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DEONTOLOGY AND THE SCIENTIFIC PUBLICATION PROCESS

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Abstract

After laying down a few markers aimed at distinguishing between what comes under research ethics (which concerns the participant in the research and even society) and what comes under scientific integrity (i.e. the researcher's deontology), an argument is developed concerning the implosion of the peer review process, The argument is made about the implosion of the peer review process, which is a pillar of the functioning of science, as well as about the minor deviations of authors in plagiarism and self-plagiarism, which are indeed a problem of scientific integrity, albeit of moderate importance, but of great significance. An analysis is made of the structural reasons for these various problems; solutions are proposed around the idea of a radical rebalancing in the evaluation of researchers between their scientific production activities and their activities in evaluating the articles and research projects of their peers.*

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1. Introduction

Following the publication of the Corvol Report (June 2016) on scientific integrity, a national network of Scientific Integrity Officers was established in France. The author of this chapter was among the first to be appointed.[126] Approximately one hundred universities and higher education and research institutions have now appointed scientific integrity officers. They are appointed by the university chancellors, to whom they refer, and their responsibilities are extremely varied. In some universities, their scope also includes ethical issues, but that remains an exception. There are overlaps between deontology and ethics, but for didactical reasons we believe that it is important to distinguish between the two terms.

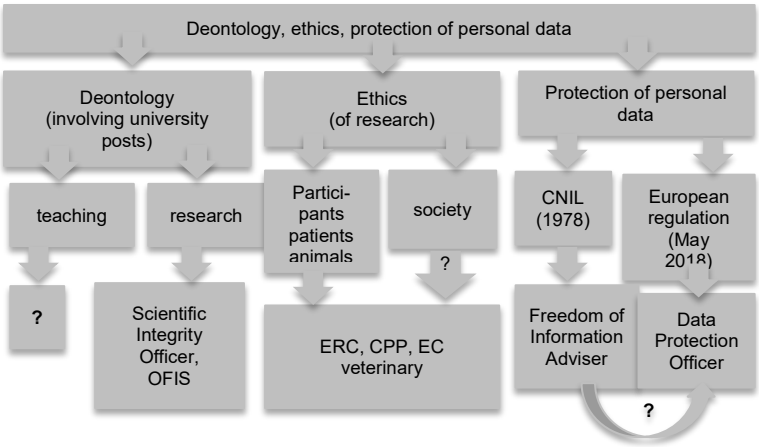
Deontology means following good practices in order to guarantee the reliability of the data obtained and the reproducibility of the research and ensure that every effort was made to avoid plagiarism. *Ethics* involve research participants, and even society as a whole. Ethics mean, for instance, respecting the confidential nature of data (which falls under a more general principle of loyalty toward research participants). The third aspect of integrity is the protection of personal data. This has more to do with regulations than ethics, even though such regulations can help solve ethical issues. Morales describes the dilemmas that arise in this regard when viewed from a legal perspective.[127] Confidentiality does not mean anonymity. From the moment a participant has given his informed consent for a researcher to store personal information, there are no longer any ethical problems, but there is an issue regarding the

[126] P. Corvol, *Bilan et propositions de mise en œuvre de la charte nationale d'intégrité scientifique. Remise du rapport à Thierry Mandon, secrétaire d'État chargé de l'Enseignement supérieur et de la Recherche,* 29 June 2016.

[127] S. Morales, 'Propriété, accès et partage des données : Qu'en dit le droit québécois ?', in *L'urgence de l'intégrité académique*, ed. by M. Bergadaà and P. Peixoto (Caen: Editions EMS, 2021), pp. 257-72.

protection of personal data. Figure 1 presents a general view of the issues concerning deontology, ethics, and the protection of personal data.

Figure 1: The scope of scientific integrity[128]



In this article, we will deal with the deontological tensions that arise at the very heart of research: the system of scientific publications.

Deontology is seen as a movement or action associated with the performance of professional duties. Bergadaà writes that, although individual conscience is bound by morality, ethics drive individuals to act in one way or another within the framework of action to which they refer; deontology stems from the conflicts between different duties that emerge when one performs one's job.[129] Etymologically, *deontology* comes from the Greek words *deon* and *logos*, which respectively mean 'duty' and 'discourse'. Today, it is defined by the Larousse dictionary of

[128] Abbreviations used in Figure 1: CNIL: French data protection authority; OFIS: French office for research integrity; ERC: European Research Council; CPP: Code of criminal procedure; EC: ethics committee.

