researchers working under them, was also described. Senior scholars may ask students or assistants to work for

them: 'Superiors use their academics to do work for them they should be doing themselves, claiming credit for it. So, they exploit them' (S17). The product is then presented as the work of the senior scholar without proper credit being given to the junior (S19, S13). Interviewees were not sure how to label such situations, but considered them to be a form of abuse of power and failure to respect authorship, owing to the power imbalance: 'Now, is that plagiarism? Yes, of course, using someone else's work and put your name on that' (S13). Causes ascribed to such situations revolved around the need for scholars to compete with peers by producing more papers, reports, and so on. Senior scholars use available resources, such as subordinates, strategically (S22); their CVs and output can grow, and their time can be spent in other activities at the HEI.

Self-plagiarism was mentioned by six interviewees. According to the interviews, it consists of an author of several scientific publications reproducing part or all of one of his or her publications in a new paper, without acknowledging the previous similar or identical writings. While some scientific journals demand submitted papers to be original pieces, that is seldom the case in book chapters or other publications. The practice allows scholars to inflate their list of publications without doing new and original work. The interviewees felt there was a general lack of negative reactions to such incidents, for which scholars are not reprimanded. As a result, they had doubts about how to label them (S5, S3). Some subjects (S7) even mentioned how, through reading or talking to peers, they started paying more attention to the practice and becoming more aware of its reprehensible nature, thus changing their interpretation.

Honorary authorship was mentioned by four of the interviewees. Such situations occur when senior scholars (heads of laboratories, for instance) systematically put their names on papers produced by their subordinates or colleagues from the group they lead when they have had no significant part in the writing process (S8, S19): 'I know some [colleagues] that will try to put their names in any kind of article written by their students and sometimes as the first [author]. And they go and publish all the time' (S8). This is not to be confused with exploiting students' and/or assistants' work, since the name is added not instead of

the true author's name but side by side with it. Interviewees mentioning such situations considered this to be a rather serious and blameworthy practice (S19, S3).

Cross-referencing was mentioned by two interviewees. It consists of an agreement within a group or network by which authorship is shared among the group with peers who had no contribution for the paper. The goal seems to be to inflate, in a short time span, the list of publications of each member of the network: 'Professors forming networks together and then every publication they have they put everybody's name so that everybody has 5 publications instead of one' (S13).

Plagiarism of ideas or concepts was mentioned by three interviewees. They criticized the unauthorized use of ideas and concepts produced by others without proper acknowledgment of the true authors: 'the other thing is actually people who are writing articles and stealing ideas from authors in other books and other articles' (S13). Interviewees also stressed the ambivalence of such situations (S17).

Biased literature search was considered by two of the interviewees to be a way of 'quoting the right people' in such a way as to legitimize or try to prove the quality of the paper: 'ok, did I quote the right people, or do I need more quotation from this particular guy … you want to have the major names there also because it gives you a lot of credential for your own thing. So, you don't want to miss a particular important person there' (S8).

Plagiarism used as a weapon was mentioned by three interviewees. It apparently consists of raising plagiarism suspicions against colleagues, initiating conflict in interpersonal relationships among scholars by way of attacking the academic reputation of others. Proven or unproven accusations of plagiarism seem to leave a heavy scar on personal and organizational reputations. An accusation of plagiarism may be used as a means or a strategy to resolve personal conflicts, and it has a strong impact on scholars' lives, endangering trust in colleagues: 'There's also a lot of rivalry within the university and you have to look through the rivalry in order to make sure than an accusation is well founded' (S21).

It is clear that, given the full range of problematic behaviours and situations noted, plagiarism is the one leading to the most serious negative

consequences for individuals and institutions. According to the interviewees' perceptions, those accused of 'traditional' plagiarism may be fired, have their papers retracted, or have their academic degree cancelled. But reactions to authorship practices are not always the same, and it seems to vary according to the HEI or the scientific area: naming someone as author without his or her knowledge, for example, may be considered unproblematic by scholars in a certain discipline while leaving scholars in other disciplines feeling uncomfortable. Clearly, disciplinary traditions and organizational practices frame how people view such mores. Reactions may also differ within an individual HEI and discipline. In plagiarism cases, detection is essential, and while the jury assessing the work is crucial for plagiarism committed by PhD students, in other areas interviewees admitted to a high number of undisclosed cases. As a result, ambiguity in the problematization of behaviours seems common.

It is clear from the results that scholars at the top of the career ladder mentioned knowing of more plagiarism cases than other interviewees, probably because of their long experience in academia. Table 4.1 shows clearly how the scientific domains vary in their perception of plagiarism: all groups perceived the existence of 'traditional' plagiarism and plagiarism by PhD students; in the law/philosophy group, no other authorship situations were mentioned; in the social sciences group, exploiting other people's work, plagiarism of ideas, biased research of literature, and plagiarism as a weapon were mentioned. The hypothesis is that scholars in social sciences are more aware of these subtler problems and debates about authorship than scholars from other areas. Plagiarism, especially in its 'traditional' form or when performed by PhD students, when compared with other problematic situations, seems to be the easiest to detect, owing to the existence of identifiable victims and, especially, to the existence of detection software in some HEIs. It thus leads to sanctions even if, according to some interviewees, it should not be considered the most harmful act for science. Its importance, nonetheless, arises from the importance of publishing in scientific research, which is, in turn, closely related to scholars' assessment and reward systems.

Table 4.1 Problematic authorship practices by scientific and disciplinary field

Scientific and disciplinary field	Type									
	Trad.	PhD	Bias lit	Self	Ideas	Honor.	Expl.	Cross	Weap.	Total
Exact sciences	6	3	0	4	0	3	0	1	0	17
Social sciences	8	5	2	1	3	1	6	1	3	30
Law/philosophy	1	2	0	1	0	0	0	0	0	4
Total	15	10	2	6	3	4	6	2	3	51

Key Trad.—'traditional plagiarism'; PhD—plagiarism in PhD dissertations; Bias lit.—biased literature search; Self—self-plagiarism; Ideas—plagiarism of ideas or concepts; Honor.—honorary authorship; Expl.—exploiting students' and/or assistants' work; Cross—cross referencing; Weap.—plagiarism used as a weapon

4.2 Problematic Methodological Procedures: 'We All Want Our Data to Look Just as Good as Possible' (S2)

Apart from two, all interviewees admitted the possibility of people inventing, forging, manipulating, or selecting data, which they had heard about at least through the media. Even when mentioning 'public' scandals alone, it is possible to assess the interviewees' sensitivity to the topic. Interviewees mentioned a total of 30 cases of interference with data (see Table 4.2). These followed a continuum of seriousness: at one end of the scale there were cases of forging, inventing, or fabricating data (six interviewees), followed by falsification, tampering, cooking, or manipulation (three interviewees), and massaging, trimming, or selecting data (ten interviewees), and, at the other end of the scale, biased interpretation of data (four interviewees). In such cases, there are no clear borders to define what is, or is not, problematic and objectionable. Instead, there is a scale of reproach that has its maximum with data fabrication and its minimum with biased interpretation of results. Methodological procedures guide the researcher's scientific integrity but, nonetheless, there are always grey areas where problematization emerges not from the behaviour itself but from other contextual elements: 'the way in which you have to work and to present your work and to deal with your work is, in my opinion, is criminogenic. If it leads, on the one hand, [to the] manipulation of the results, sometimes, even if it's very soft, even if it's totally within the rules' (S8).

Difficulty in detecting such situations seems to relate to its secrecy and, in general, its invisibility owing to a lack of access to raw data: 'you tend not to see that because you don't always see if somebody chooses not to report the data … you don't always see that, you don't always notice that' (S1). Even when records of data do exist, interviewees felt that nothing could really impede circumventing experiments or any other research method: 'the lab book is very important, and we tell our students that it is almost like a legal document, so they write everything down, it's signed by supervisors. But of course we still don't know if it's the truth. It's what they've written but whether it's the truth …' (S2).

According to interviewees, if the fabrication is really well done, it can go totally unnoticed: 'To be honest, in the kind of research we do, sometimes if we are really able to invent and not be discovered is because you are really good' (S8). In contrast to plagiarism, such practices do not relate to the existence of direct victims. They are usually conducted in isolation and in secluded places, with no witnesses around, whether human or technological, to detect them. Thus, according to interviewees, control and surveillance mechanisms are weak. Let us now go through the situations that were described.

Fabrication of data takes place when data used for research are made up: they are not collected from any sources and come to existence only at the moment when the researcher introduces them, fraudulently, into databases. These databases are then used to draw conclusions. One of the interviewees (S5) explained how he watched his boss invent results. He, the interviewee, then left the institution because he felt he could no longer work there, considering it to be the most serious misconduct situation he had ever witnessed while undertaking research. Nonetheless, S5 felt it was an exception, caused by the European-funded project the scholars were working on, and that his boss was probably feeling 'some pressure to produce' (S5). He then confronted the senior colleague and told the coordinator of the European project about it, but nothing happened. Other interviewees mentioned more or less direct knowledge of other fabrication episodes, although S5 was the only one witnessing such a situation. Fabrication of data may serve to facilitate and improve the chances of entering the research production process, with more publications or possible future funding: 'there has been people [who,] in order to get finance, have written a research proposal and said "we have found this and this and this" while they're completely out' (S16). Sometimes, fabrication appears mixed with plagiarism, being considered a more serious and reproachable behaviour. Interviewees clearly attacked such practices: 'That's unethical. That's something that you should not do as a researcher' (S16).

Cooking or falsification of data was mentioned by a minority of three interviewees. This led to some surprise when the results were analysed because, in fact, the interview script asked directly about cooking, falsifying, or manipulating data. In fact, interviewees gave very detailed

accounts of other behaviours and helped to tell situations apart, which can be a good sign of their spontaneity in the interview context. However, when directly asked about cooking of data, they provided less information. Cooking, here, means changing the values, contents, coordinates, and so on of collected data, and interviewees, in general, did not provide much information on the practice. This may have been because cooking of data (i) is less likely to happen than other such practices, or (ii) is harder to detect; or (iii) because interviewees recalled only the more serious situations (such as fabrication), or that raise more doubts and debate (such as trimming); or, finally (iv) because cooking and trimming may, in fact, be hard to tell apart, especially in the case of very subtle cooking of data.

Trimming of data occurs when there is a complete dataset but researchers choose to publish or show just a selected part of it, because they consider that part to be the most representative of the phenomenon they intend to prove. Outliers, or deviant cases, are eliminated from the dataset because they weaken the coherence and strength of the results that researchers want to have and to show. For S5, it was a 'reasonable and acceptable practice': if researchers have conducted a set of experiments, measurements, and observations of the same phenomenon, to prove regularities, they may want to show or publish the results that best describes the phenomenon being studied. S4 mentioned a kind of filtering of data which improves the chances of publication of the results. This is used, then, 'to sell a better story' (S2). Some of the interviewees also believed that trimming may be done to please the institution commissioning and paying for the research. In the following quotation, one should note how the interviewee's reaction was to negotiate, conceding more on some of the issues and less on others. This clearly reveals the conflict felt between wanting to retain funding and leaving space for the researcher's scientific autonomy, an issue which will be elaborated further shortly:

> They plainly wrote me a letter with four pages with 'in this page we don't like this sentence and we would like that sentence out and you're not right in what you're saying about this and that.' (– What was your reaction to it?) Half-half. Sometimes I tried to please them a little bit because

> I would like to continue to do this research for them. … And in some instances I said 'no, I'm not going to change that, that's my conclusion, whether you like it or not.' (S13)

From the accounts of the interviewees, it seems that trimming of data also reveals some difficulties that should be framed and labelled as problematic. Some of them considered it to be a change not to data but to what one says about results and how they reflect the world: 'so you don't really manipulate the document but you are manipulating reality' (S8). Such ways of interpreting the situation may mean that trimming is a common practice, and in fact it is considered normal when the researcher clearly admits that some data were left out and explains why. This means that the same situation may be evaluated in different ways. S7 explained how the same situation of trimming data, conducted by a PhD student or by a supervisor, is evaluated differently according to whether the selection of data is disclosed. Openness, disclosure, and transparency on how the data was handled change the label given to the situation: 'I question regularly whether that person erasing this piece of information is any different from me saying to my students "we won't include that case in our statistics because it doesn't really fit". I tell myself they are different because we can then write down why we're excluding it' (S2).

Biased interpretation does not involve fraudulent action in collecting, analysing, and publishing data, but the interpretation and the drawing of conclusions may be considered problematic. The conclusions appear to be divorced from data and may be determined before results are found: 'actually, I did two years of working in collecting data from drug users and this colleague of mine, he wrote the conclusions. Which he already knew in advance' (S13). There is no consensus on how to frame such situations, and interviewees had serious doubts about how to consider and label them: 'he wrote the conclusions and he already knew the conclusions. That's manipulating results, isn't it? It's not manipulating data … it wasn't in any obvious way changing the numbers or rewriting quotes from participants, and stuff like that. But in terms of interpretation and writing the conclusions and then organizing a press conference … that happens a lot' (S13). For some of the interviewees, this kind

of bias may also be explained by the researcher's inability to admit a null result or an error that occurred at some stage of the research process. Lastly, other instances of problematic methodological practices were mentioned that do not fit the typology presented: (i) instrument errors that may endanger the validity of the research but are not admitted by the researcher; and (ii) biased literature research excluding opposing perspectives, which was mentioned by interviewees in the law/philosophy group and seems to be more common in these fields, given their methods of enquiry.

What do scholars gain from such practices? According to the interviewees, scholars may think they will be rewarded for a biased scientific interpretation, because they have the impression that they need to match data to scientific products (that is, publication). They need to show satisfactory and positive results to the commissioner of research. Alternatively, they may dodge the necessity of accepting errors or different theoretical perspectives. 'Failing is not an option' (S4), and researchers feel they are expected to show results, even if these results emerge from fabricated, cooked, or trimmed data. As will be shown, positive results are crucial for scholars and for HEIs. In addition, time is scarce, and research seems to have to be done in a short time frame and in dialogue with external bodies, such as companies, governments, and funding agencies. These, in turn, are not familiar with the rules of scientific method and may press for specific results.

Interviewees were asked how they perceived the consequences of committing such behaviours. They mentioned pressured research and weak or unconsolidated results, with researchers not being cautious enough in maintaining scientific and methodological standards. In addition, social control mechanisms seem to be unable to deal with such situations. On the one hand, peer-review mechanisms assess research based on presented data: 'you get evaluated, but how do they know that you did something with the numbers, how do they know that you have done something that is based on the data? They do not screen that, they screen the output' (S15). On the other, existing ethics commissions are irrelevant when dealing with trimming or biased interpretation, because there is no violation of clear ethical rules: 'All kinds

Table 4.2 Type of problematic methodological procedures by scientific and disciplinary field

Scientific and disciplinary field	Type					Total
	Fabrication	Cooking	Trimming	Biased interpret.	May happen	
Exact sciences	4	0	7	1	2	14
Social sciences	2	3	3	2	5	15
Law/philosophy	0	0	0	1	0	1
Total	6	3	10	4	7	30

of ethical procedures and committees are not going to prevent this kind of mechanisms' (S13). The book will return to consider social control mechanisms in Chapter 5.

In these cases, as before, senior researchers were more aware than others and mentioned knowing about a greater number of problematic methodological practices. This may be explained by their longer experience, as well as their supposed role as gatekeepers. Table 4.2 shows that, in the law/philosophy group, only one interviewee mentioned biased literature review, and trimming and fabricating data were largely mentioned by interviewees from the exact sciences.

4.3 Bias in Peer Assessment—'There's the One That Glows … and Some Are Pushed to the Corner' (S13)

The scientific community is closely tied to the development, production, and dissemination of scientific knowledge, and peers are essential for it, making it necessary to identify relationships and interactions woven between individuals and groups inside HEIs. The research then went on to determine whether scholars encounter problematic situations when assessing or being assessed by their peers. Interviewees were asked about this in the situation of a applying to a job and, spontaneously, called my attention to the peer-review process in publication or applying for funding. All these processes (job applications, publication,

and funding) are crucial in an academic career and for the success of HEIs. In fact, peer assessment is vital in the construction of the scientific community, which, in turn, guarantees scientific quality and allocates scientific rewards, such as professional merit. Peer assessment takes place in all of the HEIs of the scholars who were interviewed, and all those wanting to build a career in academia will have to, at some point, be assessed by their peers. Assessment means the production of a specific type of knowledge about someone's abilities and past successes, and this is closely tied to exerting power through knowledge production (Foucault 1975). Such peer and group mechanisms are needed in order to build networks or departments and for communicating and sharing definitions on problematic behaviours. They are, simultaneously, tools for social control. Nonetheless, problematic behaviours, such as biases, may also be found at the heart of peer assessment and review. Only two of the interviewees mentioned not knowing and not having heard of any problem arising in such situations.

Fourteen interviewees mentioned biased peer assessment in being appointed or advancing in an academic career, and from accounts given by the subjects, it is clear that such events are vital in controlling and allocating available human resources. Like any other resources, human resources are scarce, and their distribution has to be done according to a set of formal criteria. Nonetheless, interviews reveal that these sets of formal and expressed criteria may exist along with sets of tacit, adaptable, and informal criteria: 'So these are the kind of things that are taken into account as well, though you'll never find it in writing. But the norms are quite clear, but the way they are executed are of course open to [change]' (S21). Interviewees mentioned that some non-formalized or expressed features of the applicant are taken into account when someone is assessed for a specific job where personal attributes have to suit the tasks. What attributes are valued? According to the interviewees these are the ability to work within a group, being trustworthy and loyal, having important relationships created inside a department, and being a team player (S5). On the opposite side, causing confusion, nuisance, or unease with colleagues is disliked, and people with such features are deprecated:

> if you have a professional who is really top class as a scientist but he also has to teach, and he's also a manager and has to be able to hold his team together, etc. And if you have someone who is gifted but less gifted but who is a far better manager, and someone who isn't always making a fuss when something wrong happens, then of course, if you're in charge of the faculty then you may choose between the one that is always creating trouble and the one who is not. (S21)

However, many of the interviewees mentioned not so much the importance of the applicants' personal attributes as their involvement in groups or networks which have access to more information, power, and influence. There seems to be a wide perception that the candidates best positioned are those who belong to predetermined groups and are in touch with key players inside the system. Personal trust and proximity to a specific group seem to matter: 'to go [up] the stairs in the academic career your CV is important, … but first of all the trust for [who] they know, search for people in their environment and if you don't have a very good connection to these professors or student groups you have not that much chance of having that, that position or that job. … when you apply for a job at the university, for example, they can take near them people they know' (S6). In addition, mechanisms are deployed to activate the protection of groups involved with the same scientific project, the so-called schools, clans, and families. There are restricted sets of key players, usually at the top of the hierarchy, who select the new pawns, trying to balance power and alliances, just as in a chess game.

According to one of the interviewees,

> the game will be, probably above my head, whether I fit in the scheme of some of the people who are within the faculty [who think] 'we need guys like him to counterbalance the power-play'. And if they think that I'm not useful I won't be promoted at all and they will always find that quantitative arguments … if you don't like somebody, or if it doesn't fit a certain profile, or if he's not, in a chess play, he is not one of the pieces, he is not important, you can dismiss him. … There are a lot of factors that play there and not only scientific. (S13)

In the end, this means that criteria of scientific and teaching merit may not be enough to decide who is chosen to enter or progress in an academic career. There are hidden criteria that have to do with who you know, including those outside the HEI. One of the interviewees mentioned that the current climate of competition may have helped in the past to reduce the feeling that some colleagues are protected by loyalty networks, but, nowadays and in general, biased practices seem to continue to exist. Mechanisms for transparency and publicity of the appointment process do exist, but apparently are not enough to avoid the perception that preselection of candidates occurs.

The interviewees considered such situations very serious and tended to equate them with undue use of public resources, using terms such as 'corruption' (S10). For some of the interviewees, taking into consideration non-bibliometric or quantitative criteria was essential because formal criteria are blind and insensitive to the situation and do not help in choosing the best person for the job. Other interviewees felt that introducing less transparent criteria should be considered a distortion of the rules of meritocracy that should steer scientific activity. The interviews conducted showed how the appointment and selection process may fuel other problematic practices, such as authorship practices specifically exploiting the work of subordinates or other QRP: 'Some professors also started to put in [the CV] the figures, which is really … You can start to measure everything … but what does it ultimately say?' (S16). If the formal criterion for assessment is the number of publications, new publications are added by using problematic authorship practices. If the relevant criterion is secured and published research, then 'you have this strategy of having other people writing for you and putting your name in all of the articles that go out, etc.' (S13).

Finally, interviewees also felt that these problematic behaviours may be protected from the public eye by the scholars' personal networks. This makes them hard to detect from outside certain groups, departments, or HEIs. In particular, they mentioned two other situations that will be briefly described in the following paragraphs.

The supervisor's assessment for obtaining a PhD was mentioned. The status of PhD supervisors and mentoring relationships seems to be crucial, especially for their ability to mobilize the panel elements that

seem best fitted to evaluating a particular candidate. This protection and loyalty may shape relationships inside the networks mentioned earlier and may, according to interviewees, affect the chances of success in an academic career: 'of course there are examples of protégés who were enormously helped by their mentor or professor and probably would never have a career so successfully and so quickly without their support' (S17). One interviewee (S14) compared his/her situation with that of a colleague: while he/she chose to resist the supervisor's guidance because of theoretical and epistemological differences, the colleague never questioned it. This lack of critical questioning from the colleague would explain, according to S14, why when compared with his/her colleague, he/she had published less and was still waiting for the viva.

> [The supervisor] wanted to help, I think he really wanted to help me, but he pushed me in a direction that I didn't want to end up, I resisted that direction … the other colleague, he did a PhD at the same time and just followed the supervisor. … And he got far more opportunities to publish, also together with his supervisor and got a lot more publications. So, if we were together to apply to one position, and if they would look only at publications, he would be in a better situation. (S14)

The central role of the supervisor in socialization mechanisms should also allow the communication of problematic situations, or, by contrast, facilitate them.

