UNIVERSITY OF AMSTERDAM

Code of Conduct on Scientific Integrity

Institute of Physics[1] – UvA

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[1] To avoid claims for plagiarism, it should be noted that this document is largely based on the Code of Conduct from the Institute for Biodiversity and Ecosystem Dynamics (IBED).

1. Introduction

The range of ethical issues in research is very wide, ranging from unintended but nevertheless selective reporting to manipulation of results to please the funding organization or contractor, or from being inspired by someone's ideas to stealing or scooping.

Rule one for all people involved is in all cases to **address any potential ethical issue as soon as it is encountered**. In known cases of severe misconduct, it became apparent afterwards that there were observations and even suspicions by at least some people, which was not communicated or picked up by the responsible authorities. The examples below discuss a number of issues and suggest best practices and actions to take. The focus is on scientific issues and not general ethical aspects (such as stealing or intimidation) or student-related issues (exam fraud, etc.). This is a concise overview that is not meant to be a comprehensive account, and more extensive documents can be found elsewhere (see the links in the last section).

The University of Amsterdam adheres to the *The Netherlands Code of Conduct for Scientific Practice*, published by the Association of Universities of the Netherlands (VSNU) as well as the publication by the European Academies of Science (ALLEA): *A European Code of Conduct for Research Integrity*. The American Physical Society (APS) published similar guidelines: *APS Guidelines for Professional Conduct* and *APS Policies for Handling Allegations of Research Misconduct*.

It is highly recommended that ethical issues are openly discussed, in particular with new employees and (guest) co-workers, and this text can help to open and guide discussions.

As a general rule, any potential ethical issue encountered requires action: looking away is not an option. A first step could be to check with colleagues to see if your views or observations are shared or not, but either way, the organization should know about any potential issue. This can start with talking to your own superiors, and if needed can be escalated to a complaint issued to the University Ethics Committee.

The following escalation ladder is suggested as a guideline[2] for actions:

1. Contact your superior, discuss the issue and decide on which further action to take.
2. If the outcome is not satisfactory (for instance the problem is down-played), or if this is too problematic (for instance because he/she is involved), contact the director of the research department.
3. If this is not satisfactory, or too problematic, or if you prefer absolute confidentiality, contact one of the university "Vertrouwenspersonen" (Confidential Advisors) to discuss the issue. Although they are not specifically appointed to deal with integrity issues, they can advise you on a course of action. They treat cases confidentially, and action is taken after mutual agreement.
4. You can submit a formal complaint to the University Ethics Committee, through its chairperson,

[2] For FOM employees, the FOM website contains specific information (in Dutch) about the procedure when scientific misconduct is encountered.

or alternatively to the Board of the University.

2. Ethical aspects of collaboration in research

2.1 Co-authorship of papers

Practices on (co-)authorship differ in the various disciplines, but is a topic frequently causes major discussions at the stage of publication that are preferably to be prevented.

Best practices: Authorship in collaborative work is discussed as early as possible in the project. This does not necessarily entail who will be lead author and who will be co-author(s), but concerns the criteria that will be used to determine if a co-authorship is warranted or not, and what the procedure will be to decide on the order of the authors (habits vary in the importance of being first or last author). Consider asking a binding judgment from a respected scientist in such cases. The International Committee of Medical Journal Editors (ICMJE) provides a detailed account in their *Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals*. Also the American Physical Society has issued a statement on this as part of the *APS Guidelines for Professional Conduct*. Authorship should be based on the following: (a) substantial contribution to project conception and design, or acquisition of data, or analysis and interpretation of data; (b) drafting the article or revising it critically for important intellectual content; and (c) final approval of the version to be published: and (d) agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. It is advisable to specify the contribution of all authors to a published work and make this available upon request, also for journals that do not require this information as part of their standard policy.

2.2 'Ownership' of ideas, originality

Scientific discussion is essential for research and takes place at the work floor, at meetings, e-mail interchanges etc. It is sometimes difficult to trace back the origins of an idea, and the lines between a fruitful open exchange of ideas, scooping results or stealing ideas is not always clear.