[129] M. Bergadaà, 'Évolution de l'épistémè économique et sociale : Proposition d'un cadre de morale, de déontologie, d'éthique et de responsabilité pour le marketer', *Recherche et Applications en Marketing (French Edition)*, 19(1) (2004), 55-72.

French as 'the set of rules and duties that govern a profession, the conduct of those who practice it, and their relationship with their clients or the public'.

2. The dynamics of responsibility for scientific journals

The question of deontology in research is nothing new. It has its roots in both the good practices governing experimental methodology, as defined in particular by Claude Bernard, and some of the major cases of scientific fraud that have marked the 'short' history of science. This question is nothing new, but it recently became particularly acute when the scientific community became aware of the thorny issue of the reproducibility of experimental results. There is a very significant number of articles for which the data cannot be reproduced. This affects some disciplines more than others, such as medicine or psychology.[130] According to Corvol, the reason for this non-reproducibility concerns all the key players in research: the researchers themselves, the institutions that employ them, the evaluation committees, the scientific journals, and the organizations that fund research.[131] The Diederik Stapel affair, which came to light in 2011, is undoubtedly an exception to this.[132]

The responsibility of scientific journals for deontological misconduct is not negligible. A particular concern is their excessive thirst for surprising and sometimes counterintuitive results, for which a high impact is expected in terms of citations, on which the evaluation of a journal's quality depends. The criteria for selecting articles partly

[130] Open Science Collaboration (OSC), 'Estimating the Reproducibility of Psychological Science', *Science*, 349(6251) (2015), Article aac4716; M. Baker, 'Over Half of Psychology Studies Fail Reproducibility Test', *Nature*, (2015), Article 18248.

[131] Corvol, *Bilan et propositions.*

[132] P. Barthélémy, 'Le scandale Stapel, ou comment un homme seul a dupé le système scientifique', *Le Monde.fr,* 9 December 2012.

explain the non-reproducibility of the published results. The 'newness' factor of a scientific result is an integral part of what is considered a scientific contribution, whereas an article seeking to reproduce the results of already published research is not considered 'new'. Moreover, research that does not result in the validation of a hypothesis is less valuable in the eyes of a journal's editorial staff than research that provides the expected results. Therefore, research seeking only to replicate published results and failing to do so would be of very little interest.

However, over the last few years, some journals have developed 'open science' strategies, which may be helping to correct the biases in reviewing articles. It is possible to submit a research protocol to certain journals which, after carrying out their review, will agree to publish the research whatever its final results. Including a 'reproduction' section in all scientific journals could help to ensure the reproducibility of published results.

Rowland lists four duties of scientific journals: spreading knowledge, archiving canonical knowledge, controlling the quality of publications, and giving authors the credit they deserve.[133] Regarding this last point, the widespread pressure to publish in order to access university or research positions creates bias. Bias affects all types of evaluations, whether they concern sales assistants, police officers, teachers, researchers, etc. Let us take the example of the police. A dozen years ago, in France, a certain Minister of the Interior wished to evaluate police services based on the number of people taken into custody. In a single year, there were over a million arrests! For a country of 67 million inhabitants, that number was highly improbable, especially when one considers that women, children, and elderly people were hardly ever arrested. All evaluations generate their own biases, especially when

[133] F. Rowland, 'The Peer-Review Process', *Learned Publishing*, 15(4) (2002), 247-58.

there is only one criterion for measuring performance, and there's the rub.[134]

3. The structural causes of the peer review system's implosion

In an ideal peer review system, everybody would have the time to write high-quality articles, and readers would have both the time and the required attention to review them and recommend them for publication or rejection. This system is the traditional model for reviewing scientific output.[135] It is an integral part of the philosophy of science and epistemology.[136] This model is admittedly criticized, as the review of an article depends greatly on the choice of reviewers, who are very sensitive to orthodoxy and to belonging to networks, but nobody has yet found a viable alternative (to paraphrase Winston Churchill, the peer review system is the worst system for the review of scientific output—except for all the others).[137] Furthermore, the peer review system can be improved, as most of its biases and limitations can be amended. Scott offers solutions to optimize the reviewing of articles, in particular by

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[134] D. L. Kirkpatrick, 'The Four Levels of Evaluation' in *Evaluating Corporate Training: Models and Issues,* ed. by S. M. Brown and C. J. Seidner (Dordrecht: Springer Netherlands, 1998), pp. 95-112; J. Py, 'Questionnements sur l'activité évaluative à l'école', in *Les apports de la psychologie sociale à la problématique de l'évaluation: Quelques acquis et éléments de réflexion,* ed. by G. Figari and M. Achouche (Brussels: De Boeck Supérieur, 2001), pp. 181-88.