Biased peer review in the publication and grant-awarding and funding process was also mentioned. Nine of the interviewees expressed concern over problematic practices in peer review for publication, of whom seven were in the exact sciences group, and four interviewees mentioned the same for grant awarding and funding, all them in the same group (Table 4.3). The fact that these perceptions were stressed mainly by researchers in the exact sciences group, may indicates that either (i) these interviewees are more frequently exposed to such peer-review assessment because they submit more papers to peer-reviewed journals and apply more frequently for grants or funding; or (ii) social science interviewees are more conscious of biased assessments for appointments and advancement in an academic career, and may be less aware of peer

Table 4.3 Type of bias in peer assessment by scientific and disciplinary field

Scientific and disciplinary field	Type					Total
	Academic career	Obtaining PhD	Publication	Funding	Undefined	
Exact sciences	5	3	7	4	0	19
Social sciences	7	2	2	0	3	14
Law/philosophy	2	2	0	0	0	4
Total	14	7	9	4	3	38

review for publication or funding. Other hypotheses are (iii) that competition for funding and publishing is not so strongly felt in the social sciences and law/philosophy groups; and, finally, (iv) that processes of professional recognition for interviewees in the social sciences and law/philosophy groups use criteria other than publishing in peer review and getting funding or grants for research.

When discussing peer review in scientific publications, while acknowledging that it also intends to be a quality control mechanism for publishable research, interviewees questioned whether it is effective in avoiding RM and bias. Some mentioned that it has problems and inefficiencies that are probably due to the scientific community's size: 'I worry a little bit about the ethics associated with peer review because we are such a small country and everybody knows everybody' (S2). In such cases, anonymity as a guarantee of objectivity may not be possible, especially in specialized areas with strong competition. Such competition, and the prospect of authors being identified by blind peer reviewers, may introduce non-scientific criteria into the process. On the topic of peer review for grant awarding and funding, interviewees who identified problems with existing mechanisms worried about the fact that some peers assessing may have information that does not follow from the submission process, with competition being 'hyped' as a result: 'it's very competitive, if professor "Smith" gets it [funding], then I won't get it' (S2). They also expressed concern over criteria for

funding being manipulated and grants awarded to candidates closer to the jury. Another perceived cause had to do with scarce resources, especially funding, and the sense that those resources are controlled by a handful of scholars who distribute it as they choose.

All this considered, it is possible to postulate that scarcities of monetary resources (funding), human resources (research assistants), and opportunities for publishing are at the heart of conflicts and competition in HEIs. The scientific community interacts whenever it has to decide on the scientific merit and quality of peers, and from there it goes on to distribute rewards accordingly. In this process, power-plays take place and, according to interviewees, may have the aim of guaranteeing the status quo, a school of thought, or the survival of a group or a network. The interviews conducted are filled with expressions such as 'chess play' and 'civil war', which were used to refer to an organizational environment where the ongoing activities are not only scientific but also permeable to mundane issues such as gaining access to and keeping positions of power. This would explain why groups or divisions emerge. The group that 'wins' resources seems to automatically increase its chances for success, especially in terms of funding or equipment; thus, differential access and differential allocation of resources and opportunities are developed.

While interviewees from the law/philosophy group seemed to be somewhat protected from questions related to peer review in publishing and funding, all scientific areas are prone to issues arising from perceptions of biased assessment in appointment or advancement in an academic career. In fact, all scholars have to undergo through these stages, but not all have to publish or obtain funding. Interviewees from the exact sciences, on the other hand, seemed to be more aware of biased peer review in publishing and funding, possibly because such mechanisms were originally designed for these fields. Again, full professors were more aware than all other interviewees of the types of bias described in this section. Nonetheless, most of the interviewees identified at least one problematic instance of this kind.

4.4 Relations with External Actors: 'If You Bring Money You Have the Freedom to Decide on Everything' (S8)

Power games and power strategies also take place between actors in HEIs and external actors, especially collective actors such as political and public bodies or private financial ones. They may occur in any organization: 'organizations themselves operate within and attempt to influence external environments comprising political, economic, and cultural forces' (Paternoster and Simpson 2001, p. 202). HEIs are not closed and self-centred, contrary to the myth of the 'ivory tower' (Shapin 2012). However, since 2000, European universities seem to have changed their identity discourses, expressly acknowledging the need for relationships with external partners: 'We are no longer in our ivory towers; we are a central part of the globalisation and rapid transformation … and we will have to engage with politics and with a predatory private sector if we are to maintain academic values and to contribute to the improvement, as well as the narrow economic productivity, of our societies' (Floud 2004, p. 41).

A continuity can be traced in the interactions between scholars in HEIs and external systems or actors. Scholars are social actors, and HEIs, where scholars develop their work, are collective social actors that absorb and are influenced by other elements of the social system: political and public systems and subsystems, and economic and private systems and subsystems. As noted in Chapter 2, problematic situations may arise in such interactions, such as CoI. The analysis conducted indicated strong interaction patterns between scholars and public institutions or private agents. As will be shown, for each there are different action strategies: interference, influence, and ambivalence. Full professors and associates (in the case of relationships with public powers) were more aware than others of problematic situations and mentioned a larger number of episodes. Interviewees from the social sciences group seem to have been more aware of problematic situations than other interviewees. These scholars may share a more critical stance towards power and, thus, are more aware of problematic situations arising from

such interactions. They may also have greater proximity to such powers when they are called upon as experts in social or economic issues that may impact on public policies. On the other hand, scholars from the exact sciences group either did not problematize or were unfamiliar with situations of interference from public powers.

Thirteen interviewees mentioned interference from public (8) and private (5) organizations, indicating that these somehow intrude upon typical tasks performed by the scholar, especially during the research process or publication of results. Sixteen situations were mentioned of scholars actively seeking to influence public (11) and private (5) organizations to benefit themselves, their research group, or their HEI. Eleven interviewees mentioned ambivalent situations where scholars simultaneously held positions in HEIs and in public (6) and private (5) organizations. The patterns found in such situations seem, in general, to be identical whether relating to public or private powers, and as such will be analysed together. The patterns of each of the objectionable practices mentioned will now be described.

Interference

There were some situations where interviewees experienced or perceived different degrees of unwanted intervention by public or private organizations in the course of the research process, or during publication of results: 'some work, well, it's fashion and it's politics' (S2). Such interference seems to result from the existence of previous relationships between researchers and public or private organizations, for instance in commissioned research. In cases of commissioned research, the public or private actors use the available economic resources (funding), and scholars are expected, in exchange, to conduct research. There is a kind of a contractual relationship between the parties, which each have reciprocal duties. In cases where there is no interference, the funding institution is expected to provide a certain amount of money, equipment, or other resources. The scholar is expected to develop a research process where the result is open-ended and unknown. When interference

occurs, the funding organization acts as if it is entitled to have the scholar generate a specific result, independently of the process used to achieve it.

Interference may take place at various stages of the research process. Right at the start, the topic of research is proposed and there is an agreement on what will or will not be funded for research. Bluntly put, what can or cannot be research is defined: 'One of the things I can think of is that some topics are allowed and other topics not' (S16). Researchers may strategically try to adapt, and while some interviewees rejected this kind of interference, others did not perceive it as being necessarily problematic: 'some of them [researchers] find it is the responsibility of the government body to formulate the research question whereas this for [other] academics, this is exactly what an academic should do' (S17). Interference may also occur when research questions are set, and may be visible in the research call: 'they wanted you to discard the questions so that if you ask different questions you will get different answers' (S21), in such a way that 'the results are almost in the call for research' (S6). It can also take place when the research design is chosen, namely when the commissioner of the research asks for specific methods or samples to be used: 'I know cases where the government body refused to accept or in advance demands that certain people will not be interviewed' (S17). Scholars may respond by accepting such restrictions—'they are ordering the research, they can say what kind of information they want to have' (S17)—or by looking for gaps or loopholes in order to keep intellectual and budgetary autonomy: 'I would do it and I would still interview them on my own budget' (S17).

One interviewee mentioned his/her personal experience of interference when analysing data: 'And then they wanted us to manipulate figures' (S21). Such a situation raises concerns about interference in the integrity of data and signals the complexity of behaviours and how individual decision-making is framed by social processes and collective constraints. Interference may equally take place when scholars wish to publish results but the public or private funding organization considers those results to be a bad advertisement, or harmful for public policies or business operations: 'they are so afraid that the results will be turned against them' (S16). To prevent that from happening, the commissioner of the

research may somehow hamper the publication of results: 'keeping it secret or trying to make sure that the researcher himself will not speak out in public or to the colleagues what he has found out' (S21).

Finally, public or private funding organizations may demand changes in research reports. This practice can range from the changing of sentences to deleting data, thus endangering the data interpretation conducted by scholars. Funding institutions may also exert pressure for quick results in a desire for speedy commercialization, overvaluing ongoing and preliminary results and not allowing for in-depth, lengthy, and mature research. It is also possible to conclude that some of the problematic behaviours and situations mentioned earlier may be strictly connected with such interferences and demands from funding institutions.

The results show that researchers may try to negotiate such interference situations. The following quotation is from a researcher who tried to reason with the funding institution: 'if you're going to suppress it then you are creating a larger problem because, then, it's a forbidden fruit and every journalist wants to take a bite of a forbidden fruit, so why not have the research done and be open about it and of course we can discuss with each other' (S21). In this case, the scholar and the commissioner settled by discussing, step by step, the results to be presented. What happens if researchers try to resist such interference? According to interviewees, there can be serious consequences: commissioners may try to discredit the research by criticizing its quality or methodological choices: 'rhetorical arguments, the quality of your research and that's one thing, you always know that any research is defective' (S21). But there may also be consequences for the whole research group or HEI: '[he] sat in front of him saying "listen, if you people are being that strong we will not only cancel our contract with your institute but with the faculty as a whole, other contracts as well"' (S21).

In sum, power-plays with external actors occur and may give way to conflicts and negotiation. Negative consequences for researchers may include loss of funding and, with that, the loss of the research group and a halt in the scholar's career due to lack of resources to continue research and, consequently, publications. According to some of the

interviewees, what leverages and makes the power-play fall to the side of the commissioner (public or private) is precisely the fact that funding is a very scarce resource. When scholars accept or do not problematize interference situations, when they do not feel the need to resist, the interviewees justify their options by claiming a will to fulfil the goals of advancing in their career through the securing and retention of funds and achieving more publications. This means, in the end, being able to keep pursuing the palpable outputs of research. Thus researchers, in the context of the organizational environment they find themselves in, must balance goals and consider different courses of action: one being resistance, the other being negotiation of the end product and interactions. Scholars seem to understand that they have to set limits on external interference, but such limits seem to be somewhat elastic: 'there is a lot of negotiation going on and they say they have their limits to what they're willing to accept …. It's a long way before the limit is reached' (S17).

The interviewees did not criticize negotiation, especially when there were no explicit guidelines on how to proceed. Nonetheless, the degree of freedom left to scholars may be less than they are willing to sacrifice. On the other hand, resisting interference may bring about associated costs that scholars may feel are just too heavy: 'not every compromise is rejectable [sic] in itself. But, in the end, perhaps you're far more willing to give away some of your research than you actually want to. Because you have a laboratory, you have 20 people, they all have careers, have mortgages, have marriages, etc.' (S21). Commodification or privatization of research seems to be highly influenced by the commissioner of research or contractual relationship mentioned earlier: 'they know what the client wants to hear so they try to serve the client' (S17). Scholars feel that research is used in a utilitarian way by those commissioning it, who already seem to have a sense of what they wish to hear and are certainly fully aware of what they do not want to see made public. Economic actors need to prove they have conducted research on their products; political actors want to gain legitimacy and influence voting—and that is where research enters: 'companies [are] interested in having some support to complete their activities, because they can prove there was research. Politics, I think the same, to legitimate

policies and also on the streets to have more support, stronger, in elections for example' (S6).

The interviewees felt that there are no concerns expressed over such instrumentalization of research, rather the situations are somewhat ambiguous. Maybe, as suggested by one of the interviewees, the lack of problematization means that researchers have already internalized the constraints that come with commissioned research, ceasing to question how many demands and forms of interference are acceptable: 'they had already accepted, influenced by the organizations or the government bodies that order the research that they didn't see much harm in this. So they had adapted the idea of independence already to what the organizations expect' (S17). Scholars may already expect some degree of 'non-conformity activities' (Hedgecoe 2014; Vaughan 1999a, b) in commissioned research, in exchange for highly prized funding. In sum, the scientific demands guiding researchers seem to be opposed to the political and economic demands. The former are guided by questions such as generalization, confidence in results, methodological adequacy, and peer review; the latter ask the researchers to refrain from interpreting results, demanding instead that they produce fast results in 'in beautiful chunks, digestible chunks' (S17). The funding institution then has maximum freedom to interpret results and adapt them to its business or political strategy.

Influence

Scholars may seek to exert influence over public and private actors, in an active attempt to blur boundaries between academia and the outside world and gain a strategic proximity to power (S18). The goal is to gain academic and organizational benefits. This is not so much a question of nepotism as one of 'a kind of soft relationship, it's very much mediated by friendships' (S8). How does that happen? As one of the interviewees explained, 'one of my colleagues has been the advisor to the previous Prime Minister. So, if you have that situation it's so easy to get knowledge of what kind of research topics that will be asked for by the government and it's even possible to give advice, "do this, this or this".

… if you have some kind of functions [role] it is more easy for you to put your mark on the agenda of [scientific] research' (S16). Personally knowing people in strategic decision centres seems to be essential for scholars, and will be put to work. They can then have access to first-hand information and the privileged possibility of advising on public policies, managing market issues, or even determining future lines of research. Scholars come closer to the decision-making process: 'the possibility of deciding on more research, more research assignments, and also being part of these very prestigious commissions' (S8).

Some interviewees considered this to be the main goal of science: societal impact, changing the outside world, improving living conditions: 'I think it must be a very nice feeling to know that you can actually change things or implement things, or create or help to create policies. So I think there is a power aspect to it' (S13). Consequently, researchers have the ability to get funding and to develop their careers. Not only do those benefiting from influence have more funding, but they have more research equipment, better libraries, and better working conditions. Those who can exert influence are 'the research groups that get most research, they are the most rich in financial terms, they have the most fancy offices, they have the Nespresso machine, they have the oak floor …' (S13). Proximity to public and private actors also allows influence over the research agenda and improves chances of success in future grant and funding applications: 'they are able to set the agenda and of course they can apply' (S16). It also allows for new opportunities outside academia (S10).

So far, nothing too problematic seems to stem from what would be considered the pursuit of the societal impact of research or the provision of services to society. However, power gained or negotiated outside academia is transferred inside it. Relationships with external powerful actors may have an impact on relationships in micro-power-plays. Those scholars benefiting because of their external influence also benefit in comparison with other colleagues inside HEIs who do not have such influence: 'you do hear that because of political alliances, for example, they receive more funding. (...) And also can choose, maybe, who's the president of this faculty. It influences' (S15). Progressively, scholars and their groups accumulate more ability to

continue influencing external actors, and they may be able to choose who is allocated to specific functions: 'doing what they want to do, also being promoted in the hierarchy. So they are the people that count, they have money, they have influence, they have power, they have the votes within the faculty … they have this capacity or talent for putting people in the right places and networking with the right people' (S13). These factors may also influence interaction between different working groups. Boundaries with other research groups seem to be well set out, with some apparent disinterest in the work of smaller and less powerful groups: 'there is not a lot of openness towards each other. While I tried to contact researchers from the other, bigger institutes, in the beginning, I experienced that they're not keen on [it]' (S15). Eventually, accessing and distributing resources, opportunities, and benefits seems to be concentrated in some key players (individuals or groups), which continue to accumulate benefits while others have less and less. There is differential access and resource distribution, and differences thus become deeper between scholars, groups, and HEIs.

Ambivalence

Situations of ambivalence are situations where scholars systematically mix their roles inside and outside academia, accumulating or interweaving research and teaching tasks with other political or economic tasks: 'these are scientists that are both active in the political field and in the scientific field and they change their hats both sides and that's something that happens' (S13). The interviewees mentioned in this category what the literature usually labels CoI. A researcher may work at a hospital and have entrepreneurial and consultant activities (S17); he or she may be a scholar and also work as a lawyer or in consultancy (S10); he or she may be found at different stages of design, implementation, and evaluation of public policies (S13). What seems hard to define here is how trustworthy someone can be when pursuing different (and, eventually, conflicting) interests without proper disclosure (S12). Interviewees raised doubts and suspicions about their scientific freedom and autonomy. The question of differential access to opportunities and resources,

as mentioned above, also surfaces in ambivalence situations (S10): those having different tasks inside and outside academia seem to have easier access to the media, with their work and opinion being considered more valuable than that of their peers. They may also enjoy easier access to funding and invitations to conferences or other significant rewards (S2).

Interviewees mentioned the causes underlying such situations of ambivalence. One of these is economic motivations, such as the wish to earn more: 'you cannot really support a family on it if you wanted, or a life style you would like, so these part-time jobs [in academia] are often combined with other jobs' (S17). They feel that external employment is also encouraged because society is now more prepared than before to have scholars working outside academia, and knowledge is considered an economic added value: 'there is this idea that knowledge contributes to the market so they enter a relationship with business' (S17). Some of the interviewees stressed the importance of encouraging the migration of scholars to other areas of social life, because 'it brings prestige' (S12) to the HEIs from where scholars originate and to which they may return. In addition, an HEI can demonstrate its commitment to social problem-solving. The scholar has a duty to be heard outside academia, 'as long those are not promiscuous relationships' (S11). Finally, the opinion of interviewees about these ambivalence situations was not unanimous. In the case of CoI, the situation may be resolved solely on the basis of personal ethics and how people perform their tasks at the different places to which they belong. Disclosure could help to resolve the debate and the doubts expressed.

4.5 Science Under Pressure: Recognition and Funding

In the final part of this chapter, the main categories found in the analysis of the narratives of the interviewees will be presented. This will give an understanding of how individual interpretations, interacting with perceived organizational goals and constraints, may account for the different types of RM discussed previously. One of the most intriguing

facts that emerged during the collection and analysis of the data was that interviewees constantly expressed concerns over funding and the consequences of not getting it. The search for research money seems to be central to understanding all other categories, such as pressure felt or perceived causes of problematic behaviours. In fact, of the 27 interviews, only one did not contain data on this issue. The same goes for interviewees' concerns over questions of professional recognition, especially progression in their career. The search for individual professional advancement brings about not only psychological and emotional rewards, but also material gains, such as better working conditions following positive assessments and production of outputs. Such results are crucial for scholars' position in the system and future expectations. Assessment is usually conducted at the end of specific career stages, or after the creation of specific outputs (publications, funded research proposals). Such success is equivalent to professional recognition by peers (S7, S24). In the interviews conducted, benefits obtained from career progression and attaining more recognition are measured in terms of work done and chances for future work.

These two categories, funding and recognition, share two dimensions: an organizational one and an individual one. The interviews conducted with scholars naturally gave very clear insights into the individual dimension, and a deeper analysis allowed to know more about the organizational dimension from the interviewees' perspective. Especially notable is the fact that interviewees believed that securing funding for research is a typical concern for HEIs (the organizational dimension), as well as for the scholar (the individual dimension). The same goes for professional recognition and prestige, which can be awarded to or lost by HEIs and by scholars. Nonetheless, from the analysis conducted, funding seems to be primary for the HEIs, with recognition, especially in international rankings, following from this (S17). Such recognition of the HEIs permits growth because it facilitates getting more equipment, hiring new staff, and accessing more funding, students, and their tuition fees (S19).

The other face of this process occurs at the individual level, in relation to scholars' goals. These are mostly oriented to professional recognition, but, in order to get this, they have to go through the process of getting research funding: 'I'm part of this business of getting money'

(S8). Scholars who win funded research gain a benefit because it guarantees future work and publications, and may increase opportunities. For newcomers, career and funding are presented as synonyms, and careers seem to be dependent on funding (S7). It is noteworthy that, when funding is awarded by external commissioners, scholars' connections with HEIs weaken, and this may have serious implications for their socialization into rules and standards of integrity. If scholars are dependent on research commissioned by external actors, their loyalty may not necessarily be towards the HEI or the scientific process.

Most of the interviewees considered that problematic situations arise through the search for funding and recognition. While it is true that this may reflect the use of mere neutralization techniques (Faria 2009; Faria and Agra 2012; Hochstetler and Copes 2001), these results should be explored further. In view of the pattern of answers obtained in the current study, the strong feelings displayed by interviewees, and its frequency in responses, it seems more likely that another theory should be considered. I suggest that these are behavioural and situational frameworks used to make sense of goals which are, in turn, closely connected with scholars' and HEIs' identities. Fewer interviewees mentioned personal causes of RM, such as ego (S22), ambition (S5), or the natural tendency of human beings to deviate (S16). But a closer look at the results shows that the scholars' ambitions makes sense only in the specific organizational context shaping it. Temptations that show themselves to human beings are placed in the context of the HEI, and that is where they make sense. For that reason, there is a need for a comprehensive and integrated analysis which overcomes the 'bad apple' approach; organizational culture and the broader macro-social processes and environment shape individual paths for action, and these, in turn, may accept or refuse opportunities being offered. It is necessary to understand what place RM has in this imbrication.

