Advisory Opinion

Challenges and responses of the scientific community to the increasing openness and internationalization of research activities

- From the perspective of research integrity -

21 September 2023

Science Council of Japan
Subcommittee on Academic Systems
of the Committee for Scientific Community

This Advisory Opinion is largely the outcome of the deliberations of the Subcommittee on Academic Systems of the Committee for Scientific Community, Science Council of Japan.

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This English version is a translation of the original written in Japanese.

EXECTIVE SUMMARY

1. Background and purpose of this opinion

The world is currently at a turning point in the way science and technology should be. The importance of science that aims to realize the well-being of human society is increasing, as well as science that focuses on elucidating the mechanisms of the world. On the other hand, in order to respond to the international competitive environment, countries are making strategic R&D investments, particularly in AI (artificial intelligence), life science technology, quantum science technology, space science technology, and marine science technology, which are also called advanced science and technology or emerging science and technology. These research fields also have the character of contributing to solving social and economic issues. In this context, the importance of the concept of "research integrity" has been recognized, on which international discussions have begun. "Research integrity" has traditionally been interpretated as "research fairness" and has been understood as an effort to prevent research misconducts such as fabrication, falsification, and plagiarism. However, the current discussions aim to extend such interpretation. on it. In their background, there are the problems of the diversity or ambiguity (dual use) of uses of today's science and technology, especially advanced science and technology and emerging science and technology. Moreover, in these fields, it is usually difficult to clearly distinguish between basic and applied research, and even if the research is recognized as basic research, it is impossible to exclude the possibility of diversion to the researcher’s unintended usage . Therefore, as it is no longer easy to evaluate and regulate science and technology in advance according to its potential diversion, it is becoming increasingly recognized that it is important for researchers and universities and other research institutions to properly manage it from broader perspectives. For this reason, it is necessary to accurately understand the nature of emerging science and technology. In particular, since the nature of such emerging science and technology can be confidential information or sensitive information, there are movements in various countries to take measures to prevent the leakage of such information under the concerns of "foreign influence." The major issue here is the conflict between the ideals that universities and other research institutions have, such as "ensuring intellectual excellence," "contributing to solving social problems," "autonomy as an academic institution," and "protecting academic freedom with the principle of disclosure and quality assurance through the principle of openness and open criticism," and the perspective of national security.

The Science Council of Japan summarized its views on research integrity that go beyond research misconduct in "Reply: For the Enhancement of Soundness of Scientific Research (2015)." On the other hand, from broader perspectives, after reconsidering the role that

scientists should play in society a statement of "Code of Conduct for Scientists, Revised Version (2013)" was published, based on the statement in 2006. However, there has been no explicit discussion from the perspective of the scientific community about the realization of the core ideal of science, namely the openness and internationalization of research activities, which is currently under discussion, and how to respond to the associated risks. Therefore, the Council recently held deliberations and summarized the issues that have emerged so far and the responses to them as this opinion.

2. Opinion

(1) Definition and objectives of research integrity

In this opinion, research integrity is defined more broadly than before as "the soundness and fairness that the scientific community should ensure independently and autonomously in the research activities they conduct under the social entrust of funding, environment, and trust, as well as the management of transparency and accountability to that end, as research activities become more open and internationalized." The constituent entities of the scientific community that are responsible for ensuring research integrity are assumed to be universities and other research institutions, individual researchers (faculty, students, staff), university associations and university alliances etc., academic societies etc., and the Science Council of Japan.

The significance of ensuring research integrity is to protect academic freedom from various stakeholders in the scientific community, especially from political and international issues, and ensure the autonomy of research, while taking into account qualitative changes in research subjects, methods, and results, while recognizing that openness and internationalization of research activities are important foundations for research development.

In doing so, it is important not to aim for zero risk, but to properly manage the inherent risks. It is also important to ensure that excessive strengthening of such efforts or excessive response such as self-regulation and self-restraint in research sites will not undermine the openness and internationalization of research activities which are considered essential in basic research.

(2) Division of roles and collaboration among stakeholders

In order to protect academic freedom and research autonomy, how to ensure research integrity is an important issue that the scientific community should consider independently. However, as the responsibility of ensuring research integrity requires specialized knowledge and skills, and involves a large burden of costs, etc., it is not enough to simply put all the responsibilities to individual researchers or individual organizations. It is essential that respective parties accurately recognize their responsibilities, and strive for efficiency while

appropriately dividing their roles.

Stakeholders surrounding the issue of research integrity include the scientific community, as well as the Government (the Japanese government), foreign governments, funding agencies (domestic), funding agencies (foreign), companies (domestic), companies (foreign), universities and other research institutions (foreign), etc. As research activities become more open and internationalized, there are more opportunities for stakeholders to compete against each other, and it is unavoidable to deal with multiple stakeholders at the same time. Therefore, it is essential for researchers, universities and other research institutions to manage their conflicts of interest and conflicts of responsibility in cooperation with stakeholders.

(3) Formulation and implementation of guidelines

If universities and other research institutions respectively take different approaches and decisions regarding research integrity, it may cause confusion in the research and education field and may also lead to distrust both domestically and internationally. Therefore, in order to ensure research integrity, it is necessary to formulate guidelines and standards that indicate the roles (risks, responsibilities, authority) of the Government, universities and other research institutions, and researchers, as well as the researchers and research information that should be managed. However, these must take into consideration the philosophy of each institution, and therefore each institution's initiative in formulating them will be required. On the other hand, the formulation and implementation of guidelines will be able to impose a new and large burden on universities and other research institutions. Therefore, strong and continuous support for the initiative-oriented efforts of universities and other research institutions by the Government (Cabinet Office, Ministry of Education, Culture, Sports, Science and Technology, Ministry of Economy, Trade and Industry, Ministry of Foreign Affairs, Ministry of Justice, etc.) and funding agencies must be implemented and strengthened in parallel.

(4) Handling research involving confidential or sensitive information

As research activities become more open and internationalized, there are various points to keep in mind from the perspective of research integrity, especially when conducting research that involves highly confidential or sensitive information.

In the Economic Security Promotion Act, the public-private "Council" established under Article 62 of Chapter 4 of the Act aims to create a public-private partnership, but council members are required to maintain confidentiality of sensitive information with penalties. The specific form, including the content and operation, needs to be made clear to the scientific community in a transparent and accountable. Regarding the non-disclosure of patent applications under Chapter 5 of the Act, the

contents and operation that take into consideration the impact on academic activities are required, and attention must also be paid to whether the effectiveness of the prescribed compensation for losses has been ensured.

In universities, it is difficult to separate the two roles of research institutes and educational institutions within the same laboratory on campus. In such a situation, when conducting research that involves highly confidential or sensitive information, a well-managed off-campus laboratory should be established, and researchers and students involved in such research should enter into individual contracts and conduct their research activities there.

If the publication of research results is restricted because they contain confidential or sensitive information, there is a risk that young researchers, in particular, will not be able to accumulate these achievements necessary for their career development. Additionally, there is also a risk that the researchers could be at a disadvantage if they are involved in the research that contains confidential or sensitive information.. It is necessary to clarify the period during which publication is restricted, and to give consideration and design a system to make sure that would not happen. .