[135] R. Spier, 'The History of the Peer-Review Process', *Trends in Biotechnology*, 20(8) (2002), 357-58.

[136] J.-L.Beauvois, and P. Pansu, 'A good idea gone bad in the service of cultural globalization: measuring the impact of publications in the psychological disciplines', in Globalization – Today, Tomorrow, ed. by Kent G. Deng (IntechOpen, 2010), pp. 77 89.

[137] F. Ferretti and Â. G. Pereira, 'A New Ethos for Science? Exploring Emerging DIY Science "Qualities"', *Futures*, 125 (2021), Article 102653.

ensuring that the experts called upon are diverse, especially geographically, and also by seeking a balance between originality and tradition.[138] Again, these problems clearly fall under the scope of everyday deontological debates: guaranteeing a system's equity and accuracy.

However, such adjustments are insufficient, as over the last few years one aspect of the peer review system has been under great strain: the pressure exerted on researchers by the various reforms in higher education and research around the world, which encourage researchers to publish even more articles but not to review more of their peers' work. Over the same period, the workload for researchers has increased, especially due to the development of funding for research projects. The editors-in-chief of scientific journals therefore have fewer than ever available reviewers, even among those who have already published articles in their journals.

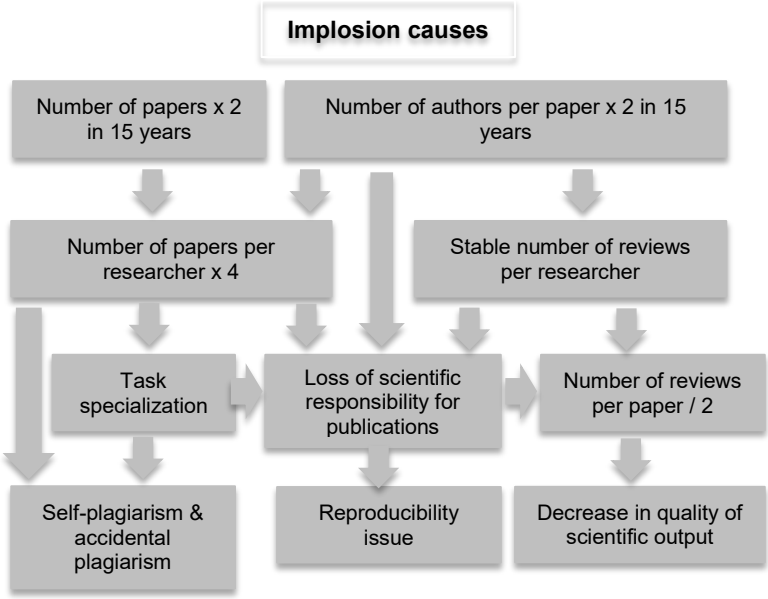
The year 2020 was significant in this respect. For instance, in the case of the *European Review of Applied Psychology* (ERAP), the scientific journal for which the author of this chapter has served as editor-in-chief since 2007, we can see that, between 2010 and 2019, we received approximately one hundred papers each year (between 82 and 117 depending on the year, for a precise mean of 102). In 2020, ERAP received 166 papers, representing a 63% increase in the papers submitted compared to the mean for the previous ten years. Furthermore, ten years ago, we were usually able to obtain three independent reviews per paper. Today, we struggle to obtain two, and in many cases we are obliged to provide an editorial response based on a single expert assessment. Consequently, it is the editor-in-chief or the associate editor in charge of the paper who is forced to carry out a more thorough reading of the article, combining both an expert and an

[138] A. Scott, 'Peer Review and the Relevance of Science', *Futures*, 39(7) (2007), 827-45.

editorial role. The dilemma is therefore whether to rely on a single expert's analysis or to become personally involved in the process, leading to excessive consumption of time and energy, and even to a substantial change in the nature of editorial work. All the editors-in-chief of scientific journals to whom we spoke about this phenomenon confirmed that they were facing the exact same situation. Some have thrown in the towel. When there are no longer any reviewers, or associate editors, or editors-in-chief, there will be no more scientific journals, and authors will be condemned to self-publication on their own websites… It is doubtful that science has anything to gain from this situation.