The analysis of the data collected through the use of interviews revealed three existing goals in the current European scientific system: (i) scientific, methodological, or integrity goals, which are supposed to direct researching and teaching activities in HEIs; (ii) organizational goals of European HEIs, which are bound to competitiveness and economic value and the need for funding; and (iii) individual goals,

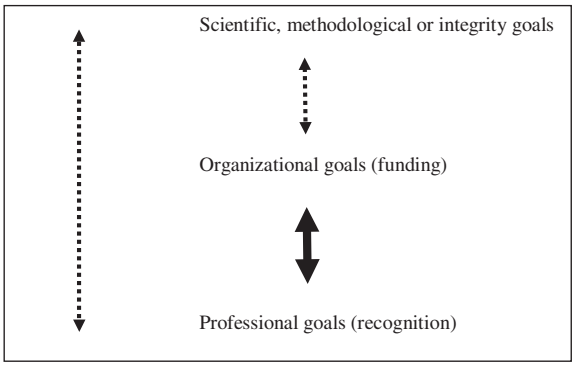

Fig. 4.1 Interactions between goals

connected to the professional reward system and recognition. These goals may not be linked with each other. From the analysis conducted, it seems clear that scientific goals are perceived as being secondary to organizational goals:

> When you start working as a researcher you have always the illusion that every researcher produces science for the main goal or the broader goal of community and that's not what I experienced in here. I actually received a new image of producing science, it's more of winning some… and not producing something for the same higher main goal. (S15)

Goals of funding and commodification of outputs seem to predominate over goals of methodologically robust scientific production in European HEIs (Fig. 4.1). Several interviewees stressed this by comparing HEIs to factories or businesses striving for productivity and efficacy. The interviewees considered HEIs to be oriented towards the valorization of products with added economic value (tuition fees, research funding) and less towards pursuing public benefit. What seems to be typical of current European HEIs is the search for public or private (national or European) funding, a market approach, and offering fast products for consumption (training, technologies, results, papers). Individual goals of professional recognition were also relevant to interviewees, because actors are guided by professional needs, such as searching for

better salaries. However, they also seek out more research projects, more resources, and more internationalization. Scholars aspire to senior academic jobs because they will bring personal and professional benefits and rewards: recognition, status, autonomy, better working conditions, and the ability to solve social problems.

There is, thus, an interactive process in which the two main goals of recognition and funding converge. HEIs look for funding to guarantee competitiveness and economic survival and, when they attain it, they obtain recognition, are well classified in world rankings, receive wide publicity, are better known, and gain students. In the convergence, scholars benefit from such prestige through their affiliation to such HEIs. At the same time, individual recognition seems to be ever more dependent on obtaining funding, in a 'bring your own money to work' logic. For interviewees, recognition currently comes not so much from scientific merit, innovation, original research, or careful teaching (S11) as from past funding and, more importantly, from the potential for getting more future funding, better economic and human resources, and visible outputs from such activity (publications): 'Someone who applies for (...) full professorship surely has to show that [they have] not only published but will be publishing more' (S21). It is as if organizational and professional goals have been progressively converging. There is no longer space for the scholar who takes up time and resources with apparently useless research (S12). Those at the bottom of the career ladder are expected to keep on proving their ability to feed HEIs with products, results, and funding, in order to increase their chances for career progression (S10). Those who are already settled in their careers are continually encouraged to keep producing in order to attain more recognition, belong to powerful groups, and attain real or symbolic benefits, which are usually associated with higher ranks in the academy.

> I would like to be promoted for the sake of the financial benefits, for the sake of being somebody within the organization that, more or less counts a bit, because it's the people who are promoted to a certain level … who can vote here on important issues like division of money, division of staff. (S13)

However, the convergence of both goals is not a given, but rather a tentative process resulting from interactions between scholars and HEIs, and between HEIs and their environment, and the result of the process is unclear, depending on its complexity. In addition, recognition and funding depend on access to and the granting of use of scarce resources (money, publications, awards), and competition is quite high. The next section will explore which internal mechanisms are put into place for achieving organizational and professional recognition.

4.6 Convergence Mechanisms for Recognition and Funding Goals

In theory, such professional and organizational goals may relate to each other in different ways. They may be complementary, oppositional, overlapping, divergent, or convergent. The results of the research presented in this book seem to show that nowadays the goals are presented as convergent. In fact, the interviews show that some individuals strongly criticized organizational goals designed by the HEIs in which they work or have worked: several of the interviewees seemed not to accept the importance given to the quest for organizational funding in exchange for professional recognition. The interviews also showed how HEIs seem to react negatively to scholars who do not share their organizational goals. In sum, scholars have different ways to adapt to such convergence.

It is hypothesized that HEIs have at their disposal mechanisms such as pressure to produce, ineffective social control mechanisms, and a perceived absence of alternatives. All of these will force the convergence between organizational and personal goals. Such convergence will guarantee stability and shared values between individuals and organizations. HEIs have a degree of power over individuals, namely in indicating which behaviours are desirable to accomplish and how. Moreover, individuals may use different strategies to deal with such convergence: accepting it, adapting to it, or resisting it. The following paragraphs will look at each of the convergence mechanisms currently in place.

Pressure

Pressure has been widely mentioned in the literature as being associated with RM and as a potential cause of it (Broome et al. 2005; Fanelli et al. 2015; Gardenier and Resnik 2002; Tijdink et al. 2014). The current research seems to show how interviewees characterize such pressure. There is a perception of a sort of limitation and constraint being exerted over scholars, regulating their activities and seeking to influence them: in research deadlines, research processes and methods, and resulting outputs (especially publications) (S10). Interviewees mentioned a top-down kind of pressure (S7) which is hard to resist: 'data is manipulated when people above think "oh, this is not good for someone who's funding the research"' (S15).

External actors also play a role, although pressure imposed by the HEI on scholars is perceived as stronger and more important, given its proximity to individual action, the hierarchical organization, and the contractual bonds between HEI and scholar. This is to say that HEIs mediate between demands from external environments and demands of existing actors inside the organization (scholars, groups). The interviewees were in fact more articulate about pressure felt from HEIs and felt strongly the pressure that HEIs impose, for instance when changing assessment rules: 'I think that's exactly why it has been done. So it raises the stress level. I'm absolutely sure' (S2). Scholars feel the pressure to publish more (S5); research and obtain results (S18); obtain results quickly (S23); accumulate tasks or take on a bigger workload (S10); improve rankings: 'there is a lot of pressure with constant e-mails and letters from whatever guy upstairs saying that we need to and that we will be ranked' (S13); and obtain and secure research funds (S24). Pressure is felt even more when, adding to such demands, there are tight deadlines for performing tasks. Lack of time was constantly mentioned by interviewees as a source of pressure (S11).

It can be argued that pressure to produce may have beneficial effects, avoiding stagnation and incentivizing productivity. However, the pressure mentioned by interviewees is exerted not only upon tasks, but also upon chances for recognition, success, and professional career development. Pressure hits at the heart of individual goals and may have effects such

as work instability and dependence on getting resources. Such resources may, nonetheless, be available ony due to factors outside of the scholar's control. Felt pressure can also lead to a feeling of injustice in the workplace, with effects on scientific misconduct (Martinson et al. 2006). What results from this 'science under pressure' is visible only in publications, in the form of reports, books, and especially peer-reviewed papers. Scientific publishing is the visible face of the work conducted: it allows the dissemination of results and peer critique, may be accounted for, and contributes to the creation of bibliometric results and rankings. More importantly, it enables the recognition of scholars and their work. Publications are a product valued for what they represent (research) and for what they allow: recognition and scientific merit awarded to the scholar(s) and to the HEI. However, not all publications have the same value, and it is especially important to get positive results (S24). Accumulating such publications raises the chances of individual success in assessment procedures, as well as organizational success: in short, recognition and funding.

Pressures exerted over the HEI by the external environment were also identified: budgetary cuts, and changes in demands for scientific products and scientific publications. Ensuring funding for functioning is achieved through the work of scholars researching and teaching in pressured HEIs: 'universities, they want to count and they want to stay important and they want to get money and get more students' (S13). From the interviewees' accounts, pressure appears as a mechanism or a tool for limiting individuals' paths of action, guiding them to what seems to be the HEIs' main objective: funding and organizational recognition.

Social Control

The interviewees' perceptions about the consequences of problematic behaviours will be addressed in the next chapter. Here, it will be pointed out that social control was largely considered to be ineffective, and this, in turn, may be seen as a form of organizational misconduct. It takes place when HEIs do not allow for the existence of public written rules on misbehaviour; when they are incapable (or capable only

to a minor degree) of creating transparent and fair investigative procedures; or when there are no clear sanctions appropriate to the levels of seriousness of RM and to the offender's intention. As will be shown, risks of detection and sanction of problematic situations are slim, while the perceived benefits obtained from RM are recognition and funding. For instance, when researchers allow the funding institution to interfere in research data, when they commit self-plagiarism, or when they give way to abusing the work of colleagues, they seem to do so in in order to attain valuable goals. To put it differently, RM may be regarded as a strategy to improve access to the rewards of the research system. This does not indicate a total and outright contempt for integrity standards and methodological rules; it means that such abusive practices are one of many available options for action.

Interviewees' perceptions of social control mechanisms direct the focus to one of the mechanisms leading to the convergence between individual and organizational goals. There seem to be no real obstacles to RM, but, on the contrary, several stimuli to committing it. Such questionable practices, in turn, improve the production of outputs (at least in quantity), help achieve quicker access to senior jobs, and create bonds with external actors who have privileged information on the research agenda. This is what allows the attainment of funding and recognition. HEIs create the pressure felt by scholars and, again, are crucial in the creation of an environment that may facilitate (or avoid) RM. Many of the interviews reported that HEIs facilitate such questionable situations. This is not to say that HEI are criminogenic organizations: they pursue perfectly legal and legitimate goals. It is the means used to achieve such goals that may be bordering on RM. The literature reveals that when organizations, and not only HEIs, are called upon to use compliance systems, these may be negotiated and the organizations can choose whether or not to comply. Moreover, they may choose non-compliance because the financial, political, or reputational costs of compliance are considered high (Innes 2003). The same may be said of informal social control mechanisms in HEIs, such as supervisors, who are supposed to be mentors, who abuse juniors' work, or the practice of biased peer review instead of guardianship. More pressure and less

formal and informal social control facilitates the convergence of individual and organizational goals, promoting the proliferation of some aspects of RM.

Lack of Alternatives and Scarce Resources

The absence of alternative ways to obtain funding and recognition, together with scarce human and material resources, vital for scholarly activity, are factors simplifying the convergence of organizational and individual goals. Several of the interviewees mentioned the lack of alternative means, other than funding through external institutions, for ensuring the survival of HEIs and their research. This is a trend which has become stronger since the 2008 crisis (S12). The absence of a plurality of funding sources was perceived by interviewees as something that requires satisfying current goals using only a very limited and very rigid set of existing resources. Such goals are satisfied through raising productivity, quick production of outputs with potential for commercialization, and the acceptance of commissioned research. All of this carries some risks: acceptance or flexible limitation of interference from commissioners of research, and degrees of privatization of research. According to one of the interviewees, 'research money for independent research is really rare so if you want to have some research money it is easy to step into this kind of thing only for the money' (S6).

Other types of resources that are scarce are materials, assistants and technicians, laboratory equipment, books, and the like. These also force scholars into trying to achieve desirable goals through limited opportunities for publication in high-impact journals, or for being appointed and progressing in their academic careers. Scarce resources and rewards in academia are, as anywhere else in social life, highly valued, and this value is difficult to estimate. With no funding, it becomes harder to obtain software and specific technical materials, hire research teams, travel, and internationalize one's work. Without such possibilities, the usual tasks of scholars, for which they gain recognition, become less likely and less achievable, according to interviewees. Simultaneously, access to scarce resources may have a symbolic value and be considered

a mark of success of a group or department (S3). Given the hierarchy of academic careers, it is easy to understand that jobs at the top are rarer than jobs at the bottom: that is why there are more disputes over them. One of the ways of achieving senior jobs seems to be through publication, even when that implies abusing authorship practices that help strengthen CVs and outputs. Other means of improving the chances of access to such scarce resources are belonging to power networks inside HEIs, ambivalence, and the influence of the scholar over external actors. Where external and/or internal power relationships are strong enough, mechanisms reported by interviewees referred to an imbalance or differential distribution of resources and rewards. Scholars belonging to groups that are considered powerful and those who have privileged relationships with external actors have more funding than other colleagues. This is a phenomenon described by R. K. Merton as the Matthew Effect (Merton 1968a, 1988): scholars who already have recognition, resources, and opportunities tend to accumulate more in comparison with colleagues who do not have such things, despite the scientific merit of their work.

Individual Reaction Strategies

In view of these results, the analysis then turned to study how scholars react to such mechanisms for convergence between funding and recognition. The aim here was to understand how their strategies influence this general association, especially given the complexity of interactions between individual and organizational dimensions, and between academics and HEIs. Available individual paths of action, or strategies, are limited by the organization's structure, but the chosen pathway will emerge from a constellation of complex factors and may change over time (Byrne and Callaghan 2014).

The interviewees' different reactions were clear from the very first contact in the interview setting. They displayed different attitudes towards context, demands felt, and rewards; they interpreted RM differently. There were no unique and exclusive reactions among interviewees. In fact, four reaction strategies were found which influenced the

ways individuals problematized or did not problematize situations. Of the 27 interviewees, 11 had a strategy of acceptance, eight of resistance, six of fitting in, and two of giving up. It should be noted that scholars may change their strategies according to their interaction with HEIs and other colleagues and that the presented typology is not intended to draw a static image of individual choices. In fact, this typology is, like any other, a simplification, for the purposes of analysis. Such strategies may also be collective. It is helpful to understand how individuals interpret not only RM but also any other situations in the organizational context. It is not because scholars use strategies of acceptance that they commit RM. All behaviours are tactics in a broader strategy that also includes adhering to normative practice and rules.

(a) *Acceptance*: Scholars in this category showed a strong orientation towards the fulfilment of funding and recognition goals, accepting with minimal criticism the limitations imposed by the organizational context. Their responses showed less frequent feelings of anguish, less felt pressure, and minor problematization of situations such as interference from commissioners of research or peer bias. This strategy is probably used by scholars driven by success, productivity, and creation of the outputs most valued by the HEI and the scientific community: 'we're choosing what is best of us at each step of the way. And if they tell us that is what's best for us, for all of us, that is what's best for the university, then …' (S18).

(b) *Resistance*: These were scholars who spontaneously and strongly criticized the status quo, and whose responses clearly contested and conflicted with organizational rules, constraints, perceived pressures, and the convergence of funding and recognition goals. They stressed the need to maintain some degree of individual freedom from interference, or keeping away from power relations, while searching for resistance stances (for instance, looking for legal advice in doubtful situations): 'the university will always have rebels … when research funding comes from the state it is obvious that the state is more powerful than the rebels' (S20).

(c) *Fitting in*: These interviewees mentioned how, during the first years of their careers, they had criticized organizational culture. The passing of time has led them to try identify the rules of the game

(especially informal rules) so as to take part in it and be granted more and quicker rewards. While not ceasing to reflect on problematic behaviours and situations, they recognized the change, clearly searching for a compromise between their individual goals (recognition) and organizational goals (funding): 'I just want to stress the imbalance that I talked to you about. … extremes are never good and in science … because putting too much emphasis on one thing that is not good for science in the long run' (S16).

(d) *Giving up*: Two of the interviewees mentioned their desire to abandon their careers. Neither of them pointed to personal or familiar reasons for this. Instead, they mentioned an obvious malaise with the tasks they performed and with imposed demands and limitations, and an inability to obtain resources and opportunities: 'No, there's no reason for me to get involved [in power struggles]. I'm not staying here' (S15). Over time, such a strategy may change to fitting in or resistance).

From the results obtained, the sample of interviewees can be described as follows (Tables 4.4 and 4.5). Social sciences interviewees seem to adopt the resistance strategy more often than others. It may be because they are trained to take a stronger critical look at their surroundings, or because they feel that the model of publication and assessment that migrated from the exact sciences does not apply equally well to the social sciences. Acceptance and fitting in are more common in the interviewees from the exact sciences group. All three junior researchers interviewed find themselves between the strategies of giving up and resistance, which may mean that they are experiencing difficulties in socialization or are strongly questioning how to do science. Most full professors, on the other hand, accepted the perceived rules of the game, presumably because they have become familiar with them or because

Table 4.4 Individual reaction strategies by scientific and disciplinary field

Scientific and disciplinary field	Acceptance	Fitting in	Resistance	Giving up	Total
Exact sciences	5	3	2	0	10
Social sciences	5	1	6	2	14
Law/philosophy	1	2	0	0	3
Total	11	6	8	2	27

Table 4.5 Individual reaction strategies by academic rank

Academic rank	Acceptance	Fitting in	Resistance	Giving up	Total
Full professor	7	2	2	0	11
Junior researcher	0	0	2	1	3
Assistant professor	2	1	0	1	4
Associate professor	2	1	2	0	5
Assistant lecturer	0	1	0	0	1
Senior researcher	0	0	2	0	2
Post-doctoral researcher	0	1	0	0	1
Total	11	6	8	2	27

they have a broader vision of their HEIs' strategies or their own professional tasks. Interviewees using resistance strategies were found at both of the extremes of the academic career. It may be that those who are still to be assessed for progressing in their careers are more willing to use acceptance or fitting-in strategies in order to improve their chances of financial success.

Finally, each of these strategies seems to either broaden or limit the scholars' possibilities for success. According to their chosen strategy, scholars expand or reduce their potential achievements and future rewards. Acceptance may lead to belonging to powerful groups inside the HEI and eventually to biased assessment of junior colleagues. Nonetheless, it carries benefits: access to scarce resources, privileged information, or laboratory equipment and, thus, more research and more publications. Resistance may limit the ability to find research money and may result in publishing in less well-known journals and fewer opportunities for career advancement. In the end, the contraction of opportunities is greatest when scholars give up and abandon the game. As already mentioned, adherence to strategies may change over time. The notion of individual and organizational process is vital and helps in avoiding a static analysis that ignores complexity, agency, change, novelty, and creation. According to Hulsman:

> the meaning which a directly involved person bestows upon a situation will influence … his course of action. That course of action will also be influenced by the degree to which different strategies to deal with trouble are available and accessible to for him … the degree to which he has a real possibility of choice. This degree of choice is largely influenced by his

> place in the network of power which shapes his environment and by his practical possibilities to change the 'tribes' of which he is part for other ones. (Hulsman 1986, p. 76)

The last paragraphs of this section will consider some examples provided by interviewees of perceived causes of problematic behaviours, based on the convergence of recognition and funding goals. Once again, there is no causal relationship, but rather a relationship whose outcome is uncertain, depending on the strategies used, the available resources, the efficiency of social control, and the existence (or absence) of alternatives for achieving goals. As already mentioned, pressure, inefficient social control, and lack of alternatives were recounted by interviewees as perceived causes of self-plagiarism and fraudulent inflation of the academic CV (S7), data tampering, and other problematic methodological procedures: 'showing that you are not wrong means that you can get more money, positions' (S8). They are also perceived causes of biased peer assessment inside HEIs (S20) and biased peer review for funding: 'I think because there's competition for funding, it's the main thing' (S2). Those same pressures, the absence of social control and lack of alternatives, accounted for the causes of influence or ambivalence situations (S10), as well as for interference situations: 'the so called partnerships [in commissioned research] are in fact... relations where dominates the money and power' (S21).

In sum, a convergence between recognition and funding goals is currently in place, and the perceived benefits from RM may exceed the associated risks of detection and sanction. As a result, the goals relating to methodology and integrity may be put aside in favour of funding and recognition. When RM occurs, it results from the scholars' interaction and integration with individual and organizational goals. Actors do not choose from opposing paths of action; rather, rules are interpreted according to the situation; individuals are fully involved, and RM may take place because they wish to get organizational rewards, and not because they are against the system (Merton 1968b). Additionally, the group's influence is vital in transmitting justifications, perfecting techniques, and validating choices. Organizational culture shapes individual choices for action (Croall 2001), and costs and benefits, as well as

opportunities for such benefits, are not calculated in a perfectly rational way, but rather in the context of individual or group strategies and according to the place each one is accorded in an organization or structure (Benson and Simpson 2009; Zedner 2006).

In addition to this, HEIs also commit misconduct when they are not able to implement effective social control mechanisms. They also have to take decisions about their goals in the face of pressures imposed from the outside, as collective actors in the current world with all its idiosyncrasies. If the same study were to be conducted at another time or outside Europe, the results might be different. Today, the results obtained show how strategies and tactics used to pursue legitimate goals of funding and recognition may, in fact, reflect the typical parameters of post-modern societies: productivity, consumption, privatization, profit, cost reduction, insecurity of work, and global competition.

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5

Preventing, Regulating, and Punishing Research Misconduct: Myth or Reality?

This chapter will be divided as follows. Firstly, the results of interviews with scholars, in questions about perceived social control mechanisms of RM, will be presented. Results show a general lack of knowledge of rules, procedures, and the consequences of RM. As already stated, this inefficient social control may be viewed as organizational misconduct and, what is more, may facilitate the convergence of individual and organizational goals, with a consequent general disregard for integrity and methodological rules. Section 5.2 of the chapter will integrate the results obtained from the document analysis of formal international documents seeking to regulate RM. While methodological procedures have already been presented in Chapter 3, the results here will show the conflicting control models being currently designed for European research. Special attention will be paid to what is RM according to such policy documents, to the actors involved in the control of the research activity, and to justifications for the proposed models of control. These will be described in detail, together with their limitations and shortcomings. Existing loopholes and enforcement difficulties will be critically analysed.

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5.1 Scholars' Perception of Social Control of Research Misconduct

Interviewees were asked about their perceptions of the consequences of RM. The intention was to determine whether scholars are aware of formal and informal social control mechanisms in place to prevent, regulate, detect, and punish all the sorts of misconduct that interviewees admitted to being aware of. The criminological literature has shown how social control of crime and deviance is used in different ways according to time, behaviours, culture, contexts, actors, and the like, and how it can take different forms (Black 1976; Cohen 1985; Foucault 1975; Garland 2001; Innes 2003). The question was, then, how did interviewees perceive the formally or informally organized consequences of RM reported in the previous chapters? Some interviewees had indeed, at some point in their career, played roles in ethics commissions, peer reviewing, or detection and sanctioning of tasks. A proportion of them mentioned that their HEI had some kind of committee for dealing with ethics or scientific integrity offences. Three identified the relevance of gatekeepers who would be called upon to deal with or arbitrate such situations, including rectors or scientific committees (S18). One of the interviewees mentioned the importance of having scientific organizations to help investigate offences (S21), and another mentioned the relevance of professional associations in controlling research activities (S11).

