

Japanese Colonialism and its Sciences: A Commentary

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There is clearly much work to be done on science in the Japanese colonial empire and on colonialism as a category in the Japanese sciences. Political considerations are partly to blame for delaying this research program, though we seem now at the point where Japanese, Korean, Taiwanese and other scholars can work productively together. That the present volume includes, for example, a Korean scholar of Japanese science writing about Taiwan (Kim) demonstrates how cosmopolitan the STS research community in East Asia is becoming, and what stands to be accomplished by both individual and group effort. Likewise, the founding of the East Asian STS Network (and this journal) bodes well for the likelihood that long-neglected issues relating to knowledge creation in Japan's colonial empire will attract attention, and from multiple perspectives.

What then, are some of these issues? In choosing to write about meteorology, seismology, and bacteriology, the authors in this volume have focused on sciences with more to reveal about knowledge creation and social control than about wealth creation and strategic positioning. The 'cultural turn', in other words, so long in coming to historical scholarship on science in Asia, is being made. Race, for example, is a category of interest to all three papers, and one extending beyond social history to the content and practice of science. The old model of "transfer" has also ceased to be controlling. The authors rather seek contrasts in the character of science projects in colony and metropole, with knowledge sometimes traveling in both directions, or even outside the frame. The military emerges as a player in two of the three papers, and the Pacific War is a major event, not an empty watershed between "pre-" and "post-". Japanese science is approached in all three accounts more for what it might tell us about colonialism than developmentalism, representing a maturation toward a search for something closer to the texture of the colonial experience.

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Overshadowing the developmental problematic is a new concern with vulnerability. All three science projects discussed here relate to knowledge of (and control over) natural hazards of some sort—i.e. typhoons/droughts, earthquakes, and epidemic disease—emphasizing that a significant part of science’s colonial mission was keeping disaster at bay. It is worth noting that, to an unusual degree, the potential catastrophes at the root of all three science projects were shared by colony and metropole alike, the Japanese nation-state having a particularly close experience with violent and mortal nature. This makes Japanese claims to be rendering colonial landscapes more benign—or in some cases, describing them as particularly threatening—all the more fascinating. The theme of vulnerability, even if not given full expression in every paper, reminds us that we are still bringing contemporary concerns and understandings to our scholarship on Japanese colonialism, which is both inevitable and, given the right emphasis, potentially illuminating.

An even more fundamental change represented by these papers and other recent scholarship is a formative dislocation of “the colonial” itself, as a distinct realm of research activity in the history of science. If we are no longer discussing the simple “transfer” of science projects from centers to peripheries, and if the hazards which such projects reveal are shared by metropole and colony alike, then what is the proper geographic frame for our studies, and what do we call this place? By the same token, can we continue to describe scientific practices, ideas, or institutions as being “colonial” when the thrust of much recent scholarship is the excavation of intricate networks rather than the privileging of particular nodes? An emerging frame we might consider, and which I will discuss later in this essay, is “multi-local”. But first let me consider the restrictive nature of our traditional choices.

The term “colonial science”, coined by George Basalla (1967) in a very different time, has clearly outlived its usefulness for the authors in this volume. All three papers treat the phrase in a perfunctory manner, and Zaiki & Tsukahara, who give it more play than the others, prefer the term “scientific colonialism” which they borrow from one of their actors (Goto Shimpei). However, given that “colonial science” elicited 7,200 Google hits when I just checked, it obviously still has a constituency and turns up in book titles, book reviews, course syllabi, and general scholarly conversation. In a recent forum on colonial science in *Isis*, nearly all of the essayists criticized the phrase and intelligently pointed out its many limitations, though the editors of journals seem loath to abandon it as an organizing frame (see Shiebinger et al. 2005). It is, after all, simple and direct. It puts together two very big words that all of us know belong together in some manner. But this particular formulation, for all its economy, is the wrong one.

For there to be “colonial science” there has to be a “non-colonial science”, and the distinction increasingly seems dubious. As Basalla himself delighted in documenting, European science grew in sophistication and prominence in precisely the period when Europe was actively colonizing the rest of the world. Basalla excluded the word “colonial” from this “phase one” activity, however, in order to reserve it for “phase two”, and thus keep the discovery period more purely an outward projection of a pre-existing European talent-set. We now recognize, however, that the links between modern science and imperialism were so many, and began so early, that

even if we happen not to be writing about them in a particular instance, they are never capable of being fully banished, if one would even wish to. The most insightful accounts do not wish to, though they also resist the temptation to reach for word “colonialism” too quickly when another might give more subtlety and depth to the analysis.