The peer review system, therefore, is currently imploding. Researchers' professional activity is in urgent need of rebalancing. Ideally, there should be a more equal balance between the importance attached to scientific output and that attached to peer reviewing. It is therefore absolutely necessary to change the parameters of the evaluation of researchers by promoting not only their work as authors but also their work as reviewers of scientific papers and research projects. The job of editor-in-chief or associate editor, which has become more and more demanding due to the implosion of the peer review system, must also be promoted in a way that is commensurate to the work performed and the challenges faced.

Figure 2: Causes of the implosion of the peer review system.



A number of ideas are currently circulating, but what about the founding principles of our profession? One solution would be to compensate academics for reviews and the editing of scientific journals. This step has already been taken by some research funding bodies and research and higher education evaluation agencies, such as the HCERES[139] for expert assessments, and even by some scientific journals for editorial tasks; for example, *Cognition* compensates members of its editorial committee. This would be a revolution in the business model of scientific journals, which would make authors bear this additional cost—for the most part: since researchers do not review enough of their peers' papers, they will have to pay (more) to get published. We return

[139] The French High Council for the Evaluation of Research and Higher Education.

to the question of the balance between producing research and scientific reviewing.

4. Keeping it in the family

Deontology does not imply morality. Doctors are required to treat patients and save lives but not to be honest, especially in their private lives. Similarly, researchers know they will be evaluated based on the number of scientific papers they publish and the impact factor of the journals in which they are published, not on their moral duty to participate in the epistemology of science and its overall functioning rather than only part of its functioning. Numerous biases can therefore be found, which are liable to cause problems of scientific integrity.

The excessive zeal to publish is based on Taylorism, in particular on the idea that productivity increases thanks not to a scientific division of work but to a division of scientific work, including the writing of articles. The number of authors who have co-written papers has increased by 36% in a dozen years (+149% in France, a factor of 2.5), as is shown in Table 1. Some have specialized in the processing of statistical data, others in discussing results, and still others in reviewing the question, etc. Scientific responsibility is being diluted, to the point where, in some famous cases of scientific fraud—such as the Stapel case—top researchers had unknowingly collaborated for years with a scientific swindler who had invented false data. Is it reasonable to put all the blame on the swindler?

This excessive zeal is also made evident by the industrial nature of scientific writing. The heavily structured format of a scientific paper lends itself to this. From one paper to the next, a large part of the introduction will be reused, as will the section concerning the method or discussions.

Such self-plagiarism constitutes a problem of scientific integrity as it places stereotypical constraints on science, whereas it

would be more expected of a researcher that she should conceptualize and rethink science in her writing instead of copying previous work. The practice of 'salami slicing', which consists in dividing research into several segments in order to publish several papers is also part of a similar phenomenon, leading inevitably to large overlaps between the various papers stemming from the same research. Moreover, by liberally increasing their number of publications, the authors who engage in these dubious practices inflate their CVs and enjoy a better reputation than their more scrupulous colleagues.

Table 1: Mean number of authors per paper, by discipline, in 2000–2004 and 2012–2016 (source: HCERES, 2019).

	World		USA		China	
Discipline	**2000-04**	**2012-16**	**2000-04**	**2012-16**	**2000-04**	**2012-16**
Physics	4.5	7.6	6.5	19.5	7.9	17.9
Particle physics	7.9	37.1	16.6	125.8	25.7	272.2
General physics	5.9	10.2	15.1	39.0	13.9	29.3
Nuclear physics	5.7	13.7	8.3	41.0	8.5	47.2
Earth sciences, Astron., Astrophysics	3.5	5.8	3.8	10.1	4.3	10.4
Medical research	4.6	5.8	4.4	5.8	5.1	6.9
Fundament. biology	4.4	5.7	4.3	5.8	5.0	7.0
Applied biology-Ecology	3.4	4.6	3.4	4.6	4.1	5.9