Best practices: Openness and reciprocity is the ideal (but also idealistic or sometimes naive) way to operate. This can entail informing discussion partners in advance about your plans (at least globally), and asking if they foresee any overlap with their own plans, or if they wish to collaborate. In cases where research (topics, experiments, techniques) is highly competitive and scooping or stealing ideas is a real issue, there should be written agreements with all (including temporary) people working on the project, specifying the accepted rules of conduct for disclosure of information. This may include a clause on what is allowed when people leave an institution.
Contact the faculty legal officer for advice, or for setting up an agreement among co-workers. The legal expert at the Technology Transfer Office can assist in setting up a consortium agreement for projects with partners. This may also include clauses on how Intellectual Property is dealt with and the potential beneficiaries of valorization of results.

2.3 Hierarchical relationships and peer pressure

In an ideal scientific world all scientists are independent and each other's peers: the scientific input is what counts, not rank, seniority or prestige of a researcher. However, hierarchical relationships such as between a professor and a PhD student as well as group processes such as peer pressure may create situations in which the independence or equality is under pressure.

Best practices: A supervisor must leave ample room for dissenting scientific opinions of people under his/her supervision. Despite a hierarchical relationship, a junior researcher is responsible for his/her own activities at all times, and must not bend due to perceived pressure, for instance in representing the results in a way the junior researchers is not comfortable with. This can be a delicate problem, and should preferably be discussed openly, for instance with an independent colleague as mediator. If this is too problematic or does not solve the issue one of the "Vertrouwenspersonen" can be contacted.

3. Ethical aspects of reporting results, fraud and plagiarism

3.1 Independence of reporting from provider of funding

Research is funded by public sources, but increasingly also contracted by private or semi- private organizations. In some cases, organizations may only want to hear their preferred outcome, and may exert pressure to present the results in a particular way, or omit certain aspects. Conversely, a researcher might want to give in to please a money provider, in order not to risk future funding. Clearly the integrity of scientific work needs to ensure independent reporting and accountability for all results. Research is almost always teamwork, in which the responsibilities are shared. This is a great asset, as checks and balances can be implemented to ensure accountability for the entire chain.

Best practices: In contracts, the principle of independent reporting must be clearly specified and, while the funding organization can request clarification of the results, pressure to modify any findings is never permissible. Similarly, agreements on the (delay in) timing of publications can be part of a contract (so always in advance), however, prevention of publication is not acceptable.
Requests from a contractor to modify reports, as well as other influences on conducting the research should always be communicated to the research team, not only to the principal author or investigator, so that they can be openly discussed in the team. For bigger contracts it is recommended to install an independent advisory committee, with its tasks specified in the contract.

3.2 Authenticity of (primary) data

Key to all scientific work is proper reporting, to ensure accountability for all results. Some of the most extreme cases of fraud in science involved the fabrication of data, with huge implications. Research is almost always team-work, in which the responsibilities are shared, which reduces the risks, and ensures that checks and balances can be implemented to guarantee accountability for the entire chain that may involve many people recording data, operating equipment, writing logs, etc.

Best practices: For all experimental studies, a scientist should be assigned with the responsibility for maintaining an accurate logbook and securing the safe storage of the raw, primary data. This is done adhering to commonly accepted protocols for the discipline, and with an amount of detail that allows

reconstruction of the methods followed to obtain the data. This scientist can delegate part of the work to others (for instance a lab technician or student), in which case the scientist should regularly inspect logbooks and ascertain the correctness and completeness of the data. Likewise, the project leader or supervisor of the assigned scientist regularly checks the accuracy of reporting and storage of unprocessed results: "*Can you show me the logbook and the raw data?*" Colleagues (for instance working in the same lab) should be aware that they should report any doubts they have about the way data are collected by a co-worker or colleague, difficult as this might be.

3.3 Transparency of workflows for data processing

Raw data often need to be processed to get publishable results, which may include procedures to remove outliers, transformations and aggregation of data, and combining with data from other sources. Any such action is prone to unintentional human mistakes, as well as malicious manipulation in extreme cases.

Best practices: This step is as important as maintaining logbooks and storing primary data. For all projects that involve experiments, observations or modelling, a scientist must be assigned with the responsibility for maintaining accurate log of workflow from primary to processed data, based on procedures that can be repeated later and by others, so with sufficient detail (e.g. version of the program used for each step of a work flow, parameter settings, input/output/log files). This scientist can delegate part of the work to others (for instance a lab technician), in which case the scientist should regularly inspect the correct implementation of workflows.