It will be shown that, according to the data obtained in the interviews, social control of RM can take many forms, according to (but not limited to) the type of offence. Detecting 'traditional' plagiarism seems to be frequent and, according to the interviewees, detection may be made by the victim, by peers, or during the viva of a PhD dissertation. In contrast, forging, tampering, and trimming of data were considered very difficult to detect, because, according to the interviewees, peers usually look only at results and are unable to know whether there has been some kind of fraud with data (S16). And when a complaint is made, the allegation seems to be very hard to prove (S18). Only one of the interviewees (S5) had witnessed a situation of tampering with data, which he considered, nonetheless, to be rare. In interference situations, only three interviewees identified the existence of disclosure

mechanisms for CoI situations. For all other situations, interviewees mentioned the non-existence of consequences or reactions to situations that were considered problematic. They also manifested special awareness of the vulnerability of those suspected of engaging in RM, such as plagiarism, conscious of the effects that an eventually unsubstantiated complaint may have for the individual and organizational reputations. In addition, economic and time costs associated with detection were considered too high for all those involved in the procedure, as well as for the HEI. Additionally, such situations may hinder reporting, whistle-blowing, or effective investigation of RM allegations.

Scholars from the United Kingdom were, impressively, among the few who showed a global knowledge and understanding of the formal procedures for investigating a complaint. The procedure described was the following: a formal complaint is submitted, in writing, which then goes to the human resources department and to the director of the HEI. The accused researchers are suspended from their tasks for the period of the investigation while evidence is collected and may, subsequently, have the chance to refute accusations. Offenders found guilty may be called upon to undertake training in order to prevent future RM. Nonetheless, interviewees pointed to the limitations of such procedures (S19): the suspension of the defendant before any final ruling, the large amount of time taken by the investigative procedure, an excessive number of guarantees granted to the complainant, and the difficulty in ensuring confidentiality. In contrast, most of the interviewees from other countries in the sample did not have full knowledge of these formal procedures. The accounts given in the interviews moved on to description of social control where situations are dealt with informally and kept secret within HEIs. Interviews revealed very different mechanisms of social control according to countries, national scientific systems, and the interviewees' experiences. Control mechanisms were widely criticized for their inefficiency, being considered limited in their scope and action, reactive, and dependent on complaints.

> X organization for scientific integrity. That was really important. However it's limited in its scope. Firstly it only deals with issues after the university has dealt with a particular issue. … they are only for universities but

> nowadays universities are expected to cooperate with commercial and governmental bodies in order to establish research. … so far they have dealt with a handful of cases and mainly dealing with plagiarism. (S21)

Systems seem to be created with few national guidelines and are different in different HEIs (S18). This raises concerns because the variation has to be acknowledged and known by scholars, who must become familiar with different systems in order to know how to proceed in case where they detect problematic situations or are considered to be offenders. In addition, interviewees stressed the importance of social control mechanisms in achieving general and specific deterrence, especially by making public all detected and sanctioned cases (S22, S12). Most of the situations reported seem have to been dealt with through informal mechanisms (S22), undertaken in secrecy, or talked about in hallways: 'Nobody knew, it was discovered much later that she had this problem and she was sort moved because of this plagiarism. There was nothing like scandal' (S8). Apparently, such secrecy is considered necessary because of fear of negative publicity and loss of reputation of the HEI, as well as harms inflicted on scholars' careers (S18). Exceptions to such secrecy and informal resolutions exist when cases fall under public scrutiny owing to the offender's status, public concerns, or specific concerns in the scientific community. Such cases are viewed as scandals and are then addressed by formal investigative procedures.

Regulation of RM. Some interviews reveal that codes and standards regulating RM are usually adopted after a scandal has broken (S22), with public knowledge of the situation: 'We've also had an incident in this university of a professor of psychology who plagiarized and he was fired, and then we had at the university of XX a code of good conduct and also plagiarism was incorporated into it' (S21). However, some interviewees considered that the existence of such codes could have adverse consequences. According to this view, such codes may raise awareness and concerns among external actors, indicating that RM is a potential risk, which can have impacts on public trust in the integrity of the scientific process. Such trust in researchers and HEIs is essential for the public and for funding institutions to continue using them. As a consequence of such alerts about the risk of RM, external actors may

feel distrust towards research and researchers, and may want to impose tighter rules on research: 'based on our experience we thought that it could backfire and sort [of] invites [sic] these bodies to present contracts to us with very restrictive rules, limitations. We were hoping that in the near future we still could carry on within the generous limits that we still enjoy' (S17). Eight interviewees knew of the existence of ethics, integrity, or professional codes in their respective HEIs, although many of these were designed for and applied only to students, and not to researchers (S18).

Training on scientific integrity and ethics was considered uncommon (S21, S11) or took place only as part of training on other issues. Interviewees nevertheless considered training to be useful in order to improve knowledge about rules, principles, and prohibitions (S22). Taking into consideration this general lack of knowledge about existing training in RCR or integrity, some hypotheses remain to explain such situations. Either there was in fact no training in place at the interviewees' HEIs, or it existed in principle but was not being put into practice or advertised. It may also be that training was designed for students, and the interviewees, no longer being considered as such, were not targeted, or, alternatively, were not aware of the existence of such training and of its relevance.

On the topic of *peer review* as an informal social control mechanism, especially for funding allocation, interviewees revealed different views. Some, because they had already sat on funding commissions, were sure of their trust in the system and considered it able to control for RM: 'in the panels I've been on, the chairs have listened but are well established when biases are being performed, I think so. So I was quite reassured by it' (S2). Others noted some apparently discretionary decisions in systems that they considered to be systematically biased. Concerning peer review in the publication process, and as noted in previous chapters, interviewees were aware of the seemingly paradoxical situation whereby on the one hand peer review may be considered problematic, while on the other hand it may function as social control. Several interviewees considered it to be an efficient social control mechanism, guaranteeing the quality of what is published (S16), while others mentioned problematic situations being detected through peer review

for publication (S7, S5). Nonetheless, peer review is not flawless, and many questionable practices go undetected in the publication process and are signalled only later by other members of the scientific community when consulting already published research. Lastly, in addition or as an alternative to investigatory procedures conducted by the HEIs, three cases were presented where complainants used their national judicial systems to react to a specific form of RM (S7, S10, S18). In fact, most of the cases described that were taken to national judicial courts concerned appointment and progression in academic careers. Interviewees mentioned that the use of national judicial systems in the end had no visible results and was not effective in dealing with the situation.

In sum, social control mechanisms existing inside or outside HEIs are not considered to be totally effective: 'in the end there will be some commission … obscure and non-transparent …, saying that nothing can be proved' (S8). From the brief overview offered by interviewees about their perception of existing formal and informal social control mechanisms, it seems appropriate to conclude that there is a range of standards and regulation, as well as a shared view about the absence, or sheer inefficiency, of investigation of RM complaints. Interviewees mentioned that proven RM cases were not usually publicized and that, on the contrary, informality and secrecy abound. Except for the interviewees working in the United Kingdom, who seem to be more aware of 'checks and measures at place' (S2), the interviewees felt that cases are dealt with by only a few people. The results of such situations always vary because they seem to depend on ad hoc appraisals of the status of the offender, the status of the complainant, his or her connection to internal power groups, risks of negative publicity for the HEI, and estimations of time, costs, and workload to conduct formal procedures inside the HEI.

In addition, cases are dealt with differently according to the problematic situation at hand. The paragraphs below will try to describe in more detail the different reactions to the various problematic situations described by interviewees. First of all, 'traditional' plagiarism, when detected, is usually managed by way of some kind of informal resolution, mainly because evidence is easy to gather and there is a victim being plagiarized. Data forging and tampering, on the other hand,

since they seem to be hard to detect, may not bring about any negative consequences or procedures (S5). The interviewees mentioned only one case that resulted in a prison sentence (S2), in a case concerning forging of data with health consequences for users of tobacco. Misconduct in peer review for appointment and progression in academic careers may motivate the use of national judicial systems, with a formal investigation being conducted by actors external to the scientific community and to the HEI. However, as has been mentioned, the results seem to be null.

Interference in research situations usually does not lead to investigation procedures. Seldom are there disclosure systems in place for such situations, and no negative consequences were mentioned in interference cases. This may be because the source of interference is usually external to the HEI and the HEI may have no jurisdiction over it. Existing mechanisms do not allow for screening: 'All kinds of ethical procedures and committees are not going to prevent this kind of mechanisms, in the sense that scientists can set the agenda or research according to what they think politicians want' (S13). Moreover, benefits obtained from 'cooperating' with commissioners of research, such as access to human and material resources, are important for HEIs and scholars. In cases of interference, direct negotiation occurs between the scholar and the commissioning organization, and, during this process, the two parties discuss and decide on what methodological or professional boundaries or rules of integrity they are or are not willing to transgress.

If one considers all stages of the social control process, as well as the variety in ad hoc treatment, it is possible to conclude that the labelling of a situation as problematic or questionable may never take place. When some form of censorship does occur, there may be no detection. If, in effective, a suspicion or complaint is raised, not all HEIs have standards and rules for scholars to follow, nor are uniform investigatory procedures in place. Peer review for publication also reveals flaws in the detection of problematic situations. According to the interviewees, when all else fails, there is, nonetheless, one last chance to prevent RM: 'I think that in a lot of things you have to rely on the integrity of the person and to hope they're reporting everything that happened, there's something that you can't legislate for and only draw them to correct this kind of behaviour and hope that people won't get into it' (S1).

Thus personal integrity and scholars' personal sense of duty, validated by interacting with colleagues, are considered the ultimate form of control. Or, in other words, and given the importance of the interaction with scientific peers (Budd 2001; Hedgecoe 2012; Reich 2009), trust among peers is seen as the last realm of social control. This is why some interviewees considered that the smaller the scientific community, the easier it would be to detect and label problematic situations. It would also explain the importance of groups and loyalty networks, and it may be why, when QRP or FFP generate negative reactions from the group, sanctions tend to be informal and have only minor impacts on the HEI and the scholar's career.

Interviewees seemed to perceive that the choice and application of sanctions for RM is left to the HEI. Available sanctions are considered either too light or too heavy (S18), and they are usually applied in an informal, secretive way: 'The first strategy is not saying anything to the outside world, keep it inside, how to deal with this in a very quiet way and low profile way. If somebody has to go, to be sacked, they put out another excuse' (S8). Social control mechanisms may lack written rules on what is or is not allowed, but interviewees perceived the existence of non-written rules according to the role of the scholar, the organizational context, and the reality of each country (S22).

To take 'traditional' plagiarism as an example, the sanctions for detected situations described varied widely. One was applied by the national judicial system and followed by compensation to the victim: '[he] had to pay the lawyer, who was a very expensive one … . I think that cost him his summer vacations' (S17). Other interviewees mentioned papers being retracted from scientific journals. Nonetheless, the accounts of interviewees reveal, once again, that there are differences in sanctions according to the status of the offender, as, for instance is shown by an interviewee mentioning how a well-known researcher was given the possibility of correcting the paper after publication instead of retracting it (S3). In other plagiarism cases, people can be dismissed from the HEI: 'We've also had an incident in this university of a professor of psychology who plagiarized and he was fired' (S21). However, many cases are still dealt with in secret: 'some of them become a scandal, many of them, I think, remain known by some people but not

really to the outside' (S8). Finally, in cases of plagiarism by PhD students that are detected before the viva, candidates are usually banned from submitting the thesis in the same HEI, and may be expelled from it, but, again, with little visibility (S18). This variety of reactions shows that, as with regulation and investigatory procedures, the kind of questionable situation at hand leads to a range of different sanctions, if any.

In the area of peer review for appointment and progression in academic careers, the use of national judicial systems does not bring about any useful sanctions or decisions, and informal consequences may occur in such cases (S7). For all other problematic situations (self-plagiarism, honorary authorship, abusing the work of subordinates, cross-referencing, data trimming, biased interpretation of data, biased peer review in publication, interference in commissioned research, or ambivalence), the interviewees could not recall any formal sanctions. Apparently, negative reactions to such situations may never transpire or, if they do, are not unanimous or are silenced. In fact, interviewees mentioned that some of the problematic situations listed do not cause negative consequences, but rather deliver real benefits, such as inflating a CV with publications and improving chances of funding. On the other hand, with most of the existing sanctions being informal, there is a risk of offenders being labelled and not having the freedom or procedures to contest it. If they remain in their position at the HEI, or accept the informal sanction, they may find themselves trapped, with very limited access to career or funding opportunities, in a form of retaliation for what has happened.

The risks of being detected and sanctioned are usually considered by social control theories to have deterrent effects. However, in the case of RM, such risks are not systematic but rather discretionary; and if people believe that such costs or risks are low, they may have more opportunities to engage in problematic behaviours (Paternoster and Simpson 2001). What the interviews reveal is that, except in the United Kingdom, the formal and informal social control mechanisms designed seem to give preference to self-regulation of situations, to in casu negotiation, and to keeping HEIs' goals attainable: the securing of funding, research outputs, and resources. The supposed benefits obtained from RM seem to be much greater than the costs.

5.2 European Scientific Policies for Controlling Research Misconduct

The following section will describe the results of the grounded analysis conducted on a corpus of documents enacted with the specific purpose of tackling RM and devising the respective control mechanisms. These documents have all been produced since 2000, and the results obtained may be seen as clustered around initiatives of three pivotal bodies: the ESF, sometimes in cooperation with ALLEA and the ORI; the OECD, eventually in cooperation with other institutions; and, finally, the EC. The results will be presented in terms of axes across several dimensions: problematized situations of RM; existing evidence about RM; actors involved in the design of control mechanisms; proposed control mechanisms; and justifications for the enactment of control solutions.

Definitions of Research Misconduct

A first step in the document analysis was to identify problematized situations considered to be RM and, concurrently, to list the content of problematization (what behaviour fits inside each category considered to be problematic) and the designations used and number of situations considered to be RM. It was also important to understand whether, and how, definitions of RM vary across institutions and with time. It was considered crucial to determine how bodies designing control mechanisms would name and describe RM, which shows the importance of trying to answer the following question: what are these bodies reacting to? Table 5.1 offers a summary of the variety of situations mentioned by the documents under analysis.

The ESF was the first issuer to produce formal documents problematizing RM. However, the number of situations considered to be RM was irregular over the years, and designations used ranged between 'misconduct', 'fraud', 'dishonesty' and 'offenses to scientific integrity'. The content of problematization, which is meant to show what falls under the notion of RM, changed with each new document. For instance, Documents 3 and 6 were both issued in 2007, but are very different

Table 5.1 Types of RM mentioned in the analysed documents

Doc.	Fabr	Cook	Pla	O. pl	Tri	Expl	CoI	Eth	Mis	Rev	OM	Oth	Issuer
18	X	X	X		X	X	X			X		X	ESF
17	X	X	X	X	X							X	
6	–	–	–										
3	X	X	X		X		X	X		X	X	X	
2	X	X	X	X				X		X	X	X	
4	X	X	X	X								X	
8													OECD
7	X	X	X									X	
15	X	X	X	X	X		X						
14			X	X									EC
10	X	X	X					X	X				
11	X	X	X					X	X				

Key Fabr—data fabrication; Cook—cooking/manipulation of data; Pla—plagiarism; O. pl—other types of plagiarism; Tri—trimming; Expl—exploiting students' and/or assistants' work; CoI—conflicts of interest and external pressures; Eth—ethical issues; Mis—misuse of research; Rev—problematic issues of peer-reviewing; OM—organizational misconduct; Oth—other situations and events

in content; Document 6 mentions misconduct and good practices in research but nothing more; meanwhile, Document 3 claims that a common and universal definition and typology are needed, and includes FFP, QRP, offences to bioethical rules, and biased reporting of results caused by external pressures on HEI, among other practices. Document 2 adds the category of 'minor misdemeanours' while Document 18 covers a wide range of situations, including sabotage. Across the documents issued by the ESF, organizational misconduct is also considered problematic.

The OECD documents use designations such as 'misconduct' and 'RM', while the number of situations problematized is irregular. The common denominator is that mechanisms under construction tend to be designed to apply to international research cooperation agreements. The content of problematization clearly includes FFP along with a variety of situations such as 'harassment' or 'research incompetency'. Document 7, for example, mentions financial misconduct, harassment, and improper mentoring, while Document 15 includes FFP, but also bias and research which endangers human beings, animals, and the environment.

Documents issued by the EC reveal less importance accorded to RM in contrast with the importance given to ethical questions and misuse (or dual use) of scientific products and processes. The documents use designations such as 'RM' or 'scientific misconduct', and the situations described are limited to FFP, with few targeted as problematic. Definitions of problematized situations, for instance fabrication, vary with each new document. Additionally, the general attitude is a devaluation of RM to other situations, as in the statement 'Other ethical issues that should be taken into consideration are scientific misconduct (such as fabrication, falsification and plagiarism)' (Document 11, p. 11).[1]

In this way, documents are proof of a clear incoherence when it comes to the situations considered to be problematic, an absence of stable and shared definitions, and a lack of harmonization across documents from the same issuer over the years and between documents from different issuers. The corpus of documents thus reveals three issuers that, since 2000, have presented a diverse and inconsistent range of problematized situations that makes it hard (if not impossible) for scholars and HEI to know what is or is not prohibited at the supra-national level.

Evidence-Based Knowledge About Research Misconduct

One would presume that scientific policy-making regarding the proposal of new or improved social control mechanisms for the research endeavour would be based on scientific evidence about the matter under regulation. Therefore it seemed important to look at the information on the topic of RM that is put forward by the documents. These were searched for evidence-based knowledge about causes, processes, consequences, prevalence, and frequency of RM. It was also intended to gain an understanding of how this information would guide preventive and repressive responses by the social control mechanisms designed. The results show that, paradoxically, most of the analysed documents produced to regulate science have no scientific data on or theoretical explanations of RM,

[1]My italics.

nor do they refer to many scientific studies on the topic. The features of RM and its causes seem to be regarded as matters for commonsense and speculative insights from bodies operating in the field.

The ESF, in Document 3, suggests that the more serious behaviours are also the less frequent ones, and data on papers retracted on PubMed are used to sustain this conclusion. Discussing the causes of RM, the document states: 'one has to admit that pathological causes will always occur, also in science. Scientists are human beings, too, subject to the same temptations and pressures many people are prone to use as an excuse for being slightly easygoing with the truth' (p. 26). It goes on to indicate the pressure to publish and the personal reasons leading to RM, stating, however, the need for more data. Document 2 declares that 'it is believed that peer review and collegiate ethos, the process of challenge and the practice of questioning, sooner or later reveal the truth' (p. 6). It admits, nonetheless, that RM occurs, mainly owing to potential causes such as an inability to train young researchers in a context that has become more and more complex, pressure to publish, competition for funding, and the career system for researchers. The document mentions nothing more on how processes leading to RM develop.

Document 7 from the OECD seems, firstly, to consider RM as a form of occupational or professional deviance, since 'scientists, like all professionals, are subject to pressures and temptations, and they are no more nor less likely than others to behave badly' (p. 5). Some pages later, the tone seems to change: 'an act of misconduct in research is an instance of moral failure, where an individual makes an intentional choice to behave badly' (p. 11). The document goes on to add that some individuals have a tendency to misbehave, especially when pushed by external factors. The OECD considers that there is a set of causes related to the researcher and the career system, including pressure due to competition for funding, pressure to publish for keeping jobs, and personal misbehaviours such as a desire to hurt colleagues. Another set of causes identified relates to the specific nature of scientific activity, including isolation due to specialization, difficulty in reproducing results, unfamiliarity with rules for scientific research, and the current scientific model focusing on quick and usable results. The document concludes by saying that 'in general, the prevalence of misconduct can

be aggravated by an unsupportive or indifferent environment where integrity is ignored or downplayed' (p. 12). Lastly, documents issued by the EC are completely lacking in this dimension: over all, the EC documents reveal a total absence of evidence-based information on RM and its frequency, incidence, causes, consequences, or processes. However, this does not exclude a strong will to control and limit the phenomenon, whatever it may be.

From the overall analysis, the following conclusions are drawn. Evidence-based knowledge of what RM constitutes is sparse, and scientific research on the specific topic of RM is seldom used, but this does not prevent bodies from trying to regulate it. It is thus paradoxical that, while organizations want to regulate research, research about misconduct is almost non-existent. This indicates that the documents prioritize a non-scientific endeavour over scientific matters. They ultimately constitute a set of politically driven efforts based on interests, rather than empirical knowledge about RM's features, causes, and consequences.

Actors Involved in Controlling Research

On the subject of actors involved in and bound to the emerging social control system over RM, the analysis showed that the ESF is able to activate dialogue and feedback with several supra-national actors, including scientific publishers, scientific societies, several HEIs, and the ORI, while sometimes maintaining dialogue with the OECD and EC. At the same time, the ESF presents itself as the body better prepared for, and more capable of, regulating RM: 'ESF, with its two sets of stakeholders firstly (its membership drawn from funding agencies, national research organisations and academies of sciences and letters and, secondly, the research community at large) is uniquely placed to play a significant role in promoting the highest levels of scientific integrity and better self-regulation across Europe' (Document 18, p. 2). Especially given the recent movement towards the opening of the ERA, the ESF will distribute roles and responsibilities in a top-down fashion to HEIs, research groups, departments and laboratories, and so on, down to individual scholars.

