

The Measures for German Universities and Scientific Research Institution Deal with Scientific Misconduct

With the scientific misconduct into public view and becoming a general discussed and reported topic, all academic institutions have been an increasing awareness that it is necessary to establish essential standard to standardize research behavior of the researchers. Otherwise not only the individual scientist involved will be hurt but also will shake the trustful foundation of scientists group by society, even trigger crisis of the society's trust in science itself. In order to prevent and control scientific misconduct, maintain scientific integrity, many governments and academia successively set up administrative organization, establish policies and regulations according to native national condition, increase the ethical education of scientific and precautionary and punitive measures, strive to reduce the occurrence of scientific misconduct. The United States is one of the earliest countries that study about the integrity of scientific research in the world. American government founded the specialized officials to deal with the scientific misconduct. It's work group of scientific misconduct was set up under the "Presidential Commission of Integrity and Efficiency". The coordination panel among the departments was founded in the White House Office of Science and Technology Policy. Among other specialized management institutions

were set up by the federal agency, like the "Office of Research Integrity" founded by the United States Department of Health and Human Services and other departments. As well, some nongovernmental organizations, universities and national lab also set up related Full Time office to investigate and handle scientific misconduct, but most universities don't have standing body, they organize special agencies to investigate and collect evidence when complaints happened. In addition to the United States, and Denmark, Finland, Norway and Poland, etc, the government directly involved in, and set up the specialized officials.

Different from America and several countries above mentioned, German universities think maintain research integrity is the responsibility of university and scientific institutions themselves, the government's management is not only unnecessary but also inefficient^[1]. In order to positively prevent and deal with the scientific misconduct, it's need for university to join scientific institutions to do the science self-management. DFG set up international commission including 12 foreign scientists, authorized the commission to study the reason of scientific misconduct from the scientific research system and enact precautionary measures. In addition, DFG set the commissioner positions to specifically deal with scientific misconduct complaints.

Moreover, in Germany three important rules were announced to deal with scientific misconduct:

First, the verdict of Federal Administrative Court of Germany enacted the legal norm for dealing with scientific misconduct in 1996.12.11, read as follows:

If a university teacher abuse research freedom protected by Art. 5. 3 paragraph 1 Constitution, damage or harm others' Legitimate products which was protected by the constitutions, if there is specific clues, universities can survey the clues, if possible, school teachers launch the defining committee to review the facts and surprising result.

- If so and only if so, such a committee can take action independently, make an important punishment for a scientist, if he irresponsibly violates the basic principle of science, abuses research freedom, the scientific individual characteristics or the system characteristics according to subject definition, his work may be denied

- If scientists will undoubtedly across the boundaries of science , the committee has a right to make a corresponding evaluation and gives the researchers corresponding criticism; but if scientists get the knowledge through earnestly study in the work, and pay attention to the basic principles of scientific labor, don't give harm to others' rights, it has no right to evaluate the corresponding work.

- If responsible superior neglects his duty, could not know the progress of incident; it is necessary for Committee to protect the people involved in the case.

Keeping secret, and request it should be follow the formal disciplinary procedures. **Science Self-management and the scientific misconduct**

Second, the council of Max Planck Institute passed "Legal Process of Querying Scientific Misconduct" in 1977.11.14.

Third, "About Advocate Good Scientific Practice and Guidelines for Dealing with the Scientific Misconduct" was approved by the "academic self-regulating" committee of DFG in 1988.1.19.

Those three rules above mentioned are very important for deal with scientific misconduct. The announce of first rule made the scientific misconduct get legal support, legal provision has the strongest universality and legal effect, it's the legal basis and legal safeguard of the occurrence of the second, third rule. And the second and third rule are more concrete and therefore simpler to operate. In the following, this article will analysis about the measures German universities and scientific establishment deal with the scientific misconduct on the basis of the content of the second and third rules.

The basic ideas and main content of *Legal Process of Querying Scientific Misconduct* and *About Advocate Good Scientific Practice and Guidelines for Dealing With The Scientific Misconduct* are the same. Both of them have defined the scientific misconduct, and also illustrated the measures about sanctioning the scientific misconduct, and the rules of investigation procedure of the scientific misconduct are the same in essentials while differing in minor points.

