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New Swiss guidelines on scientific integrity: a step in the right direction, but still not enough

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On May 2021, the Swiss Academies of Arts and Sciences (SAAS) announced the publication of new guidelines on scientific integrity under the title “Code of conduct for scientific integrity” (hereafter “the Code”) [1]. The document was developed by a group of experts from the SAAS, the Swiss National Science Foundation, the Rectors' Conference of the Swiss Universities (swissuniversities), and the Swiss Innovation Agency (Innosuisse). The Code is an updated and expanded version of the document titled "Integrity in scientific research. Principles and procedures" that was issued by the SAAS in 2008.

The declared aim of the new guidelines is “to promote responsible conduct of research in every area of scientific research and education.” More specifically, it intends “to promote a common understanding of behaviours that violate scientific integrity”; to identify a “set of principles” in this area; to foster “equal treatment” of these issues across institutions in Switzerland; and “to provide a basis for regulations and guidelines on scientific integrity” that could be adopted by academic institutions and funding agencies.

It is worth noting that the development of guidelines in this area is relatively recent. It dates back to the 1980s in the US and the late 1990s in Europe, when a number of high-profile cases of data fabrication and falsification by scientists were uncovered and investigated by ad hoc committees. Although misconduct in science has always existed [2], it is only in the past few decades that academic institutions and the public opened their eyes to the sad reality that scientists, like any human beings, may be tempted to engage in fraudulent behaviour to achieve more rapidly their personal or professional goals.

The new Code does not provide a proper definition of scientific integrity, but delineates this concept indirectly by presenting the basic principles that are relevant in this area: (a) *reliability* in ensuring the quality of the research; (b) *honesty* in developing the research work and in presenting its results; (c) *respect* for persons, society and the environment; and (d) *accountability* for the research and its impact. These principles are directly inspired by the European Code of Conduct for Research Integrity developed in 2017 by the European federation of academies of sciences and humanities (ALLEA).

After outlining the four basic principles, the Code makes a number of general recommendations relating to their implementation. These recommendations concern a great variety of topics such as the need to promote a culture of integrity within academic institutions and funding agencies; the importance that those who participate in collaboration between institutions agree sufficiently in advance about the format to be used for the publication and dissemination of research results; the value of complying with the rules on data management, such as the duty to store the data appropriately and for a certain period of time; the recommendation that scientists should commit to making their work available to a wide audience as soon as possible, in accordance with the Open Science principle, unless it was otherwise agreed; the importance of impartiality when selecting reviewers for the evaluation of manuscripts, research proposals and appointments; etc.

Two of the recommendations deserve special attention. One concerns the teaching of scientific integrity; the other relates to the concept of "authorship":

(a) *Teaching of scientific integrity.* The Code declares that educational and research institutions should promote the basic principles in their research and teaching activities. After drawing attention to the value of “a strong culture of scientific integrity (…) especially in connection with the training and development of young scientists” (Section 2), the Code points out that “scientific integrity is a fundamental part of education and training” (Section 4) and that institutions need to “incorporate the basic principles into the teaching” and to “hold training courses” (ibid.). Certainly no one can disagree with these general statements, but the absence of more concrete recommendations in this crucial area is regrettable. For instance, the Code could have urged the inclusion of mandatory courses on research integrity into the curriculum of master’s and doctoral programmes in all disciplines. Or, as is suggested by the main German guidelines on scientific integrity, the Code could have recommended that education in this area “begins at the earliest possible stage in academic teaching and research training” [3, Guideline 2] or that junior scientists should attend “regular training sessions” on this subject [4, Guideline 3]. In the US, the National Academy of Sciences (NAS) has assigned a central role to education in this area since the early 1990s. Accordingly, it has proposed very concrete educational measures to ensure that early career researchers acquire the knowledge, skills and attitudes they need to do research in conformity with the rules for good scientific practice [5]. It must be noted that the educational

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goal is not just one element among others in the promotion of scientific integrity, but it is “the most important one” because “ethical conduct is not likely to occur without effective education” [6].