In Document 3, issued in 2007, the ESF together with the ORI, with external support from the EC and in the aftermath of the first World Conference on Research Integrity, builds the connections between Europe and the USA in order to raise awareness of all scholars about RI issues, while leaving to the OECD the studying of governmental guidelines on the topic of RI, and to the EC the creation of an expert group on the subject. In this way, the now extinct ESF positions itself as frontrunner in the distribution of tasks and roles around the wider scientific system. Efforts are made by the ESF, namely in Document 2 (2010), to create the European Code of Conduct for Research Integrity, which is intended to regulate all European research. From individual researchers to funding agencies, everyone has the duty to accept and act according to established rules. Nonetheless, the ESF needs actors to voluntarily accept the code, and for this reason it recommends to its members, and also to the OECD, the European Parliament, and to the European Research Council, that they accept the new code. The ESF is, thus, able to create a wide but dispersed network, legitimized on a scientific basis, from the top down.

On the other hand, the social control mechanisms designed by the OECD involve mostly policy-makers and governmental administrators. Its rules and regulations are concerned with international collaborative research and should consequently, from the top down, bind actors planning specific international projects that involve large sums of money and quantities of resources. The OECD's efforts create a wide and solid network, from the top down, on the basis of its political legitimacy. Scientific policy-makers who are members of the OECD have to try to apply the rules to international projects dealing with high levels of funding and international collaborative resources and teams. The EC has a more limited network upon which it imposes its rules and control of RM, namely all those researchers and HEIs submitting proposals to be funded by the EC. Document 10, issued in 2010, results from the discussion of 51 ethics experts with previous experience in the existing ethics procedures for funded research. This may help to explain why RM is considered, as already mentioned, a secondary interest of the EC. The EC's legitimacy for intervening in a very narrow dimension of RM stems from the fact that, unlike the ESF or the OECD, it is a funding

institution, a commissioner of research, and so its legitimacy for control is based on economic and financial criteria. As such, the EC is able to build a strict network based on its economic and financial legitimacy.

Proposed Models of Control for Research Misconduct

The range of solutions proposed by the documents under analysis confirms, once more, the lack of coherence of approaches to RM by all of the bodies issuing documents on the topic. In this section, each of the proposed models of social control over RM will be presented and discussed.

Documents issued by the ESF (together with ALLEA and ORI) established early on the goal of designing a pan-European regulatory system, by creating a scientific self-regulation model, more formal than before and, especially, more visible to the public and decisionmakers. Over the course of time, the ESF has issued documents trying to establish a double mechanism based on the adoption of written rules to be applied to all European (and even global) research, together with the implementation of clear procedures for detecting and dealing with complaints about RM. In Document 18, issued in 2000, a Code of Good Practices is suggested, with procedures for detection to be implemented by HEIs across Europe. Document 17 (2003), proposes a Code for Good Manners in Europe, with national committees helping HEIs in detecting and sanctioning. A Code for Good Scientific Practices appears in Document 6 (2007), and in the same year Document 3 proposes the creation of a global clearing house for exchanging advice and data on RM cases, together with training programmes in RCR and a governance system of science, with checks and balances able to update scientific self-regulation. The second World Conference on Research Integrity is instituted as a forum for debate.

In Document 2 of 2010, finally, the European Code of Conduct for Research Integrity is instituted. This code is to be used in tandem with national and European laws and with HEIs' rules and regulations, alongside an investigatory system dealing with RM allegations which, in turn, are also to respect national and European procedures, a fair and

due process, proportionality of sanctions, protection of whistle-blowers, and the like. Document 2 also defends the need for a framework for RI governance which balances RM prevention and detection, especially by using national governance structures 'respectful of institutional responsibility and autonomy' (p. 27). This document also presents three possible models of governance, together with their respective limitations: a self-regulation model with governance based on HEI and peer review control; a surveillance model, operated by means of national institutions in each country; and a regulation model based on national structures of governance. The ESF seems to prefer 'a well constituted impartial and professional national office … especially if the office is seen to be respectful of institutional responsibility and autonomy' (p. 27).

Documents issued by the OECD are, from the start, to be applied to international and transnational scientific collaborative projects. Document 8 is disapproving of a standardization of procedures and, instead, pleads for the creation of adapted protocols for each international collaborative project. In Document 7 (2007), the OECD underlines the need for an effective balance between prevention and repression of RM and, after considering different control models, chooses the existence of a national and governmental structure which would facilitate the interaction between authorities from different countries. What is more, the document states the closeness of investigating RM to criminal or civil procedures, demanding mechanisms for confidentiality and anonymity, sound evidence-gathering systems, and respect for the presumption of suspects' innocence. Document 15 (2009) reiterates that harmonization is undesirable and that RM should be prevented and detected by way of cooperation agreements that promote awareness and procedures for investigating it. The EC documents, just as before, lack any specific concern about RM. Instead, the use of ethics screening, review, and audit is promoted. This mechanism, already in place for the screening of ethical questions on proposals for funding, is now turned to deal with RM. This means that RM issues are integrated into existing procedures previously specializing in ethical questions and the misuse or dual use of science.

In sum, the ESF, ORI, and ALLEA propose a stronger self-regulation mechanism for science, with standard codes and procedures potentially

adapted to research in Europe, and using HEIs as the main actors for detecting and investigating RM, with the help of impartial national bodies. The OECD does not accept common standards and prefers individual solutions for each international research collaboration. Additionally, because the OECD is representative of policy-makers, the proposed solution may be a way of avoiding intrusion in questions of sovereignty. Simultaneously, by comparing the social control of RM with formal, namely criminal, social control, it removes the topic from the monopoly of the scientific community. Finally, the EC reuses existing mechanisms that were prepared to deal with ethics, and widens their scope to screening for RM in submissions. In the absence of information on detection and sanctioning procedures, one must assume that the penalty for RM found in submissions is elimination from the funding process.

Justifications Used for Proposed Control Models for Research Misconduct

On the subject of justifications for the proposed social control mechanisms, most of the analysed documents refer to and share concerns about the need for maintaining trust in the scientific endeavour, be it the trust of the general public, of policy-makers, or between researchers. The documents also mention new challenges posed by globalization to the scientific community and research tasks. However, and despite these shared rationalizations, the issuers all present different anxieties.

The ESF, in its documents, alerts us to recent social and economic transformations which have had an impact on the way research is done, especially the higher levels of pressure and competition among researchers. Justifications for controlling RM seem to be constructed to persuade society in general about its dependence on science and its products and processes, and also to remind researchers that they must be trustworthy because they need society. The ESF's documents make efforts to convince scholars of the need to be better controlled because of the interaction between society and science. Scientific knowledge is related to wealth and well-being, and RM harms science, individuals, and society (Document 2). In addition, the credibility and integrity of

the scientific system are key for its social utility (Document 3). What is more, and given that the proposed control model is dependent on the voluntary commitment of all other involved actors, it is not surprising that documents issued by the ESF persuasively try to convince stakeholders and scholars of the need for and fairness of such a model for controlling research activities. Finally, the ESF mentions the opening of the ERA (Document 18) and the need for standardized practices and procedures due to the expected mobility of funding and scholars across countries. Again, in Documents 6 and 2, in 2007 and 2010, globalization and the growth of international scientific cooperation are considered paramount for the enactment of the same rules across all countries, scientific disciplines, HEIs, and scholars.

The OECD, on the other hand, echoes the demands of policy-makers about research, particularly their concerns about public money spent on science which should, in turn, guarantee a transparent and incorruptible system. What is more, the justifications presented demand research that can be trusted in order to be used as a platform for political, economic, and social decisions. The benefits and limitations of international collaboration are discussed: from the advantage of 'playing at home', to the control of economic costs when sharing resources and facilities, everything leads to the conclusion about the importance of international collaborative research, notwithstanding some loss of sovereignty in national scientific policies, and increased risks and uncertainties (Document 8). So it is no wonder that public officials represented at the OECD need to be reassured that the risk of RM will be better controlled and public moneys will be properly distributed, especially when science-based laws and regulations are now crucial for national growth.

Finally, the EC, which does not distinguish RM and scientific integrity from research ethics, stressed the need for ethical research funded by the Commission, in order to create the ERA and the project of the most developed and dynamic knowledge economy in the world, in accordance with the Lisbon strategy. This would imply research mobility, professionalization of scientific research, and the transfer and sharing of useful scientific knowledge. In 2013, Document 11 states that excellence in research should become a goal and more structural actions, such as the Seventh Framework Programme for Research, would take place.

After analysing these different dimensions, it is easy to conclude that no consensus exists on what RM is, or on what is known about its features or even its consequences. Nonetheless, conflicting social control mechanisms are proposed by very different bodies wishing to regulate scientific activity for very different reasons, and while trying to attain various goals. In the following pages, the results of the grounded analysis will be presented, with special attention being given to the main categories found in the document analysis. This will allow a more comprehensive view of the social control models for RM proposed in Europe in the first 15 years of the twenty-first century.

5.3 Globalization Versus Harmonization

The analysis conducted on the documents issued by the ESF (with ALLEA and ORI), the OECD, and the EC led to some immediate conclusions. One of them is that there is incoherence and lack of uniformity in the definitions of what is considered problematic in scientific research, and in the solutions and rationalizations offered for the creation of social control systems. Nonetheless, despite variations, all issuers are contributing to the emergence of social control models which have been rehearsed since approximately 2000. The other immediate conclusion is that each control model seems to be balanced between two opposing, and apparently incompatible, poles: globalization and diversity versus harmonization and standardization. When exploring this last assumption, it is possible to conclude that there is a continuum between those extremes, and it is along this continuum that social control models are being essayed. Specifically, the choice between self-regulation and hetero-regulation of RM, along with the competing difficulties, will be decided along this continuum, as shown in Fig. 5.1.

The results shown so far make clear that there is an apparent opposition between the difficulties and the corresponding social control models presented in the analysed documents. Nonetheless, despite different proposed solutions, all the models aim to fulfil two goals. The first is to provide a solution through regulation, a solution that may be used by researchers and HEIs in preventing and managing the potential

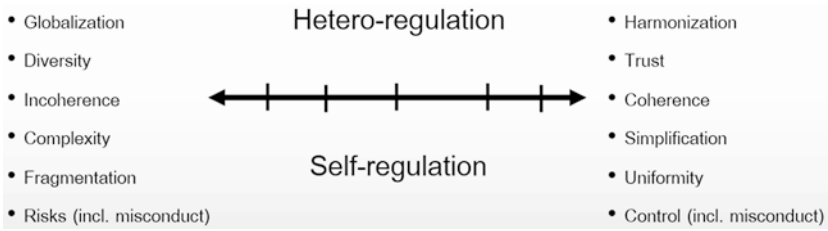


Fig. 5.1 Hetero-regulation vs. self-regulation; globalization vs. standardization

conflicts, risks, and consequences caused by RM. The second goal is to design social control models that transcend all kinds of barriers and borders. The solutions proposed in the analysed documents aim to overcome disciplinary boundaries (they are intended to be applied to all scientific disciplines), geographic boundaries (they are intended to be cross-border mechanisms), institutional boundaries (they are intended to be applied in any kind of HEI), legal boundaries (they respect different national laws but are independent of legal jurisdictions), and traditional boundaries (they are intended to be applied despite national and regional scientific traditions).

As such, these are *transgressive models of social control*: independently of its specific features, each of the models proposed intends to break barriers and boundaries to research. In 2010 the ESF issued the European Code of Conduct for Research Integrity (Document 2): a standardized regulatory system with a pan-European goal, intended eventually to be a model for other non-European countries. The OECD states the need to create rules for integrity and prevention of RM to be applied to international research collaborations in any scientific field. Additionally, the EC applies its rules to all researchers and HEIs, from very different countries, scientific traditions, and disciplines, which have applied to calls for submissions and are receiving its funding. In sum, they all are models which aim at a wider application, intending to go beyond specificities of scientific traditions, HEI features, or legal jurisdictions. In this sense, it is not surprising that some sort of standardization is needed. The standardization of principles, rules, and procedures is intended to overcome perceived difficulties caused by the current

broad movement towards the globalization or internationalization of research, so often mentioned by the analysed documents (Drenth 2015).

In fact, globalization can be perceived to operate at various levels. There is a growing mobility of researchers during training and professionalization, and it is not only the researchers who travel, because scientific knowledge, resources, instruments, data, and results will also travel with them. Scientific publications are better ranked when published in English, which is considered to be the *lingua franca* of scientific research, and when published in journals with international scope. This, together with a tendency towards online and open access (Editorial in *Nature*, 22 June 2017), allows a wider communication of research and research results. Simultaneously, there is a growing trend for scientific products, processes, and innovation to be created in cooperation with researchers working in different parts of the world, as well as in different HEIs and scientific areas. Consequently, those products and innovations (ranging from technologies to policies, drugs, etc.) are also used in different places across the globe. Moreover, the impact of that use may be felt in locations very distant from the place of production (examples include drugs to fight epidemics, or environmental solutions). Funding and capital for scientific research flow between countries, research teams, and national HEIs. Obviously, the newly developed information and communication technologies play a central role in this globalization process, just as they play a role in international commerce or finance.

In sum, scientific activity expands and crosses borders, and so the risk of RM has ceased to be limited to national and institutional frontiers. The potential offenders may travel, their victims may have different nationalities, harms may be felt in different parts of the world, and loss of public investment in fraudulent research may be felt by different HEIs, disciplinary areas, funding agencies, and countries. Over all, the documents analysed show how different actors (scholars, policy-makers, and funders) have become committed to the opening of an international scientific market: people, money, resources, and products associated with scientific research flow across the globe. Simultaneously, the potential for conflict, risks and harms, complexity, and uncertainty (see the left side of Fig. 5.1) also flows and grows. The questions that

arise are clear: how to ensure an international scientific market, and how to prevent and quell anxieties felt by the consumers of science (public, policy-makers, companies, etc.) in the face of risks and uncertainties about results and products generated by research worldwide. These are two of the main questions to be answered by the proposed models of social control created by the analysed documents.

Throughout the examined documents it is stated that trust is a crucial element for the development of science: scientists, HEIs, and especially funding agencies, policy-makers, scientific editors, and consumers of science in general all have to accept that there are standards, canons, and general rules. These certify that the conducted research has been undertaken in such a way as to cause the minimum amount of risk, harm, or uncertainty (which does not necessarily mean a growth in quality). Science, scientists, and HEIs must be trustworthy, and the traditional model of trust used so far, based on small networks confined to personal acquaintances or the disciplinary area, country, or HEI, seems not to be adequate. Scientific research has ceased to be bounded in that way, and, in fact, the complexity becomes even greater if one adds linguistic and legislative diversity, as well as an array of scientific traditions to be found in each part of the world or disciplinary area. The peer-review model of social control is now considered to be outdated, and it does not fulfil the task of self-correction. Not only is scientific activity broader now, but, at the same time, the process of peer review has been tainted with suspicion of bias and CoI. What is more, peer review is powerless to guarantee the task of standardization because it differs according to discipline, journal, or country, and, standing alone, is incapable of helping build a broad culture centred on scientific integrity.

The documents indicate that the whistle-blower replaces the reviewer; it is the whistle-blower who must be protected and encouraged to draw attention to suspicious cases. Anyone can be a whistle-blower: not only a reviewer, as before, but also other new actors such as publishers, colleagues, subordinates, students, or those outside the research process, such as journalists, clients, and commissioners of research. This makes sense within the context of the analysed documents, where RI is treated as 'safe conduct', the symbol that ensures the necessary trust between actors and users of science. RI is the 'common currency'

(Document 18, p. 5), and RM is its reverse; the former must be protected, and the latter must be prevented and condemned. In fact, the documents analysed for the current research show issuers claiming that RM may take place anywhere, independently of the level of scientific development of the country, or of the reputation of the HEI or the scientific journals where the research is published. The Schön affair is paradigmatic of this: Schön, a young researcher, worked at the very well-known Bell Labs and published in highly rated journals, such as *Science* and *Nature*. Thus the proposed social control models are not intended to be applied only to 'developing countries' but rather, according to the ESF, to all of Europe, mirroring the situation in the USA. This may explain why the ORI cooperates with the ESF in issuing documents containing codes and charts to address RM. Europe aspires to the status of the world's most developed knowledge economy, and to achieve this it has to gain the trust of all consumers of science and knowledge.

It has been assumed that the numbers of cases of RM have grown in recent years, eventually justifying concerns over the risk of RM, but the documents analysed offer little proof of this. Data on frequency, incidence, causes, and processes are mostly lacking, and most of the reasoning on the topic seems to be speculative. But what the documents do reveal throughout is a clearly constructed concern about RM, which is fuelled by the actors represented by the issuers of the documents: experts, researchers, policy-makers, and funding agencies. One therefore has to go to the core of the relations between researchers and HEIs on the one hand and policy-makers and funding agencies on the other if one wants to understand the perception of the growth of RM. In fact, it is this argument that RM is growing that justifies the erosion of trust and the need to build social control models that rebuild that same trust. Without trust, as has been shown, risk and uncertainty increase. If risks (of bad scientific products, dangerous processes and innovations, or harmful evidence-based policies) are too high, there is no reason to fund scientific research, especially by means of public money, whose misuse may have economic and political consequences.

There is another reason why documents seek to reassert public trust in science, even if it is mainly through the working of policy-makers and funding agencies deciding on national and international scientific

policies and allocating scarce and limited economic resources. The fact is that a new relationship between science and society is stressed in most of the documents: science needs different and diverse knowledge users. Science needs citizens, businessmen and businesswomen, experts, and technicians to use its products, processes, and innovations. Additionally, over recent years citizens seem to have become generally more aware of the importance of science to the conduct of their daily lives and businesses, as a result of higher levels of attendance in higher education and more frequent training. Nonetheless, one can also assume that more educated citizens are also more sensitive to scandals of RM and to the dangerous consequences of science. In sum, the documents examined seem to state that the international scientific market can open up only if the number of science consumers grows, and, for that to happen these consumers must be reassured about the utility and safety of consuming science and knowledge products. At a more particular level, scientific research must be considered trustworthy and reliable, an available, fast, and safe resource, available through the allocation of public money and with no unnecessary risks.

Should the opening of this scientific market be considered a surprise? Within Europe and in its relationships with other countries, it should be seen as the substantiation of a general movement towards the opening of international markets: Document 3 of 2007 celebrates the 50th anniversary of this general trend, facilitated by the globalization of national economies. Currently, in Europe and worldwide, people, assets, and capital flow on a daily basis, and so too will science and knowledge, its products, processes, and innovations. In Europe, the process will culminate with the ERA, which is being built under the slogan 'An open space for knowledge and growth'. This seems to promise positive outcomes, as stated in Document 8: diversity of available funding, consumers, and users; mobility of researchers; flow of products and resources; increased visibility of scientific activity; growth in cooperation, sharing, and dissemination of scientific results; facilitated grand-scale research; and the potential development of the economic and financial value of science. However, it also has drawbacks: more and different interferences and pressures on science, its functioning, and its outputs; a rise in potential conflicts because more actors are involved; the weakening

of the protection of national scientific systems; growing complexity and bureaucracy due to interactions with different national jurisdictions and organizational cultures; and, finally, an increased visibility of RM and its effects. All this amounts to growing conflicts, uncertainties, and risks in the scientific endeavour, in accordance with the well-documented general nature of risks in late modern societies (Aas 2013; Beck 1996; Innes 2003).

The only way to control such a spread of risks is, according to the analysed documents, through the regulation and standardization of practices, perceptions, definitions, and expectations of the individual and collective actors involved. Setting aside the principles of scientific integrity 'risks undermining the entire chain linking the creation of new knowledge in science to the creation of wealth and welfare in society' (Document 2, p. 16). Managing the risk of RM is a way of attempting to control for potential dangers; risks convey the notion of uncertainty, of something that may happen with unknown consequences; and harms caused by risks are viewed as impossible to control. This considered, the efforts for emergent social control models should be understood in this context of the growing risk of RM (and its consequences) posed by the opening of the international scientific market. What is more, these models are extremely different from the traditional peer review system.

5.4 Self-Regulation Versus Hetero-regulation

It is at the heart of the new social control models proposed that the debate between self-regulation and hetero-regulation must be situated. Traditionally, the self-correcting nature of science has been based on a self-regulation model, by which regulation is achieved through the work of actors directly involved in the scientific endeavour, with no or very limited interference from external actors. Document 3 (2007) calls this a value-based approach: established through privileged interactions between researchers and students, it is supposed to internalize integrity principles through training, with senior researchers having the duty to set the example and pass on high standards of integrity; integrity is considered a central value for self-regulatory rules and

procedures in a system designed around objectivity, honesty, and impartiality in research. It is a model turned inwards to the scientific community where personal interaction is valued and integrity is considered an end in itself, an informal social control model centred on peer review. However, there is a risk that, when used to deal with RM, this model will cover up scandals.

The hetero-regulation model achieves regulation by using actors external to the scientific community who have the power to regulate and to make binding decisions. Document 3 refers, in this respect, to a compliance-based approach. It is rule-oriented and seeks a standardized application of definitions and procedures for investigating RM complaints; it is usually enforced by governments, funding agencies, or HEIs; and its expressed goals are to protect society and guarantee a safe use of public money. This is a model turned outwards from the scientific community and open to demands from external actors, where scientific integrity is considered a means to achieve social and economic ends. Much more formalized than the previous model, this one sets out written and standardized rules and procedures which can be known by everyone involved.

All this considered, what are the models and respective variations proposed by the analysed documents? One should keep in mind that solutions are sought along the continuum between globalization and standardization, and between acceptable risks and assuring trust. In addition, the issuers of the analysed documents are unanimous in considering that science should not perpetuate the failures and omissions found in the traditional self-regulation model. They demand limits to disciplinary, organizational, and national diversity, and strongly criticize the lack of common definitions and rules about what constitute scientific integrity, RM, plagiarism, CoI, good practices in research, and so on. This is, clearly, the beginning of a process of problematization, by which these actors (ESF, ORI, ALLEA, OECD, and EC) call for the recognition of a problem and the need for a solution to contain it. Nonetheless, as will be shown, the issuers have different points of view. For instance, the OECD is somewhat sceptical about the possibility of imposing an international standardization. The ESF, on the other hand, aims at all costs to design a European code for use worldwide.

