

## The History of Technology in Japan and East Asia

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To the extent that “the history of technology” exists in Japan and East Asia as a discipline, literature, or coherent collection of problems or approaches, it does so in an often liminal form. “The history of science” is also a relatively small discipline in this part of the world (as elsewhere), but is more clearly locatable and demarcated in the form of groups and individuals whose identity is bound up with that project.<sup>1</sup> In a 1990 survey, Mats Fridlund found that there were about 950 persons in the various Japanese organizations of the history of science and technology, but that only about 10% of them were dealing with technology as opposed to science. At that time, there were four professorships in the history of technology in Japan, although most of these were qualified by reference to other sub-fields, such as economics and industrial psychology. “The general climate of the history of technology is quite cold” one Japanese professor told Fridlund, but was in “the fermentation stage” (Fridlund 1993).<sup>2</sup> This is not fundamentally different than the situation today, almost 20 years later, at least as regards formal institutionalization.

This is an odd situation on the face of it, given that countless people on every continent identify Japan and East Asia with “technology” and would think that

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<sup>1</sup>The History of Science Society of Japan was established as early as 1941, and its flagship journal *Historia Scientiarum* began publishing (under an earlier name) in 1962.

<sup>2</sup>Fridlund found that the category itself was elusive. One course in Chuo University called “The History of Science” was, despite its name, almost entirely about technology. Two “pure” graduate programs in the field existed, at Osaka City University and Tokyo Institute of Technology. The latter was the largest such program in Japan, located in the Dept. of Social Engineering. The Graduate Program in History and Philosophy of Science at Tokyo University also trained students in the history of technology. These programs continue today.

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questions such as “how did East Asia become so entranced with both the production and consumption of advanced technology?” would be a primary focus of academic inquiry here. Of course some very established disciplines purport to answer this and related question using statistics, models, empirical data about production, and the most advanced political, economic, and social theories. But the “technology” remains a black box in most such accounts, not humming, lighting up, breaking down, or taking inordinate amounts of daily time and creative energy. It “develops,” but often according to an evolutionary model which has little connection to lived reality, nor is particularly explanatory in the end.

Despite all this, we may be on the cusp of learning more about the history of technology in Japan and East Asia right now than we have at all points in the past combined. We seem to be experiencing a shift in emphasis across a range of disciplines that will bring “technology” and “Asia” into sharper convergence, and historical methodologies will inevitably come into play. Whether this will be called “the history of technology” remains to be seen. I personally think that this is an excellent category within which to organize inquiry, but other more interdisciplinary rubrics such as “Science, Technology, and Society” (STS) and “Science and Technology Studies” are catching attention and enthusiasm in Asia often in advance of the institutionalization of their specific Western disciplinary strains (or even subsuming them). Whereas in North America STS was constructed with the history of technology as one pre-existing component, in Asia, it is often developing the other way round, with the enthusiasm for STS as an interdisciplinary field developing new constituencies for older projects and transforming them in the process.

The institutionalization of many academic disciplines in East and Southeast Asia, including Japan, has long followed patterns set in the West, and particularly at the most prestigious schools, such as Harvard, Cambridge, Berlin, etc. Thus did the history of science become a viable career path in Japan and elsewhere in the region when it was departmentalized in what were perceived as the top-ranking Western universities—places to which Asian graduate students could be sent, credentialed, and return to institutionalize such interests in their own milieus. This was also true of the history of medicine, the history of architecture, and a number of historical sub-fields that often flourished outside classical history departments in professional schools. The history of technology was not so easily transferred because even at its points of origins in North America and Europe, it was not so definitely institutionalized, nor were its leading practitioners and proponents at the relatively small number of universities recognized as top-rank by Asian governments. The occasional Asian graduate student who developed an enthusiasm for technology (as opposed to science) at a Western institution did not always find a niche for his interests in the academy of his home country. There are clear exceptions to his rule, as the careers and scholarship of Hashimoto Takehiko in Japan and Sungook Hong in South Korea both illustrate. But then both of these men are relatively young and still very active scholars.

On the other hand, because historians of science and technology are such a relatively small group in Japan and elsewhere in East Asia, they have also tended to blend interests, sometimes share identities, and generally tolerate each other to a greater extent than those in, for example, North America. Of 23 issues of the Japanese history of science journal *Historia Scientiarum* published between 2001 and 2008, I count nine (or more than a third) with one or more articles about technology, and a

couple of these were special issues devoted to the topic. Leafing through the American history of science journal *Isis* in the same period, the word “technology” occurs much more rarely. The editorial and hiring policies which keep histories of science, technology, medicine and other such things so neatly compartmentalized in many western institutions are not half as ferocious over most of Asia.