1. The definition of both about the scientific misconduct

“ The basic scientific misconduct:

1) Important science interrelation was deliberately or being careless misdescribed, the intellectual property of others are violated, or the research capability is damaged, the occurrence belong to which kind of misconduct depends on the circumstances.

a) Misrepresentation

Data fabrication; Data falsification; choosing or giving up the unexpected results, or don't open these results; manipulate statement or chart; incorrect statement when write an application or apply for the fund (include making a false statement to the publisher and printer).

b) The infringement of intellectual property

Involving the works created by other people and protected by law, or scientific knowledge, hypothesis, theory or the content of research methods founded by others:

Plagiarism; exploiting part of content or thought of the research, especially the caretaker; unreasonable demand or falsely accept science copyright or cooperation right; falsificate content; disclose or contact the unpublished works, knowledge, hypothesis, theory and research methods to third parties that is not authorized.

c) Use of the (co)authorship without permission.

d) Sabotage the research activity (include destroy, damage or manipulate the research procedures, instruments, documents, hardware, software, chemical or other things which another needed to perform an experiment) .

e) Deletion of primary data, this violates the law or the acknowledged basic principle of subject.

2) Co-responsibility of scientific misconduct as follows:

Actively participate in others' scientific misconduct; know the falsified fact through other people; the collaborator of published forged publications, reckless when supervise. Zum Umgang mit wissenschaftlichem Fehlverhalten in den Hochschulen, Empfehlung des 185. Plenums vom 6. Juli 1998; Verfahrensordnung bei Verdacht auf wissenschaftliches Fehlverhalten- beschlossen vom Senat der Max-Planck-Gesellschaft, am 14. November 1997, geändert am 24. November 2000.

Compared with the definition of scientific misconduct by the American Public Health Research Institute and the National Social Science Foundation, the German definition is more extensive and its content is more concrete. It includes not only the core requirements of scientific misconduct, "Fabrication, Falsification, and Plagiarism" (Scientific Integrity: Text and Cases in Responsible Conduct of Research, Higher Education Press, 2011.11.), also includes "the publication and the

signature", "peer review", "relations between students and teachers", and "collaborative research". Obviously the German definition of scientific misconduct includes the content required by United States scientific integrity (9-10.). Or other, in the United States every act is considered to be against scientific integrity will be regarded as scientific misconduct in Germany; in addition, there is also beyond the content included in the American scientific misconduct and scientific integrity, such as "Sabotage", " Deletion of primary data ".

But it is narrower than the Australian definition of responsible scientific behavior norms, does not include the content of the letter financial responsibility; Australian responsible scientific research behavior standards put "failed to declare, to avoid and handle serious conflict of interest" into the scientific misconduct. Jianlong Dong, Hongbo Ren, Experience and Enlightenment of Construction of Strengthening Scientific Integrity Abroad, 2007(4), 224

The German definition of research misconduct can be seen as a middle definition between the definitions generalized represented by Australia and in a narrow sense represented by American. It's not only conducive to avoid complicating the issues which the generalized definition causes, and the problem which is solved more difficult, but also is beneficial to avoid the operability anti strong because definition does not specifically, and the disadvantage of narrowly defined that include

many misconduct in the scientific practices, it's more suitable for our national conditions. From The China Association for Science and Technology on Science Ethics of Science and Technology Workers (trial), Our definition of scientific misconduct is more closer to the definition of scientific misconduct in Germany.

2. Investigation procedure

Both files are called for the establishment of the special committee on scientific misconduct investigations. The process is divided into two phases of preliminary and the formal investigation.

The two files on the staff of the special committee and the regulation of office term are somewhat similar. Such as the main members of the special committee are all the members of the unit, the office term is 3 years, and can be reappointment if there's no mistake. Committees can employ experts who's professional is related or people with experience as a consultant in dealing with such events. But there are still subtle differences. Such as the Max Planck Society requested the Chairman of the Permanent Committee must be external, that is to say he is not the member of the party. The scientific self-management committee does not have such request. In addition the resolution of Max-Plank academic society is stricter to the request to team structure of committee. Committee is composed of a permanent president, deputy director, three mediation consultant, 3 members of different research units, and the

minister of personnel and Legal Department. Self-management of the Scientific Committee recommended that the university teachers occupy most in the committee. Committee can be consist of 3-5 experienced Professor in own university or three professors and two external members, but one of them has the ability to judge or the experience about out of court conditioning.

