

**ANNUAL REPORT 2005**  
**THE DANISH COMMITTEES ON**  
**SCIENTIFIC DISHONESTY**

*Danish Agency for Science, Technology and Innovation*  
*November 2006*



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# **PREFACE**

*By Henrik Waaben,  
Judge of the Supreme Court,  
Chairman of DCSD*



**Henrik Waaben**

*Judge of the Supreme Court,  
Chairman of DCSD*

The Danish Committees on Scientific Dishonesty (DCSD) herewith submit their Annual Report for 2005.

In 2005 DCSD ruled on 7 cases, 5 of which had been carried over from 2004. In addition to these, DCSD received a further 6 cases in 2005 that could not be completed during the year under review and were therefore carried forward to 2006. These cases are discussed below in Chapter 1.

The 7 cases finalized by DCSD in 2005 thus break down as follows between DCSD's three committees: the Committee for Natural Science, Agricultural & Veterinary Science and Technical Science (UNJVTF) dealt with 2 cases, the Committee for Social Science and the Humanities (USHF) also dealt with 2 cases, and the Committee for Health and Medical Science (USF) dealt with 3 cases.

None of the cases included components that could be characterized as scientific dishonesty in DCSD's opinion, but in one case (Chapter 1, Case No. 1) UNJVTF did express mild criticism of the defendant. In keeping with previous years, it is characteristic of the cases decided in 2005 that the majority of complaints were able to be dismissed, either because the complaint did not address circumstances encompassed by DCSD's remit, e.g. because the defendant's matters had not been committed in research, or because DCSD considered it improbable a priori that the defendant had acted in a scientifically dishonest fashion. A prior assumption of this kind enables DCSD to dismiss the case without giving it further consideration.

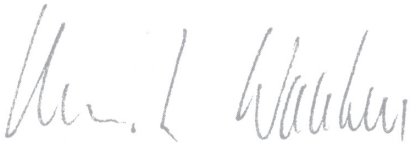
The relatively modest number of cases ruled on in 2005 is primarily due to the fact that as a result of the new Executive Order on DCSD (Danish Executive Order No. 668 of 28 June 2005), which came into force on 1 August 2005, members and alternates of DCSD's three committees had to be re-appointed. Members and alternates are appointed by the Danish Minister of Science following consultation with the Councils for Independent Research, a procedure which was not completed until 2006. As a result of this, DCSD was unable to rule on cases in autumn 2005.

A new set of rules of procedure for DCSD is expected to be issued in October 2006.

Chapter 2 of the Annual Report contains a discussion of the new Executive Order on DCSD. As will be seen from this, DCSD foresees that the new rules for DCSD's operations may potentially give rise to doubts on several points, which will have to be clarified by DCSD's practice in future years.

As Chapter 3 of the Annual Report, an article has been included on *Good Conduct in the Sciences*, written by a member of DCSD, Professor Vagn Lundgaard Hansen.

I thank DCSD's members, alternates and secretariat for their excellent collaboration in 2005.

A handwritten signature in black ink, appearing to read 'Henrik Waaben', written in a cursive style.

**Henrik Waaben**



# **CASES IN 2005**

*By Annette Rasmussen, LL.M.,  
Head of Section,  
DCSD Secretariat*

## CASES IN 2005

### *Completed cases from previous years*

*All completed cases have been considered in accordance with Danish Executive Order No. 933 of 15 December 1998 on the Danish Committees on Scientific Dishonesty.*

#### **Case No. 1**

*Complaint about being ranked, against the person's will and without any prior opportunity to make a statement, as principal author of a report published after the complainant had vacated his post.  
(Case No. 15 in DCSD's 2004 Annual Report).*

**1** In August 2004 DCSD received a request for assistance in a case in which the complainant had been cited as principal author of two reports published by a public authority in 2003. The reports also gave details of an incorrect measuring method. DCSD's Committee for Natural Science, Agricultural & Veterinary Science and Technical Science (UNJVTF) stated in August 2005 that the complainant should have been presented with the report prior to publication, as the problem with citing the complainant as principal author and the problem with indicating the incorrect measuring method would then have been clarified. DCSD did not find, however, that the matters complained of could be characterized as scientific dishonesty. DCSD based this finding on the fact that the reason for the complainant having been ranked as principal author was that the person who assumed responsibility for the projects wished to give the complainant the credit that comes with being listed as principal author. As regards the complaint about indicating an incorrect measuring method, DCSD found that this had been due to the special circumstances under which the report had been compiled and that, in the case in hand, moreover, indication of an incorrect measuring method had no bearing on the scientific message.

#### **Case No. 2**

*Case about a draft article which a newspaper refused to print, for fear of possible legal ramifications, unless the article had already been evaluated by a wider selection of experts.  
(Case No. 17 in DCSD's 2004 Annual Report).*

**2** In November 2004 DCSD received an enquiry from a social-sciences researcher who had wanted to have a newspaper include an article containing criticism of a colleague's research. The editor of the paper refused to include the article on the grounds that, owing to the risk of liability in damages, the paper had to have the article and matters touched upon in the article evaluated as a condition for publication in an ordinary newspaper. In February 2005 DCSD informed the complainant that the case had been put before DCSD's Committee for Social Science and the Humanities (USHF). With reference to Section 2, subs. 2, clause 2 of the Executive Order, USHF declined to consider the case, since it could only be deemed improbable a priori that there was any scientific dishonesty, in the sense in which this concept was defined in Section 3 of the Order. DCSD found that the case concerned professional disagreement over the quality of the work in question, as well as possible

misunderstandings on the part of the defendant, but not that there was any dishonest conduct as such. In December 2005, pursuant to the then provision in Danish Executive Order No. 933, Section 2, subs. 2, clause 2, the complainant again approached DCSD about the case, which was therefore still pending at the end of 2005.

**3** In November 2004 DCSD's Committee for Health and Medical Science (USF) received a complaint from a foreign health science researcher who for some time had been employed by a Danish hospital and as part of this appointment had been working on a PhD thesis. The complaint encompassed two aspects:

- 1) complaint about inadequate supervision in connection with drafting of a PhD thesis and
- 2) complaint regarding authorial rights to an unpublished article.

In March 2005 the Committee declined to consider the case. As regards the assertion about inadequate supervision, the Committee did not judge that it had the competence to assess this point. As regards the complaint regarding authorial rights to the article, the Committee found that the case concerned disagreement as to whether the complainant's supervisor should be listed as co-author of the unpublished article. Since steps had not yet been taken to publish the article, the Committee did not find the case to be covered by DCSD's competence. DCSD referred the informant to contact the practice committee at the university concerned.

The complainant in question approached DCSD again in April 2005. From the renewed enquiry, it emerged that the complainant had had the article printed without crediting the supervisor with co-authorship. DCSD's Committee for Health and Medical Science stated that there was no basis for the complainant's accusations against the supervisor in connection with the dispute over authorial rights, and that such conflicts were not intended to be settled by DCSD under the rules on scientific dishonesty, but had to be resolved through talks between the parties or by an impartial third-party. Thus, given the a priori improbability of being able to uphold the complainant, the case was dismissed.

### **Case No. 3**

*Case about inadequate guidance in connection with the preparation of a PhD project and a complaint about authorial rights. (Case No. 18 in DCSD's 2004 Annual Report).*

**Case No. 4**

*Complaint about an allegedly inadequate feasibility study of the subsoil in a vulnerable area where major building work was being planned.*

*(Case No. 19 in DCSD's 2004 Annual Report).*

4 At the turn of 2004/2005 DCSD received a complaint about inadequate preliminary investigations of the subsoil in an area where there were plans to build a major development. The original complaint was supplemented in March 2005 with new material for assessing the complaint. The case raised the question of whether the investigation report in question, published by a research institution, could be regarded as research and was thus covered by DCSD's competence. DCSD's Committee for Natural Science, Agricultural & Veterinary Science and Technical Science (UNJVTF) stated in June 2005, inter alia, that DCSD is only empowered to deal with a complaint if the product targeted by the complaint is covered by the concept of "research". In each individual case, DCSD must therefore undertake a concrete evaluation of whether, say, a written report can be considered "research". In making this evaluation, UNJVTF partly stressed the importance of the report's purpose and nature, including whether the analyses and conclusions in the report had been generated using a particular scientific method. In addition the Committee stressed, amongst other things, whether the report had been subjected to a peer-review process, i.e. an external appraisal by specially qualified experts prior to publication. There were several factors in favour of regarding the report as a research activity: The report had been written by a skilled researcher and published at a research institution. Furthermore, it included a number of components typical of a research publication, including a review of the scientific background literature, a working hypothesis, an analysis based on sampling (drilling sample), a discussion of data and a conclusion. The report had not been subjected to peer-review. In their considered and combined opinion the Committee decided to regard the report as the result of a consultancy assignment which the research institution had resolved in the context of the planned building work, and thus adjudged that the report was not being assessed qua research. The information provided about the background to the report dictated in favour of not regarding it as research. The Committee also attributed considerable importance to the fact that the report was not research in the research institution's own view.

