

2002

Hyvä tieteellinen käytäntö ja sen loukkausten käsittelyminen

God vetenskaplig praxis
och handläggning av avvikelser från den

Good scientific practice
and procedures for handling misconduct
and fraud in science



Tutkimuseettinen neuvottelukunta

on opetusministeriön asettama asiantuntijaelin, joka perustettiin vuonna 1991 käsittelemään tieteelliseen tutkimukseen liittyviä eettisiä kysymyksiä ja edistämään tutkimusetiikkaa.

Neuvottelukunnan tehtävänä on edistää tutkimusetiikkaa koskevaa keskustelua ja tiedotustoimintaa Suomessa sekä toimia aloitteentekijänä ja lausunnonantajana tutkimusetiikkaan liittyvissä kysymyksissä.

Neuvottelukunta kokoontuu kerran kuukaudessa, ja sen pääsihteeri toimii Tieteellisten seurain valtuuskunnan yhteydessä.

Forskningsetiska delegationen

är ett sakkunnigorgan, som undervisningsministeriet har utsett. Delegationen grundades år 1991 för att behandla etiska frågor med anknytning till vetenskaplig forskning och att främja forskningsetik.

Dess uppgift är att främja debatt och informationsverksamhet i Finland och ta initiativ samt avge utlåtanden i forskningsetiska frågor.

Delegationen håller möten en gång i månaden, och delegationens generalsekreterare arbetar vid Vetenskapliga samfundens delegation.

The National Advisory Board on Research Ethics is an expert body nominated by the Ministry of Education. The Board was founded in 1991 to address ethical questions relating to scientific research and to advance research ethics. The responsibilities of the Board include promoting discussion and informing the public about research ethics in Finland as well as taking initiatives and responding to proposals made on matters concerning research ethics. The Board meets once a month and its Secretary General is attached to the Federation of Finnish Learned Societies.

Good scientific practice and procedures for handling misconduct and fraud in science



The statutory task of the National Advisory Board on Research Ethics (Decree 1347/1991) is to promote discussion on and to disseminate information about research ethics in Finland and to take initiatives concerning research ethics. To this end, the Board, together with the Finnish research community, has devised guidelines for good scientific practice and for handling misconduct and fraud in science. Although the composition and mandate of the Board are based on law, the effectiveness of the guidelines will depend on the voluntary commitment of the research community to comply with it.

The research ethics guidelines formulated by the Board seek to define good scientific practice and violations of it in multidisciplinary terms. The aim is to promote good scientific practice and prevent research misconduct in all public organisations carrying out research, such as universities, research institutes and polytechnics. The code may also be applied to research and development conducted in cooperation with business enterprises, where appropriate.

Different scientific disciplines have their own sets of ethical norms, which provide more detailed instructions concerning for instance the relationship between the researcher and the object of research. Information about these can be obtained from the National Advisory Board on Health Care Ethics (ETENE), the Advisory Board for Biotechnology, learned societies and professional organisations. Relevant links and contact information are available on the web site of the National Advisory Board on Research Ethics pro.tsv.fi/tenk.

Background

Misconduct in science and fraud in science have serious consequences for science and scholarship. Although they are rare, competition in the research community may lead people to resort to dishonest means in order to gain prestige or other benefits. This is why the research community must bolster adherence to good scientific practice and address questions of research ethics.

The National Advisory Board on Research Ethics issued its first guidelines for handling alleged misconduct in science in 1994. They were revised in 1998 based on the experience gained from their application and international debates on the subject. The aim of these first guidelines was to identify misconduct in science and to establish a common set of norms for handling it.

In recent years, good scientific practice and means of identifying misconduct and fraud in science have been debated extensively in different parts of the world. This has resulted in various definitions and codes of conduct. On the other hand, these definitions and codes have been severely criticised. The dissimilarities between disciplines alone preclude the formulation of unambiguous, universally applicable standards which would definitely state what is or is not research or professional conduct conforming to good scientific practice for researchers or scientific experts.

In Finland, too, questions of research ethics are increasingly debated, and it has transpired that what is needed, apart from identifying and investigating misconduct, is commitment to ethically sustainable research methods and procedures which serve the interests of science and scholarship. To this end, the National Advisory Board on Research Ethics has formulated the following description of **good**

scientific practice. In support of this positive point of departure, the Board provides examples of actions which infringe good scientific practice. These descriptions help to identify unacceptable conduct in research and thereby to promote good scientific practice. It is also important in terms of researchers' legal protection to identify questions of actual research ethics and thereby distinguish them from other problems in the science communities.