The regulation on preliminary and the formal investigation is very similar.

1. Preliminary requires:

Information provided by the reporting person must be written, if it is the oral information needs to carry on the written recording or evidence can be support . The committee must maintain secret, protects the reporter and the related personnel of the university committee that investigate the events . Committee has to give the person involved in 2 weeks to express his views. During this period does not disclose the name of the person involved. After the deadline, the Committee should make a decision in the 2 weeks that end the review process or transferred it to the formal investigation procedure. The result of preliminary is need to inform research institutions that was in , personnel department, principal or the leader of agency , and also inform the personnel involved, the reporting person if requested.

2. Formal investigations regulate:

Committee discussed whether to investigate suspected scientific misconduct by the non-public oral forms . It should give the accused Scientists opportunities to express their views. The accused scientist may also listen by the oral way and may invite someone help which he trusts. If don't public informant , the person involved can't defense based on the realistic, especially the evidence of the informant make a big difference to confirm the misconduct , then it may publicize the informant. The committee makes a judgment according to the investigation result, and gives it to the university or the leader of research institution by the form of report. Finished the survey or further investigated, the content of report should include the conclusions and the reason supported the conclusions. Simultaneously inform person involved and informant in writing. The files in Formal investigation should be kept; the objection that objective resolution of Commission from internal of themselves is not allowed.

3.Sanction measures of research misconduct

The sanctions provisions about the scientific misconduct in the *Guide on the promotion of good scientific practice and deal with suspected scientific misconduct cases*, including labor law, civil law, criminal law, and the sanctions of academic rules, but didn't give a detailed explanation. *Legal Process of Querying Scientific Misconduct* has detailed list the specific measures of sanctions against scientific misconduct in the attachment.

A. According to the labor law, may warn to sb., irregular dismissal, dismisses, terminates a contract or annul one's position.

B. According to the academic stipulation, can carry on the school internal processing, external processing or take back the published results. The school internal processing includes: If the published results are fake, or obtained by other unscrupulous behaviors, then exempt the academic status, exempt the teacher qualifications. External processing was referring to the scientific misconduct should be informed of the scientific organizations and scientific associations involved in the case, or the scientific organizations and scientific associations the people involved in, as well as promotion organizations and the resolutions committee.

C. According to civil law, people involved hand over the stolen scientific material, eliminate or give up copyright, human rights, patent rights, competition, the right to revoke (scholarships, etc.), compensate to the university or the third party in the human rights and other aspects' injury.

D. According to criminal law, if the following conditions occur, university presidents have the right to make a judgment whether or to what extent the University carries out criminal charges on this matter: harm copyrights, forged documents (including counterfeiting technology draft), destroy the facts (including tampering with the data), damage property and ability(such as theft, swindle the promotion material), injury

other people's life and the privacy, damage other people's lives and body. If the above behavior occurs, will be disposed in accordance with criminal law.

Moreover, "The 50th University and Colleges Union General Assembly resolutions in 2000" also stipulates that who was confirmed to have scientific misconduct, cancel the qualification of the university alliance member.

The above strict disciplinary measures would in fact make the person who has the scientific misconduct not only end his academic career but also fall into disrepute and lose all reputation. Visibly, the attitude of Germany universities and research institutions towards scientific misconduct is very strongly, it established a comprehensive, a full range of measures to punish all possible research misconduct, did not give any lucky opportunity to the man who has scientific misconduct. The person who has scientific misconduct must pay a heavy price which is the society cost, it is better to deter the scientific misconduct.