Consequently, DCSD did not have the competence to consider the case. The Committee added that it was not at any rate part of DCSD's remit to undertake a qualitative assessment of the report.

**5** In November 2004 DCSD received a complaint from a social-sciences researcher, who complained that the committee assessing his PhD thesis at a Danish university had displayed dishonest conduct in assessing the thesis. The dishonest conduct on the part of the adjudication committee pertained, in the view of the complainant, to particular statements in its recommendations. The adjudication committee had recommended that the thesis not be accepted for defence. The complainant had previously contacted the relevant faculty council, requesting that the council overrule the adjudication committee's recommendation. The faculty council had decided to abide by the adjudication committee's recommendations.

DCSD's Committee for Social Science and the Humanities (USHF) stated in February 2005 that it was the Committee's view that assessment of a scientific thesis is not covered by the activities that fall under "in research" described in Sections 2 and 3 of the Executive Order. DCSD did not, therefore, have the authority to deal with the case.

In March 2005 the complainant brought the Committee's ruling before the Danish Parliamentary Ombudsman; in September 2005 the Ombudsman pronounced that he found no basis for criticizing the Committee's ruling.

### **Cases received and finalized in 2005**

**6** In March 2005 DCSD received a complaint highlighting a number of errors in a report compiled by a research institution. The complainant found that one of the assertions in the report was undocumented and that an error of addition had been made in a table, as a result of which the conclusion to the table was misleading. Furthermore, the complainant stated that the gravity of the errors was accentuated by the fact that the preface to the report showed that the guidelines generally applicable to research quality assurance had been observed, and that the report had mentioned by name three people who had checked the report and thus vouched for its quality. The case was considered on DCSD's Committee for Health and Medical Science (USF), which stated in April 2005 that the nature of the grievances pointed out by the complainant in his complaint were not such as to come under the concept of scientific dishonesty. It was not within DCSD's authority to take a stance on a criticism of the report's scholarly content, just as any professional or academic disagreement between the report's author and the complainant should not be evaluated by DCSD. As a result, the case was dismissed, since it had to be deemed improbable a priori that the complainant could be upheld, cf. Executive Order, Section 2, subs. 2, clause 2.

#### **Case No. 5**

*Case about postulated dishonest conduct in connection with assessment of a PhD thesis. (Case No. 16 in DCSD's 2004 Annual Report).*

#### **Case No. 6**

*Case about postulated dishonest conduct in the contents of a report drawn up by a research institution for the use of the catering industry.*

**Case No. 7**

*Request for DCSD to review a publication published by a university with a view to evaluating whether it was scientifically dishonest.*

**7** In February 2005 DCSD was requested to undertake an assessment of the possible scientific dishonesty in a publication published by a university. In addition DCSD was requested to clarify whether the university in question vouched for the assertions put forward in the report. Finally, DCSD was requested to investigate whether the Danish measures were sufficient to prevent the spread of false academic titles.

The case was considered by DCSD's Committee for Health and Medical Science (USF). Accordingly, in April 2005, DCSD notified that Section 2, subs. 1 of the Executive Order implies that DCSD is mandated to deal with complaints concerning scientific dishonesty, cf. the definition in Section 3 of the Order. DCSD's ability to consider a case is conditional on it involving a specific complaint about scientific dishonesty. DCSD could not undertake to deal with a general request to make an evaluation of a publication, such as that desired by the complainant.

In addition, DCSD stated that it was not within DCSD's jurisdiction to clarify the extent to which the university was acting as a professional guarantor for the assertions put forward in the relevant publication. DCSD referred the complainant to present this issue to the university in question.

DCSD, moreover, stated that it is not within DCSD's remit to examine whether the Danish measures are sufficient to prevent the dissemination of false academic titles. DCSD referred to the option of raising this question with the Ministry of Science, should the complainant wish to take the matter any further.

***Incomplete cases in 2005***

**Case No. 8**

**8** A person contacted DCSD in March 2005, since in his opinion a research institution had acted with scientific dishonesty by publishing a report without being able to produce the requisite documentation for the institution's research data, amongst other things. In addition, the complainant was of the view that violation of an insufficiently depersonalized individual had taken place unduly in the report.

*The case had not been finalized by the end of 2005.*

**Case No. 9**

**9** An editor on a Danish journal contacted DCSD in May 2005, being of the opinion that a named person had acted in a scientifically

dishonest fashion by submitting an article to the journal which, in the view of the journal's assessor, was an abridged and directly translated version of an article previously published abroad and compiled by two foreign researchers.

*The case had not been finalized by the end of 2005.*

**10** In April 2005 a foreign researcher approached DCSD, feeling that, as an employee on a Danish-funded project abroad, she had been witness to various instances of scientific dishonesty, which she had complained about to the project officers in charge, following which she had been dismissed.

**Case No. 10**

*The case had not been finalized by the end of 2005.*

**11** In September 2005 a person contacted DCSD with information that two named individuals had acted in a scientifically dishonest fashion in two publications in their description of a disease.

**Case No. 11**

*The case had not been finalized by the end of 2005.*

**12** In September 2005 DCSD received a complaint about different research activities connected with a Danish county authority. It was the complainant's view that the research showing that a particular species of animal lived in the relevant county was scientifically dishonest and its purpose was to have a natural area designated an EU habitat area.

**Case No. 12**

*The case had not been finalized by the end of 2005.*

**13** In October 2005 a researcher contacted DCSD with a request for DCSD to undertake an evaluation of whether it was scientifically dishonest of a research institution to have placed a publication on its homepage without the researcher's consent, making it look at first sight as if the publication came from the research institution in question.

**Case No. 13**

*The case had not been finalized by the end of 2005.*



# **NEW RULES FOR DCSD**

*By Henrik Waaben,  
Judge of the Supreme Court,  
Chairman of DCSD  
and Annette Rasmussen, LL.M.,  
Head of Section,  
DCSD Secretariat*

*By Henrik Waaben, Judge of  
the Supreme Court,  
Chairman of DCSD, and  
Annette Rasmussen, LL.M.,  
Head of Section, DCSD  
Secretariat.*

## **NEW RULES FOR DCSD**

In June 2005 the Danish Ministry of Science, Technology and Innovation issued a new Executive Order on the Committees on Scientific Dishonesty, Executive Order No. 668 of 28 June 2005. The new executive order, issued under the authority of the Act on the Research Advisory System etc., Section 33 (Danish Act No. 405 of 28 May 2003), came into force on 1 August 2005, from that same date superseding the previous order on DCSD, Executive Order No. 933 of 15 December 1998. Both the old and the new order have been included as appendices to the Annual Report. The new executive order differs from the previous one in a number of areas. None of the cases in which DCSD made a ruling in 2005 was dealt with under the new executive order, and it is not yet clear, therefore, how great a significance the amendments will have in practice. This article contains a short review of the most important changes to the rules governing DCSD's activities.

The three committees that go to make up DCSD have been given new names, cf. Section 1, subs. 2. This change of name is of no practical importance, however, since the committees are still divided into health and medical science, engineering and natural sciences etc., and social sciences/the humanities etc. The individual committees have been expanded from four to six members, with a corresponding number of alternates, each committee still being chaired by DCSD's joint chairman. This follows from Section 7. This expansion will guarantee better coverage of the scientific research areas.

In Section 1, subs. 4 and 5, the Danish Executive Order includes restrictions on DCSD's competence as compared with previously. Section 1, subs. 4 stipulates that DCSD can (only) deal with cases in which the defendant has been scientifically trained within the area of research pertained to by the scientific product being complained about. This involves two restrictions: Firstly, it is a requirement that the defendant must be "scientifically trained". The Executive Order does not define the implications of this training requirement in more detail; these will therefore have to be established through DCSD's future practice. It seems only natural that some requirement for graduate-level training must be made as a point of departure. Secondly, DCSD will not be able to deal with cases in which a researcher strays into fields of research other than his or her own, e.g. a researcher trained in the social sciences writing a research article on a topic of natural science.

From Section 1, subs. 4 it further appears that the defendant must either have had the scientific product published in Denmark, have compiled the product in connection with employment/commercial activities in Denmark, have received or applied for a subsidy from the

Danish public authorities to compile the product or be otherwise associated most closely with Denmark.