To summarize the solutions and models found by the different issuers of the analysed documents, in general the ESF (together with ALLEA and ORI) proposes a muscular self-regulation model; the OECD proposes a model centred on politically negotiated hetero-regulation; and the EC designs a meta-control model (Innes 2003, p. 137). Each of these models will be presented in detail.

The ESF states that it is necessary to show the public (meaning policy-makers, commissioners of research, and consumers of science in general) that HEIs and researchers 'are willing and able to deal with cases of the infringement of scientific integrity' (Document 17, section 7, no page number). Its Document 2 states that standardization and codification of principles and behaviours regarded as RM are essential for a model which is still based on self-regulation, and that which must become more formalized and visible to the outside world. This is especially due to the flaws detected in the model, namely HEIs which fail to address RM cases owing to a fear of reputational damages, or which do address them but in a discretionary or persecutory way. These factors necessitate the creation of codes, rules, and procedures for investigating RM complaints, aimed at reacting to an increase of risks and uncertainties created by RM and by the opening of the international market in science and knowledge.

The ESF's efforts are designed to create standardized and potentially universal rules for integrity. What is expected as a result is the formation of trustworthy knowledge, usable anywhere in the world, a strong pan-European model, with different actors involved, and explicit rules and procedures that everyone may know and adhere to. The model proposed is not intended to replace the traditional system of self-regulation, but to make it more visible, based on consensus of the scientific community, and better adapted to current times (Document 3). This entails having international benchmarks to guarantee quality in research, the possibility of replicating results, and continuing research (Document 6). Social control is kept in the hands of the scientific community, which must show that it is willing and able to control RM. It is the scientific community that 'sets its own house in order' (Document 2, p. 13).

In fact, according to the ESF, hetero-regulation may be a source of serious problems: a growth in bureaucracy and undue interference

from external actors in scientific activity, for instance in the formulation of integrity principles, definition of criteria about appropriate and inappropriate behaviour, and reactions to RM. In sum: 'By fostering the responsible conduct of research, not only can we work to minimize cases of misconduct, but we can also provide the assurance that society requires that researchers and research institutions take integrity seriously and that the research system itself is robust in dealing with misconduct' (Document 6, p. 1). This process culminated in the enactment of the European Code of Conduct for Research Integrity (Document 2). The code must be used to guide any aspect of the research process, may be complemented with ethical issues, intends to respect other national and European laws and regulations, and may be used by any scientific field. It represents an effort towards a consensual solution, that is to say, a broadly accepted one: 'a European wide agreement on a set of principles and priorities for the research community' (Document 2, p. 7). More specifically, the code should be complemented by the existing rules of HEIs and, at the same time, it is believed to encourage regulation in those HEIs which have none. In this way, the code is regarded as an element of change from and for the entire scientific community, internationally and not only at the European level: 'a step towards a globally accepted code to be conceived by world science organisations' (Document 2, p. 13).

What are the problems arising from such a model? The most serious one is that the scientific community must voluntarily adhere to its rules and procedures. Additionally, according to the analysis undertaken, it is reasonable to believe that the ESF has a limited capacity to bind most of the actors involved, which is why it is cautious enough to state that the code 'is not a body of law but rather a canon of self-regulation' (Document 2, p. 13). HEIs are considered key elements for obeying this set of rules, and should, according to the ESF, be forced to foster an integrity culture with clear procedures, sound training and mentoring, and early detection mechanisms for RM. If HEIs fail, they may be accused of organizational misconduct. Surprisingly, this is a problematic situation that the ESF tries to curtail, and that has no correspondence in any of the documents issued by the OECD or the EC. All this seems to mean that, for the ESF, voluntary adherence to the code is the first and necessary step to creating a whole new governance system based on RI.

As for the proposal of the OECD, it is possible to say that it is a politically negotiated hetero-regulation model. One must keep in mind that the OECD is a forum of policy-makers sharing concerns about potential negative consequences of the opening of the scientific market. They want to have a say in how public money is spent: 'Since the internationalisation of research is on the rise, it makes sense for competent national administrations to increase their level of cooperation, in order to understand one another's requirements and constrains. Harmonisation and convergence on definitions and procedures is also desirable' (Document 7, p. 11). OECD members prefer to act through cooperation between national administrations and not by convincing the scientific community about the need to set standards. The OECD seems to be aware of how difficult it is to impose one global control system. It also openly declares that governments should be allowed to make demands on integrity, control of public resources, and the use of results for public policies. Such a hetero-regulation model would be in the hands of public decision-makers who would be able, indirectly, to make proposals to HEIs and scholars about what they need.

In Document 15, the OECD defines its area of intervention: regulation of collaborative international research. Given the differences in national scientific policies and the cultural and institutional differences, solutions are sought for each case. Moreover, governments must be allowed some degree of negotiation, while protocols are to be signed for each case of international research: 'experience shows that all collaborations are uniquely different' (Document 8). How should scholars and HEIs behave? 'Scientists must be aware that government officials themselves might have political and administrative view on whether a projected programme should be international or not, and it will be necessary for the proponents to ensure that the proposed programme is consistent with government policy' (Document 8, p. 4). This means that the scientific community is asked to accept the political agenda about what should or should not be funded. International grand-scale research is thus, to some extent, politically authorized and accepted.

A question remains as to whether the OECD rejects the possibility of having the scientific community create its own standards. The reply

is given: 'How can the validity of the proceedings be ensured, given that the investigators may be prominent scientists, but legal amateurs' (Document 8, p. 10). For the OECD, the regulatory and investigatory procedure for RM should be close to traditional judicial systems (especially criminal ones): defining intention, establishing causal relationships between act and harm, ensuring the presumption of innocence, gathering evidence, and deciding on guilt. While the ESF regards RM as a a form of professional deviance and an offence to professional standards, the OECD considers it to be closer to common crime: 'There is a possible analogy to remedies that society used to deal with criminality in general in that there are two basic approaches that can be followed concurrently: (1) prevention; and (2) deterrence/enforcement' (Document 8, p. 12). Another reason for the OECD refusing the harmonization and self-regulation solution has to do with the difficulty of making decision-makers and political actors from different countries adapt to it. Issues of sovereignty would arise. The solution is, for the same reason, negotiation and diplomacy for each case. The OECD's final decision (Document 15) is to create agreements for international cooperation with standards for integrity, which the signatories would agree to.

The EC has a somehow 'comfortable' position in the sense that it does not develop new mechanisms nor does it look for specific justifications to its practices. One could call it a meta-control system (Innes 2003): it reuses the already existing structure and mechanism for ethics, applying them to RM. There is no broad regulation, and a screening committee is used for each submission for funding. Almost no justification is offered for this system. It will probably have a limited ability to regulate, because it applies only to those submitting proposals for funding. The EC seems not to take part in the debates about self-regulation and hetero-regulation or about globalization and harmonization. It achieves standardization when scholars respond to calls and submit to their formal requirements. According to Lascoumes (1999), the more social power one actor gets, the more it is able to create its own rules. In this sense, it may be that HEIs and scholars are losing power in favour of such political and bureaucratic institutions. It seems that the EC is confident of its legitimacy in regulating research, as a result of its central role as a funder of research in Europe.

5.5 Testing Hypotheses in a Largely Qualitative Study

In the qualitative study just described, a final logical step was needed to test some of the aforementioned outcomes. This section therefore presents the results of an illustrative empirical study of the relevance of RM, or its counterpart, RI, to the general goals postulated by European scientific policies while proposing and implementing this new project of an open research market capable of fuelling competitiveness in the European area. The ERA seems to be presented as the materialization of such efforts. What is more, the ERA is frequently mentioned in the documents analysed regulating RM in Europe, suggesting that many of the efforts to prevent RM presented there were oriented towards its success. The purpose here is to describe the ERA and the place that RI and RM take in such an endeavour. The following hypotheses were constructed after the analysis of the data presented in previous sections and will be tested by means of a quantitative content analysis of a series of documents:

Hypothesis 1: Documents on European science policy (i.e. ERA) show a concern with issues of funding and careers (recognition);
Hypothesis 2: Documents on European science policy (i.e. ERA) show a concern with issues concerning the opening of the knowledge and science market;
Hypothesis 3: Documents on European science policy (i.e. ERA) show less concern with integrity issues than with the preceding issues (funding, careers, and the knowledge market).

In order for these hypotheses to be tested, a sample was composed of documents that create and monitor the ERA, all of them produced by the EC. Open-access documents about the ERA from 2000, when it was created, until 2015 were retrieved. The inclusion criteria for documents in the sample were in accordance with the content analysis conducted, namely completeness, relevance, and representativeness (Bardin 2011): the documents had as a central topic the creation and

monitoring of the ERA; all were issued by the EC; they were prescriptive in nature, which meant that, in order to obtain an homogeneous sample, those containing no prescriptions or guidelines, such as 'facts and figures' reports, were not included; and, finally, the analysed documents were referred to as essential for the understanding of the process of creation and monitoring of the ERA (Table 5.2).

A quantitative content analysis was then conducted in order to generate an analytical description of these documents. The word was the unit of record (that is, what was counted), and the paragraph was the unit of context, with the aim of identifying the blocks of meaning structuring the communication in the documents. The presence or absence of such categories shows its relevance for the topic studied. A series of indicators or units of record were searched for and their frequency registered in order to determine their relative weight in the analysed content as a whole. According to Bardin (2011), the procedure for the content analysis entails grouping indicators in categories. The categories have to be mutually exclusive, meaning that the same indicator cannot appear in different categories, and have to be homogeneous, in the sense that they are adapted to the selected material and the theoretical frame of reference. The categories for analysis chosen were (i) integrity, (ii) market, (iii) resources, and (iv) values.

Hypothesis 1 corresponds to the category of resources; Hypothesis 2 corresponds to the market category; and Hypothesis 3 corresponds to the integrity category. The value category was also included after the 'floating analysis' usually conducted in such cases. The indicators for each category can be found in Table 5.3.

The results of the content analysis conducted on the sample of ERA documents can be found in Graphs 5.1 and 5.2. The smallest category with fewest counts is integrity (5.73%), followed by values (12.05%), market (28.76%), and resources (48.4%). Across all the documents, the category of resources is the largest and the integrity category is the smallest.

There were no counts for indicators of integrity such as misconduct or fraud. Peer review is mentioned about 76 times in Document 3, which is interesting because it this the classic model of social control that has been called into question by the ESF or the OECD, as already

Table 5.2 ERA documents analysed

Doc.	Title	Date
1	Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions. Towards a European Research Area COM (2000) 6	2000
2	Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A reinforced European Research Area Partnership for excellence and growth COM (2012) 392	2012
3	Recommendations on the implementation of the ERA communication	2013
4	Communication from the Commission to the Council and the European Parliament. European Research Area, progress report, 2014 COM (2014) 575	2014

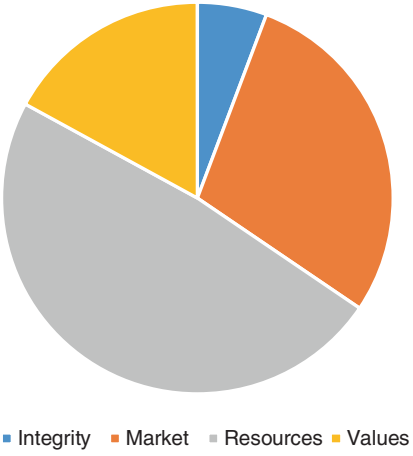
shown in this chapter. This may reveal some inconsistency between goals and mechanisms proposed for social control at different levels of analysis: the social control level and the scientific policies level. These results confirm Hypothesis 3: documents on European science policy (i.e. ERA) show less concern with integrity issues than with issues such as funding, careers, or the knowledge market.

For the category of resources, the counts of its main indicators are as follows: human resources (scientists, researchers) have 250 counts, and funds and funding have 304 counts. Thus concerns about funding are clear, as in the interviews cited in Chapter 4. Hypothesis 1 is confirmed: documents on European science policy (i.e. ERA) show a concern with issues of funding and careers (recognition).

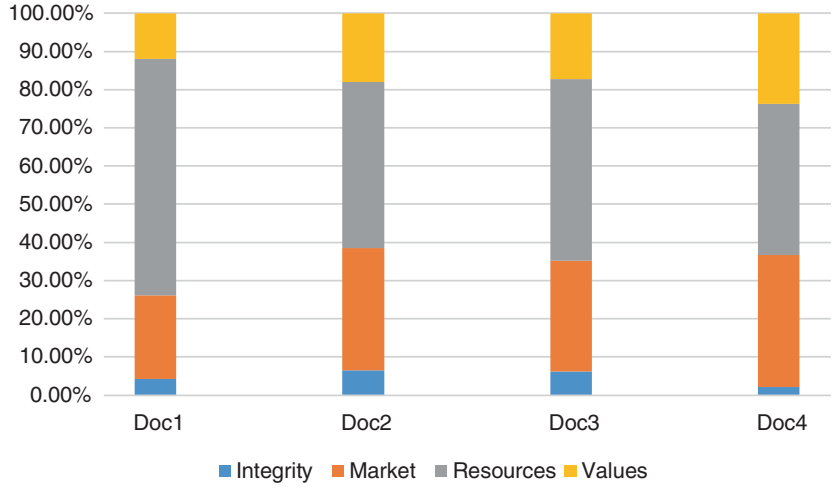
The market category has 275 counts for access, accessing, and accessibility, 194 counts for open/openness/opening, and 116 counts for internationalization/international/ly; thus the documents disseminate (at least in terms of quantity) the idea of an international, open market which different actors can access. Hypothesis 2 is confirmed: documents on European science policy (i.e. ERA) show concern with issues of opening of the knowledge and science market.

Table 5.3 Categories and corresponding indicators

Category	Indicators
Integrity	Allegations; Charter/s; Code/s; Control; Dishonesty; Ethics/ethical; Fabrication; Falsification; Fraud; Integrity; Misconduct, Peer review; Plagiarism; Questionable; Regulation/s; Rules: Whistle-blower
Market	Access/ing/accessibility; Circulation/circulating; Collaboration/s; Commercial/ization/ing; Competition; Cooperation/co-operation; Currency; Demand/s; Distribution; Economy; Exchange/s; Globalization/global/ly; Growth; Incentives; Internationalization/international/ly; Market/s; Mobility; Open/s/openness/opening; Production/products; Reward/s; Supply; Trade/trading
Resources	Career/s; Data/databases; Funds/funding; Infrastructures/facilities; Information; Instrument/s/tool/s; Investment/s; Knowledge; Labour; Money; Network/s/ing; Output/s/outcome/s; Protocol/s; Publications/papers; Resources; Scientist/s/researcher/s/worker/s; System/s; Technology/ies; Women/young
Values	Accountability; Competitiveness; Efficacy/effectiveness; Efficiency; In/Equality; Excellence/excellency; Freedom/liberty; Improvement/s; Innovation; Justice/fairness; Leadership; Merit/recognition; Progress; Quality; Quantity; Responsibility; Success/ful/ly; Transparency/transparent; Trust; Values



Graph 5.1 Distribution of indicators per category



Graph 5.2 Distribution of categories per document

For the final category, values, innovation has 131 counts and seems to be the main goal of the ERA: innovation through science and research. It is followed by equality (80 counts), progress (63 counts), excellence (62 counts), and quality (50 counts). Trust, which was frequently mentioned in the documents analysed in this chapter, is mentioned only seven times.

In sum, all three hypotheses are confirmed. There are inconsistencies in comparison with the documents analysed in the previous chapter. Firstly, the ERA documents support the peer-review system, while the social control documents analysed in this chapter propose new models for preventing and regulating RM. Secondly, the ERA documents attach very little importance to trust, while this same expression is widely used in the social control documents, which are aimed especially at restating the need for society to trust research and, thus, the need to prevent RM. Thirdly, the ERA documents make no reference to FFP or any other form of RM, while the social control documents analysed in the previous chapter reveal serious concerns over it. This means, overall, that issues of integrity and misconduct, FFP and QRP, are clearly underrated in relation to all the efforts made to create the ERA and the opening of a knowledge- and science-based market.

5.6 A Synthesis of Results

As already mentioned, the main difficulties found in proposed models of social control of RM have to do, in the first place, with voluntary adherence to guidelines: the ESF depends on the scientific community willingly adhering, the OECD model depends on policy-makers willingly adhering, and the EC model applies only to those researchers willingly submitting applications for funding. Also, dialogue with HEIs and scholars seems very limited, especially for the ESF and the OECD owing to their top-down models, which may not reach lower strata, particularly the individual researchers who, nonetheless, are the people targeted by rules and standards. This is probably why, at the micro-level, most interviewees were not aware of effective social control systems at place. Another difficulty is that some of the principles of integrity proposed may not apply to all scientific disciplines. For instance, demanding objectivity, reproducibility, international sharing of products, and creation of technologies may not be possible in some social sciences and humanities. This means that the documents analysed still rely heavily on the traditional model of the exact sciences, while simultaneously trying to cover all scientific fields.

Surprisingly, the documents are silent on a number of relevant dimensions concerning the social control of RM. First of all, although they try to describe investigatory procedures in detail, all of them are silent concerning sanctions for those researchers and/or organizations committing RM. There is also a lack of information about ways to intervene in external factors influencing research activity. The ESF and OECD refer to some factors that may lead to RM, such as pressure for quick and useful results, the importance of quantifying outputs, and lack of time for researchers. Thus proximal or distant causes, or associated factors of RM, are not dealt with in the documents analysed. In fact, proposed models for regulation say nothing on how to tackle such issues. Perhaps the will or ability to change the whole system is lacking. There is also another difficulty, given that three social control models were found: how do they relate to and articulate with each other? The ESF and OECD solutions appear to reinforce each other: they constantly refer to each other, and they share tasks and jurisdictions.

The OECD regulates grand international research collaborations, and the ESF is intended to apply to all other research situations. Nonetheless, their proposed solutions may be incompatible. A protocol signed under the auspices of the OECD for international collaboration may fail to follow standards proposed by the ESF, instead proposing, in casu, different rules and procedures. The EC has designed a model that is somewhat independent and is applicable only to a very small percentage of the research that applies for and is approved for funding. Success rates for European funding, that is, the number of funded projects in comparison with the number of proposals submitted, is very low (Lamborelle and Álvarez 2016).[2] All other, non-funded research will fall under the radar and thus elude the screening process of the EC.

When these findings are integrated with the results of the first study, presented in Chapter 4, some conclusions can be drawn. One of the major concerns of interviewees had to do with undue interference in research from external powers, namely commissioners of research. The interviewees also mentioned situations of ambivalence and influence. While Document 3 refers to interference situations, all others omit them, or stress the need for researchers to adapt to the political agenda. Investigatory procedures are not applicable to such situations, and external actors are never responsible for any kind of interference in the research process. All models are applicable only to individual scholars and, eventually, to HEIs. What matters the most is the fact that, as shown in Chapter 4, some interference and CoI situations may be the trigger for FFP and other QRP. References to biased peer review in processes of appointment and progress in an academic career are also missing. Only Document 14 mentions it, and the others do not, as if there were no connections between the research activity and the reward process. Thus, scholars are asked to have high professional standards without integrity being rewarded and recognized in the career system. Eventually, HEIs may be held responsible for not promoting a

[2]The EC has produced and published data on success rates, reports such as the one entitled 'FP7 Subscription, performance, implementation during the first two years of operation 2007–2008'. These and other documents may be found on the EC's website.

culture of integrity, according to the ESF, but it is hard to understand how biased peer review can be considered an instance of organizational misconduct.

The behaviours considered more serious by interviewees are not necessarily those that that documents outlaw. The interviewees and the documents analysed give different perspectives on what constitute RM, its causes, and its processes. Moreover, the interviewees had practically no knowledge of documents regulating research and preventing or sanctioning RM, such as the ones analysed above. If this is so, how can one expect the social control models to be effective when scholars are not aware of their existence? Everything seems to point to the fact that the proposed social control models are not intended to question political and economic needs concerning research and knowledge as socially and economically valued outputs for the knowledge society. As before, science, research, and knowledge are not valued for the intrinsic value they may hold, but rather are considered a means to the production of commodified outputs.

Finally, a broader account of European scientific policies, namely the enactment of ERA, showed some more inconsistencies regarding the relevance of RM and its control at the European level. While the social control documents propose new, stronger, regulation models concerning RM in order to maintain trust in science and its results, the ERA documents seem to maintain the faith in the peer-review system of science, while trust is deprecated and values such as innovation and progress are given more relevance. What is more clear is that the ERA documents analysed make no reference to forms of RM, which suggests that issues of integrity and misconduct in science are underrated as the opening of this relatively new science-based market approaches. It is surprising how, when going up one level of analysis and enquiring about European scientific policies (or at least those pertaining to the ERA), the efforts to prevent RM lose ground to other goals such as the search for human capital and funding resources. One should recall, for current purposes, that the grounded analysis conducted with the interviewees led to conclusions about the central importance that scholars ascribe to funding and recognition. Moreover, the interviews indicated how social control was loosely perceived (except by interviewees in the United Kingdom).

It is as if current European HEIs and scholars are being more directly influenced, or more directly confronted, by guidelines translating broader scientific policies than by supra-national efforts regulating RM. It is necessary to have an overview of such scientific policies, and this will be offered in the next chapter, together with proposals for future research.

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6

A Criminological Agenda for Studying Research Misconduct

The current chapter puts forward reflections on the results obtained in the empirical study that has been described, in connection with some features of current European science. It also indicates future research directions on RM that may be enriching for criminology. As already stated throughout, this book argues for the need to consider RM as a potentially inspiring topic for scholars of white-collar, occupational, and organizational crime, notwithstanding any other relevant criminological approaches to it. This chapter will, in this sense, provide a wider context for what seem to be the main features of scientific endeavour in the twenty-first century. This context may help to explain the results described in the previous chapters, although this is not an exhaustive account of all the trends currently in place for the management of science and scientific research. Such an effort would require a separate book, which, obviously, is not the goal. The current chapter will pinpoint some general features of the current Western model of science and how those features may help explain the move towards a growing awareness of RM. Nonetheless, as results of the empirical study conducted already seem to show, this consciousness of RM is no more than a grain of sand in the wider European project of opening up a single scientific

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market, where science and its potential products are accorded added economic and political value.