In the German scientific misconduct on their part, the biggest impact of the incidents is the academic cheating of tumor specialist Friedhelm Hermann, Marion Brach in 1997. They were considered the top-level scientists in the late 90s German. Molecular Biology Dr. Eberhard hildt found that their data can be obtained must with the help of computer, afterwards he obtained their original data, he once confronted Friedhelm

Hermann and Marion Brach, but ended without result. Later, he turned to his doctoral mentor, his doctoral mentor and his colleagues make a review of the material provided on hildt together, founded the data was bogus. He informed the Friedhelm Hermann and Marion Brach's university, The university has established the investigation committee immediately. The event has aroused wide concern of the media, the competent minister of science and technology made a response. Not only the condemnation is confirmed, moreover the approach and number of the revealed forgery are more and more. 58 papers were considered have great suspicion of fraud in more than 170 papers they co-wrote, Friedhelm Hermann、Marion Brach had rejected the investigation application by the misuse of authority. Many partners had been involved in this event, most of them declared themselves is the honorary author, and not clear the research contents. Their colleagues Roland Mertelsmann who is a famous professor in the field of medicine is the one representative, but the people found that some papers also have the forgery which he didn't co-write papers with the above two scholars. In addition, there are two other Mertelsmann colleagues had been canceled doctoral qualifications as a result of forgery. Fröhlich, Gerhard (2001) *Betrug und Täuschung in den Sozial- und Kulturwissenschaften*. In: *Wie kommt die Wissenschaft zu ihrem Wissen? Band 4: Einführung in*

die Wissenschaftstheorie und Wissenschaftsforschung. Schneider-Verlag Hohengehren, pp. 261-276.

There are two major scientific misconduct are also caused by the bogus data. One is deal with the event of chirality of the chemist Dr. Guido Zadel in 2004. His doctoral dissertation in 1995, was confirmed by the investigation group that has the forged data. His research results were published early caused a sensation in the professional field and industrial fields. At least 14 research teams, thousands of companies engaged in this research. But it is precisely in these research, people founded Dr. Zadel's experiment cannot repeat, thus was questioned. The committee immediately launched an investigation, the result is the same that can't repeat this experiment. Doctoral qualification of Zadel is canceled, originally expected to receive the Nobel Prize was miscarry, and also missed the well-paid position that were expected to obtain. FOCUS Magazin | Nr. 14 (1996), WISSENSCHAFTSKRIMI Titel kampf an der Uni, Montag, 01.04.1996, 00:00 · von FOCUS-Redakteur Christian Weber

The other is the event of Joachim boldt last year has just been exposed worked at the Hospital of Ludwigshafen, Germany, the 57-year-old Joachim Boldt once was considered as a top anesthetist and the expert in intravenous drug research in German. His research results were widely published in the all major European medical journal, and

were applied to the British Anesthetist Medical Guide. His studies of hydroxyethyl starch was suspected for falsifying research data. The German anesthesiology and the critical care medicine association mentioned: "The published articles does not have the science investigation", "research has not been tested -and patient data". Joachim Boldt was dismissed by the hospital in 2011.2, supernumerary Professor position in Gies-sen Jesus Libby tin University was exempted, and the teacher qualification is canceled.

Betrug und Fälschung in der Wissenschaft ,

http://de.wikipedia.org/wiki/Betrug_und_F%C3%A4lschung_in_der_Wissenschaft

4. Enlightenment for our country to deal with the scientific misconduct

4.1 Strengthening the self-management of science

Different from American and some other countries that pay attention to the management from the Government to the scientific organization itself, the German scientific circles specially emphasize the self-management of science, proposed the quite effective management measures and drew up the quite strict legal laws and regulations and the executive routine based on this idea. And this is exactly what the deficiency in China's scientific community. Accustomed to long-standing dependence on government, Our scientific research institutions and

scientific organizations lack certain essential capacity, therefore some functions of their own can't play well, also can't fill the lacunary caused by the "inadequate government functions" and can't form an effective composition of forces with the government management. Various scientific institutions and research organizations of our country should change the concept, strengthen the ability of self-supervision and self-management, perfect the supervision and management mechanism as well as the corresponding regulations, procedure construction.