One major restriction on DCSD's competence in relation to previously is set out in Section 1, subs. 5. This provision stipulates that, in respect of scientific products prepared under private auspices, DCSD can only deal with cases if the private company or similar enterprise wished to be embraced by DCSD's jurisdiction or wishes to be involved in hearing the case. In cases concerning private research, DCSD will make the defendant aware of these rules so that the defendant has an opportunity to oppose DCSD dealing with the case. In case of doubt, depending on the circumstances, DCSD may find itself having to ask the defendant whether he or she wishes to be covered by the rules or wishes to be instrumental in disclosing all material facts in the case. Incidentally, the Executive Order does not make clear how the concept of "private auspices" is to be delimited, and this will therefore have to be clarified through DCSD's future practice.

The definition of scientific dishonesty in Section 2 of the Executive Order has been phrased differently to the previous order in a number of respects, although there seem to be no differences of a substantive nature. Scientific dishonesty is understood to mean intentional or grossly negligent conduct in the form of falsification, plagiarization, concealment, non-disclosure or suchlike, bringing about undue misrepresentation of one's own scientific efforts and/or scientific results. As previously, the enumeration in Section 2, subparas 1-6, is a non-exhaustive list of examples of scientific dishonesty.

A new feature of the DCSD Executive Order is that Section 4, subs. 1 now determines that DCSD is only to deal with cases lodged, as a basic working premiss, by a person who can be regarded as a party to the case under the rules of the Danish Public Administration Act. As a result, only people with a material, individual interest in the outcome of the case are entitled to have DCSD consider a complaint from the person in question, e.g. a researcher who feels he or she has been the victim of plagiarism. However, DCSD has now been given an opportunity to take up cases of its own accord if they are of social interest or of importance to human or animal health, and there is a justified assumption of scientific dishonesty, cf. Section 4, subs. 2. In practice this new facility for taking up cases of its own accord will mean that DCSD—in any case lodged by a person not considered to be a party to the case, who would therefore have to be turned down—will evaluate whether the case meets the conditions for DCSD to take it up of its own accord. DCSD will also be able to take up cases of its own accord on the basis of e.g. publicity in the press. Section 4, subs. 2 sets out that DCSD can only take up cases of its own accord to a "limited extent". The precise implications of this

restriction are unclear, but it may possibly entail the bulk of those cases admitted by DCSD for consideration on their merits having to have been submitted in the form of a complaint from a person with party status. In practice, therefore, DCSD will have pretty free rein to take up cases of its own accord.

The previous DCSD executive order included legal authority allowing DCSD to decline to consider matters dating back more than five years. This provision does not exist in the new Executive Order. By contrast, Section 4, subs. 3, clause 3 of the new order does contain a new rule, according to which DCSD can refuse to consider a case if deemed beforehand that the costs of hearing the case will be out of reasonable proportion to its importance. Amongst other things, this provision may be expected to be applicable if the case is more than five years old and it would foreseeably be very time consuming to disclose sufficient details of the case. Furthermore, it follows from Section 4, subs. 3, clauses 1 and 2 that, as hitherto, DCSD can obviously dismiss cases that fall outside its competence and DCSD can dismiss cases which can be regarded a priori as manifestly unfounded.

As formerly, DCSD can set up an ad hoc committee with the participation of external experts to assist it in preparing a case, cf. the rules in Section 11. According to Section 11, subs. 2 an ad hoc committee must, as part of its preparations for a case, draw up a report on the actual circumstances of the case. Otherwise, pursuant to Section 12, subs. 1, it is incumbent on DCSD, as hitherto, to provide as part of its consideration of the case all necessary information to allow the case to be decided on a sufficiently informed basis. In future too, therefore, DCSD must be able to request an ad hoc committee to state its views on specialist issues falling outside a narrow understanding of the concept of "the actual circumstances of the case". There may often be a need for this, quite simply because DCSD, despite its new and broader composition, does not cover all subjects and research disciplines.

As a new rule, it has now been determined in Section 13, subs. 3 of the Executive Order that in cases where criticism of the defendant's behaviour is expected in the form of scientific dishonesty, DCSD must listen to the defendant's comments concerning its ruling in draft form. This gives the defendant one (last) opportunity to influence the decision and rectify any misunderstandings, just as the review ensures that the defendant is informed of the decision beforehand.

Finally, it should be mentioned that since the Danish Act on the Research Advisory System etc. came into force on 1 January 2004, it has not been possible to refer DCSD's ruling to any other administrative authority, cf. Section 34 of the Act. As previously, however, DCSD is subject to the usual supervision by the Parliamentary Ombudsman.

# **GOOD CONDUCT IN THE SCIENCES**

*By Professor Vagn Lundsgaard Hansen, PhD,  
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## GOOD CONDUCT IN THE SCIENCES<sup>1</sup>

### Synopsis

What is scientific dishonesty? How to handle the problem? How to prevent it? These three questions are discussed in an international perspective, focusing on ways of achieving and maintaining good conduct in the sciences.

The article opens with selected historical examples, illustrating the many difficulties associated with assessing scientific conduct. Scientific dishonesty is not a concept that can be taken for granted, a priori, but has first to be defined. Examples discussed are the definitions of scientific dishonesty currently in use in the USA and Denmark. A few problematic cases from recent times are presented, and these provide additional insight into the difficulties of reaching balanced decisions in issues of scientific conduct. Ethical aspects relating to publication are discussed in detail, and by way of conclusion discussion is devoted to the urgent need to formulate some basic rules for integrity in the sciences that are acceptable at international level.

### 1. INTRODUCTION

An individual can develop a platform of serious scientific dishonesty when minor irregularities are ignored by close colleagues and management. Scientists strive to be the best, and it can be tempting to further the advancement of their work by resorting to inappropriate means. This may involve forgetting to provide complete information about the origin of a new idea or a new experiment perhaps, or failing sufficiently to acknowledge and appreciate the work of others, or borrowing a couple of sentences here and there without quoting. If a researcher has never been introduced to the basic rules of good scientific practice by responsible colleagues, that person may end up considering such minor irregularities natural and acceptable. In any scientific subject area, high priority should be assigned to preventing unacceptable scientific behaviour by members in relation to other members of that subject area and society as a whole; in other words, to preventing scientific dishonesty. In this connection it is important to discuss ethical problems in research openly and without prejudice, and that scientific associations

<sup>1)</sup> Based on the author's invited contribution *Good Conduct in the Sciences*, "Proceedings of the International RILEM Conference, Technical University of Denmark, August 2006 (PRO 52)", RILEM Publications, Bagneux, France, 2006, 1-10.

clearly formulate and reach agreement on certain fundamental rules of good scientific conduct. All sciences are international undertakings these days, and it is therefore of growing importance to establish internationally accepted basic rules for good conduct in the sciences—no easy task in light of the cultural differences in the perception of what is regarded as unacceptable.

A nation has laws for regulating the conduct of its inhabitants—not with a view to punishing people, but primarily to prevent undesirable behaviour. Nevertheless, crime—breaking the law—is something that happens, and it is important for a civilized society to have a legal system to deal with crime in a suitable fashion. In the same way, a legally entrenched system is needed for handling scientific dishonesty. It is too late to contemplate how to clamp down on poor conduct in the sciences once the damage has been done, and it is too naive to deny that bad conduct occurs.

Unfitting scientific behaviour is no new phenomenon. History abounds in examples where scientists have acted contrary to generally accepted standards in their profession [1].

The examples below illustrate differing degrees of dishonesty in the sciences, in some cases perhaps not even dishonesty at all. The lesson from history which I hope to convey using these examples is that finding sensible ways of handling poor conduct in the sciences which are acceptable to everyone is a very difficult, but also a very necessary task.

To be fair to the famous British natural scientist Charles Darwin, he was scarcely behaving unfittingly in his trail-blazing publication 'On the Origin of Species by Means of Natural Selection' from 1859, although it has been claimed that Darwin did not find his principal mechanism, the concept of 'natural selection', until his compatriot, the equally outstanding natural scientist Alfred Russel Wallace, sent Darwin a copy of his own article from 1855 in a letter from Indonesia, where he was staying at the time, describing a theory of 'biological evolution'. Darwin rushed to immediately publicize the idea of 'natural selection' and on his own initiative arranged a joint article with Wallace in 1858 before publishing his main work in 1859. By way of apology for Darwin, however, it must be said that he had been conducting his own research in the field for more than twenty years, and that his child did die at roughly the same time as he received Wallace's letter from Indonesia. Furthermore, Wallace always referred to the concept of 'natural selection' as Darwin's theory

## **2. EXAMPLES FROM HISTORY**

### **2.1. Did Darwin display poor scientific conduct in his 'Origin of Species'?**

later on, and there does not appear to have been any unsettled score between the two men.

Extensive information about Alfred Russel Wallace's life and his scientific contributions in relation to Darwin's work can be found on the website [<http://www.wku.edu/~smithch>].