Across the chapter, considerations about the need for criminological study of RM as a topic of white-collar, occupational, and organizational crime will be entertained. While this main statement has already been provided in Chapter 1, some of the previous considerations will be followed through. Social harms caused by RM will also be addressed as way of, simultaneously, overcoming the problem of lack of ontology of crime and stressing the potential harmful consequences of RM, including organizational misconduct and interference in commissioned research. Lastly, future paths of research will be proposed, as well as potential interventions for improving definitions of RM, social control mechanisms, RCR training, and the like, all on the basis of the results provided by the study at hand.

This section, thus, is useful for (but not limited to) all those researchers in criminology wishing to study RM, and also to all who are interested in the political economy of science, such as science managers or science policy-makers. In fact, this wider description of science in Western societies, especially in Europe, refers to some features that were identified by the interviewees and by the social control documents as potential causes of, or correlated with, RM, including pressure to produce, lack of alternatives for funding, competition, the reward system of researchers, and others. As white-collar, occupational, and organizational scholarship claims, in order to better understand instances of misconduct and deviance, one has to walk the extra mile and consider the interaction between the individual and the broader environment, as well as current scientific practices, thus moving away from the 'bad apple' approach.

6.1 A Brief (and Unfair) Account of What Science Is

When searching for a deeper understanding of the topic of RM, the dimension of European policies relating to scientific research and higher education must be considered. Before moving to ponder those current

European policies, the question of what science is has to be posed, especially concerning the production and dissemination of knowledge, including scientific research. How have science policies evolved over the last 20 years in Europe? What roles, if any, do RI and RCR play in this evolution?

Science has traditionally been a topic of enquiry for philosophy and epistemology. It should therefore be asked whether such areas have been concerned with RM or with its counterpart, RI. Some seminal writers have discussed what science is, specifically its role, its methods, the goals achieved, and its relation with society. One can subdivide the various epistemological considerations into two main traditions: the French and the Anglo-Saxon (Agra 2001). The French tradition includes the work of Comte and Bachelard, and is interested in how science evolves and its connection with history. The Anglo-Saxon tradition includes several strands of empiricism, as well as the contributions of Popper and Kuhn, and is more concerned with unravelling scientific knowledge from other forms of knowledge. Some of these authors are more than familiar to readers of the current book. Nonetheless, a necessarily brief outline of their thoughts on science will be provided, in order to try to determine whether issues of RM and/or RI are addressed.

Comte, in his *Cours de philosophie positive*, published between 1830 and 1842, sets the guidelines for understanding the epistemology of science. These revolve around the use of the positive and scientific method and drawing of laws, in a search for predictability through the observation of phenomena. The goal is to attain social progress through science. These guidelines were used to study both natural and the social phenomena (Comte 1936). Nonetheless, causality and predictability came to be questioned in the early twentieth century, with the abandonment of linear causality and the assumption of the complexity of the world and the development of systems theory (Agra 1997). Still within the French tradition, Bachelard (1968) presented science in terms of constant critique and dissatisfaction, defending the need for science to include the complexity and irregularity of natural phenomena. Scientific procedures were established through self-reflection on the part of scientists, together with a dialectical movement between rationalism and empiricism. Dialoguing theory and experimentation allowed for

constant questioning, a constant renewal of, and doubt over, acquired scientific knowledge.

Empiricism is an epistemological strand including such names as Hume, Wittgenstein, and the Vienna Circle, with its desire to create a scientific conception of the world (Scruton 2001). Observation and truth, formalism, and the search for a unified scientific language, universality, and objectivity were among the empiricists' guidelines. Later, Popper defended the need for the falsification of theories and the provisional status of hypotheses, in such a way that error abounds in scientific production and drives the evolution of scientific theories. In this way, each destroyed or falsified theory gives way to new and better knowledge in an ongoing process of approaching truth (Popper 2002). For Kuhn, science is conducted by the scientific community and works through continuous debate. It experiences stages of stagnation and of evolution, where scientific paradigms are defeated by unforeseen anomalies which in turn give way to scientific revolutions. Science is seen from the outside in light of the social and external factors that influence it (Kuhn 1970). Finally, Feyerabend presents an epistemology characterized by a view of science as anarchic and nonconformist, where methodological rules are fluid and there is an illusion of rationality. Deviation, transgression, subjectivity, and strategies for confronting political power are the vectors of his thinking about science, in which he defends a strong relativistic approach to knowledge (Feyerabend 2010).

From this brief review, it is clear that it is not at the epistemological level that more can be known about RM, or about the role occupied by integrity or responsible conduct. Popper, for instance, tries to tell science apart from pseudo-science, but does not refer to the use of RM by those same pseudo-sciences. Additionally, although Feyerabend and Kuhn certainly proposed new ways of looking at the scientific endeavour, doubting its pre-ordained and highly rationalized nature, in none of these classic authors, who fill handbooks of the philosophy of sciences or epistemology, have produced enough about RM. This means that one has to look into accounts other than these general reflections on science if the purpose is to understand the importance of RM or its counterpart, RI, in shaping today's scientific landscape. What is more, if one wishes to make sense of all the apparent awareness and moral panic

surrounding RM, one has to try to understand what is going on in scientific practices today.

The following paragraphs will aim to provide a bird's eye view of the current tasks demanded of scholars, and apparently being imposed upon HEIs. Those tasks have, traditionally, been scientific research and teaching. These, and other responsibilities, have to make sense at a time when Europe has been trying to build a 'knowledge economy', with consequences for its HEIs and demands on the production and dissemination of scientific knowledge. Thus, in order to better understand the place occupied by RM in today's scientific practices, it is necessary to know how HEIs are presently characterized, how they have been influenced by broader social and economic changes, and how current HEIs work, what roles they play, and what goals they try to attain. The following sections will try to explain the European Union's central role in determining research, innovation, and economic growth.

Certain authors state that there are currently a mode 2 society and a mode 2 science, which are inseparable from each other: 'socialization of science has been contingent on the scientification of society' (Nowotny et al. 2001, p. 3). Their changing patterns co-evolve and both, science and society, influence each other and transgress their own domains, and a growth in the knowledge industries, as well as an increase in 'knowledge' workers and a proliferation of sites of 'knowledge' production, has been witnessed (Nowotny et al. 2001). Current societies depend on knowledge for improving processes and results. This implies more people involved in research, a broader meaning of what is considered research, a propagation of the places producing knowledge, and an extension of quality control mechanisms for such knowledge. Simultaneously, current societies are characterized by pluralism and deep changes in the roles and competences of states, with a closer relationship between public and private institutions, the draining-out of the traditional tasks of the welfare state, and the appearance of new, private actors and emerging markets. While society and science co-evolve, they share standards, and research is asked to account for risk and uncertainty, as well as to promote economic rationality based on the potential for future outcomes. Science also allows the belief that the future can be anticipated and predictable, and a utilitarian view of science is found. At the same time, a crisis around the idea

of general reliability and trust is being felt, and efforts are being made to overcome it, acknowledging that trust is deemed essential for cooperation at a distance. According to Nowotny et al., science and society have evolved to be self-organized (by means of self-control or, rather, internal social control), with constant audits, surveillance, transparency, and accountability. The frontiers between science and society tend to become less well defined; science is called upon to solve problems and becomes a contextualized activity, to such a point that the distinguishing feature of science, in this context, is its current ability to be considered 'the strategic value of an intangible asset' (Nowotny et al. 2001, p. 69), a way of promoting wealth creation and improving societies.

In this post-industrial environment, where there have been sudden socioeconomic changes, uncertainty, and organizational decline, HEIs have to find new ways to cope with change. This implies that they have to experience 'high levels of competition, scarce resources and new associated costs, as well as unpredictable fluctuations in enrolments and revenues' (Becher and Trowler 2001, p. 1). Globalization and transnational networks create new rewards, new structures, and new opportunities, but also disincentives, dangers, and constraints. Higher education and science are, thus, considered new tools for business, and their performance is constantly measured, with a 'shift in power relations in terms of who defines what counts as useful knowledge and whose discourse achieves dominance' (Becher and Trowler 2001, pp. 5–6). During years of economic crisis,[1] HEIs also feel the pressure to find alternative (i.e. private) sources of funding, in a 'bid and deliver' strategy, with consequent devaluation of scholars' salaries and working conditions. The current 'triple helix' model implies that the state, the market, and a university oligarchy work together (Nowotny et al. 2001). Thus, knowledge is to be used for solving specific problems for communities or business: 'knowledge is produced in the context of application; – transdisciplinarity is the norm; – heterogeneity and organizational diversity are common; – there is enhanced social accountability; – there is a more broadly based system of quality control' (Becher and Trowler 2001, p. 7).

[1]For a general overview of the most recent financial crisis see Zestos (2016).

Some authors consider that things are tending to move towards an 'academic capitalism' (Slaughter and Leslie 1997, cit. in Becher and Trowler 2001, p. 9) where HEIs behave as markets and scholars are asked to chase funding. The result is a commodification of knowledge, and practices and discourses typical of managerialism shape the demand for efficiency, efficacy, and management of HEIs (Buggenhout and Christiaens 2016). Business models migrate to HEIs, with a consequent downgrading of working conditions for scholars (longer working hours, greater variety of tasks, fewer resources), and bureaucracy and power transfer to managers (Belluz et al. 2016). Authors also believe that current changes endanger autonomy for universities and the balance between teaching and researching, and that dissemination and innovation are more difficult to manage (Businо 2000). HEIs are becoming places of conformism and frustration, where research is now considered more important than teaching because it is easier to fund and to evaluate, allowing scholars to obtain more rewards and recognition (Chiang 2009). So far, many of these analyses seem to be perfect echoes of the results of our empirical study, especially those presented in Chapter 4.

It is, then, possible to claim that HEIs and scholars are producing something that has, steadily but inevitably, become considered to have both an economic dimension and social value. In fact, Conceição and Heitor (1999) mention how the World Bank and the OECD have stressed the importance of knowledge as a fundamental motor for economic growth. Western countries have registered a growth in 'knowledge intensive' professions, and correlations between levels of development and the extent of these professions have been found. In addition to work and capital, knowledge is now considered able to produce wealth and growth. New ideas and better skills allow for more knowledge and better productivity and efficiency. In the case of Europe, the European Union has invested greater effort in research and development than the USA or Japan.[2] However, it still finds itself with lower levels of investment. Nonetheless, recent research has shown similarities

[2]Data about gross domestic expenditure on research and development in, 2005–2015 (as % of GDP) is available on the EUROSTAT website.

of growth between universities and business, suggesting they are sharing the same mechanisms based on market forces (Plerou et al. 1999).

The EC has played a central role in scientific research. It was in 2000, with the Lisbon strategy, that official discourses of the EC embraced the desire to create a 'knowledge and economy society', as well as the creation of a common space for learning through life. Thus, higher education and research came to be considered as a means for promoting the European project and serving the goals of economic prosperity and social cohesion. In sum, the EC tied scientific research to private economic activity and the labour market. HEIs became an element in a broader system which is intended to help in the process of economic development of Europe, with constant productivity assessments. Higher education and scientific research now play a vital part in leveraging European competitiveness in the world. However, the centrality of creation and dissemination of knowledge through higher education and scientific research was not a given in the first years of the European project. Certain authors note that, at first, scientific research was not part of the European project (Gideon 2012, p. 170). Nonetheless, the process of commodification of higher education and scientific research is visible and ongoing, with research and science treated as 'a service potentially tradable on the market' (Gideon 2015, p. 52). Recent decisions of the European Court of Justice confirm this trend, and research is increasingly being regarded as ab economic service. Horizon 2020 and the ERA have definitely changed the vision of HEIs and the ways in which the European Union regulates HEIs' tasks and roles, as well as the value of scholars' participation in such a process, which is currently considered to be essential for international competition of the European Union against other developed economies.

In sum, some of the literature on the current features of science, HEIs, and scholars' tasks, especially in Europe, points out the valorization of research, which is probably connected to its promise for economic growth and the fact that higher education is being asked to adapt to the fluctuations of the job market. The traditional tasks of HEIs fall

under demands for managerialism, efficiency, and utility, and HEIs may feel the need to mimic the functioning of private bodies. The European Union has progressively come to recognize the economic potential of research and higher education, with the EC designing scientific public policies, and authors fearing some form of limitation of scientific autonomy and academic freedom in research and teaching. A transgressive science, which is one crossing borders between social groups, markets, methods and topics of research, is on the verge. In an era that has come to be known for its 'liquid' nature (Bauman 2003), HEIs and scholars are asked to react quickly and in order to satisfy the needs of different sets of audiences. In Europe, such demands seem to constitute a part of a wider effort to obtain socioeconomic advantages, and HEIs are considered nodes of innovation in a global economy (Baker et al. 2015).

This commodification and privatization of research, its added economic value, and the migration of management and business practices to HEIs and scholars' activities constitute another argument for the need to study RM and the scientific endeavour by means of white-collar, occupational, and organizational criminal scholarship. Many of the studies on traditional topics of white-collar crime refer to the search for profit and economic survival no matter what, without regard for health, safety, or rules. RM can therefore eventually be considered as an opportunity that scholars and HEIs perceive they may benefit from, and that may help them retain their economic and professional activities. Many such concerns were clearly stated early on by the interviewees, especially the pressing need for research money, funding, and professional recognition. As already suggested, methodologically robust research and science may, silently and slowly, be being replaced by profitable science. Thus RM, as well as being an independent topic of research, may also be regarded as an epistemic analyser (Agra 1986), in the sense that it can illuminate the entire scientific system, helping to identify features to be addressed in the future. For this reason, RM may become a topic of enquiry for criminology, as well as for all other parties wishing to improve scientific practices in Europe.

6.2 Questions Unanswered—Or a Future Research Agenda

From the results described in the previous sections, integrated with the results presented in Chapters 4 and 5, a number of questions arise. Such questions will not be answered in the current book but will be offered as guidelines or proposals for a future research agenda for criminologists who are interested more specifically in white-collar, occupational, and organizational crime topics. The unanswered questions concern the social mechanisms of RM control being designed and imposed upon HEIs and scholars, especially concerning its relevance to broader European scientific policies, the apparently non-existent dialogue between the dimensions of social control of research activities and researchers, and the policy-driven initiatives for the building of a knowledge economy. The results of the empirical study conducted suggest that the social control mechanisms being implemented to curb RM, in the name of trust in a globalized scientific endeavour, are no more than a tool for the opening of the scientific market. One may therefore conceive that all the concern and awareness surrounding RM and the efforts promoting RCR and RI are nothing more than tools to govern and manage this globalized market for research. As argued in the first part of this book, parallels can be drawn with studies of white-collar, occupational, and organizational crime. Take, for instance, work on the problematization of money laundering. According to Amicelle (2013) such problematization and the consequent regulation were successful only when the interested stakeholders used them for protecting the trust and working of the international financial system, and not due to its connection with other criminal activities, such as drug trafficking. Is it possible to claim that, just as may happen with the regulation of white-collar crime (Mascini 2016), social control mechanisms currently designed to curb RM are nothing more than window dressing, and that its real impact is being neglected in favour of the functioning of a European knowledge society? Could it be that RM is problematized only in order to protect the new open market of science, and not because of its potential harms? Research needs to be conducted on compliance and social control mechanisms governing RM in order to best understand their effectiveness.

Nonetheless, potential harms stemming from RM should be considered. Use of the Social Harms approach, also called zemiology, would avoid the fallacy around the ontology of crime discussed in the first part of this book. Instead of insisting on the normative approach to crime, research should look at events causing physical harm, financial and economic harm, emotional and psychological harm, and the endangering of cultural safety (Hillyard et al. 2004). Many studies of white-collar, occupational, and organizational crime have done this (Benson et al. 2016; Friedrichs 2010; Gottschalk 2017; Rothe and Kauzlarich 2016). It would be easy to argue that poorly conducted or fraudulent clinical trials tainted by RM may cause death and injuries (Hedgecoe 2014). Studies of RM have already managed to identify the types of costs (investigative, losing of grants, administrative penalties, and retraction) caused by some RM cases (Gammon and Franzini 2013). Episodes of RM may cause harms to colleagues and co-authors of the offender, such as professional backlash and reduction of productivity (Mongeon and Larivière 2016). Nonetheless, as has already been done elsewhere (Faria 2014), attention should be drawn to harms arising from interference situations or from organizational misconduct. Interference in commissioned research, by which other social or political stakeholders ask the researcher to trim data or bias results, may cause a normalization of wrongful behaviour committed by those who sponsor research, while stigmatizing vulnerable populations under study. Organizational misconduct may worsen precariat working conditions for younger researchers, while rewarding tenured researchers exploiting their subordinates' work. The importance accorded to applying public money to 'profitable' and 'impactful' science may hinder research into more pressing topics that are concerned with marginalized populations or non-Western countries, such as the effects of global warming on extreme weather events, or infant mortality in 'developing' countries.[3] The list could go on to include harms stemming from the lack of a due process for those accused of RM, with consequent stigmatization; or harms caused

[3]Readers interested in knowing more about the debate about societal impact of social sciences and humanities may find useful information in the work being produced by the European Network for Research Evaluation in the Social Sciences and the Humanities (ENRESSH).

by the onus for RM falling on individual scholars, when many of its (ultimately indirect) causes can be traced back to the present trend of commodifying the scientific system. The 'ethics creep' currently at work seems to be under criticism, promoting unwanted consequences such as bureaucracy and cynicism, while, simultaneously, being unable to cope with RM topics that are of real relevance (Haggerty 2004; Winlow and Hall 2012).

Many of these questions will have to go unanswered in the current book. Acknowledging these gaps in knowledge, far from being considered a failure or shortcoming of the presented research, should be viewed in terms of the potential the topic of RM offers for criminological studies. This has been shown exhaustively throughout the current book, and the next section will provide an overview of results of the empirical analysis conducted, integrated with criminological theories and especially with white-collar, occupational, and organizational crime scholarship.

6.3 The Path Behind and the Road Ahead

As mentioned previously, it is crucial to use an approach that considers crime, deviance, and problematic behaviours of professionals in the context of the organizations they work in if one wishes to better study RM. Many criminological approaches use reified concepts of crime or antisocial behaviour, and are not concerned with the way individuals attribute meanings to events, or with the social construction around what is or is not considered problematic according to time and space, especially in the context of professional organizations. They also fail in providing accounts of the influence of the organizational environment where human activities occur, or the wider context with its likely impact on human agency.

The results of the studies presented throughout this book show that there is no unanimity or consensus about what should be considered to be RM. This lack of consensus, or ambiguity, can be found both among the scholars interviewed and in formal initiatives seeking to create social control mechanisms for RM. It can also be traced back to

inconsistencies between European scientific policies with the creation of the ERA stressing the opening of the market and the search for results, when compared with concerns found in documents regulating RM. This lack of agreement has to be understood in the context of a field in which interpretations of what should be considered problematic are shattered and fragmented. It is argued that traditional criminological theories may help in making sense of this lack of consensus. When one looks at RM, it is clear that rules do exist, and thus there is not a question of anomie (Durkheim 1996, 2005). On the contrary, existing rules stress the need for production, and the utility and economic value of scientific research, while apparently not sufficiently stressing integrity issues—and this is what was found when interviewing European scholars and when looking at the creation of the ERA. Nor is this a situation to be described as anomic according to Merton (1968), because, in the current study and contrary to the claims of Merton, there is no consensus about the illegitimacy of the opportunities being offered to fulfil goals of funding and recognition. The interviewees, as well as the social control documents analysed, refer to a wide range of reproachable events, and, moreover, the definition of such situations is changeable and is yet to be stabilized (assuming that that it ever will be).

Differential Association (Sutherland et al. 1992), on the other hand, may help explain how favourable definitions of problematic behaviours are communicated, but it does not give an understanding of incoherence from social control mechanisms and its relationship with European scientific policies. Nonetheless, criminological studies of white-collar, occupational, and organizational crime and deviance may help to promote the study of RM, in the sense that they have built a tradition of researching areas of enquiry where ambiguity and fluidity in definitions abound:

> Ambiguity and ambivalence are inevitable results of situations in which previously legal behaviour has only recently been redefined, and this is exacerbated when the boundaries are changed in ways that are to some extent outside the control of the community being regulated. (Nelken 2012, p. 618)

The results of the interviews conducted also show that there is a wide spectrum of events and situations that some actors consider to be problematic according to one set of rules (methodological and epistemological ones) but end up not being criticized according to another set of rules (relating to funding and recognition). This means that scholars feel their professional recognition is highly dependent upon obtaining economic and financial rewards as imposed by European HEIs. If such a rationale is to be used, it may support the argument that white-collar crime is mainly driven by the search for economic rewards and profit (Friedrichs 2002, 2010; Queloz 1999).

