Promoting Integrity as an Integral Dimension of Excellence in Research

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Report on the multidisciplinary reconnaissance of research integrity and misconduct

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The final task of WP II is to integrate the findings in a comprehensive report that will help to further articulate the project, provide a conceptual framework, and inform policy reports and educational tools in WP 5, as well as dissemination activities in WP 6.
The following deliverables will be integrated in the reconnaissance:
D.II.1 Inventory of key documents
D.II.2 Chapter on conceptual clarification
D.II.3 Chapter on ethical clarification of integrity and misconduct
D.II.4 Chapter on legal analysis
D.II.5 Chapter on criminological analysis of scientific misconduct
D.II.6 Chapter on organizational approach to integrity

1. Conceptual clarification

Although integrity is currently considered to be crucial for research, the introduction of this concept in relation to the scientific enterprise is fairly recent dating back only to the 1980s. Since then, the meaning of the term, as well as its usage, has been subject to heated debate (D II.2:14; D II.4: 2). In these reflections, integrity is generally presented as a joint concern for scientists, research organizations and policymakers alike. (D II.2: 14).
Diversity and plurality of definitions are the first things that are brought up when addressing the topic of research integrity. The inventory of the key documents on integrity and misconduct in D II.1 and the analysis carried out in D II.3 distinguished four potential levels or subjects who might have integrity: research findings, individual researchers, research institutions and science as social system. First, as a property of **research findings**, integrity refers to correct and reliable research results, which are not corrupted by fabrication, falsification and other similar forms of misconduct (e.g. Singapore Statement 2010). Integrity as a property of **individuals** emphasises the individual researcher's commitment or adherence to a certain set of norms and values, and may in more precise terms also be labelled as 'researcher integrity'. While according to some conceptions these values may be strictly confined to those that help grant the integrity of the research findings (e.g. honesty and objectivity), they may also be considered to involve other important matters such as social responsibility and a duty of care with regard to research subjects (European Science Foundation & All European Academies 2011). So, the focus need not be only on the end result (reliable research findings), but also on the means by which those results were brought about. It concerns how the researcher conducts himself on the path towards new knowledge. Third, the term 'research integrity' has also been conceptualised at the level of **institutions**. This refinement comes from the (US) National Academy of Sciences, who differentiates between two types of integrity in research – individual and institutional. As a characteristic of institutions research integrity is considered a matte of creating an environment that promotes responsible conduct. It concerns supporting the integrity of individuals – and not just by sanctioning misbehaviour but by helping researchers

cultivate professional virtues, and eliminating various pressures and temptations, which might lead them to engage in misconduct. Fourth, research integrity is sometimes talked about in more over-arching terms, attributing integrity to science as a social system, which displays soundness in its functions. Insofar as the 'soundness of science functions' can be described in terms of reliable research findings, and organisational structure that is designed to foster rather than inhibit the good conduct of its practitioners, all three first mentioned interpretations of research integrity could simply be considered as aspects of this more over-arching form of integrity.

1.1 Individual vs structural

In case of misconduct, throughout the deliverables attention was given to individual, organizational (II.6) and structural/institutional (II.5) aspects. These divisions do not overlap entirely, nonetheless they illustrate that issues related to misconduct and integrity can be addressed from different perspectives, focusing on different aspects. This does not mean however that the different approaches are in conflict or that there is one right level or aspect that deserves attention.

D II.5 suggests that too much attention has been given to individuals compared to institutional or organizational aspects, which has led to scapegoating (II.5: 18) or punishing the 'bad apples' in order to restore the legitimacy of an organization (II.6: 18). But the focus on the individual is important in order to understand motivations and character of a researcher, especially in the context of education, mentoring and leadership (II.3: 39-41). Thus it would be advisable to consider all the levels when addressing issues related to integrity, with special attention given to organizational and contextual factors in addition to individual responsibility.

1.2 Universal definition

Both D II.5 and II.6 strongly suggest that misconduct and deviant behaviour can be understood only by taking into consideration social and organizational contexts, which may vary in different institutions or countries. D II.2 identified several differences in the way that different European countries address research integrity. D II.4 stated that national normative frameworks vary. All this diversity raises the question whether a universal definition is possible if we are to consider the actual practices of doing science and the different understanding about what is right and wrong. It may even be asked whether a universal definition is actually desirable (II.2:17)

1.3 Integrity work and compliance

D II.6 clearly states that they focus in addition to managerial level also on the more mundane level of 'doing' integrity repairing and strengthening by all members of organization (II.6: 19). Still the strategizing and managerial part of integrity work, usage of compliance programs and the intent to influence behaviour (II.6: 19) raises the question whether integrity work is not too action-oriented? The regulative and normative pillars rely heavily on principle-based conceptualization of integrity and may be thus seen as another form of 'widening the net, thinning the mesh' (II.5: 4, 16) – another form of far

reaching preventive social control. Anyway, it would be interesting to know whether and how operating on micro-level everyday practices could address the structural aspects of science related to knowledge economy and collective production of knowledge.