The discussion of whether Darwin or Wallace should be credited with the principle of 'natural selection' in the biological sciences is an example of the way in which, with time, misinformation can amass in support of the attitude often found among scientists, that "we are all sinners, even the greatest kingpins of science". It is interesting in this connection to note that more than five percent of American researchers who answered a confidential questionnaire admitted to minor degrees of scientific skulduggery, according to an article [2] in the Washington Post on 9 June 2005.

The article was based on an article in the magazine Nature [3], which reported that up to thirty percent of researchers admitted having acted contrary to good scientific practice.

## **2.2. The discovery of the double-helix structure of the DNA molecule**

It is likely that the British molecular biologist Rosalind Elsie Franklin was the true discoverer of the double-helix structure of the DNA molecule, for which her compatriots Francis Crick and Maurice Wilkins, together with the American geneticist and biophysicist James Watson, were awarded the Nobel Prize in 1962, four years after Franklin died of a cancerous illness at the age of just 37. Franklin was employed by Wilkins to work on the project, and she developed the necessary X-ray crystallography to take the famous photograph of the double helix in the DNA molecule. The photograph lay in her desk drawer until Wilkins informed Watson and Crick, who removed it from the drawer, credited themselves with the glory for the work and published the discovery. Is this a case of deception, plagiarism or the invisibility of women in science? You can read more about Franklin on the webpage [<http://www.sdsc.edu/ScienceWomen/franklin.html>].

## **2.3. Does it ring a Bell?**

The invention of the telephone is a famous example of seemingly poor conduct outside of science proper. Philip Reis, a German professor and inventor, developed the apparatus and demonstrated it to people. The American inventor Alexander Graham Bell, who apparently attended one of Reis's demonstrations, hurried to develop his own device and patented the idea on 14 February 1876. Bell managed to register his patent just hours before Elisha Gray, another American inventor. Elisha Gray and others tried to contest his patent, but Bell was very crafty and

invested in a strong team of legal experts to frighten off the opposition. You can read more about this in [4].

Dishonest usurping of intellectual rights that rightfully belong to another person is a difficult problem to tackle in the sciences. In the case involving the invention of the telephone, it took the form of Bell patenting an invention which he probably devised immediately after attending a demonstration by Reis. In other agonizing cases wily researchers have hastily written down articles immediately after other researchers' lectures on as yet unpublished results without any form of reference. Proving such things can be difficult unless they can be traced back to direct plagiarism.

The British inventor and professor of music David Edward Hughes developed a carbon microphone in 1878 and presented his secret designs to the Royal Society in London first, before going public with his idea. The president of the Royal Society at the time, Sir William Crookes, strongly advised Hughes against publishing the underlying physical observations on the transmission of oscillations, maintaining that it was merely a form of induction rather than electromagnetic waves. Sir William was mistaken, and the German physicist Heinrich Rudolf Hertz is now credited with the discovery of electromagnetic waves in 1887. It was clearly a mistaken assessment of Hughes' observations, but William Crookes' evaluation was not reflective of poor scientific conduct, as the mistake involved was an honest one.

The Ukrainian Trofim Lysenko was a trained agronomist but had no proper scientific training. During the severe farming crisis of the 1930s he impressed the dictator of the former Soviet Union, Joseph Stalin, with wild claims that he had discovered methods for growing crops without the use of fertilizers or minerals and under unfavourable conditions (vernalization). Lysenko distorted ideas of Lamarck's and Darwin's, developing biological theories that were completely at odds with theories put forward by scientists outside of the Soviet Union, but his theories fitted in well with Stalin's political view that environmental rather than hereditary factors are crucial to growth and performance. Stalin therefore appointed Lysenko head of all biological sciences in the Soviet Union, and he was awarded the highest distinctions for his 'accomplishments'. It has been claimed that Stalin himself wrote some of Lysenko's publications to "prove his political point of view". Lysenko's experiments, including growing corn in Siberia, backfired and led to very severe famine in Russia. Only after Stalin's death in 1953 was it slowly

#### **2.4. Microphones and the discovery of electro- magnetic waves**

#### **2.5. The Lysenko Affair**

acknowledged officially that Lysenko was a fraud—something that good Soviet biologists had known for years but could not be openly discussed under Stalin's regime. A detailed account of Lysenko's catastrophic impact on the biological sciences in the former Soviet Union is given in [5].

The Lysenko Affair is a grave example of how a political system can produce and support 'research' based on ideologies rather than scientific methods. Lysenko cooperated zealously with the system and persecuted the few scientists who gainsaid him. He was undoubtedly guilty of scientific dishonesty, even allowing for his poor scientific training.

Accusations of scientific dishonesty are occasionally raised against able and well educated researchers who have apparently been subjected to political or financial pressure to reach 'scientific' conclusions they themselves cannot entirely vouch for. Such cases can be difficult to handle.

### **3. THE CONCEPT OF SCIENTIFIC DISHONESTY**

The first nation to take government initiatives to handle problems concerning lack of integrity and honesty in the sciences seems to have been the USA, where offices were set up to deal with cases of this kind in 1989 at the two federal institutions: the National Science Foundation and the Public Health Service. The large majority of cases have occurred within the purview of the Public Health Service, where they are handled administratively by the Office of Research Integrity, which deals with cases involving fraud and deception in state-subsidized biomedical research and behavioural-science research.

In 1996 the White House Office of Science and Technology Policy took the initiative to formulate a definition of scientific dishonesty, which was published in the Federal Register on 14 October 1999 and later assented to and approved by the US National Academies of Sciences [6].

From the very outset the work of creating a joint understanding of what is expected of researchers in terms of scientific conduct and how to maintain and protect scientific integrity has focused on two aspects:

- Setting up suitable training of research students in ethical issues.
- Creating a suitable system for handling cases of scientific dishonesty when they occur.

The way concrete cases of alleged scientific dishonesty are being handled is increasingly attracting awareness, both in the scientific world and in society as a whole, and detracting from the educational aspect to some extent.

The definition of scientific dishonesty varies slightly from one country to another. The comparatively narrow definition of scientific dishonesty ('research misconduct') used in the USA forms a common core in all definitions of scientific dishonesty. For the sake of accuracy, the English phrasing will be retained verbatim.

"Research misconduct is defined as fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results. - Fabrication is making up results and recording or reporting them. Falsification is manipulating research, materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record. Plagiarism is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit, including those obtained through confidential review of others' research proposals and manuscripts. - Research misconduct does not include honest error or honest differences of opinions."

The definition of scientific dishonesty currently being used in the USA is often referred to as the FFP definition (Fabrication, Falsification and Plagiarism) for short.

As explicitly emphasized in the FFP definition, poor conduct in research does not cover any actual difference in views about an academic or scholarly question, but presumably it does include misuse of power to suppress results (one's own or others') that do not fit one's own published results.

There are three committees in the Danish system for dealing with fiddling in the research community, one for each of the broad areas of "health and medical science research", "natural, engineering and production science research" and "cultural and social science research". The three committees, called The Danish Committees on Scientific Dishonesty (DCSD), have a joint secretariat at the Danish Agency for Science, Technology and Innovation and have a high court judge as their joint Chairman.

The definition of scientific dishonesty currently in use in Denmark is a tad broader than the FFP definition. The Danish definition [7] is representative of many European countries.

"Scientific dishonesty shall mean wilful or grossly negligent conduct in the form of falsification, plagiarization, suppression, non-disclosure or similar practices resulting in improper misrepresentation of one's own scientific efforts and/or scientific results. Accordingly, it includes:

### **3.1. The definition approved by the US National Academies of Sciences**

### **3.2. The definition used by the Danish Committees on Scientific Dishonesty**

- Undeclared construction of data or substitution with fictitious data.
- Undeclared selective or surreptitious discarding of undesirable results of one's own.
- Undeclared unusual and misleading use of statistical methods.
- Undeclared one-sided or distorted interpretation of one's own results and conclusions.
- Plagiarization of others' results or publications.
- Inappropriate credit for the author's role, title or place of work.
- Submission of incorrect information about scientific qualifications."

#### **4. PROBLEMATIC SCIENCE IN RECENT TIMES**

Scientists have always been dependent on finding sponsors for their research. Since the competition for research grants has become cut-throat nowadays, by the same token there is also a growing temptation to adopt shady methods for conducting that research.