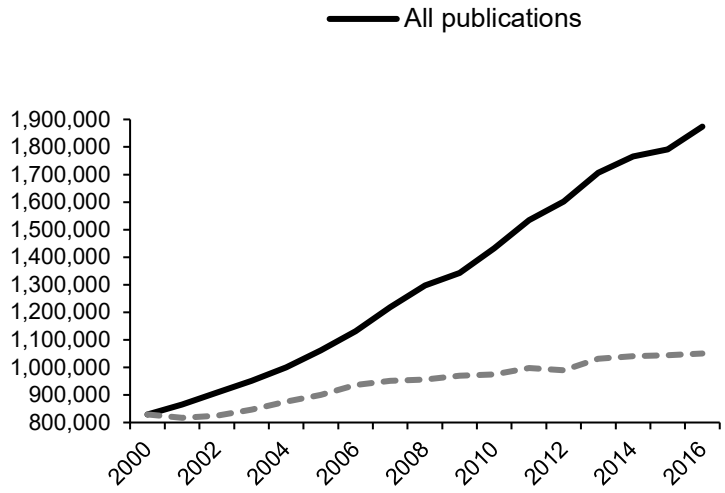
	World		USA		China	
Discipline	**2000-04**	**2012-16**	**2000-04**	**2012-16**	**2000-04**	**2012-16**
Chemicals	3.8	4.7	3.6	4.8	4.3	5.1
Engineering	3.2	3.8	3.2	3.9	3.6	4.1
Social sciences	2.3	3.1	2.2	3.2	2.9	3.1
Computer science	2.7	3.4	2.7	3.6	3.0	3.7
Humanities	2.0	2.5	1.9	2.6	2.6	3.7
Mathematics	2.0	2.4	2.1	2.5	2.1	2.7
All disciplines	3.3	4.5	3.5	6.0	4.1	6.4

	France		Russia		UK	
Discipline	**2000-04**	**2012-16**	**2000-04**	**2012-16**	**2000-04**	**2012-16**
Physics	10.0	52.6	10.8	54.7	11.3	55.1
Particle physics	31.1	358.1	29.4	324.2	38.2	287.6
General physics	21.9	92.0	23.7	76.7	26.9	93.8
Nuclear physics	12.6	93.2	11.1	76.0	13.7	103.3
Earth sciences, Astron., Astrophysics	5.0	23.7	4.1	38.0	4.3	19.3
Medical research	5.7	8.2	4.8	7.2	4.2	6.3
Fundament. biology	5.6	7.9	4.5	6.3	4.6	6.9
Applied biology-Ecology	4.3	6.4	3.1	4.5	3.6	5.6
Chemicals	4.5	5.8	4.0	4.7	3.9	5.3
Engineering	4.3	4.9	4.5	4.3	3.3	4.2
Social sciences	3.3	4.3	2.3	3.0	2.1	3.2
Computer science	2.9	3.9	2.4	3.0	2.7	3.8
Humanities	2.2	3.1	2.3	2.6	1.8	2.5
Mathematics	2.0	2.5	1.8	2.0	2.2	2.6
All disciplines	4.5	11.2	4.1	11.8	4.0	10.4

And what can be said of the practice consisting in sending the same article to several scientific journals at once in order to maximize the chance of getting published in the shortest possible time? Again, research deontology is being jeopardized by this type of 'minor scientific delinquency'. The irony of the matter is that, on certain specialized subjects, editors-in-chief use the same strategies to find experts, with the inevitable consequence that a given expert often has to read the same paper for two different journals. The inconsiderate authors will have given extra work to two editorial teams, already under considerable pressure, only to then see their paper rejected by both journals.

This combination of the tendency toward self-plagiarism and the increase in the number of published articles leads to inextricable situations with regard to scientific responsibility. Let us imagine an article co-written by four authors, where each author may feel responsible for what was published; if, in articles written alone or with new co-authors, each author reuses a large part of the introduction or the method or discussion section, there will then be five essentially identical articles. And if the new co-authors do the same thing, that will lead to around twenty articles with mostly similar content… and all this, without the authors ever thinking that they have plagiarized anyone, since they have merely plagiarized themselves. It is likely that this phenomenon has contributed to the huge increase in the number of published articles, since this number has more than doubled over the last twenty years, as shown in Figure 3.

Figure 3: Number of scientific publications worldwide between 2000 and 2016 (source: HCERES, 2019).



An editor-in-chief's feedback

In 2020, as editor-in-chief of the *European Review of Applied Psychology* (*ERAP*), I had to handle thirty-two problematic cases of plagiarism. This amounted to 19% of the articles submitted to the journal that year.