Although Basalla deployed “colonial science” within a stage model—and mainly in relation to countries which were not politically colonized, such as Japan and Russia—its most commonly scholarly usage describes scientific activity in an overseas colony of Europe. Astronomy in the Dutch East Indies or biological research in British India, in this formula, become “colonial science”, as distinguished from what goes on in Amsterdam or London. In sustaining this distinction, however, we are in some sense colonizing our own historical research program, by not fully excavating the very real linkages between Amsterdam and London on the one hand, and their colonial scientific enterprises on the other. To their credit, the authors of these papers operate in a research space that includes both colony and metropole, and remain concerned about the relationship between them, even if the matter begs for more extended treatment. Ignoring those connections would be to implicitly admit that science could have gone on in the metropolises with or without participants, information, or objects coming in from the larger, mostly colonized world (and going back) which in many instances is just not true. “Colonial science”, in this formulation, suggests a scholarly enterprise off the side of “the history of science” which is an increasingly untenable position.

When Linneaus sat in Amsterdam (and later Uppsala) sorting through botanical specimens brought from dozens of distant, conquered lands, was he doing “colonial science”? Or was it only during his trips to Lapland? Were Darwin and Wallace doing “colonial science” when in the Dutch East Indies or the Galapagos (a colony of Ecuador) and something else entirely when in Britain? Was or was not John Milne doing “colonial science” when overseeing a global network of seismographic stations from the Isle of Wight, most of which were convergent with the British imperial map? When the network of Japanese meteorological stations described by Zaiki & Tsukahara in this volume jump from the home islands to Korea and Taiwan, do just the overseas bits become “colonial science”, or is the whole system transformed in that direction? Clearly the relationship between science and colonialism is more vital and intricate than the phrase invites us to ponder.

A second way of using “colonial science”, however, which is much closer to Basalla’s intention in coining it, is to describe formative scientific communities in nation-states outside Europe during the period of Europe’s scientific ascendancy. For Basalla, the United States, Russia, and Japan were the most important sites of “colonial science” and this partly explains why historians of science in Japan have so commonly referenced his model. In doing so, however, they were using “colonial” in a very different way than historians of the British or Dutch empires, i.e. to describe the situation in their own metropole. As elements of modernization theory, stage models were of course common in both Japan and the United States in the period when Basalla wrote, and fed the habit of quantifying, graphing, or otherwise expressing in supposedly objective terms the “growth” late developing power

centers, a taste that has survived in Japan longer than many other places. In that sense, whether Basalla's "second stage" had been called "colonial" or something else would scarcely have affected its attractive power.

Basalla's casual depiction of Meiji-period Japanese scientists as dependent, peripheral, and lacking in both connection and recognition hardly accords, however, with what we increasingly know of their aspirations and actual situations. Meiji-era physicists, geologists, and seismologists, for example (to take the scientific communities I know best), were busily founding journals, writing both in their own and foreign languages, forming their own research projects while contributing to those abroad, convening conferences at home and going to those overseas, educating graduate students in Tokyo and sending them to Cambridge and Berlin, and being recognized for their efforts by both the Emperor, their fellows at home, and their colleagues abroad, all at the same time. They were hardly the half-formed creatures Basalla designates as "phase 2", divorced from the "invisible college in which the latest ideas and news of the advancing frontiers of science are exchanged". If one wanted news of advancements in seismology at the turn of the twentieth century, one read what was happening in Tokyo, in a journal produced there, and based on instruments invented there (and widely copied in Europe). When an earthquake destroyed San Francisco in 1906, California's geologists sent for their Japanese colleagues, and neither one of these "colonial" scientific thought to engage a European (see Boumsoung 2007; Clancey 2006).

Seismology may be unusual in this regard (along with bacteriology and a few other disciplines in which Japanese scientists established global reputations quite early), but even in the case of disciplines with a stronger 'local' orientation, such as geology, the development of research infrastructures could still be so impressive and intensive that the term 'dependent' does not fit (Shigeru 1974). If anything, some Japanese disciplines became more inward-looking with time, with an increasingly percentage of their publications occurring in the vernacular. Nationalism, more than colonialism, is the crucial frame here, which could be just as strong among Japanese scientists as their European counterparts.

It would be specious to suggest that Japanese science has not looked to European, and later American, science as a model, and often felt itself to occupy a outlying position. But that is hardly the most interesting thing about science in Japan, and letting that plotline dominate our approach has tended to put off the discovery of texture and detail, let alone counter-narratives, which would make "science" a field of dynamic, lived experience convergent with other historical categories. The extension of science projects into Japan's colonies is only one of the stories that historians of Japanese science long missed because of overly reductionist research programs. And even if, to return to the Basallarian formula, European science was the sun with Japanese science one of the planets, then what of the moons? We would do well to remember that their emergence, along with spots on the Sun, constituted the Galilean moment—a fundamental shift in the view of the whole system.