##### **4.1. The Baltimore Case**

In 1991 the prominent researcher in biomedicine David Baltimore, 1975 Nobel Prize winner, was forced to retire from his position as president of Rockefeller University, a position he had held since 1989. The background was an event back in 1986, when he was head of a famous biomedical research centre at the Massachusetts Institute of Technology. In April 1986 David Baltimore, together with five co-authors, published a scientific article on certain reactions induced by the transmission of genetic material from one strain of mice to another. In May 1986 one of the co-authors, Theresa Imanishi-Kari, was accused of fraud by a researcher who had accidentally gained access to her logbook, which provided strong indications that the article had dishonestly reported data about the genetic material. During subsequent hearings in Congress about the case, Theresa Imanishi-Kari was tenaciously defended by David Baltimore, who insisted on the researchers' sole right to be judges of their work. Congress took a different view, however, and during the hearing took steps to set up the above-mentioned federal agency, the Office of Research Integrity. The Baltimore case was closed in 1996, clearing Theresa Imanishi-Kari in full, whereas Baltimore, who had received very sharp criticism during the hearing, had to resign as president of Rockefeller University in 1991. He received rehabilitation in 1997 when he was nominated president of the California Institute of Technology.

The Baltimore case has been instrumental in raising awareness of dishonesty in the sciences, particularly the health sciences, and the case

fully demonstrated to the public how complicated exposing and elucidating fraud in the sciences can be without suitable courts with scientific expertise. A detailed and comprehensive description of the Baltimore case has been given by the historian of science Daniel J. Kevles in the book [8].

The verdict was: "Not guilty, but..." The case involves a charge of scientific dishonesty raised against the Danish political scientist Bjørn Lomborg in his English book "The Skeptical Environmentalist" [9]. The accusation was brought before the Danish Committees on Scientific Dishonesty (DCSD) early in 2002, when DCSD received two Danish and one foreign complaint about the book. Since the complaints referred to the same book and generally dealt with areas of the natural, social and health sciences, DCSD decided to treat all the complaints as one at joint meetings of the three committees. In its ruling of January 2003 DCSD found that, based on customary scientific standards, the defendant had acted at variance with good scientific practice in his systematically unilateral choice of data and in his argumentation. In addition DCSD found that if the book was to be judged as science, and not as a debate outline, the scientific message had been distorted to such an extent that the objective criteria for establishing scientific dishonesty had been met. DCSD did not find, however, that it had sufficient basis for establishing that the defendant had misled his readers wilfully or with gross negligence.

Lomborg appealed the decision to the Ministry of Science, Technology and Innovation. The Ministry made its ruling in December 2003, remitting the case to DCSD. The Ministry's ruling, which reflected an overruling of DCSD's decision, was critical of DCSD in several respects, particularly in the rationale behind DCSD considering the book to be a scientific work (research), just as the committees' use of the concept 'good scientific practice' was severely censured. For legal reasons it was not possible for DCSD to make a fresh evaluation of the book, as the committees found that re-examination could not be expected to lead to any substantive change in relation to the ruling from January 2003, which acquitted Lomborg de facto of scientific dishonesty. In a number of ways, therefore, the Lomborg case ended 'dangling in mid-air'.

The Lomborg case exposes the great problems involved in reaching balanced decisions on the assessment of scientific conduct in interdisciplinary research, all the more so when social-scientific issues are involved and the dividing line between research and debate is not a sharp one—the problem of facts and their interpretation.

#### **4.2. Guilty or not guilty? – that is the question**

**4.3.**  
**The downfall of a national hero**

Hwang Woo-Suk was a prominent professor of biotechnology at Seoul National University in South Korea, right until he was suspended in February 2006. He became famous and rose to the status of national hero in South Korea—even being illustrated on postage stamps—after having laid claim to a number of remarkable breakthroughs in stem cell research. Until November 2005 he was regarded as one of the world’s leading experts in stem cell research, best known for research in which he maintained that he had succeeded in cloning stem cells from fetuses. Hwang has now confessed a multiplicity of lies and deceptions in his work, but he maintains that some stem cells were swapped over without his knowledge. Investigations are currently underway in South Korea to see if Hwang has committed criminal acts.

**5.**  
**ETHICAL ASPECTS IN RELATION TO PUBLISHING**

Throughout the world researchers feel they are subject to ever increasing pressure from governments and universities to publish in highly prestigious scientific journals. The scientific journals covered by the ISI Web of Science are the most attractive, because these are the journals from which a researcher’s citation impact is calculated. For many researchers, having a high number of citations has become a goal in its own right rather than thinking about contributing to producing knowledge. Endeavours to present new research in a sound scholarly fashion in well-documented and exhaustive works, like monographs and lengthy dissertations, are not appreciated by those administrators who are perfectly capable of counting the number of your publications but do not have the time to assess their quality. Working out the ‘smallest unit of publication’ and then dissecting a coherent work in relation to that unit is therefore becoming a goal for many researchers. This may lead to a long list of publications for the individual, of course, and maybe even to a high number of citations if the researcher belongs to a ‘mutual citation club’, working within the same—sometimes narrow—topic. But does it advance science?

The objectionable habit of cutting up coherent works into small units is viewed with grave concern by some scientific associations, e.g. mathematical societies, who are attempting to fight the problem but in reality can only prevent it in the associations’ own journals. ‘Salami publication’ is not scientific dishonesty as such, but it does pose a threat to academic work and the acquisition of knowledge by making it difficult to trace the origin of ideas and obtain a connected picture of new theorizations.

Duplicate or even multiple publication of virtually the same article in different scientific journals, or censored conference proceedings, is another bad habit, which also stems from the pressure to accumulate

long publication lists. Duplicate publication could, and in reality perhaps should, be regarded as scientific dishonesty, since it is instrumental in blurring researchers' actual scientific qualifications in connection with applications for grants and in the context of promotion.

A particularly serious as well as a growing problem within the sciences is multi-author publications, where some of the publication's authors have not made any essential contribution to the production of the work, sometimes none at all. In cases where a project team is involved in conducting experiments on a large scale, hundreds of people will often be found listed as authors of a publication, including technicians who have only carried out standard measurements. There may be many reasons. It seems to be widely accepted, for instance, that the head of a research centre can be added to the list of authors of all scientific articles emanating from that centre without any contribution whatsoever to the production of the articles other than having helped to finance the underlying research. In other instances an authorship is 'traded' as payment for services irrelevant to the publication, e.g. access to a workplace for a guest researcher at an institution. Such findings are distressing to witness, particularly when researchers entrusted with leadership grow to unmerited heights of recognition and thus enjoy the ease of access to research funding that ensues. Authorship must be taken seriously.

In this context it is instructive to look at the basic rules of authorship formulated by the International Committee of Medical Journal Editors, known as the Vancouver Rules [10].

In 1978 a group of editors of general medical journals met informally in Vancouver, British Columbia, Canada, to set up common guidelines for the format of manuscripts for their journals. The group was later enlarged and developed into the International Committee of Medical Journal Editors, which meets annually. The committee has gradually extended its sphere of interest to cover ethical principles in relation to publications in biomedical journals. Formal requirements of manuscripts, including rules for authorship, were first published in 1979. For the sake of precision, the English wording has also been retained verbatim here.

"The International Committee of Medical Journal Editors recommends the following criteria for authorship.

### **5.1. The Vancouver Rules for Authorship**

- Authorship credit should be based on 1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content; and 3) final approval of the version to be published. Authors should meet conditions 1, 2, and 3.
- All persons designated as authors should qualify for authorship, and all those who qualify should be listed.
- Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content.
- An author shall have contributed substantially to the creative process usually within more than one of the following elements: idea, planning, experimental work, collection of clinical or clinical-epidemiological data, analysis of data and interpretation of these.
- An author shall have contributed substantially to the preparation of the resulting article through participation in the preparation of manuscript drafts or through a critical revision of importance for the appearance of the article.”

The above rules may appear fairly restrictive, but they are not followed to the letter, not even in the health sciences. Nonetheless, many an unpleasant episode in the research community, some of which lead to allegations of scientific dishonesty, might well be averted if journal editors in the various fields of science were to agree to make explicit requirements of publications in their field, including authorship requirements.

It may be educational to see how ethical rules relating to publishing can be formulated within the mathematical sciences, as has been done by the American Mathematical Society (AMS), for example. For the sake of accuracy, the verbatim English wording will again be retained in several places.

**5.2.  
Ethical guidelines  
formulated by the  
American Mathematical  
Society**

The American Mathematical Society (AMS) has formulated a substantial set of ethical guidelines governing good conduct in the mathematical sciences [11], which was first published in 1995. With these guidelines the society wishes to remind its members that “The public reputation for honesty and integrity of the mathematical community and of the [American Mathematical] Society is its collective treasure and its publication record is its legacy”.