4.2 Depend on prevention

Severe measures of punishment although can be constitute certain deterrent to the misconduct, but it is not the ideal choice. Takes the effective preventive measure and prevent accidents before they occur is the wise approach. German universities and research institutions particularly pay attention to the construction of prevention mechanism. *Guide on the promotion of good scientific practice and deal with suspected scientific misconduct cases* pointed out survey scientific misconduct and make the appropriate punishment besides, universities also should strengthen or introduce a new appropriate measures to prevent the occurrence of scientific misconduct.

First, the universities (research institutes), research teams and individuals engaged in research to be responsible layer upon layer, undertake their respective responsibilities. As a place for research,

teaching and training young scientists the university has the responsibility system. Leaders or representatives of each working group shall observe the scientific norms. University students and young scientists must be concerned about its own future plans, against possible scientific misconduct in his area.

Then, It should formulate the correlation measure to safeguard effective education for the students and young scientists. Faculties should establish the topic of "scientific misconduct" in the curriculum, make the students and young scientists have the sensitivity of preventing scientific misconduct. It should explicitly told each young scientists the norms of good science practice, such as how long should the original data be retained, cited reference must indicate author's name and so on.

Last, *Guide* also requests scientific professional societies define "good scientific practice" for every professional writings.

At present, our country from the government direction to the formulation of specific norms, both reflect the characteristics of focusing on prevention and education matters, but it still lack the concrete mechanism safeguard in practice session. (Yandong Liu, Placed The Scientific Integrity and Construction of Study Style in A Prominent Position of Science and Technology, The Speech in the Symposium of Scientific Integrity and Construction of Study Style, 2010. 3. 30)

4.3 To strengthen the protection of the prosecutor

Sanctions and prevention play roles at the same time, it's conducive to reduce the occurrence of research misconduct to a certain extent. But it is impossible to eliminate the occurrence of such event fundamentally. Because of the high precision, advanced features of the modern science, the average person and the layman are nearly unable to realize after the scientific research occurring, not to mention the valid exposition. Surveillance and accusation between scientific colleague become the main channel to explain the scientific misconduct. Such a situation in fact make the informants face a lot of pressure and actually the spotted scientific misconduct is far less than real scientific misconduct.

Fehlverhalten in der Forschung weitaus häufiger als vermutet , <http://www.heise.de/newsticker/meldung/Fehlverhalten-in-der-Forschung-weitaus-haeufiger-als-vermutet-215042.html>

In order to make the research misconduct actually being revealed, German universities and research institutions especially pay attention to the protection of informants. Because The informants often delay the research work because of the reporting behavior, even interests have been violated by the retaliation of the person who was accused. Protection measures are reflected in all aspects. First in the process of the trial, the identity of the reporter should do anonymous processing, it has a strict limit to public his identity, such as the situation above mentioned. The conference hold in Bonn in 2003 pointed out, at that time the protection

for informants in Germany was extremely insufficient. So the conference proposed tracking survey about the professional career of reporters, that is ,follow and investigate whether the reporters have the unfair treatment like scorn, demotion. In 2005 the oversight board publish *The Summary Report of the Oversight Board Dealing with Scientific Misconduct in Recent Six-year*, the report mentioned that it should be discussed the reporters may receive the unfair treatment and revenge in the future life, in order to defense actively.

Protection measures mentioned in the report :

First, prevent damage to the informants through the precautions. The Research Institutes should hold internal meetings to tell the agency members that the agency has the obligation to protect the legitimate reporting behavior of informant, any retaliation to the informants is not permitted. This protection clause should be written into " The internal guidelines of ensure good scientific practices ".

Second, the informants may lead to fund cost, delay work or economic losses caused by the retorsion. Thus, the commission may consider setting aid fund or give short-term financial assistance.

Third, the informants can apply for financial aid according to the prosecution proof.

Compare with those acquire scientific achievements through scientific misconduct, and on the basis of this, to seek benefit and

position , late-comers who disclose the scientific misconduct often in a weak position. To effectively protect the prosecutors, as for any country to do the real punishment of scientific misconduct is very important. The scientific community of our country can absorb some good practices from the German's scientific community especially from the protection measure proposed by supervisory committee in 2005 above mentioned.