D II.2 pointed out that there is a difference between policy documents, which refer more frequently to misbehavior and punishment, and scientific publications, which refer more frequently to values, virtues and ethics in research, discussing integrity as a broad notion (II.2: 14). In science policy documents, the term 'integrity' has gradually lost its connection with ethics and is currently used in a more narrow fashion. In a similar manner, the legal analysis of D II.4 has referred to a variety of normative frameworks in different European countries and a difference among the various definitions: some include compliance with relevant laws as part of integrity, others do not (II.4: 22).

2. First step in defining: misconduct or integrity

The relationship between 'research integrity' and 'research misconduct' is also understood differently. Some associate 'research integrity' with a positive approach and 'misconduct' with 'negative approach', i.e. breaches of integrity. Some see scientific misconduct directly in opposition to research integrity, as the other side of the coin, while others see research integrity as "the purse that sometimes contains the coin of scientific misconduct, occasionally in addition to others" (II.4: 22). The legal analysis showed that in some regulatory frameworks 'scientific misconduct' is given prominence, delineating research integrity's contours negatively (II.4: 3).
The exploration of research integrity in WP II from the perspectives of ethics, law, and social sciences showed that consensus between various disciplines about the meaning of integrity and misconduct is not likely but discussion can bring more clarity in the interpretation of these terms.
Taking all of this into consideration, we have not proposed one universal definition of scientific integrity and scientific misconduct. Instead we formulate some points that should be considered whenever trying to define research integrity and scientific misconduct.

Along the line of broadness, one can distinguish between the very narrow definitions of misconduct, limiting it to falsification, fabrication and plagiarism (FFP); the broader definitions including what is currently referred to as questionable research practices; and the conceptually open definitions including unethical behaviours not strictly linked to research practices (Fanelli 2011). (II.2: 5)

This division between broad and narrow definitions is one of the recurrent topics in most of the deliverables (II.2: 5; II.3: 23-24; II.6: 4-5). The question of broadness reflects the complex relation between misconduct and integrity. The narrow definitions relate mostly to compliance to certain rules regarding FFP and see research misconduct as breaking

these rules, whereas the broader definitions may, in addition to FFP, include questionable research practices and ethical considerations that are more related to the concept of integrity.[1] This in turn reflects the way how misconduct and integrity are often related: as opposites or two sides of the same coin. However, this kind of simplification leads to some problems.

Firstly, the two concepts tend to have a similar scope (II.3: 26-27). If we define misconduct narrowly as FFP, then it would also narrow down the concept of integrity to a few core elements of doing science – honesty and accuracy about the research findings and authorship. Yet, if we broaden the concept of integrity so that it would also include for instance respect for autonomy and social responsibility, then FFP would fall short of covering all breaches of integrity. However, broadening the concept of misconduct may lead to new problems. If misconduct would continue to be understood in terms of punishable behavior, it could become an umbrella term under which more scientific practices may become punishable, leading to increased pressure on science, expanding social reactions to scientific misbehavior and possibly resulting in 'creeping criminalization of scientific behaviors' (II.5: 16). Categorizing other types of academic misbehavior – for example being a rude academic, prejudiced supervisor or negligent administrator – as research misconduct may lead to a similar blurring of categories that occurs when already existing legal obligations become re-labeled as ethical standards (II.4: 22) thus leading to a kind of duplication of obligations and the danger of imposing double sanctions. Some ethical standards may still set forth obligations that are already legally binding – for instance data protection. However, these cases should be well-reasoned and clear about the way how the breach of ethical standards is handled in addition to the breach of legal obligations. In addition, widening the scope of research misconduct past FFP to include all sorts of more or less questionable misbehavior that are somehow related to academic work may lead to definitional ambiguity and confusion among scientists: whereas there seems to be consensus concerning the wrongfulness of FFP, there is less consensus regarding questionable practices or how to balance different academic roles (II.5: 6-7; II.3: 20-21).