As regards the communication of mathematical discoveries and results, the ethical guidelines open with the following declarations:

- a) The knowing presentation of another person's mathematical discovery as one's own constitutes plagiarism and is a serious violation of professional ethics. Plagiarism may occur for any type of work, whether written or oral and whether published or not.
- b) The correct attribution of mathematical results is essential, both because it encourages creativity, by benefiting the creator whose career may depend on the recognition of the work, and because it informs the community of when, where, and sometimes how original ideas entered into the chain of mathematical thought."

"To that end, mathematicians have certain responsibilities, which include the following:

- To endeavour to be knowledgeable in their field, especially about work related to their research;
- To give appropriate credit, even to unpublished materials and announced results (because the knowledge that something is true or false is valuable, however it is obtained);
- To publish full details of results that are announced without unreasonable delay, because claiming a result in advance of its having been achieved with reasonable certainty injures the community by restraining those working toward the same goal;
- To use no language that suppresses or improperly detracts from the work of others;
- To correct in a timely way or to withdraw work that is erroneous."

The ethical guidelines go on to say: "A claim of independence may not be based on ignorance of widely disseminated results. On appropriate occasions, it may be desirable to offer or accept joint authorship when independent researchers find that they have produced identical results. All the authors listed for a paper, however, must have made a significant contribution to its content, and all who have made such a contribution must be offered the opportunity to be listed as an author."

AMS, of course, has only limited scope for managing unethical conduct, though it nevertheless advances the following declaration: "Because the free exchange of ideas necessary to promote research is possible only when every individual's contribution is properly recognized, the [American Mathematical] Society will not knowingly publish

anything that violates this principle, and it will seek to expose egregious violations anywhere in the mathematical community.”

The requirements set out in the Ethical Guidelines of the American Mathematical Society for the academic schooling and knowledge expected of a researcher in mathematics are high. On the other hand, without lofty requirements in terms of academic schooling and knowledge, the world would soon be inundated with ‘reinventions of the wheel’, over and over again.

## **6. AGREEMENTS REQUIRED ON INTEGRITY IN SCIENCE**

Serious instances of scientific dishonesty, as discussed above, include fraud and deceit, fabrication of data or extensive plagiarization, i.e. the FFP definition. Any allegation of scientific dishonesty is unpleasant for all parties involved. It is acutely embarrassing for the person who has had the whistle blown on him or her, of course, but it can also turn into a nightmare for a whistleblower, who will have vicious aspersions cast on his or her motives by vindictive individuals. Spectacular cases of scientific dishonesty capture the interest of the media and have serious consequences for the careers of those involved.

It ought to be relatively easy for any nation to endorse the FFP definition of scientific dishonesty as a minimum set of rules for regulating good conduct in scientific environments. Such internationally accepted, fundamental rules would diminish the risk of misunderstandings when researchers from different nations and cultures cooperate in international research consortia.

In some of the above examples of alleged scientific dishonesty, powerful political interests seem to have been at work. In such cases it might be desirable to have international authorities to which cases with a strongly international profile could be referred, or to which national rulings could be appealed in difficult cases. Even within an individual nation it might be convenient to have authorities that cannot be subjected to political pressure (if that is possible), nor peer pressure, of course, to handle the most difficult cases involving scientific dishonesty—like the supreme court in the civil justice system.

The role of the whistleblower in science should also be consolidated. In a time of increased pressure to achieve high productivity in the sciences it is important to support colleagues who insist on honesty, both in publications and in experimental work.

In spring 2006 a panel of experts was set up on a Japanese initiative, with the participation of the Danes, within the Global Science Forum under OECD auspices, initially to clarify how individual nations define scientific dishonesty, how they handle problems concerning poor conduct in the sciences, and what are considered to be the main causes

thereof, and then on this basis to draw up a proposal for continued work. If the proposal is admitted, the intention is to draft a document able to assist in providing a more in-depth appreciation of the problems and issues surrounding scientific dishonesty and identifying possible solution models, on a practical level as well. However, there are no illusions about devising a set of rules covering all forms of scientific conduct common to all nations.

The great majority of scientists endeavour to uphold good conduct in the sciences and rally to arms over serious instances of scientific dishonesty. It is important for honest scientists to see that inappropriate behaviour is being taken in hand, not just glossed over, as is often the case. As the competition for research funding grows, the number of serious cases of poor conduct in the sciences is also likely to increase unless more importance is ascribed to training future generations of scientists in ethical standards. It is a positive development, therefore, that courses on ethical matters in the sciences are now regularly on offer in many research and graduate schools all over the world.

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## **APPENDICES**

*Excerpts from the Danish Act on the Research Advisory System etc.  
(Act No. 405 of 28 May 2003)*

*Executive Order on the Danish Committees on Scientific Dishonesty  
(No. 933 of 15 December 1998)*

*Executive Order on the Danish Committees on Scientific Dishonesty  
(No. 668 of 28 June 2005)*

*Members and alternates of the Danish Committees on  
Scientific Dishonesty*

## **EXCERPT OF DANISH ART NO. 405 OF MAY 2003 ON THE RESEARCH ADVISORY SYSTEM ETC.**

We, Margrethe II, by the grace of God Queen of Denmark hereby make known that the Danish

Parliament has passed and we have given our Royal Assent to the following Act:

### **Part 1**

#### *Scope of the Act*

**Section 1.** To strengthen the quality, coordination and internationalisation of Danish research and the dissemination and application of research results, the Minister for Science, Technology and Innovation establishes the Danish Council for Research Policy, the Danish Councils for Independent Research, the Danish Council for Strategic Research and the Danish Research Coordination Committee.

Subs. 2. To ensure the scientific integrity of Danish research, the Minister for Science, Technology and Innovation establishes the Danish Committees on Scientific Dishonesty, cf. section 31.

Subs. 3. The main purpose of the Danish Council for Research Policy shall be to provide independent, expert research policy advice to the Minister for Science, Technology and Innovation, the Danish Parliament and the Government. The Council shall have a purely advisory function, cf. section 3.

Subs. 4. The Danish Councils for Independent Research shall have both a funding function and an advisory function. The main purpose of the Councils shall be to support specific research activities based on the initiatives of the researchers themselves, and to provide scientific research advice in this regard, cf. sections 7 and 8.

Subs. 5. The Danish Council for Strategic Research shall have both a funding function and an advisory function. The main purpose of the Council shall be to support research within politically prioritised and thematically demarcated areas of research, and to provide scientific research advice in this regard, cf. sections 17 and 18.

Subs. 6. The Danish Research Coordination Committee shall be responsible for coordinating the public funding function for research, and shall have an advisory function in relation to research training, cf. sections 25 and 26.

Subs. 7. The Councils and the Committee mentioned in subsections 4-6 in combination shall ensure that all state research grants, with the exception of basic grants associated with particular institutions, are allocated in open competition following scientific assessment of their quality.

**Section 2.** For the purposes of this Act:

- 1) Recognised researchers: persons who have engaged in active scientific research for a number of years, and who possess academic and research qualifications at a level corresponding to those of at least an associate professor or a senior researcher.
- 2) Research experts: persons at the PhD level, who possess either knowledge of or experience with the performance of research tasks for a number of years at a national or international level, or who have undertaken in-depth research administration, research management, research dissemination or research policy work for an institution, organisation or company.

...

**Section 31.** The purpose of the Danish Committees on Scientific Dishonesty is to examine cases involving complaints of scientific dishonesty.

Subsection 2. In the event that scientific dishonesty is ascertained by the Committees, the Committees may:

- 1) Inform the accused person's employer, if the party in question is employed as a researcher.
- 2) Recommend withdrawal of the scientific project concerned.
- 3) Inform the relevant authority responsible for the area.
- 4) Make out a police report when a punishable offence is involved.
- 5) At the special request of an appointing authority, state its views on the degree of scientific dishonesty.

Subsection 3. The chairperson shall resolve all legal questions, cf. section 32, subsection 2.

Subsection 4. The Committees shall publish annual reports on their activities.

**Section 32.** The Danish Committees on Scientific Dishonesty shall consist of one or more committees covering all areas of scientific research.

Subsection 2. The chairperson must be a high court judge.

Subsection 3. The Minister for Science, Technology and Innovation shall stipulate the number of members. Each member must have a corresponding deputy. The members and deputies must all be recognised researchers, who in combination cover all areas of scientific research, cf. section 36, subsection 2.

## **Part 2**

### *Definitions*

## **Part 7**

### *The Danish Committees on Scientific Dishonesty*

Subsection 4. The chairperson shall be appointed by the Minister for Science, Technology and Innovation. The members and the deputies shall be appointed by the Minister in their personal capacities following a hearing conducted by the Danish Councils for Independent Research. The chairperson, the other members and the deputies shall be appointed for a period of four years.

Reappointment may occur for a period of no more than two years. If a member or deputy resigns in an untimely manner, a new member or a new deputy may be appointed for a period of less than four years.