With the coming of STS scholarship in the 1970s and 1980s and its burgeoning institutionalization in the form of STS departments and interdepartmental programs at western universities with high status in Asian ranking schemes, the history and social study of technology began to be taken more seriously in the Asian academy as well. The relatively entrenched status of the history and philosophy of science, however, meant that real institutionalization around the competing interdisciplinary rubric of STS would have to wait until the 1990s and early twenty-first century over most of East/Southeast Asia. Japan was ahead of this curve, as was Taiwan. The Japanese STS Network was founded in 1990, the very year Fridlund conducted his survey, with its first symposium dedicated to examining STS in the UK. By 1993, its members were asking “What is STS Education?” An academic Japanese STS movement had firmed up by the mid-1990s when Nakajima Hideto presented the paper “The Dawn of the Japanese STS Movement” at a meeting of Korean science writers in 1996.<sup>3</sup> Now the Japanese Society for Science and Technology Studies (JSSTS) is the largest in Asia, and allied organizations exist in the form of the Korean Association of Science and Technology Studies, the Taiwan Science and Technology Network, the international *East Asian STS Journal*, a growing STS Research Cluster in Singapore, and other efforts around the region. Still, most of the founders of the STS movement in Japan (or Taiwan) would describe themselves as historians, philosophers, or sociologists of science or medicine, rather than of technology, even if objects and devices are increasingly central to what interests their research groups.

Some may challenge my contention that the organization of the western academy has had so strong an influence on enthusiasms in Asian ones, particularly as I wrote a whole book with the opposite argument—highlighting the divergence between the Japanese and western university systems in the nineteenth/early twentieth centuries, despite their superficial convergences (Clancey 2006). Having lived and worked in an Asian university for the last decade, however, and in a very different time from the one I wrote about, my sense is that we now underestimate rather than overrecognize the power of “global rankings” on fashioning Asian academic curriculums and projects. On the other hand, we also underestimate the effect of Asian educational policies on the re-fashioning of (western) institutions, the strong presence of Asian graduate students overseas being only the most obvious example. In the current era of academic globalism, the “inter-disciplinary research project,” often with the perception of practical outcomes, is the locus of enthusiasm across all regions, and some explicit recognition of the role or presence of technology is often part of that. The history and philosophy of science in its classical form (with only superficial or peripheral reference to the technical or applied) cannot serve this new regime of knowledge production half as well.

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<sup>3</sup> Nakajima Hideto, “The Dawn of the Japanese STS Movement”, Talk given at the Korean Science Writers Association, Taejon, S. Korea, Jan. 22, 1996.

The shift in the priorities of Asian universities from adding departments or programs which parallel western ones, to co-fashioning international but interdisciplinary research collaborations around topics, thus helps explain the present strong interest in STS and with it “technology” as a theme to compete with “science,” or blend imperceptibly into it. The rise of strong and convincing STS theories in the 1980s also helped of course, but this alone cannot account for the “second birth” of this field in Asia, in Europe, and likely elsewhere around the world. While some colleagues think of the turn toward the interdisciplinary and interuniversity project as inherently retrogressive (attaching to it derogatory labels such as “neo-liberal”) and while it can be destructive of the theoretical and ground-breaking if taken to an extreme, it has also begun to open windows on new problems and issues, many with a real-world flavor, which classical disciplinary research often ignored as a matter of course. And most importantly in the current context, it bodes well for those of us whose interests include the technological (or even just material), which can no longer be abstracted away.

The history and social study of technology has never aimed for elegance, retreated too deeply into theory or model-building, nor been overly concerned with father-figures (excepting, perhaps, in the way we structure some of our scholarly societies). It has been highly heterogeneous and hybrid in its approach to methodologies, themes, and problems, something that was considered a weakness under the old discipline-forming academic regime, but is emerging as a strength in the more fleet-footed, thematically organized one. Scholars who read the literature, teach the courses, and attend the conferences often do not call the object of their study “technology,” but “communications and new media,” “biomedicine,” “environmental sustainability,” etc., but technologies of various sorts are central to what they study and cannot be avoided in their analysis. Here is a new and challenging problem for the field which calls itself “the history (and social study) of technology.” At the very moment that everyone has started to do it, the center is in no position to exercise control. Nor should it necessarily want to. Guidance and advocacy, however, are another issue.