(b) *Authorship.* In principle, the Code defines the notion of ‘authorship’ in similar terms as those used by most guidelines: an "author" is “someone who has made a significant personal contribution to the planning, implementation, quality, and where necessary, revision of a piece of scientific research” (para. 4.4). For instance, according to the widely used definition of authorship by the International Committee of Medical Journal Editors (ICMJE), an "author" is someone who has made “substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work” [7]. The crucial question is of course what is meant by a "significant" (or "substantial") contribution. Generally, this notion is understood as meaning “an important intellectual contribution, rather than technical assistance, without which the work, or an important part of the work, could not have been completed or the manuscript could not have been written and submitted for publication” [8]. In contrast to this understanding, the Code accepts that the "significant contribution" can simply consist of an “act of insight” (in German: “Akt des Erkennens”; in French: “acte de reconnaissance”) that may result from the experience or knowledge of a senior researcher. This very broad notion of authorship, which was not included in the 2008 guidelines, originates from a statement issued by the SAAS in 2013 [9]. It is true that, at least in theory, a feedback or advice given by a senior researcher can significantly contribute to improving the quality and originality of a manuscript, and this may justify including him or her as a coauthor of the paper. However, in practice, special caution will be needed to prevent the vague notion of "act of insight" being used to justify what in reality is a "gift (or honorary) authorship". This latter concept refers to the regrettable practice of adding as coauthors researchers (for instance, the director of the unit or the supervisor) who have not substantially contributed to the research. Today it is widely established that anyone who has given some support or advice in the writing of a paper, but who does not meet the requirements for authorship should be included in the Acknowledgments section, and not listed as a coauthor.

Section 5 of the Code presents the different forms of scientific misconduct. Compared with the 2008 guidelines, the list of practices that are labelled as misconduct has been expanded and presented in much more detail. Whereas the previous guidelines were rather succinct in this regard and simply distinguished between “infringements against scientific interests” and “infringements against individual interests”, the new Code abandons this somehow artificial distinction and follows a better structure to categorise the various forms of misconduct.

One shortcoming to highlight here is that almost no attention is paid to the need to protect whistleblowers (those who report insider knowledge about misconduct within the institution). Only one short sentence refers to the “discrimination against persons who have reported scientific misconduct” as a form of misconduct (para. 5.2.10). First, a terminological remark: the term "discrimination" seems inadequate to capture the notion of retaliatory measures against whistleblowers. Interestingly, the German version employs the term "Benachteiligung", which means a "disadvantage" and is more appropriate to convey the idea of retaliation. But besides this terminological question, it is unfortunate that the Code pays so little attention to an issue that has become prominent in recent years in academic and research institutions, including in Switzerland. In Germany, the Max-Planck-Society guidelines on good scientific practice devote an entire section to whistleblower protection [4, Section 9]. In 2015, the World Health Organization developed a very detailed policy document on whistleblower protection, which could also inspire guidelines on scientific integrity [10]. It is true that the procedural section of the Code indirectly refers to this topic when it states that those who made allegations of misconduct have “the right to confidentiality” and should be protected “against possible discrimination or reprisals” (para. 6.4.5). However, this is still too little. Whistleblower protection is a sufficiently important topic to have deserved a more prominent and visible place in the Code.

The last section of the Code describes in greater detail than in the 2008 guidelines the procedures and rules for reviewing allegations of scientific misconduct. In general, it is up to each institution (for instance, each university) to establish review bodies on a case-by-case basis to investigate potential violations of scientific integrity that have occurred within the institution. The Code also encourages the creation of permanent committees to promote scientific integrity by means of publications, training, conferences, etc. These committees, however, are not supposed to be involved in dealing with particular cases of misconduct.

In conclusion, the new Code is a step in the right direction. The mere decision to update the 2008 guidelines sends a good signal to the research community about the increasing importance attached to scientific integrity. The Code specifies the main ethical principles that are relevant in this area and presents in greater detail than in the previous guidelines the various forms of scientific misconduct and the procedures to follow for addressing allegations of misconduct. Nevertheless, it is unfortunate that many of the recommendations are vaguely worded and lack concrete suggestions for their implementation. In addition, key issues (such as education in research integrity and whistleblower protection) are virtually ignored. In sum, the Code is a valuable initiative but it is still not enough. Further and more specific guidance in this area will be needed in the coming years to promote effectively a culture of scientific integrity.

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