Since 2015, this kind of analysis has been made possible, because Elsevier, the journal's publisher, set up overlap detection software for scientific literature around the world by providing a high level of security to editors. Before then, a few plagiarism cases were detected by reviewers and some by editors, but often in retrospect, after publication. By using this software (*iThenticate*), the editor-in-chief can obtain an overlap report showing a percentage of estimated borrowings in a couple of seconds.

This percentage does not have any intrinsic significance, as the overlaps still have to be analyzed in detail. The software cannot distinguish between citations with or without quotation marks. Some

identical wordings may have been produced independently. However, when overlaps account for more than one-fifth of an article, that usually (but not always) means there is a case of plagiarism. In 2020, fifteen articles contained textual plagiarism. In five of these cases, the borrowings were significant enough to justify an immediate rejection.

Sixteen other articles were cases of self-plagiarism. One of them was a case of total self-plagiarism as it had already been published in another language. It was detected thanks to an abstract in English (unfortunately, the software cannot detect translations from one language to another). This article was naturally rejected at once. In most cases (precisely 80%), the overlap issues seemed moderate; they ranged from citations without quotation marks to a few paragraphs which were virtually 'copy-pasted'. With a higher tolerance for self-plagiarism than for plagiarism, the editorial team decided to ask for corrections in the event of a revision (no article is accepted without being revised); approximately 40% of the articles received are revised. With this in mind, the overlap report is sent to the authors to help them modify their draft.

Before we discuss solutions, it should be noted that French-speakers have three different words (*morale, déontologie,* and *éthique*) to designate what English-speakers call *ethics*. This does not simplify matters. When considering the list of good and bad publication practices (related to the authors' deontology), we can find them specified for instance by the *Committee on Publication Ethics* (COPE). Since 1997, this organization has brought together a growing number of scientific journals in order to define good practice in terms of scientific publication. As early as 1999, COPE drafted a list of possible responses to the instances of misconduct faced by the editors-in-chief of journals.[140]

[140] Committee on Publication Ethics (COPE), 'Guidelines on Good Publication Practice,' *The COPE Report 1999* (Eastleigh, UK: COPE, 1999), pp. 43-47.

These answers suggested by the COPE are classified approximately by level of severity:

- Sending an explanatory pedagogical letter to the authors stating the evidence of their obvious failure to comprehend deontological principles.
- Sending a letter reprimanding the authors for misconduct detected and warning them against future misconduct.
- Sending an official letter to the heads of the relevant institution or funding body.
- Publishing a notice of redundant publications or publications containing plagiarism.
- Drafting an editorial providing all the details of the misconduct.
- Refusing to accept future submissions from the offending researcher, or even from his research unit or his institution, for a given period.
- Officially withdrawing the article from scientific literature and providing information to other publishers and indexing bodies.
- Reporting the case to an authority or organization with the power to investigate and set up an appropriate procedure.

A survey of the editors-in-chief of scientific journals would provide information on the application of these recommendations and their consequences. One thing for certain is that, without a centralized body, sanctions will always be limited to the editor-in-chief's personal judgment and will have no dissuasive effect on doubtful practices.

5. Passing on knowledge and appropriating ideas

Detecting textual plagiarism is an easy matter, as it is done automatically by software available to the editors-in-chief of journals published by major scientific publishers. It is therefore possible to proceed against an author of textual plagiarism by referring to ethical norms known to all. However, it is much more difficult to take action

against the plagiarism of ideas.[141] In deontological terms, however, this is the most serious form of plagiarism. It is a great deal more harmful to see a peer appropriate one's idea than to have her copy a paragraph. The plagiarism of ideas is also the most difficult to identify, including by the authors of the plagiarism themselves. Jean-Paul Codol, a leading French researcher in social psychology, writes in a preliminary note to his doctoral dissertation (that he once sent one of his own articles to a celebrated foreign colleague who he thought would be interested in the subject.[142] In reply, he received a scathing letter accusing him of several borrowings without citing the source. After checking, Codol had to acknowledge that the accusation was completely justified. A few years previously, he had read an unpublished version of his colleague's article. He writes: 'It had caught my attention so strongly that my mind registered it more or less as it was. I had integrated it so perfectly that when, years later and in good faith, I duplicated some of its passages, I could have sworn I had written them myself'.