Working with data from experiments is sometimes a process executed by a single person behind his/her computer, and unintentional mistakes or fraudulent manipulation is probably not easily picked up by colleagues other than the direct co-workers/supervisor. The project leader or supervisor of the scientist should therefore regularly check the followed procedures ("*Can you show me exactly how you obtained this table/graph?*").

If intentional manipulation is suspected it should be reported immediately.

3.4 Storage of data, statistical analyses and workflows

For scientific research, it is essential that results can be checked (by co-authors or other colleagues), and therefore the raw data, workflows, input/output files, programs (versions) used need to be archived in a suitable form for later inspection.

Best practices: Whereas the scientist is responsible for the accuracy of the archiving of the aforementioned documents, the research institute and/or the research group is responsible for enabling the safe storage of this information.

In case the primary data are too unwieldy to store, appropriate procedures are implemented, for instance, by describing exactly the flow from raw to archived data, storage of a subset of raw data plus the work flow, to be able to reconstruct the correctness later.

3.5 Duplicated reporting in abstracts, peer-reviewed papers

Science is continuous work-in-progress, and preliminary results might be published in a symposium abstract, or results from contract research might become available first in the form of a report, and

later as a peer-reviewed publication. How often can the same materials be presented before 'self-plagiarism' applies?

Best practices: Results submitted to peer-reviewed journals should be original and new, unless clearly labelled as a review, or with an explicit reference of some parts to earlier work ('copied from source x", or "adapted from x").
If the results are already published as a report ('grey' literature) this should also be mentioned, and provided (as copy, or as link) at the time of submission, with an explanation to the editor, so that he/she can decide to accept the submission or not.
Referencing partial findings of earlier work of yourself and with (partly) the same authors should adhere to the normal rules for proper citations of any work, see next paragraph.
Publication of preliminary results and 'work in progress' (e.g. as a symposium abstract, poster or talk) requires permission of all authors working on the project that are planning to publish the results later on.
Computer programs can be used for automated comparison of texts with already published materials (see Wikipedia for software available for this).

3.6 Proper citations

Proper citations are part of a rigorous scientific method, showing how new results relate to older findings. The definition of what 'proper citations' are is not so easy though, for instance, it is not always possible to reconstruct the origins of an idea, so that the proper persons receive appropriate credits. Moreover, not citing certain colleagues (intentional or not) can create feuds that might be harmful to science as well as (young!) careers. Likewise for citations that are put in the wrong context.

Best practices: Although it is hard to define strict guidelines, and journals have their own policies, there are some general principles that may help:

- Verbatim text from other sources should always be presented in quotes (or italics), with the exact reference. At least two (co-)authors should explicitly check the correctness and appropriateness of citations in a paper. Indiscriminate self-citations should be avoided.
- Senior scientists can help when junior scientists are in doubt about the origins of an idea and what is normally done in the field (no need to cite Einstein in every paper).
- If there are certain competing 'schools' of thought in a particular area, young scientists in particular should be made aware of the background and the sensitivities that may arise. That being said – scientific discussion of dissenting opinions is key to progress (but selective citing is not the way to achieve this).

4. Ethical aspects and conflicts of interest in research evaluations

4.1 Reviewing papers

Independent peer review of papers before publication is considered to be one of the cornerstones of rigorous scientific practices in almost all disciplines. In many cases this is done anonymously to the authors, which is both a virtue (only the strength of the arguments counts) and a danger (unfounded criticism can be voiced without the reviewer being held accountable). Rejecting a good paper but using

the information or ideas for your own benefit is clearly considered highly unethical.

Best practices: Usually this concerns individual activities, but you can consult a trusted colleague when in doubt, explaining the case and your doubts, without giving details that would breach confidentiality. As (associate) editor of a journal, check its policies regarding reviewing before accepting the job. Select reviewers carefully, be aware of heated debates and potential mud-throwing.
If authors suggest to exclude certain people as reviewers, grant this request or inform the authors that honoring such requests is not part of the policy of the journal, in which case the authors could decide to withdraw the submission.
If your role is a reviewer, objectivity and confidentiality is essential. This holds in particular when the topic of a study overlaps with your own interest. Consider not accepting invitations to review papers that you expect to be so close to your own plans that treating the information confidentially is impossible. Of course, reviewing the work of a close colleague or friend should be avoided as well. Repeated reviewing of work by the same people and/or the same results should also be avoided: let others also decide on the fate of a publication, and inform the editor of your considerations.
As author, if you suspect that a very opinionated reviewer has trashed your submission, you can politely inform the deciding editor of your thoughts. Requests to reconsider the submission with another reviewer are rarely honored, but at least the editor will know about the issue.

