

## Specialized Knowledge in Traditional East Asian Contexts: STS and the History of East Asian Science

Yung Sik Kim

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### 1

“STS,” both the expression itself and the scholarly enterprise referred to by that label, has been very enthusiastically received in East Asia—Japan, Korea, Taiwan, and China—in recent years. It is probably because the problems posed to society by science and technology have been perceived more acutely in this region. Modern science and technology, mainly developed in the West, was felt foreign or alien by the East Asian people, but it is now an important part of their daily life. As economic growth in East Asian region has largely relied on the power of modern science and technology, how to further advance this power while dealing with the social impacts brought by it has come to be a major concern of the states in this area. By bringing citizens' attention to the complicated relation between science and technology and society, STS serves the interest of East Asian states as promoter of science and technology with emphasis on current issues while coping with the problems of science and technology policy making. STS scholars also grasp an opportunity to fulfill their role as social critics of science and technology, which has penetrated and influenced the daily life of common people.

This journal, *EASTS*, which began self-consciously as a scholarly vehicle devoted to the discipline of “STS” in East Asia, has thus far published “STS” studies of mostly modern or contemporary East Asia which, to a certain extent, shared a common experience of the spread of modern science and technology, first by the Westerners, and then by the Japanese (Tsukahara 2007). This seems to be natural as the subject “STS” itself began mainly with concerns of modern science and technology. One even has an impression that “STS” is a subject which deals only with topics and problems of modern science and technology and is not pertinent for those of the traditional period, especially in non-Western cultures.

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Y. S. Kim (✉)  
Program in History and Philosophy of Science, Seoul National University, Seoul 151-742,  
South Korea  
e-mail: kysik6637@yahoo.co.kr

Yet, science and technology in the traditional period also can be studied by characteristically STS methods and concepts. In fact, there have been many STS-informed or STS-influenced works in the history of Western science in the pre-modern period, including the period of the Scientific Revolution (Shapin and Schaffer 1985; Biagioli 1993; Dear 1995). By studying the topics and aspects like the political dimension of science, the “local” science, patronage, knowledge vs. action, practice (experiment) vs. theory, scientific “space,” disciplines—“disciplinary maps” and classification of sciences—and so on, these works have deepened our understanding of the sciences and technologies studied by them and have broadened our perspective of the periods and societies in which such sciences and technologies existed and were practiced.

This special issue was conceived to call attention to the possibility, and the challenge, of carrying out similar works on science and technology in traditional East Asia. We have invited a number of scholars to contribute studies on the history of science and technology in traditional East Asia that can be encompassed by the umbrella of STS, i.e., the studies that share the problems, issues, subjects, methods, concepts, assumptions, interests, approaches, attitudes, or styles with the standard works in the STS. The common theme for these studies was defined very broadly as “Specialized Knowledge in Traditional East Asian Contexts.”

## 2

Knowledge in various specialized subjects existed in traditional East Asia. They were not restricted to what can be considered today as “science” or as “science and technology.” Such “scientific” subjects as calendrical astronomy (曆), harmonics (律), mathematics (算), and medicine (醫) and such “technical” subjects as techniques (工), agriculture (農), and horticulture (圃) were often mentioned together with subjects that cannot be called “scientific” today: divination (占卜), alchemy (煉丹), and geomancy (風水), for example, and such non-scientific subjects as criminal justice (行刑), financial administration (財政), military strategy (兵法), and taxation (稅務).

On the whole, knowledge of these specialized subjects in traditional East Asia was found at the margins of the mainstream intellectual concern of the generalist scholars, not fully integrated to it. Yet, various items of such specialized knowledge are frequently found in the work of the traditional East Asian scholars. Descriptions of skills and techniques of the specialists (artisans, functionaries, and other practitioners) of these specialized branches, the artifacts they produced, the processes they used, and the conditions in which they worked were often handed down in the writings of the scholars.

This situation calls for a close study of various aspects of specialized knowledge in traditional East Asian contexts. What was the nature and characteristics of knowledge and practices of the specialized subjects in traditional East Asia? What was the intellectual contour of such specialized knowledge? How did the specialized knowledge operate? How was it divided and classified? What were the place, role, and significance of the specialized subjects in society and culture? What were the relations between scholars and the specialists? Why were scholars interested in such

specialized knowledge, and how was it related to their career? How did scholars' writings about specialized subject reflect their attitudes towards specialized knowledge? Some of these questions have been taken up by the studies gathered in this special issue.

We hope that these studies of specialized knowledge in situations very different from that of modern science and technology (to which most of the current "STS" studies are devoted) will not only enhance our understanding of the subjects and the societies in which they existed but also prove that STS is significant not only for the study of science and technology in the modern society but for the study of those in East Asian society and culture as well. We also hope that this will facilitate a cross-fertilizing of the two fields: history of science and STS. These studies can be used as a mirror to reflect upon—adopt, note, refer to, criticize, or compare with—the methods, issues, and concepts used in the STS.