In this context the Board has also revised the **guidelines for handling misconduct and fraud in science** based on the feedback obtained from universities, research institutes and polytechnics. These guidelines enable alleged violations of good scientific practice to be processed promptly and fairly. Universities, research institutes, polytechnics and other organisations conducting research can commit themselves to following the guidelines by signing them.

The point of departure in the Finnish guidelines is that the responsibility for maintaining good scientific practice and handling allegations of misconduct in science first and foremost rests with the organisations which carry out research in Finland. In its work, the Board focuses on promoting discussion and disseminating information about research ethics and formulating general guidelines on this basis. The application of the guidelines constitutes self-regulation by the research community within the scope determined in legislation.

Good scientific practice

For scientific research to be ethically acceptable and reliable and its findings credible, the conduct of research must conform to good scientific practice. Good scientific practice entails, among other things, that researchers and scientific experts

1. follow modes of action endorsed by the research community, that is, integrity, meticulousness and accuracy in conducting research, in recording and presenting results, and in judging research and its results;
2. apply ethically sustainable data-collection, research and evaluation methods conforming to scientific criteria, and practise openness intrinsic to scientific knowledge in publishing their findings; and
3. take due account of other researchers' work and achievements, respecting their work and giving due credit and weight to their achievements in carrying out their own research and publishing its results.

Further, it is in keeping of good scientific practice that

4. research is planned, conducted and reported in detail and according to the standards set for scientific knowledge;
5. questions relating to the status, rights, co-authorship, liabilities and obligations of the members of a research team, right to research results and the preservation of material are determined and recorded in a manner acceptable to all parties before the research project starts or a researcher is recruited to the team;
6. the sources of financing and other associations relevant to the conduct of research are made

known to those participating in the research and reported when the findings are published; and

7. good administrative practice and good personnel and financial management practices are observed.

In addition, different disciplines have special characteristics relating to good scientific practice, which are specified in more detail in the codes of practice issued by learned societies and professional organisations. Higher education institutions and research institutes have issued, and can issue, specific guidelines concerning research conducted under their auspices.

Universities, research institutes, polytechnics and other organisations carrying out research must see to it that the education they provide familiarises students with good scientific practice and research ethics. Every unit providing researcher training has a duty to include in its researcher training programme questions relating to good scientific practice specific to its disciplines.

The **responsibility** for abiding by good scientific practice rests with the research community as a whole. Commitment to good scientific practice is primarily up to each researcher and each member of a research team individually, but also to each research team collectively, the head of a research unit and the leadership of an organisation carrying out research. Learned societies operating in Finland, on their part, are responsible for upholding and promoting good scientific practice, which they can maintain for instance through the peer review system of scientific publications.

Misconduct in science

The practice of science entails quality research which produces reliable results. To achieve this, researchers must have good professional competence. Researchers' professional competence can be seen to comprise good command of knowledge and research methodology required in each discipline and professional ethics, which together constitute good research practice. Poor command of the discipline and lack of care in conducting research and in recording, preserving and reporting the results are a sign of poor research competence and undermine the reliability of the researcher's findings, and can even invalidate the research. Lacking knowledge and carelessness do not, however, necessarily mean that the researcher's professional ethics are dubious. The violations of good research practice described below specifically refer to lack of professional ethics which precludes high-quality research. Although such offences defy detailed and unambiguous definition, it is possible, by means of examples, to characterise activities which go against researchers' professional ethics.

In the following, violations of good scientific practice have been classified into two categories, which are **misconduct in science** and **fraud in science**. Misconduct and fraud in science may be perpetrated in the research process and in the presentation of results and conclusions. Misconduct and fraud in science not only violate the integrity of science, but those perpetrating them may also be guilty of an unlawful act. Honest differences in interpretations or judgments of data, meanwhile, are part of the scientific debate and do not violate good scientific practice.

Misconduct in science is manifested as gross negligence and irresponsibility especially in the conduct of research. Other examples of misconduct in science include understatement of other researchers' contribution to a publication and negligence in referring to earlier findings; careless, and hence misleading, reporting of research findings and the methods used; negligence in recording and preserving results; publication of the same results several times as new; and misleading the research community about one's own research.

Fraud in science means deceiving the research community and often also decision-makers. It is to give false information or present false results to the research community or to disseminate them for instance in a publication, in a paper presented at a scientific conference, in a manuscript submitted for publication or in a grant application. Different manifestations of fraud are illustrated below in four categories: **fabrication**, **misrepresentation**, **plagiarism** and **misappropriation**.