To help avoid such problems it would be advised to uncouple the concepts of research misconduct and integrity. As suggested in D II.4, the metaphor of two faces of a same coin should be replaced with the metaphor of a 'purse that sometimes contains the coin of scientific misconduct, occasionally in addition to others' (II.4: 23). Thus misconduct and integrity could be regarded as separate and independent concepts so that one is not fully defined by the other. This way the opposite of mis*conduct* could be responsible *conduct* and the opposite of integrity would indicate lack of integrity. Moreover, it could be argued that misconduct and integrity belong to different categories altogether and cannot be opposites: misconduct may indeed indicate a lack of integrity but lack of misconduct does not necessarily imply integrity (II.3: 11).

[1] For more detailed overview see D II.3 p. 5–12.

This would provide more flexibility in defining both concepts so that research misconduct could be defined more narrowly and integrity could be defined more broadly. However, this does not mean that misconduct should be defined narrowly: the scope of either concept should take into consideration the aim and potential application of regulations or documents. For instance, if the definition of misconduct is accompanied by punitive measures, it could be argued that clear distinctions between permissible and forbidden require a more narrow definition.

Uncoupling research misconduct from integrity would also mean that the normative argumentation regarding the 'wrongness' of misconduct should be revisited as the normative reasons for punishing FFP may not suffice for a broader concept of misconduct. Thus it would be advised to differentiate between more precise categories of misconduct and to give normative reasoning for each of those and not to fit all undesired behavior under the labels of research misconduct or 'questionable research practices' (II.3: 28).

3. Second step in defining: compliance or promotion

Simply uncoupling the concepts of misconduct and integrity does not yet mean that the meaning of either concept will be any clearer. The definitions could be divided along the lines of being norm- or value-based (II.2: 6). This is somewhat similar to the division between principle- or virtue-based approaches to research ethics (II.3: 29-38). Both divisions refer to a difference based on which aspects of integrity are emphasized. According to D II.2 "*adhering to a value-based approach might lead to a focus on training and the use of role models, whereas adhering to a norm-based approach would make one more likely to focus on generating clear and applied rules and potential sanctions*" (II.2: 6). This is in line with the distinction between principle-based approaches, which are more oriented on action and behaviour, and virtue ethics, which focus on the character, motives and emotions (II.3: 38).

The distinction between norm- and value-based approaches largely overlaps with the distinction between principle- and virtue-based approaches, although both distinctions may have their uses. For instance, in case of organizations it might be more useful to refer to common, shared or universal values instead of virtues, which are related to individual character and motives. For the sake of clarity, however, if the aim is to distinguish approaches that refer to compliance and punishing misbehaviour from those that refer to promotion, aspiration, motivation and the character of the individual, it might be better to refer to the distinction between principles and virtues.

There are a few reasons why to prefer the distinction of principle- and virtue-based approaches. Firstly, principle-based approaches are more overarching than norm-based and cover general moral principles, professional norms as well as more specific standards and rules. Thus both, documents referring to moral principles as well as documents proposing strict rules regarding how to do research, could be seen as principle-based

approaches to research misconduct, although the second offers probably a narrower definition for misconduct. Secondly, the distinction between values and norms may not always be clear: some norms may explicitly refer to some values and values could be seen as the basis for some norms (for instance, norms referring to honesty). Because of this the category of value-based approaches may become too general and ambiguous, so that almost any normative text or document could be seen as value-based. In addition, virtue-based approach also helps to consider the aim of science and its role in society, the motives of individual scientists, the particulars of their decision-making situation and practical wisdom concerning how to act in specific situations (II.3: 33-37). Thus, virtue-based approach offers a more holistic view that takes into consideration the action as well as its context.

Thus, approaches that lead to a focus on clarity and guiding action could be seen as principle-based and those that lead to a focus on character, motivation and being a role-model could be seen as virtue-based. However, since the difference between these approaches lies mainly in emphasis, there is no necessary opposition between the two. They both highlight important aspects of moral life, and can thus be viewed as complementary (II.3: 37).

Nonetheless, it is difficult to propose one right approach to research integrity. Much depends on the aim of the document or regulation. If the aim is to promote integrity of an individual or organizational level, then a virtue-based approach is helpful. If the aim is to set forth clear rules and achieve compliance, then a principle-based approach is useful. Yet there are several reasons why the use of both approaches should be considered.

Firstly, the concept of integrity work relies both on normative and cognitive pillar (II.6: 20). The normative pillar focuses on rules, obligations and conformity, whereas the cognitive pillar focuses on the sense-making, motivation and learning. Both principle- and virtue-based approaches are combined here as integrity work aims both at compliance and promotion. Thus it could be argued that systemic and profound development, repairing and maintaining of integrity requires both approaches.