The same phenomenon occurs during meetings where the aim is to find a solution to a complex problem. Often, at the very beginning of the debate, one member will voice an idea that nobody pays attention to. After extended discussions, another member will voice exactly the same idea, and this time everybody will find it brilliant! The moral of the story is that having brilliant ideas is not enough, you have to share them at the right time. As it happens, people often need to allow an idea to settle in their minds, and will only be ready to hear it when it is submitted to them once again. In research, one has to appropriate a

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[141] B. Durand, '"Les idées sont libres de parcours", Réflexion d'une plagiée sur la portée d'un adage et de quelques autres réflexes juridiques', in *L'urgence de l'intégrité académique*, ed. by M. Bergadaà and P. Peixoto (Caen: Editions EMS, 2021), pp. 243-55.

[142] J.-P. Codol, 'Semblables et différents. Recherches sur la quête de la similitude et de la différenciation sociale' (unpublished doctoral dissertation, Université de Provence, 1979), p. 2.

model or hypothesis before making one's own modest empirical and/or conceptual contribution. Scientific work is a cumulative, slow, and above all collective endeavor, where it is difficult to identify one's own specific contribution.

When one researcher is working on a highly specialized paradigm and several teams around the world are working on the same subject, everyone will end up having more or less the same ideas at more or less the same time. This is something we often find in work on cognitive interviews, a method of interviewing witnesses and victims that places them in ideal conditions for providing their testimonies.[143] There are four or five main teams working on the subject around the world. Often, when reading a new article on the subject, a researcher may be annoyed at not having published quickly enough himself, or feel cheated, believing that he is reading his own ideas. When participating in international congresses and hearing about the latest advances, or when reviewing papers by 'competing' researchers, is it really possible to distinguish someone else's idea from your own when both of you have come up with the same idea?

The phenomenon reaches its peak in the relationship between a thesis supervisor and a doctoral student. There are a thousand ways of supervising a thesis and every relationship between a thesis supervisor and their doctoral student is unique. I have supervised seventeen doctoral theses and none of them were done in the same way. Each time, however, they were collaborative efforts, ending in an appropriation

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[143] R. E. Geiselman and others, 'Enhancement of Eyewitness Memory with the Cognitive Interview', *The American Journal of Psychology*, 99(3) (1986), 385-401; A. Memon, C. A. Meissner and J. Fraser, 'The Cognitive Interview: A Meta-Analytic Review and Study Space Analysis of the Past 25 Years', *Psychology, Public Policy, and Law*, 16(4) (2010), 340-72; J. Py and others, 'Cognitive Encoding and Cognitive Interviewing in Eyewitness Testimony', *Swiss Journal of Psychology/Schweizerische Zeitschrift für Psychologie/Revue Suisse de Psychologie*, 56 (1997), 33-41.

process by the student. The student must first make someone else's ideas—in this case the supervisor's—their own, in order to understand them. Then, they have to take some distance from them, formulate new propositions and attain a level of autonomy certified by the resulting doctorate. It is therefore difficult to consider the notion of plagiarism of ideas between a thesis supervisor and a student. Furthermore, Ross and Sicoly have shown that, in a working group, each individual tends to believe they are contributing more than the others, which can constitute an endless source of conflict.[144] Hence the need the clarify deontological positions regarding the sharing of ideas.

6. The need for a code of deontology

Deontology (for this is indeed a question of professional practice) has been particularly strongly developed in the service professions, where it helps reduce the risks faced by users and professionals. As early as 1945 in France, a state decree establishing a code of deontology was applied to the medical profession. Later, similar codes were applied to other health care professions, and to architects, accountants, and notaries. A duty of solidarity between peers was thus formalized, helping to consolidate these professions. A peer review body also helped restrict the external control of the state. This is the case for the French Medical Council, which has the power to impose sanctions. Nothing of the sort exists in our profession, even though university disciplinary bodies may, after referral to the chancellor, investigate breaches of deontology and punish transgressors—sometimes severely. In France, appeal procedures are possible if the convicted person, the chancellor,

[144] M. Ross and F. Sicoly, 'Egocentric Biases in Availability and Attribution', *Journal of Personality and Social Psychology*, *37*(3) (1979), 322-36; see also E. M. Caruso, N. Epley and M. H. Bazerman, *The Costs and Benefits of Undoing Egocentric Responsibility Assessments in Groups* (SSRN Scholarly Paper ID 738666) (Social Science Research Network, 2005).

the chief education officer, or the Minister for Higher Education and Research deems the sanction inappropriate. The appeal is processed by the disciplinary section of the CNESER (the French National Council for Higher Education and Research), on which the author of this chapter serves. Challenging an appeal decision is also possible by then referring the matter to the *Conseil d'Etat*, the French Supreme court for administrative justice. But rather than putting the emphasis on individual misconduct, scientific integrity requires collective support.