Nonetheless, a series of difficulties arise from an approach that considers ambiguities in concepts, rules, and frameworks of interpretation. In RM, events that are legally sanctioned are rare. 'Traditional' plagiarism may be one of them, but the same is not true of self-plagiarism. Corruption and influence trafficking in biased peer review for appointments and progression in an academic career may also be judicially sanctioned, as well as embezzlement of public funds for research. However, outside the shadow of the law remain a large number of situations, namely QRP, that are considered by many authors to be RM, were mentioned by interviewees, and are referred to in some of the documents analysed. In addition, ethics play a small role here, in the sense that ethical rules and guidelines are mainly applied in situations of harm caused to the subjects of research, not using informed consent, failing to guarantee anonymity, and the like. In the current project, the aim was to understand, instead, those events and practices that fall under professional integrity, or deontology—in other words, questionable or fraudulent practices that may somehow, and due to the implicit and/or explicit occupational rules, be committed by all professionals performing a specific set of tasks: scientific research. What is more, this set of occupational tasks and the rules governing it should be considered in conjunction with the professional's abilities and professional duties. A scholar should not be forced to achieve goals whose success depends on external contexts and that are not compatible with their methodological and theoretical abilities. Hence, HEIs should stop pressuring their employees with precariat working conditions or excessive workloads in the name of the chase for money. These pressures have occurred

to such a point that some authors regard the awarding of Ph.D.s as real Ponzi schemes (*The Economist* 2010), or alert us to the stress imposed upon academics, especially young ones (*The Guardian* 2016).[4]

One of the factors shared among interviewees' accounts and the analysed documents on social control of RM is that such events and practices occur in organizations that have as their main task the production and dissemination of scientific knowledge. In such organizations, actors may have to be familiar with different sets of rules, some more binding than others, according to the way they interpret their environment, constraints, and available rewards. Some are methodological rules; others are connected with the governance of the HEI (such as obtaining funding); and other rules are concerned with the scholars' reward system. Such different sets of rules may be incompatible with each other, and actors will eventually have to make choices. Those choices will take into account the importance, or the pressure, accorded by the HEI to those sets of rules, and the existence (or otherwise) of a given number of alternatives. Again, it should be stressed that the 'bad apple' approach is not enough to give a comprehensive view of why certain people turn to RM. Individualistic accounts of motivation need to be paired with more complex organizational dimensions.

At the same time, social control mechanisms also play a role when individuals have to make choices between conflicting rules. The results obtained from the document analysis conducted on the emerging social control vision for RM in Europe, seem, at first sight, to reinforce the importance of one of those sets of rules: those controlling methodology and integrity. Nonetheless, a closer look at justifications provided and mechanisms proposed reveals incoherencies and omissions. There seems to exist a conflict between two models of control, namely self-regulation and hetero-regulation. Different levels of intentional intrusion in the scholars' activities were found, with a clear submission of the broader system to the general goal of opening the European scientific market, which is considered a motor for economic and social competitiveness.

[4]In October 2016, *Nature* published a special issue on young scientists, with an editorial named "Misspent Youth" (Editorial 2016).

This scientific market, according to the analysis conducted on documents creating and monitoring the ERA, has set rules and goals which, in turn, are more concerned with the governance of the HEIs and with European science's financial survival. In the end, this means that the different elements creating such a system are, also, uncoordinated and react to different sets of rules. Again, ambiguity and mutability are the norm, not the exception. In this broad picture, one difficulty is very clear: how, and in the name of what, are researchers to be blamed for adhering to one set of rules and goals (funding and recognition) while downplaying the importance of another set of rules (methodological and integrity)? How should the scholar be charged for such a choice when even the social control models proposed, as well as the wider scientific policies, fail in stressing the importance of rules for RI or RCR?

The actors involved are not unanimous about what should be considered to be problematic and labelled as RM. This topic therefore has to be understood, and studied, in light of such incoherencies. Would a more refined design of rules and goals limit FFP or QRP? It would probably help in limiting grey areas. On the other hand, more rules and regulations over scholars may increase resistance strategies from actors and HEIs, which are very sensitive to issues of hetero-regulation. Previous chapters of this book have shown that a good number of the interviewees reacted to the current situation by means of resistance. At the same time, self-regulation, namely through peer review, seems to be insufficient, given the new role ascribed to European science and innovation in a globalizing trend and a transgressive model of science, breaking geographical, disciplinary, and other boundaries. Again, there is not a lack of rules and regulation. What was found was conflicts and contradictions among different sets of rules and regulations, opposing models of social control, and European scientific policies that move science away from its typical configuration. Science is gradually becoming uninterested in its own processes and moving towards other external agendas (political, social, and economic). As a result, various criminological studies have to be taken into account in order to understand such movements correctly: specifically, those accounting for power, specifically the power to impose frames of reference, the power to regulate certain human tasks and not others, the power to impose

policies, and power in problematizing (or not problematizing) certain events (Becker 1966; Crewe 2010, 2013; Hillyard et al. 2004; Hulsman 1986; Ruggiero 2015). One must consider the committing of socially harmful acts by those in power—a category into which many instances of white-collar, occupational, and organizational crime can fall. At the same time, there is a need to address the power to impose social control and normalization mechanisms, as well as the power (or ability) that individuals have to present and position themselves according to the existing rules—resisting, accepting, fitting in, projecting themselves into the future according to their life story and interaction with other actors.

The current topic of research, RM, may allow criminology to consider it as equally relevant as any other transgressive behaviour, pairing it with the study of the emergence of disciplinary and regulatory models imposed upon the specific professional activity of scholars. It may help to access the process of attribution of meanings, as well as the process of socially constructing an event, situation, or person as problematic. Criminology, in this sense, is not only a science about transgression which studies crime or criminal phenomena. It should also be seen as a science concerning norms and the sphere of values that people hold to, including those in their daily professions, immersed in organizational contexts. It seems likely that crime or deviant behaviours exist when there is an opportunity for them and whenever individuals consider that choosing them will bring about benefits (Becker 1968; Clarke 1997). However, it is also true—and this is a key argument—that such opportunities are socially constructed, and are interpreted according to, and in interaction with, the organizational environment in which individuals find themselves (Benson and Simpson 2009; Croall 2001; Engdahl 2009; Vaughan 1999a, b). Criminology thus needs to know more about such processes for attributing meaning in organizational contexts, and especially about how problematic events and situations, such as RM, emerge in the professional and organizational context.

In order to wrap up these final considerations, the following paragraphs will acknowledge some of the limitations of the study presented, describe future lines of research, and then go on to propose some interventions to improve the current state of affairs. The aim of the research presented in this book has not been to conduct a study on the frequency and incidence of RM, nor on individual factors correlated

with RM. Quantitative studies do exist, although it may be argued that they are not sufficient, as stated in Chapter 2. The current study has intended to take a deep and comprehensive look at a process involving different dimensions, different actors, and different stages over a brief period of time, and to try to make sense of the process of problematization of, and perceptions about, RM in Europe. When interviews were conducted, they were designed in such a way as not to ask about self-reported behaviours. Instead they questioned about perceptions of RM, and its perceived causes and consequences. Personal or ideological biases, born from the interviewees' experiences and status, may alter their view or interpretation of real-life experiences. Social desirability is always something to consider when researching with people, especially when it comes to interviewing elites about sensitive topics. Thus it is not possible to discard biases due to simulation or lies, failure of memory, or limitations in communication. Nonetheless, Chapter 3 has tried to recount all the methodological procedures and reflexivity exercises used in order to keep such bias to, it is hoped, a minimal level.

An important point concerns the generalization of results of the present study. Any generalization of results obtained from the samples used should not follow quantitative models, but rather should follow what is traditional in qualitative research (Pires 1997). It is possible that the same research conducted five years ago, or five years from now, would produce different results. A sample composed of scholars from other countries, especially outside Europe, might yield different perceptions from those obtained from the sample of scholars that was assembled for this study. The same goes for the document analysis: were it to be conducted on documents issued by institutions from the USA, or in any other time period, there is a chance that it would find different models of social control being promoted. Because of this, it is argued that that the current research must be contextualized: it was conducted in Europe, in the early twenty-first century, and its results may make sense only within these geographic boundaries and for that particular period in history. Nonetheless, the empirical methods used in this study should continue to be applied, in order to improve, or ultimately verify, the results obtained. The use of qualitative methods clearly allows for in-depth analysis and a better understanding of processes and social

construction of the world. Nonetheless, the theoretical model and explanations derived from the data analysis may eventually be used to explain the research activity in different, non-European, countries, so long as there exists a situation of opening of the scientific market, coupled with limited resources—for instance, in the USA, Japan, or emerging economies striving for scientific success, such as Brazil or China.

What could have been improved in the current study? Any empirical research can always be improved: and the development of knowledge is an ongoing process, and, especially with new topics such as RM, there are always new avenues for future studies. For instance, future research may propose a deeper and more detailed analysis in a sample of codes, procedures, and sanctions used for a sample of European HEIs, in any scientific given field. If that were done, it would allow a better understanding of connections between such codes and procedures with existing supra-national social control mechanisms, as well as with scholars' perception, which were studied so far. In that way, a more imbricated vision of the coherencies and incoherencies between existing social control mechanisms (where they exist) and individual and organizational stances on RM would be produced. On the other hand, it would also be interesting to develop a more detailed empirical study of the places that scientific research and higher education occupy in Europe and their connection with RM or RI. That could be accomplished by using a broader corpus of documents than the ERA sample used in this study, and by interviewing decision-makers with specific tasks in scientific public policies, especially in integrity issues.

It would probably also be relevant to determine the detailed differences between disciplinary fields. The results of the interviews show how scholars from the exact sciences may have different views on specific forms of RM from interviewees from social sciences or from law and the humanities. Exploring those differences would probably help to predict the different pressures, or strains, existing in different disciplines. Thus sampling interviewees from a specific discipline (say, chemistry) would enable a better understanding of problematization of RM and its ascribed causes, as well as perceptions of social control mechanisms, individual and institutional goals, and individual adaptation

strategies. Nonetheless, the research presented in this book has revealed the perceptions of scholars working in HEIs from Portugal, the United Kingdom, the Netherlands, Belgium, and Switzerland about the frequency, features, causes, consequences, and seriousness of RM, including FFP as well as QRP. It has also shed light on the process of labelling behaviours and situations as problematic, in connection with the goals pursued by HEIs and, additionally, enabled an understanding of what and how European scholars think about research practices, in connection with explicit or implicit rules about what is or is not allowed in their activity.

The research has given the opportunity to understand how scholars react to and interact with organizational contexts, and especially how individual action is constrained or pushed by the availability or absence of resources, proposed organizational goals, career expectations, and the perceived costs and benefits of their actions. It has also created the opportunity to identify convergent goals between HEIs and scholars (i.e. recognition and funding), as well as the mechanisms operating such convergences. A typology of courses of action has been identified. It has been possible to understand the scholars' perceptions of social control mechanisms, and to describe the process of constructing supra-national mechanisms of social control of RM from 2000 to the present. Interests being protected, existing conflicts, actors involved, and opposing visions expressed in documents for controlling scientific activity and ensuring scientific integrity have been identified, and incoherencies flagged. Finally, the research has shown how the creation and establishment of the ERA, as an open scientific market, underestimate integrity issues.

Other than suggesting future paths for research, the results obtained in the current study may be helpful in a number of ways. Their potential in designing and developing interventions regarding RM must be briefly mentioned. These are the dimensions and areas of action that will probably interest scientific managers and decision-makers concerned with science and research. Firstly, the results may encourage a proper, evidence-based, debate and redesign of the individual and organizational reward system of scholars, in light of the need to take pressure away from attaining funding and recognition by means of

QRP. It may also be helpful in stabilizing the problematization (and non-problematization) of RM, particularly the ambiguous or grey areas that have been identified, such as QRP. The results of this study could serve as a basis for improving social control mechanisms of RM, and, more broadly, of research activity, at the European level. This may be especially fruitful for the interconnection of supra-national regulation of RM and specific HEIs. If such changes were to be made on the basis of the current work, they would probably help to better match social control mechanisms with what HEIs and scholars regard as RM and the degree of seriousness they attributed to it. As shown, for instance, CoI and interference, as well as the exploitation of subordinates' work, have not been properly addressed by social control efforts, but were nevertheless a concern for interviewees. The current work could also help to address the different adaptation strategies of scholars to perceived goals imposed by HEIs, with a potential for lessening professional conflicts and diminishing the use of RM as a means to achieve desirable goals. It could also assist in bringing about a reconfiguration of the communication system between HEIs and scholars, as well as between European HEIs and the European institutions responsible for European scientific policy-making, or for the creation of social control mechanisms. In this way, the communication and definition of desirable goals to be achieved by scientific research could be improved, as well as its role within the broader scientific endeavour in Europe.

The results presented throughout this book could assist in reducing the waste of public money invested in scientific research, protecting it from RM, especially QRP, by fine-tuning scholars, HEIs, and the control mechanisms determining what should be considered the 'don'ts' of research. In addition, it could promote the reduction of social, economic, psychological, and health-related harms identified by scholars as originating from RM, and also organizational misconduct that researchers attributed to HEI, as well as CoI and interference from commissioners of research. Similarly, the results of this study should give rise to a debate about the need to clearly define the limits of commissioned research, in as much as commissioners of research should be made aware of RM caused by their interference in the research process,

as well as more knowledgeable about the professional roles of academics and the rules they have to comply with. Finally, the study presented in this book, by showing loopholes and looseness in social control mechanisms and practices, should create an opportunity to evaluate the kinds of regulation, detection, and sanctioning presently in place. RM prevention and RCR training should also be subjected to evaluation in order to assess their efficacy and effectiveness. Failure to conduct such evaluations can mean using public money to support activities that have no effect or, even worse, unpredicted negative effects in terms of scholars' behaviours and attitudes towards RM, as well as in HEIs' strategies for curbing RM.

Criminology, specifically via white-collar, occupational, and organizational crime and deviance scholarship, could help to answer a series of research questions arising in the field of RM. It would be able to answer questions about the efficacy of deterrent mechanisms designed to prevent and punish RM, and about the effects of criminalizing some forms of RM, namely FFP, as well as the effects of labelling the offenders as fraudsters by means of informal and formal social control mechanisms. In parallel, it would be able to measure the impact of reputational damages to HEIs accused of organizational misconduct and provide advice on the best regulatory models to facilitate compliance by organizations and scientific managers. Criminology is also well equipped to study the recidivism of HEIs and individual scholars, and the motivations and consequences of and for whistle-blowers of RM, as well as designing situational prevention mechanisms and reductions of opportunities for various forms of RM. Concurrently, it should study the effects of the commodification of knowledge in HEIs and individual scholars, seeking to understand whether the new European scientific market may behave in ways similar to other markets, with the consequent risk of scholars and HEIs cutting corners in achieving desirable goals. Criminology should also probably study actors connected to the scientific production, such as the major scientific publishers that have been recording profit margins rivalling those of Google (Buranyi 2017), as well as private and public commissioners of research. Finally, it should also study the harms caused to scholars, HEIs, and users of science by the current state of affairs.

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Conclusions

The work presented in this book is intended to help clarify what is becoming a pressing issue for scholars in a whole range of scientific disciplines in Western countries: research misconduct. It is hoped that, by looking at RM in the preceding chapters, the reader has come to understand the wider picture that surrounds FFP or QRP. The book has argued that criminology holds the conceptual, theoretical, and methodological tools to research this form of occupational and organizational misconduct, especially by building on the study of white-collar, occupational, and organizational crime and deviance. Throughout the book, a number of key arguments have been presented. Firstly, RM is becoming a pressing topic of research, with an apparent growth of cases being reported and ever more frequent questions concerning the harms caused. Secondly, much of the research and debate has nonetheless been conducted outside criminology, by other disciplinary areas which may lack the conceptual, theoretical, and methodological tools usually used to study deviance, social harms, and crime. Such tools have, nevertheless, been central to criminology, and therefore the third key argument is that criminology should devote itself to the study of RM. What is more, because RM is apparently a result of legitimate professional

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activities, occurring at the heart of socially and economically valued organizations, it is also a key argument that white-collar, occupational, and organizational scholarship should play a central role in continuing empirical research on the topic of RM. While criminology has, slowly but steadily, studied some facets of RM, there is a need for more systematic and in-depth approaches. The current book has intended to bridge that gap and show how, by means of qualitative and comprehensive research on RM, it is possible to overcome methodological difficulties concerning the suspected large dimensions of dark figures on FFP and QRP. Simultaneously, the book has offered the results of an empirical criminological study on RM, which have been integrated with criminological theory, especially concerning white-collar, occupational, and organizational scholarship. The following paragraphs offer a summary of the main arguments and results presented.

Chapter 1 drew attention to the need for a criminological approach to RM. As already stated, the central argument is that criminology is especially well equipped, from a theoretical and methodological point of view, to produce empirical knowledge about RM, and to sustain theories about its causes, processes, and harms, as well as about the formal and informal social reaction to it. In particular, much of what has been produced about white-collar, occupational, and organizational crime, may be applied to the topic of RM. This chapter summarized some of the studies of RM produced in the criminological field, but also pinpointed current limitations. In addition, several analogies were made between researching RM and other issues typically falling under topics of white-collar crime: comparisons were drawn with conceptual puzzles, methods of research, the interaction between professional and occupational roles and organizational settings, ambiguity in rules and regulations, social control, and harms and victimization.

Chapter 2, by means of reviewing the literature already produced, tried to answer the question of what RM is from conceptual, empirical, and theoretical standpoints. A summary was offered of how it has been defined, what is known about it, how it has been explained, and what has been done to prevent it and regulate it. This allowed for the presentation of controversial concepts, the pinpointing of methodological limitations to research, and corresponding results. It became clear that

authors in a variety of disciplinary fields have raised concerns about FFP and drawn attention to a series of QRPs, including CoI, biased peer review, and authorial disputes. There seems to be, then, a constellation of behaviours viewed as deviations from a set of rules falling under RI or RCR. Nonetheless, the exact definitions and features of such behaviours, the harms caused, data on their prevalence or incidence, and individual and organizational causes for offending appear scattered and unsystematic. Likewise, research on the effectiveness of prevention and sanctioning is inconclusive or largely lacking.

Chapter 3 gave an account of the methodological choices and procedures that enabled the empirical research on RM presented in this book, especially that in Chapters 4 and 5. As already mentioned, a research design mainly centred on qualitative methods was used, because RM has so far been studied mainly via quantitative methods, and because an in-depth analysis would make it possible to fill the gap left by previous research. For this research, there were two main aims. The first was to access scholars' perceptions of RM, given the conceptual ambiguities and perceptions of the topic; the second was to uncover social reactions to RM, namely by accessing the development or processes of creation of social control mechanisms in Europe at the turn of the twenty-first century. Known difficulties in conducting empirical research on white-collar, occupational, and organizational crime were mentioned, and reflections were offered on researching with elites on sensitive topics.

Chapter 4 presented the results of the empirical research conducted on the topic of RM. A series of interviews were conducted with European scholars, and a qualitative, grounded analysis was undertaken. The analysis gave insight into what situations interviewees consider to fall under RM, or, at least, to be problematic and reproachable. It also facilitated an account of the perceived processes and causes enabling such situations to take place. Finally, the main categories found while analysing the responses of the interviewees facilitated an understanding of how individual interpretations of the organizational culture may account for RM. A convergence between recognition and funding goals in European HEIs was presented and integrated with the perceived benefits from RM, which, in turn, exceed the associated risks of detection and sanction.

Chapter 5 focused on social control mechanisms. It continued the presentation of the results of interviews with scholars, in relation to perceived social control mechanisms of RM, and the results showed a general lack of knowledge of rules, procedures, and consequences of RM. It was concluded that inefficient social control may be regarded as organizational misconduct and may facilitate the convergence of individual and organizational goals, with a subsequent general disregard for integrity and methodological rules. The second part of the chapter integrated the results obtained by the analysis of formal international documents aiming to regulate RM. It showed the existing conflicting control models being currently designed for European research, and paid special attention to the definition of RM according to such policy documents, and to the actors involved in the control of the research activity, as well as justifications for the proposed models of control. The analysis showed how the opposing trends of globalization versus harmonization of science, and self-regulation versus hetero-regulation of RM, have impacted social control models proposed to curb RM, and, simultaneously, how such endeavour seems to be ill-integrated with broader scientific policies in Europe, especially the opening of a European research market, the ERA.

Chapter 6 provided some wider context for the main features of scientific endeavour in the twenty-first century, concluding that it approximates to a business-driven, commodified model of science. Accordingly, a brief description of working conditions for scholars and HEIs was presented, stressing a series of elements presented as correlated to or causing RM. Throughout the chapter, considerations about the need for criminological study on RM as a topic of white-collar, occupational, and organizational crime were presented. Future paths of research were proposed, as well as potential interventions for improving definitions of RM, social control mechanisms, and prevention strategies, all based on the results provided by the study at hand.

It is hoped that readers coming from the broad field of criminological enquiry are already sufficiently convinced of the argument that RM should be studied from a criminological standpoint, as a form of white-collar, occupational, and organizational crime. If the book has succeeded in achieving that, they can start to reflect on this impending research agenda, and eventually engage in its study. Young scholars

are especially encouraged to do this, while being aware of the reflexivity and methodological issues identified in Chapter 3. It is also hoped that readers from all other scientific disciplines, and those specifically concerned about RM, and about RI or RCR itself, may have gained a clearer view of what is yet to be done and known. Policy-makers and science managers are also more than welcome to integrate the results of the research into processes of decision-making concerning research, scholars, and HEIs. Most of all, it is hoped that readers will have the courage to do with the topic of RM what they do with any other area of concern and curiosity: namely produce rigorous knowledge, based on data and involving extensive reflection and a critical stance. This is also why the book may be considered ground-breaking, while offering a foundation for the continuation of systematic, in-depth analysis on the topic of RM.

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Online Resources

Diederik Stapel on the BrainTrain—What I Lost and the Importance of Being Connected. https://www.youtube.com/watch?v=nJhvYpMxG_k.
European Commission. https://ec.europa.eu/.
European Network for Research Evaluation in the Social Sciences and the Humanities (ENRESSH). http://enressh.eu/.
European University Association (EUA). http://www.eua.be/.
EUROSTAT. http://ec.europa.eu/eurostat.
LSE Impact Blog. http://blogs.lse.ac.uk/impactofsocialsciences/.
OECD. http://www.oecd.org/.
PRINTEGER. https://printeger.eu/.
Retraction Watch. https://retractionwatch.com/.
The European Group on Ethics in Science and New Technologies (EGE). https://ec.europa.eu/research/ege/index.cfm.

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