Secondly, as stressed in the D II.5 the emphasis on external control and prevention measures – that are mostly focused on guiding the action of an individual researcher – disregard the context in which knowledge is produced and 'knowledge economy' (II.5: 18). Motivational aspects like career advancement and profit fall outside of the scope of principle-based approach. Although virtue-based approach does not cover all the contextual complexities that affect the scientific practices, it still helps to integrate motivational aspects into the ethical discussion about research integrity. Thus it could be argued, that focusing on compliance or promotion only leads to one-sided attention on either deviant behaviour or the motivational aspects.

4. Third step in defining: inclusion and agreement

The evolution towards a more organized, institutional and formal regulation of scientific behavior (either through codes of conduct or controlling agencies) implicates that a discussion about everyday practices of science has become, to a larger extent, important. It does however; contribute to a further bureaucratization and containment of scientific liberty, based on distrust and suspicion. (II.5: 17)

D II.2 has identified a growing discrepancy between the way in which scientific articles and policy documents address the topic of research integrity, which could lead to polarization between researchers and managers (II.2: 21). Furthermore, as a reaction to weakening of internal control mechanisms, external control interventions have grown (II.5: 14). This in turn means that more and more initiatives for further regulation come from outside of the actual scientific practices, not taking into consideration the constraints that scientists need to comply to. This also means that importance of researchers in the discussions over research integrity has declined in comparison to bureaucratic regulation and managers. (II.5: 16) To avoid alienation from regulative efforts and polarization between researchers and regulators, it would be advised to fully include researchers into all phases of regulation-forming.

Furthermore, since managerial thinking (II.5: 16) of policy makers often assumes consensus and agreement in addition to FFP also on how to fulfil different academic roles. However, due to definitional ambiguity and confusion regarding what exactly is forbidden in addition to FFP, consensus on these issues may be wrongfully assumed. Thus, reaching an actual agreement among the researchers becomes paramount. Lack of such agreement, or even active resistance against regulations, may lead to misconduct as researcher's personal norms may differ from those formally proposed (II.2: 18; II.6: 5). Lack of agreement may also lead to a situation where formulation of definitions and rules is based on power relations in science (II.5: 15; II.6: 6-7) and thus not on ethical considerations or the best interest of science.

In addition, any new regulation requires legitimacy on part of those being subjected to regulations. This is especially important in cases where obligations related to research integrity are widened, for instance in the case of 'possibly deviating' behavior or questionable research practices where the line between right and wrong is not so clear (II.5: 18; II.3: 24, 37). This can be achieved by taking into consideration the actual concerns of researchers and the context of doing science.

5. Points to be considered in further research and policy work

- Further studies should show if the absence of a common understanding of integrity in research hampers the promotion of scientific integrity and the prevention of misconduct (II.2).
- One should find out if discrepancies between discourses of scientists and policymakers make scientists see integrity policy initiatives as increasingly alien (not addressing their key concerns). If this is the case, any further work on research integrity should connect more closely with the daily focus and practices of researchers. (II.2, II.5)
- A discussion is needed about the concept of scientific misconduct and its relation of FFP and questionable research practices in order to formulate clear rules that support good science and find acceptance among scientist. (II.3, II.5)
- Any policies need to acknowledge the collective dimension and acknowledge economy situation of doing science and go beyond the sole focus on individual responsibility. (II.5: 17-18)
- Any attempts to foster integrity should take a more holistic approach, including both principle- and virtue-based approaches and relying on reflection and promotion in addition to compliance (II.3, II.6)
- Any new regulations concerning research misconduct should avoid restating already existing legal obligations and circularity that happens when legal provisions refer to ethical standards that in turn state the need to comply with the legal provisions (II.4)
- Any new legal obligations concerning research integrity should consider "the legitimacy of widening existing legal obligations, as well as the logic of rendering legally binding rules that were originally explicitly put forward as something different from legally binding rules". (II.4: 23)
- If research misconduct is as a result of individual and organizational factors, it is not enough to promote individual integrity through education and training, it is also important to promote organizational integrity. (II.5: 21) Therefore it becomes very important to collect information on how research organizations work on the daily basis, analyzing organizational behavior on three levels – regulative, normative, and cognitive.

  These three pillars of institutions depict various institutional elements that influence organizational behavior: from governance structures and control systems to responses to cases of misconduct (II.5: 18).