Fabrication is to present fabricated data to the research community. Fabricated data have not been obtained in the manner or by the methods described in the report. Presenting fabricated results in a research report is also fabrication.

Misrepresentation (*falsification*) means intentionally altering or presenting original findings in a way which distorts the result. Misrepresentation means scientifically unjustified alteration or selection of results. It is also misrepresentation to omit results or data pertinent to conclusions.

Plagiarism is to present someone else's research plan, manuscript, article or text, or parts thereof, as one's own.

Misappropriation means that a researcher illicitly presents or uses in his/her own name an original research idea, plan or finding disclosed to him/her in confidence.

It is naturally reprehensible to damage, delay or impede another researcher's work intentionally, and this may also be subject to criminal law. Researchers who violate good scientific practice may also be guilty of misleading the public in disseminating misleading or distorted information about their research, its results, the scientific relevance of the results or the

applicability of the results. Although this kind of behaviour is detrimental to the research community and condemnable, the procedure described below is not applied to investigating such behaviour, unless it can also be considered to constitute misconduct in science in the meaning of the foregoing. The guidelines have been formulated to safeguard the integrity of science and to assure and maintain the quality of science. However, universities, research institutes, polytechnics, other organisations conducting research and the research community as a whole bear responsibility for preventing activities which undermine research or misleads the public, and must intervene in reported incidences in a manner they see fit.

Procedures

for handling alleged violations of good scientific practice

It is in the interests of society, the research community and researchers to investigate all allegations of improper conduct in science. The revised guidelines of the National Advisory Board on Research Ethics put forward below constitute the internal ethical code of the Finnish research community for handling alleged violations of good scientific practice in universities, research institutes, polytechnics and other organisations which carry out research. In addition to the guidelines, the research community must comply with legislation in force (including provisions concerning immaterial rights, criminal liability, the management of finances and administrative procedures; legislation concerning access to official documents; and human rights conventions), which take precedence over the present guidelines.

By signing this document, organisations which carry out research can commit themselves to applying the following procedure when there are good grounds for suspecting misconduct or fraud in science. The elements most relevant to legal protection in the process are: **fairness and impartiality, the hearing of all parties concerned, and a speedy process.** The procedure entails that every phase in the handling of an alleged violation is carefully recorded and that the right to information of the parties concerned is respected. During the inquiry and the investigation, the rector of the university or polytechnic and the director of the research institute must take care of the legal protection of the person making the allegation (complainant) and the suspected perpetrator (suspect) and otherwise guarantee appropriate handling. Decisions taken during the process in regard of an individual's rights or obligations require statutory competence from the person making them.

The rector of the university or polytechnic concerned or the director of the research institute concerned is responsible for compliance with the procedure described below and for decision-making during the whole process. The process is initiated by the organisation to which the allegation is made, but the matter may be transferred to the organisation in which the suspect research has primarily been conducted. If the researcher suspected of misconduct or fraud in science has worked in many different research communities, the consideration of the allegation requires cooperation between these research organisations. The procedure comes under the Administrative Procedures Act (598/1982), which, among other things, states the grounds for disqualification. In addition to impartiality, the procedure must also ensure sufficient expertise during the whole process. Communications made to the National Advisory Board on Research Ethics help the Board to follow developments in the field. Although all documents sent to or issued by authorities are primarily public, research organisations must heed rules of confidentiality in these communications.

1. The allegation of a violation of good scientific practice must be **communicated** to the rector or director concerned **in writing**. The notification is submitted to the organisation in which the suspect research has been conducted. The notification must specify what kind of violation of good scientific practice is involved and substantiate the allegation. The rector or director can also investigate allegations that have come to his/her attention in other ways.
2. The rector or director initiates the necessary **inquiry**. Its purpose is to examine the validity of

the allegation made in the notification. The rector or director may also decide not to launch the inquiry when there are good grounds for it. The relevant decision and the reasons for it must be made known to the complainant and the suspect. If the rector decides to undertake an inquiry, it must be conducted within 60 days of the receipt of the notification. The decision to initiate an inquiry and the reasons for it must be communicated to the suspect without delay. The rector or director acquires the background information needed for the inquiry and hears the complainant, the suspect and, if necessary, experts and other persons.