What the history of technology (as quasi-institution) can and should do is constantly remind of the relevance of empirically based history to all contemporary accounts of technologies—even such seemingly contemporary ones as cell phones or stem cells. And this brings me specifically to Japan. As one of the first Asian societies to not only embrace but master “high technology,” and one that still sustains both technical and social momentum over a wide range of innovations and practices, any narrative of technology in Asia and almost all problems bound up with technology in Asia must come to terms with Japan. To imagine that we can have a “history of technology in East Asia,” which excludes or peripheralizes Japan, as some of my colleagues who are enthusiastic about the rise of China (or even Singapore!) assert indirectly through their choices of research topic or narrative, is not only ahistorical but also recreates history in the form of contemporary geopolitics. A history of the European industrial revolution with Germany but not Britain, or of Asian colonialism with the Spanish as actors but not the Dutch, would not get us far. Unfortunately, a history of almost anything in Asia which establishes real connections (rather than just comparisons) between societies and centers has long been delayed by the legacies of colonialism, post-colonial nationalisms, the

Cold War, and barriers of language, and culture. My colleague Prasenjit Duara's plea for an "inter-Asian" history of Asia, at both the micro- and macrolevels, should be taken particularly seriously by historians of technology, given how regularly borders were crossed by our actors and actants. This is not to say that "Asia" needs to be historically recreated as more integrated than it ever was (for it was and remains resistant to many integrations) but that "national histories" of the kind even I have indulged in cannot be the historical gold standard of the future. On the other hand, to answer questions like the one I began with, i.e. "how did East Asia become so entranced with both the production and consumption of advanced technology?," there are natural starting points and Japan is clearly one and a site that will still be relevant in any story extended to the present day.

As the historian David Arnold recently reminded us in a talk he gave in Singapore, there is something of a disconnect between the classic "history of technology in Asia," which emphasized colonial and then national projects, such as railroads, communications systems (and going back much farther, irrigation projects), and the present dense landscape of Asian-made and Asian-used devices, many of them personal, mobile, electronic, and lively, but indeterminate in their genealogies.<sup>4</sup> The emphasis on policy-friendly accounts of technology in many Asian universities and institutes, as opposed to cultural ones, only deepens this sense that we know much more about "big technology" than the small and personal technologies that most contemporary Asians identify with the term. Japan is farther ahead than many other East/Southeast Asian countries in understanding the pre-history of "personal" technologies, given the work of Hashimoto Takehiko and colleagues on time-keeping (and time-pieces), Simon Partner on consumer electronics, and numerous studies of gaming and the internet (Partner 2000; Hashimoto and Kuriyama 2001). There is still so much more to learn, however, from the history of robots (which are now becoming "personal" technologies) to flat-screen TVs and other visual technologies, to basic questions about the Japanese embrace of miniaturization across technical, and other object realms.

One useful bit of discipline which "the history of technology" can provide to much contemporary STS-like work on these topics, is to push for the broadening of categories (and curiosities) beyond mere pre-histories of contemporary things. It is now possible (indeed too common) for a scholar to spend their whole career with one or another contemporary techno-project, chronicling its history with great skill, while never asking questions about technologies that lie just outside his or her chosen categories. As someone with a late-comer's interest in biotechnology, for example, I am surprised at how little of the literature references technology in any other form. The history of technology (as a field and literature) can and should serve as the macroframe for microprojects, encouraging the search for connections across often peculiar and seemingly dissimilar domains. Both stem cells and computer chips, despite the macrolevel enthusiasm for them, are micro in the sense not only of size but also in being only two of many interconnected strands in any enlightening history of technology in Asia. Unless you are first willing to learn about textiles,

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<sup>4</sup> David Arnold, "Everyday Technology in South and Southeast Asia, 1880–1940", Talk given at the STS Research Cluster of the Faculty of Arts and Social Sciences, National University of Singapore, Feb. 12, 2009.

ship-building, and bullet trains, you probably should not jump straight into bluetooth technology, or so I tell graduate students.

Here is one danger with the “interdisciplinary and inter-university grant-funded research project” which, being cognizant of, we can work to correct. Casting our lot with contemporary scientists and engineers (or even contemporary social scientists), we will sometimes be expected—or at least allowed—to be mainly scribes and create relatively narrow pre-histories of contemporary techno-objects. What we really need to produce, however, is a full-blooded history or histories of technologies in Asia, which are no less riveting, critical, and believable than stories we have been producing about politics, religions, wars, cultural movements, and other realms in which people strive, suffer, and fail or succeed. The empirical material is there for the taking and is being taken up by more and more scholars operating under an STS rubric. My hope is that it will be infused with as much life in the writing as it was in the living. The world is waiting for such stories from Asia, and Asia itself (its educated reading public) is part of that expectant crowd.

## References

- Clancey, G. (2006). *Earthquake nation: the cultural politics of Japanese seismicity, 1868–1935*. Berkeley: University of California Press.
- Fridlund, M. (1993). *The teaching of history of technology in Japan: a survey in 1990, working papers from the department of history of science and technology 93/7*. Stockholm: Royal Institute of Technology [KTH].
- Partner, S. (2000). *Assembled in Japan: electronic goods and the making of the Japanese consumer*. Berkeley: University of California Press.
- Hashimoto, T. & Kuriyama, S. (eds). (2001). *Chikoku no Tanjo: Kindai Nihon ni okeru Jikan Ishiki no Keisei [The birth of tardiness: the formation of time consciousness in modern Japan]*. Tokyo: Sangensha.