Subsection 5. The Committees shall draw up rules of procedure, which shall be subject to the approval of the Minister for Science, Technology and Innovation.

**Section 33.** The Minister for Science, Technology and Innovation may lay down detailed rules governing the activities of the Danish Committees on Scientific Dishonesty.

**Section 34.** The decisions of the Danish Committees on Scientific Dishonesty may not be brought before any other administrative authority.

## **Part 8**

### *Miscellaneous provisions*

**Section 35.** Secretariat services for the Danish Council for Research Policy shall be provided by the Ministry of Science, Technology and Innovation.

Subsection 2. Secretariat services for the Danish Councils for Independent Research, the Danish Council for Strategic Research, the Danish Research Coordination Committee and the Danish Committees on Scientific Dishonesty shall be provided by an independent secretariat.

Subsection 3. The Minister for Science, Technology and Innovation, or a person empowered by the Minister for this purpose, shall supervise the allocation of grants and legal questions in connection with the work of the Danish Councils for Independent Research, the Danish Council for Strategic Research and the Danish Research Coordination Committees.

• • •

**Section 40.** This Act shall be reviewed in the 2007-08 session of the Danish Parliament on the basis of an evaluation of the advice provided by the research advisory system concerning support for research training.

**Section 41.** This Act shall come into force on 1 January 2004. At the same time, the Act on Research Policy Advice, etc., cf. Consolidated Act no. 676 of 19 August 1997, shall be repealed.

Subsection 2. Rules determined in pursuance of the Act on Research Policy Advice, etc., cf. Consolidated Act no. 676 of 19 August 1997, shall remain in force until repealed or replaced by rules issued in pursuance of this Act.

**Part 9**

*Coming into force, etc.*

Translation: Only the Danish version of the text has legal validity.

## **DANISH EXECUTIVE ORDER NO. 933 OF 15 DECEMBER 1998**

*Order on the Danish committees on scientific dishonesty Pursuant to Section 4e, subs. 4 of the Danish Act on Research Advice etc., cf. Consolidation Act No. 676 of 19 August 1997, the following provisions apply:*

**Section 1.** The Board of the Danish Research Councils shall create three committees on scientific dishonesty within Danish research: a committee for research in natural science, agricultural & veterinary science and technical science, a committee for research in health and medical science, and a committee for research in social science and the humanities. The Committees shall have a joint chairperson, one of whose tasks is to ensure uniformity in the statements made across the fields of research.

Subs. 2. The Committees' name is the Danish Committees on Scientific Dishonesty.

**Section 2.** The Danish Committees on Scientific Dishonesty are mandated to consider cases of scientific dishonesty lodged with the Committees in the form of a complaint.

A person can make a request to have a case considered with a view to being cleared of rumours in circulation.

Subs. 2. The case must be of significance to Danish research. Where the Committees are considered unlikely beforehand to find for the complainant, the case will be dismissed.

**Section 3.** Scientific dishonesty includes actions or omissions in research which give rise to falsification or distortion of the scientific message or gross misrepresentation of a person's involvement in the research, and includes:

1. Fabrication and construction of data.
2. Selective and surreptitious discarding of undesirable results.
3. Substitution with fictitious data.
4. Consciously misleading use of statistical methods.
5. Consciously distorted interpretation of results and distortion of conclusions.
6. Plagiarization of others' results or publications.
7. Consciously distorted reproduction of others' results.
8. Inappropriate credit as the author or authors.
9. Applications containing incorrect information.

Subs. 2. In order to label a conduct as scientific dishonesty, it must be possible to document that the person in question has acted deliberately or exercised gross negligence in connection with the activities under consideration.

**Section 4.** The chairperson shall distribute complaints to the Committees for consideration.

Subs. 2. The individual committee shall decide whether a case is to be considered or dismissed. The committee shall notify the defendant of the complaint and of whether it intends to consider the complaint.

Subs. 3. The parties in a case of scientific dishonesty are entitled to draw on the assistance of assessors. The complainant may be assisted by observers providing that he/she is a party to the case.

Subs. 4. The committee itself shall investigate the complaint, including providing all relevant information in the case.

Subs. 5. When a case of scientific dishonesty has been completed, the committee shall draft a statement with a reasoned position on the complaint lodged. Parties to the case shall be advised of the statement.

**Section 5.** A complaint about scientific dishonesty must be submitted within a reasonable time of the complainant having been given the necessary wherewithal for submitting the complaint. Only in special cases can the committee consider matters dating back more than five years.

Subs. 2. A committee can decide that a case previously completed by the committee is to be reopened, where prompted by special grounds, particularly the emergence of new information which - had it been available during consideration by the committee - can only be assumed to have resulted in a different outcome to the case.

**Section 6.** Where a committee ascertains that there is scientific dishonesty in a specific case, the committee can:

1. Inform the defendant's employer.
2. Recommend that the scientific project concerned be withdrawn.
3. Make a report to the relevant public authority supervising the area.
4. Make out a police report where a punishable offence is involved.
5. At the special request of an appointing authority, state its views on the choice of sanctions to be imposed, if any.

**Section 7.** The Committees shall publish an annual report detailing their activities. The report shall describe all cases of scientific dishonesty considered in non-personalized form.

**Section 8.** The Committees shall each be made up of a chairperson and two, four or six members, as determined by the Board of the Danish Research Councils. In addition, alternates shall be appointed for the members.

Subs. 2. The chairperson shall be a high court judge. The appointed members and their alternates shall be accredited researchers jointly and as best possible covering the specialist fields of the government research councils. The chairperson and members shall be appointed in their personal capacity.

Subs. 3. The chairperson shall be appointed by the Danish Minister of Science, Technology and Innovation. The members and their alternates shall be appointed by the Board of the Danish Research Councils following consultation with the government research councils.

Subs. 4. Members and their alternates shall be appointed for a period of four years and can be re-appointed for two years. If a member resigns during a term of appointment, the member appointed in his or her stead can be appointed for less than four years.

**Section 9.** The individual committee can decide that it is to be assisted in its investigation of a case by one or more external experts.

Subs. 2. In the event of a member's absence, the alternate shall deputize.

Subs. 3. The Committees have a quorum when the chairperson and members or their alternates are present.

Subs. 4. The Committees' decisions shall be made unanimously, wherever possible. Where a consensus cannot be reached, the decisions shall be made by an ordinary majority decision.

A dissenting member can demand that his/her dissent be noted in the decision.

Subs. 5. In matters of law, a ruling shall be made by the chairman.

**Section 10.** Members of the Committees are subject to the same duty of confidentiality as for public functions in respect of any information gleaned in their capacity as members of the Committees.

**Section 11.** The Danish Research Agency shall provide secretariat services for the Committees.

**Section 12.** The rules of the Danish Public Administration Act shall apply to the treatment of cases by the Committees.

Subs. 2. The Board of the Danish Research Councils shall lay down rules of procedure for the Committees.

**Section 13.** The Order shall not apply to the Faeroe Islands and Greenland.

**Section 14.** The Order shall enter into force on 1 January 1999.

Danish Ministry of Science, Technology and Innovation  
15 December 1998.

Jan Trøjborg / Dan Jensen

## **EXECUTIVE ORDER NO. 668 OF 28 JUNE 2005**

*Executive Order on the Danish Committees on Scientific Dishonesty The following provisions are laid down pursuant to section 32(3) and section 33 of the Danish Act No. 405 of 28 May 2003 on Research Advice etc.:*

### **Part 1**

*Purpose, scope etc.*

**1.-(1)** To strengthen the integrity of Danish research the Minister for Science, Technology and Innovation establishes the Committees on Scientific Dishonesty. The Committees may only consider cases of scientific dishonesty important to Danish research.

(2) The Committees shall consist of three committees, which combined cover all areas of scientific research:

- i) the Committee on Scientific Dishonesty for Research in Health and Medical Science;
- ii) the Committee on Scientific Dishonesty for Research in Natural, Technological and Production Science;
- iii) the Committee on Scientific Dishonesty for Research in Cultural and Social Science.

(3) The Committees shall jointly determine the remit of each of the three committees set out in subsection (2) hereof. The demarcation lines shall be specified in the rules of procedure, cf. section 16(1).

(4) The Committees may consider cases where the defendant has received scientific training within the area of research that the scientific product complained about concerns and who

- i) has had the scientific product complained about published in Denmark;
- ii) has prepared the scientific product complained about during his or her employment or commercial activity in Denmark;
- iii) has obtained or applied for a grant from Danish public authorities for the preparation of the scientific product complained about; or
- iv) otherwise has his or her closest connection to Denmark.

(5) As regards scientific products prepared under private auspices, any consideration of the case will require that the private business or the like wants to be covered by the Committees' remit or wants to assist in elucidating the case.

