[ELSI in Practice #1]

Practical Responses Are Needed—But What Exactly Is ELSI?

Kenji Kurata
Visiting Professor, Center for Collaborative Sciences

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ELSI and RRI are terms you may have been hearing more often in university circles lately. What do they mean?

Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT) appears to be promoting them with considerable enthusiasm. Does this mean university researchers need to take some kind of action? The need to address these issues is, in fact, highlighted in both the 5th Science and Technology Basic Plan and the 6th Science, Technology and Innovation Basic Plan.

Although ELSI is frequently invoked, the concepts can be hard to picture, and it may not be clear what to do in practice. With such readers in mind, I will publish useful explanations and practical guidance for responding to the growing need to address ELSI-related issues as part of an occasional series in this collection, titled "ELSI in Practice."

1. ELSI originates from the United States

You may have been hearing the term "ELSI" more often lately. It is used mainly in academic circles. ELSI stands for Ethical, Legal, and Social Implications. In Japanese, it can be translated as "ethical, legal, and social implications; 倫理的、法的、社会的な含意" or "impacts; 影響."

The term originated in a 1989 discussion by the U.S. government about the need to examine the ethical, legal, and social implications of analyzing the human genome as part of the Human Genome Project (HGP).

Around the same time, ELSI was also used in the United States to stand for Ethical, Legal, and Social Issues. In this context, it would be translated into Japanese as "ethical, legal, and social issues; 倫理的、法的、社会的課題."

2.How Has ELSI Been Introduced in Japan?

The 5th Science and Technology Basic Plan, adopted by the Cabinet in 2016, states:

> *"When putting new science and technology to use in society, [...] research should be conducted with participation from a range of fields in the humanities, social sciences, and natural sciences to examine ethical, legal, and social issues, [...] the development of institutional frameworks, including mechanisms for reconciling stakeholder interests, should be considered, and necessary measures should be taken."*

The passage is a typical example of the roundabout, hard-to-follow prose of policy documents. The 6th Science, Technology and Innovation Basic Plan, which succeeded the 5th Plan, does not go into what ELSI is and merely states that "responding to ELSI" is necessary, as though its meaning is given.

Another term used in much the same context as ELSI is RRI (Responsible Research and Innovation. It is often rendered in Japanese as "責任ある研究・イノベーション". My understanding is that it means conducting research—and pursuing innovation, or its practical application in society—with ELSI perspectives in mind.

Side Note: "Implications" or "Issues"?

I believe the "I" in ELSI can stand for either "Implications" or "Issues," and both are correct. However, because authoritative government documents use the Japanese phrase meaning "倫理的・法制度的・社会的課題," I will use that term in Japanese. When spelling out the acronym in English, I will use Ethical, Legal, and Social Issues as the English equivalent of the Japanese wording.

Side Note: RRI

RRI (Responsible Research and Innovation) is often treated hand in hand with ELSI, and the two are commonly written together as ELSI/RRI.

3.What Does the Government (MEXT) Expect of Universities Regarding ELSI?

Reading MEXT's stance on ELSI from its various policy documents, I believe it seeks to support the development of research and technology while carefully and proactively examining their effects on society from ethical, legal, and social perspectives, and putting the necessary systems and structures in place.

The emphasis seems to be less on imposing restrictions and more on establishing frameworks that take ELSI perspectives into account so innovation can advance in a sustainable and socially acceptable way.

On this view, ELSI-related management within universities MEXT expects involves formalizing—or, if that sounds too strong, putting mechanisms in place for—the following:

- **Put policies in writing:** Reflect ELSI in university statutes, regulations, and codes of conduct.
- **Expand review systems:** Extend coverage to emerging technologies and include humanities and social science perspectives.
- **Make training mandatory:** Research ethics training and ELSI training.
- **Build ELSI into research funding and projects:** Make it a requirement for applications and evaluations.
- **Strengthen internal governance:** Establish responsible officers, points of contact, and a risk assessment framework.
- **Institutionalize dialogue with society:** Hold public symposia, encourage citizen participation, and publish reports.
- **Promote interdisciplinary research:** Set up collaborative centers that bring together the humanities, the social sciences, and science and engineering.

4. What Should We Do in Practice?

The broad outlines of ELSI have been described above. The question that comes to mind right away is: What should we actually do?

I have a general sense of what ELSI entails, but I don't have a definitive answer even to the basic question, "What is ELSI?" In fact, it seems to me that no definitive answer has been established yet.

Even so, I plan to publish content in this "*ELSI in Practice"* series that may help readers understand ELSI. I hope it will be useful to you.