A code of deontology will always have more impact than the fear of potential sanctions. For professions that have one, it helps to create an oral process reflecting the values shared by a community, as is shown by the word's etymological origin, *logos*. Deontology calls for deliberations that clearly assert values accepted on both an individual and a collective level. Today, researchers have several charters: the European Charter for Researchers (enacted by the European Commission), the French National Deontology Charter for Research Professions (signed by the main French research bodies, such as the CNRS—the French National Centre for Scientific Research; INRIA—the French National Institute for Research in Computer Science and Automation; INSERM—the French National Institute of Health and Medical Research; IRD—the French Institute for Development; and the congress of university chancellors), and the French National Research Agency's Charter for Deontology and Scientific Integrity. It is commendable that major research organizations and research funding bodies have taken steps to promote scientific integrity, as is the fact that more and more universities are signing charters of this kind.

Finally, it is worth noting that the French Law no. 2020-1674 of 24 December 2020 on the 2021–2030 research program, which contains various provisions related to research and higher education, gives legal status to the notion of scientific integrity. We nevertheless believe that the support of the scientific community requires coordination between a

vertical thrust emanating from Europe, from each member state and from major research bodies, and more horizontal motion between international and national scientific societies and research laboratories. More than the fundamental rules and principles, which can be laid down and which concern all researchers, scientific integrity becomes a reality in day-to-day research practices, amid scientific collaboration.

7. Conclusion

Researchers are fundamentally good students.[145] They seek above all to satisfy what is demanded of them; like all good students, they even try to do so better than others.[146] They are therefore not the main perpetrators of the biases they engage in; they are mere players in a system. Scientific integrity will not be improved by focusing on individual responsibility, even that of scientific fraudsters (who simply conceal the bigger picture). We must rethink the entire system, starting with the issue of evaluating individuals, teams, and even institutions. The dependent variables of such evaluations must also be reconsidered.[147]

In 2011, the French Academy of Sciences produced a report on the matter which offered interesting solutions, such as reviewing papers for

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[145] S. Joy, 'What Should I Be Doing, and Where Are They Doing It?', *Scholarly Productivity of Academic Psychologists*, *1* (2006), 346-64.

[146] J.-P. Codol, 'Social Differentiation and Non-Differentiation', in *The Social Dimension: Volume 1: European Developments in Social Psychology,* ed. by H. Tajfel (Cambridge, UK: Cambridge University Press, 1984), pp. 314-37.

[147] J.-L. Beauvois and P. Pansu, 'Facteur d'impact et mondialisation culturelle', *Psychologie Française*, 53(2) (2008), 211-22; Beauvois and Pansu 2010; D. Páes Rovira and J. Salgado Velo, 'Indicadores de productividad científica: Implicaciones para la evaluación de la psicología española', *Boletín de psicología*, 97 (2009), 117-36.

their scientific contribution without regard to bibliometry.[148] In line with this report, the 2017 joint declaration by three academies (the French Academy of Sciences, the Leopoldina, and the Royal Society) on the good practices for evaluating researchers and research programs clearly stated that assessing research performance meant assessing 'the quality, originality and importance of the scientific research'.[149] 'Importance' refers to the potential influence of the research in its relevant field.[150] In this chapter, we have evoked the idea of promoting peer reviewing and editing, which are the cornerstones of scientific research.[151] Scientific supervision (of undergraduate students, doctoral students, and post-doctoral students) should also be given further consideration. The societal impact of research ought also to be emphasized.[152]

In short, scientific output will be able to flourish in a genuine deontological breeding ground once researchers have the impression that they are doing good and useful work for science and society. And when they once again have the time and the desire to discuss the matter. Let's talk about science!

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[148] Académie des Sciences, *Du bon usage de la bibliométrie pour l'évaluation individuelle des chercheurs. Rapport remis le 17 janvier 2011 à Madame la Ministre de l'Enseignement Supérieur et de la Recherche* (Paris: Académie des Sciences, 2011).

[149] Académie des Sciences, Leopoldina, and Royal Society, *Statement by Three National Academies on Good Practice in the Evaluation of Researchers and Research Programmes,* 27 October 2017, p. 4.

[150] Scott, 'Peer Review'.

[151] Spier, 'The History'.

[152] Scott, 'Peer Review'.

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