**2.-(1)** Scientific dishonesty shall mean intentional or grossly negligent conduct in the form of falsification, plagiarism, non-disclosure or any similar conduct involving undue misrepresentation of a person's own scientific work and/or scientific results.

Included hereunder are:

- i) undisclosed fabrication and construction of data or substitution with fictitious data;
- ii) undisclosed selective or surreptitious discarding of a person's own undesired results;
- iii) undisclosed unusual and misleading use of statistical methods;
- iv) undisclosed biased or distorted interpretation of a person's own results and conclusions;
- v) plagiarisation of other persons' results or publications;
- vi) a false credit given to the author or authors, misrepresentation of title or workplace;
- vii) submission of incorrect information about scientific qualifications.

**3.** The Committees shall not be entitled to consider cases involving the validity or truth of scientific theories or cases involving the research quality of a scientific product.

**4.-(1)** The Committees on Scientific Dishonesty shall consider cases brought by a party alleging scientific dishonesty under the Danish Public Administration Act, cf., however, subsection (3). The Committees may also consider cases brought by a party wanting to be cleared of named, anonymous or source-protected allegations of scientific dishonesty provided that the party provides all the necessary information for use in the Committees' consideration of the case, cf. section 12(3).

(2) The Committees may, to a limited extent, consider cases not brought by a party if the cases are of interest to society or of importance to human or animal health and where there is a reasoned assumption of scientific dishonesty.

(3) The Committees may refuse to consider cases where it is found beforehand that:

- i) the case is outside the scope of the remit of the Committees;
- ii) the case must be considered manifestly unfounded;
- iii) the costs of considering the case are out of proportion to its importance.

## **Part 2**

### *Remit*

## **Part 3**

### *Acceptance of cases for consideration*

(4) Cases which are not accepted for consideration by the Committees shall be dismissed not later than three months after the Committees' receipt of the case. In cases accepted for consideration, the Committees shall not later than three months after receipt of the case notify the parties to the case of the expected phases of the case and when a statement is expected to be made, cf. section 13(1).

**5.-(1)** The Committees on Scientific Dishonesty may consider cases involving complaints about individuals or groups of individuals.

(2) In cases involving complaints about groups of individuals, however, the Committees may only use their authority to employ sanctions, cf. section 15(1), if the clarification of the case leads to clarification of who is responsible for the conduct under section 2.

**6.-(1)** The Committees on Scientific Dishonesty may consider cases involving complaints about a written scientific product after the defendant's voluntary handing over thereof, cf. section 1(4).

(2) The Committees may also consider cases involving complaints about an application filed with a view to applying for a grant from public research funds.

#### **Part 4** *Structure*

**7.-(1)** The Committees on Scientific Dishonesty shall have a common chairperson, who shall be a high court judge.

(2) In addition to the chairperson, each Committee shall, in accordance with subsection

(1) hereof, consist of six members and the same number of alternates who may only deputise on any member's absence and only for the full consideration of a case. The members shall all be recognised researchers, who between them cover all areas of scientific research. The same shall apply to the alternates.

(3) The chairperson shall be appointed by the Minister for Science, Technology and Innovation. The members and the alternates shall be appointed by the Minister in their personal capacities following a hearing conducted by the Danish Councils for Independent Research. The chairperson, the members and the alternates shall be appointed for a period of four years and shall be eligible for reappointment for a period of no more than two years. If a member or an alternate resigns in an untimely manner, a new member or a new alternate may be appointed for a period of less than four years.

**8.-(1)** The chairperson shall distribute cases for consideration by the three committees, cf. section 1(2).

(2) The individual committees shall decide whether a case is to be accepted for consideration or be dismissed beforehand, cf. section 4(3) and (4).

(3) Where a case is found to concern the remit of more than one committee, the committee to which the scientific product complained about primarily relates may decide that the Committees shall make a joint decision on the case, including making a statement, cf. section 6.

(4) Where the defendant is a group of individuals, cf. section 5(1), the decision under subsection (2) may be made by the committee, to which the scientific product complained about primarily relates. Where such committee cannot be determined, the decision shall be taken by the chairperson.

**9.-(1)** A committee shall form a quorum when the chairperson and four members or an equivalent number of alternates are present, cf. section 7(2).

(2) In cases where several committees make a joint decision, cf. section 8(2), such committees shall only form a quorum if each committee independently meets the requirement set out in subsection (1) hereof.

(3) The Committees shall, to the greatest possible extent, make a unanimous decision. If agreement cannot be reached, any decision shall be passed by an ordinary majority of votes.

(4) The chairperson shall resolve all legal questions and the formulation of a conclusion.

**10.** The parties to a case being considered by the Danish Committees on Scientific Dishonesty shall be entitled to be assisted by assessors.

**11.-(1)** The Committees on Scientific Dishonesty may establish ad hoc committees without any decision-making authority to assist with the preparation of a case. An ad hoc committee may be composed of some of the Committees' members, their alternates and/or external experts appointed by the Committees after an independent hearing of the parties on the contemplated composition has taken place.

(2) In connection with the preparation of the case, cf. subsection (1) hereof, the ad hoc committees shall prepare a report on the facts of the case. Where external experts have been appointed to the ad hoc committees, an independent hearing of the parties to the case shall be undertaken with respect to the report.

## **Part 5**

*Distribution of cases,  
presence of a quorum and  
voting*

## **Part 6**

*Consideration of cases*

(3) Secretariat services for ad hoc committees shall be provided by the Committees' secretariat in accordance with section 35(2) of the Act.

**12.-(1)** In connection with the consideration of the case, the Committees on Scientific Dishonesty shall obtain all necessary information in order to be able to make a sufficiently well-informed decision.

(2) For the purpose of elucidating the case, the Committees may obtain information from the defendant on the scientific method used in preparing the scientific product complained about, cf. section 6(1), if such information is not already available to the Committees.

(3) In cases brought by a party with a view to clearing such party, cf. section 4(1), the Committees shall obtain a report in writing from the party unless the Committees find the allegation of the party's scientific dishonesty to be manifestly unfounded.

(4) In cases in which complaints are made about groups of individuals, cf. section 5(2), the Committees may, for the purpose of clarifying the case, obtain information from the defendant about the individual members' contributions to the total scientific product, if such information is not already available to the Committees.

## **Part 7**

### *Conclusion and possible resumption of cases*

**13.-(1)** The Committees on Scientific Dishonesty shall conclude the consideration of a case by making a statement. The statement shall include:

- i) a statement of facts;
- ii) statements from the other parties to the case;
- iii) the Committees' deliberations;
- iv) the Committees' conclusion and, in the event of a dissent, cf. subsection (2), the number of members or their alternates who can accept the conclusion.

(2) In cases where the Committees make their decision by an ordinary majority of votes, cf. section 9(3), each dissenting member or his or her alternate may demand that his or her dissent be mentioned in the statement.

(3) In cases where the Committees expect to criticise the defendant's conduct, cf. section 15, the Committees shall submit a draft statement to such person for hearing.

**14.** The Committees on Scientific Dishonesty may, at the request of a party, resume a case that has been closed if new information is received which, if it had been available during the consideration of the case, might probably have led to a different outcome.

**15.-(1)** In cases where scientific dishonesty is ascertained by the Committees on Scientific Dishonesty, the Committees shall make a statement expressing criticism. At the same time, the Committees may:

- i) inform the defendant's employer if the party in question is employed as a researcher.
- ii) recommend that the scientific project concerned be withdrawn;
- iii) inform the relevant public authority supervising the area;
- iv) make out a police report where a punishable offence is involved;
- v) at the special request of an employing authority, state their views on the degree of scientific dishonesty.

(2) In cases under subsection (1) hereof, the Committees shall state their views on the degree of scientific dishonesty ascertained and on its importance to the scientific message in the scientific product concerned.

(3) The Committees may shelve cases under subsection (1) hereof if the Committees find the scientific dishonesty ascertained only to be of little importance to the scientific message in the product.

**16.-(1)** The Committees on Scientific Dishonesty shall draw up rules of procedure to be approved by the Minister for Science, Technology and Innovation.

(2) The Committees shall publish an annual report on their activities. The report shall describe all considered cases of scientific dishonesty in non-personalised form.

**17.** This Executive Order shall come into force on 1 August 2005. At the same time, Executive Order No. 933 of 15 December 1998 on the Committees on Scientific Dishonesty shall be repealed.

Danish Ministry of Science, Technology and Innovation  
28 June 2005

Helge Sander / Thorkild Meedom

**Part 8**  
*Sanctions*

**Part 9**  
*Various provisions*

**Part 10**  
*Coming into force etc.*

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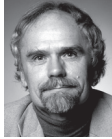
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