4.2 Reviewing research proposals

Peer review of proposals is a key step to obtain funding for research, and can make or break careers. Given the extreme competition, it is very easy for a reviewer to kill a proposal, by giving it a low mark (anything below 'excellent' in fact). Likewise, panel members can have conflicting interests, leading to unfair outcomes.

Best practices: Many of the same principles of independence and objectivity as for reviewing papers apply to reviewing research proposals. As reviewer, decline to review if you are in doubt and suspect that conflicts of interests may arise. Make sure that your verbal review corresponds to your final mark. Only accept membership of a panel in which a common opinion has to be reached if you feel the panel as a whole has the expertise, independence and reputation to do this well.
If you have your own interests in a particular proposal (or for instance a close colleague) make this explicitly clear and do not partake in the discussion of this proposal (e.g. leave the room).

4.3 Quality assessments of institutes / programs

In the constant quest for excellence of research institutions, periodic evaluations of research are a big responsibility, as the future of people and entire research groups may depend on the outcome of the review.

Best practices: Many of the same principles of independence and objectivity as mentioned in the previous sections apply here. Again, this is a group process, which helps to reach a balanced judgment. In addition, some principles for reviewing: if you are in a panel, ensure that you are aware of how your judgment will be used by the organization. Ask for the Terms of Reference.
If you feel that some panel members have too much influence and too big an impact on the outcome, address the issue openly in the group. Likewise, listen to others and attempt to reach consensus, but

claim a dissenting opinion if you have sufficient grounds not to accept a certain conclusion.

5. Ethical aspects of research topics or its methodologies

5.1 Potential unintended use or misuse of results

Scientific research can sometimes deliver knowledge that can be used for unintended purposes, even for illegal activities, or societal/ethically disputable applications.

Best practices: The issue is discussed during the conversations preceding and following appointments of personnel.
Open discussions in research team to raise awareness, and reported transparently in project communication (for instance at the project website). Reporting potential misconduct within a team is vital: suspicious behavior concerning misuse must be reported.

6. Contact persons and references

6.1 University of Amsterdam Academic Integrity Committee

The University of Amsterdam Academic Integrity Committee advises the Executive Board (CvB) on guidelines with respect to ethical issues that are related to the institution's activities. The composition of the committee and contact details can be found on the UvA website.

6.2 University Academic Integrity Adviser

As the University Academic Integrity Adviser, Prof. Hanneke de Haes can be approached for questions or complaints about academic integrity.

Prof. dr. J.C.J.M. (Hanneke) de Haes (Academic Integrity Adviser)
E: J.C.deHaes@amc.uva.nl
T: 020 566 4756 (direct)
T: 020 566 7730 (Petra Lantink, secretary)

6.3 Confidential Advisors for undesirable behavior

The following Confidential Advisors for undesirable behavior or "Vertrouwenspersonen" (also for issues of stealing, intimidation, etc.) are working at the Faculty of Science (note that you are free to contact someone working at another faculty – see the UvA staff website for the complete list):

Dr. A.J.P. (André) Heck
T: 020 525 8486
E: A.J.P.Heck@uva.nl

Ms. L. (Lydia) Sprenger
T: 020 525 5612
E: L.Sprenger@uva.nl

Dr. M. (Martijn) Rep
T: 020 525 7764
E: M.Rep@uva.nl

6.4 Experts for specific matters

Faculty of Science legal expert:
Mr. E. (Eveline) Hollink
Academic Affairs
T: 020 525 7826
E: E.Hollink@uva.nl

Technology Transfer Office legal expert:
Mr. M. (Marion) Leenen
T: 020 525 2759
E: M.C.L.Leenen@uva.nl

6.5 Further references

The University has a page about academic integrity. This also includes links to the information of the federation of universities (VSNU) on the general code of conduct on integrity issues, as well as specific codes for animal testing and the use of personal data.
The University of Amsterdam adheres to the *The Netherlands Code of Conduct for Scientific Practice*, published by the Association of Universities of the Netherlands (VSNU) as well as the publication by the European Academies of Science (ALLEA): *A European Code of Conduct for Research Integrity*.
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