3. The rector or director dispatches a **summation of the inquiry** to the suspect and the complainant for possible responses, which should be submitted to the rector or director within 30 days of the service of the summation.
4. If the inquiry shows the allegation to be unfounded, the rector or director makes the decision to terminate the proceedings. The decision and the reasons for it are communicated to the suspect and the complainant, and may also be published if requested by the suspect. The action resulting from a false allegation made with intent to misuse the procedure is determined by the rector or director.
5. If, based on the inquiry, the rector or director comes to the conclusion that the suspect's action may constitute misconduct in science but not fraud, he/she can decide on further action at his/her discretion. The rector or director notifies the suspect, the complainant and the National Advisory Board on Research Ethics of his/her decision and the grounds for it, as well as the findings of the inquiry into the matter, and takes possible action in accordance with Item 9. The rector or director may also undertake an investigation as described in these guidelines. This must always be done if requested by the suspect with good reason.

6. If the inquiry does not clear the suspect of the alleged misconduct, the rector or director must undertake an **investigation**. The rector or director invites experts to carry out the investigation, one of whom is appointed to chair the **panel**. The panel must represent expertise in the discipline concerned, in law and in other specialist areas needed, and may not be composed solely of employees of the university, research institute or research organisation concerned. The appointment and work of the panel must comply with the provisions concerning disqualification in the Administrative Procedures Act.
7. The investigation must be conducted as speedily as possible. If the panel has not concluded the investigation within 120 days of its appointment, it must report this to the rector or director, who decides on the necessary extension.
8. The panel must submit a **final report** of its work, comprising:
 - an account of the scientific study or of the alleged conduct and the grounds for the allegation,
 - the panel's opinion, with justifications, as to whether the suspect action constitutes fraud or misconduct in science,
 - the panel's opinion, with justifications, as to what type of violation of good scientific practice is involved,
 - the panel's opinion, with justifications, as to the severity and recurrence of the violation of good scientific practice and the degree of misconduct, including possible proposals for remedying its effects,
 - a list of research results and publications which the panel considers fraudulent,
 - a proposal for publishing the final report in accordance with Item 9, and
 - an account of the panel's activities.

9. The rector or director decides on the action and sanctions warranted by the findings of the inquiry and the investigation and makes the decision initiating these measures.

In deliberating on possible action and sanctions, the rector or director must consider the severity of the violation of good scientific practice and its possible recurrence, the degree of misconduct and the extent of inappropriate conduct. If the investigation finds that the misconduct constitutes fraud in science and if the findings of the fraudulent research or the fraudulent end result has been publicised, measures must be taken to publish the findings of the final report in a publication deemed appropriate by the panel. If the alleged fraudulent research has been presented in a publication series, an effort must be made to publish the findings of an investigation in the same or a corresponding manner as the suspect results.

In addition to publishing the findings of the final report, it is possible to apply statutory administrative or legal procedures and possible sanctions under labour law. The sanction may also be to discontinue or deny financing for the research. The rector or director determines case by case what sanctions a substantiated fraud warrants under applicable legislation and administrative regulation.

10. Also when the investigation finds that the suspect has not violated good scientific practice, the rector or director must dispatch the investigation documents to the suspect. Further, an effort must be made to publish the findings of the investigation if the suspect so desires.
11. When the rector or director, on receiving a written or other notification of an alleged violation of good scientific practice, takes action in

accordance with these guidelines, he/she must notify the National Advisory Board on Research Ethics of the matter. The rector or director must dispatch the following to the Board without delay, unless otherwise provided by legislation concerning confidentiality,

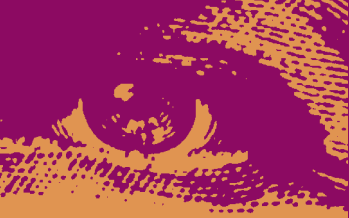
- the summation of the inquiry, possible responses to it, and a decision concerning sanctions imposed on the basis of the inquiry and
- the final report of the investigation.

If the suspect is conducting research under contract to an employer other than the higher education institution (e.g. the Academy of Finland) or research organisation in which the allegation has been handled or receives external research financing, the final report of the investigation must also be dispatched to the employer or the funder.

12. A suspect or a complainant dissatisfied with the procedures used, the inquiry, the investigation or the final report can request the National Advisory Board on Research Ethics to give its **opinion**. The Board must consider the matter based on the documents provided to it promptly, no later than within 120 days of the receipt of the request, and issue an opinion addressed to the appellant concerning the matter, which must also be made known to the rector or director.

The National Advisory Board on Research Ethics may propose that the rector or director undertake another investigation, if warranted by the summation of the inquiry, the final report of the investigation or matters communicated by the appellant in his/her request. The Board does not take part in the inquiry or in the investigation or arrange hearings.

The National Advisory Board on Research Ethics has adopted the guidelines at its meeting 7 December 2001 and research organisations can register their commitment as from 3 April 2002.



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