There was already a shift in this direction in the study of science and technology in traditional East Asia. Whereas the work in the field had been heavily inclined to close textual, technical analysis till only a decade or so ago, a new trend emerged recently in the field—notably the sociological, anthropological, or cultural approaches that could be subsumed under the umbrella of "STS." On the whole, I welcome the change, but I have some reservations. In particular, I feel that those of us who study science in traditional East Asia cannot simply adopt the vocabulary, tools, methods, and theories that these "STS-ers" of Western science found useful in their work. We cannot relegate our role to that of a mere user, or learner, of the tools and approaches developed by them, as if we were someone in the academic periphery waiting for chances to take advantage of advances made at the center. In fact, some topics studied by them are not so meaningful for understanding East Asian science and technology, because they are selected from the Western context. Obviously, study of the topics chosen from the East Asian perspective, in other words, chosen because of their importance in East Asia, will be more fruitful than the study of topics that were important in the West.

New problems, subjects, methods, etc. will come up when we take up this East Asian perspective. In addition to the studies of the nature of the enterprise of science and place of science in society and culture, topics like transmission of Western science; bureaucracy, literati, and Confucianism; books and printing; texts, including diaries, technical books, drawings, and other artifacts can be studied very fruitfully in traditional East Asian contexts. Such studies will not only help bring a better understanding of STS in East Asia but also broaden the perspective of the STS studies of the West.

### 3

Born of standard concerns of more established disciplines like history of science, philosophy of science, and sociology of science and informed by—with considerable overlaps with—such new trends as "constructivism," "actor network theory," sociology of scientific knowledge, cultural studies, and so on, the subject called "STS" is not easy to define rigorously. Nevertheless, in recent years, "STS" has more or less succeeded in establishing itself as an academic discipline, and in this

process, the discipline has developed an identity in a de facto way: STS is what the “STS-ers” (or those who say they are doing “STS”) are doing. Since most of them work on particular kinds of topics, using particular kinds of methods, theories, assumptions, or perspectives (I am even tempted to say “paradigms”), these topics, methods, theories, etc. have come to be regarded as those of STS.

Yet, this kind of pragmatic consensus building has not taken place in what is called “East Asian STS,” the purview of this journal. There even seems to be a fairly widespread awareness of an identity problem among the East Asian STS-ers. At the core of the problem lies the problem of extending the usual STS problems, subjects, or methods—geared originally to the Western situations—to the studies of East Asian situations. In East Asia, due to the lack, both the perceived and the real lack, of continuity between modern science and pre-modern or early modern science, a continuity of the sort that could be found in the West, such an extension is perceived difficult, or even impossible. In addition, there is an uncertainty about the plausibility of a distinctive “East Asian STS” in this modern world of globalized science and technology. This uncertainty was expressed as a question by Fu Daiwie, the editor of the *EASTS*: “what's the difference between EASTS and East Asian ‘area studies’ that apply Western STS perspectives?” (Fu 2007).

In this “uncertain” situation, colonial experience has received some emphasis as a distinctive East Asian feature in the STS studies of the region. Recently, there has been an impressive output of works on science and technology in East Asia during the colonial period, which provided a significant motive force for the shaping of the East Asian STS community. Yet, I feel a little uneasy about this emphasis lest it should obscure the common and distinct history of traditional East Asia which, I believe, is more significant as a distinct background of science and technology of the region. Proper consideration of this historical background will help us see better the distinct nature of science and technology of the region. Such historical consideration will lead to a better understanding of even the East Asian “colonial” experience, distinct from those studied by the mainstream of the “colonial science” or the “science and empire” studies. This special issue, then, is welcome in this respect, too. It can be hoped to illustrate the ways in which traditional East Asian STS can contribute to East Asian STS or STS in general not only by providing new STS methods or STS perspectives but also by providing historical contexts.

#### 4

There was no overall systematic planning for the issue. The individual contributors have chosen one or more of the specialized subjects and discussed various aspects—the place, role, and nature—of the subjects and their practitioners, in traditional East Asia, mostly in traditional China. The papers do not consciously adopt or pursue the standard “STS” approaches and subjects but have them in mind and are informed by them, and each contributor has shown his or her own notion of STS in his or her own field. The result is an absence of a clear organization or system for the issue as a whole, but I believe that this fits with the journal's policy of openness with respect to the issues concerning its subject and purview.

Finally, I should point out that some of the works which had originally been planned to be part of this issue could not be included in this issue because of the time conflict of their authors. This significantly restricted the richness and diversity that can be displayed by the studies under the rubric of STS in traditional East Asia.

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