A high priority in "the history of East Asian science" should be developing more multi-sited accounts of how science was done, spoken, written, resisted, etc.—accounts which will simultaneously locate themselves at sites in Asia, and take their subjects out of it (or at least around it). Whether one starts with the local or the distant scarcely matters, as long as the account travels. But if we are really concerned

with breaking the habit of hierarchal arrangement which the term “colonial science” reinforces, it would be best to consider our accounts *multi-local*, rather than jump to further reductionist terms like *global*. It is not hard to locate most accounts of science at multiple points. Scientists have always moved about, or have moved their writings, data, and objects about, and all one usually needs to do is, to use Bruno Latour’s phrase, follow them “in action” (i.e. let them lead us where they will). Many scientists also spent large amounts of time developing patronage relationships with seemingly “non-scientific” actors who become scientific by virtue being drawn into scientists’ networks. They should thus be equally present in our historical accounts, leading to further social and geographic complexity.

Multi-local accounts of science in East Asia (or anywhere) need not ignore the race-based power relations which the term “colonial” conjures. In fact, such unequal power relations are more likely to be revealed in all their dimensions if “colonial” is not a place but a cultural/political frame that exists everywhere at once. If the historian of science moves between the (former) colony and metropole repeatedly, just as his subjects did, finding traces of them in both localities, we are much more likely to grasp the texture of colonialism than if he/she simply mines an archive in a single post-colonial location. Nor do we have to confine ourselves to moving within a single network. Setoguchi’s paper demonstrates how to deploy the still insightful comparative method without privileging either “colonial” or “metropolitan” locations.

Constructivism has taught us to expect locality to effect science projects, though we still need many more stories about its degree and nature, especially in Asia. The following papers provide some interesting examples of how the process worked in the Japanese empire. Setoguchi tells us, for instance, that a “laboratory of medical zoology” was founded in Japanese Taiwan when no such institution existed on the mainland. Taiwan-based medical zoologist Koizumi, despite ties to the Home Islands, seems to have charted his own course in basic research, one that would have a general influence on Japanese “tropical medicine” by the Pacific War. Likewise Zaiki & Tsukahara inform us that Japanese meteorology first became an academic research program in a colonial university. Meteorology (as well as “agricultural science”, which it partially emerged from) had an intimate relationship with Japanese expansionism, having been institutionalized in Hokkaido earlier than Tokyo—through the American-linked *Kaitakushi*—and then carried to Taiwan, Korea, and eventually the Philippines, where a flourishing tradition of weather observation had long existed under Jesuit management.

Examples of Japanese sciences crystallizing in remote locations—institutionally or theoretically—could be multiplied. Seismologist Omori Fusakichi, whose work Kim discusses in relation to Taiwan, made his most important theoretical breakthroughs in field studies conducted in southern Italy (the “gap theory”) and British India (his theory of aftershocks, still called “Omori’s law”).¹ Indeed, mapping the territories within which different Japanese sciences gathered data and developed theories from Meiji to early Showa would reveal a geography extending well beyond spheres of Japanese political influence. This Japanese ‘research geography’

¹See Kim, and Clancey for extended discussions.

overlapped in many instances with those of European science projects, and were not necessarily constrained by them. In other words, the story of Japanese scientific expeditions abroad likely transcends the geography of Japanese colonialism, as it does in the case of Europe or the United States, though we still have much work to do in determining its contours and fleshing out its politics.

The phenomena of colonialism affecting the substance of science throughout the whole network is not unique to Japan. But other aspects of the Japanese experience were more singular. That Japan founded relatively autonomous and well-respected (“Imperial”) universities in its overseas colonies, as Zaiki & Tsukahara remind us, is worth noting when making comparisons with other empires. This was only one aspect of a general overseas transfer of bureaucracies, institutions, and personnel of all kinds in numbers quite out of proportion to the common European practice. At least with Taiwan and Korea, there was hardly the sense of distance, or exoticism, that Europe and the U.S. experienced with their Asian possessions. If anything the relationship was too close and intense. As colonies threatened to disappear into a Greater Japan, “colonization” was experienced by many as identity theft, a situation more analogous to that of Ireland, or a dozen other locations within Europe itself, than that of British India, the Netherlands East Indies, or the Spanish (and later American) Philippines. We should also remember that even the most important Japanese universities—in Tokyo and Kyoto—privileged science and technology more than typical European ones, making the gap between their curriculums and those of their colonial siblings far less than was the case between, for example, Oxbridge and the higher educational institutions in British India.

On the other hand, as all three papers also remind us, Japanese scientists could approach colonial landscapes with the same sense of strangeness as their European counterparts, and often with the same prejudicial frames of reference. Meteorologist Ogasawara’s project of determining the ideal climactic zones for seemingly fragile Japanese bodies, shadowing Ellsworth Huntington, is one of many examples of western racial science finding fertile ground in Asia. An aspect of this engagement that we need to know more about, however, is the influence of Japanese science projects on colonized communities, something that emerges only briefly in these papers or not at all. Excepting the occasional westerner, non-Japanese appear in the following accounts as a vague category of subject acted upon at great distance. Future research might address this problem by focusing more on the internal dynamics of the overseas Imperial universities, which were to some degree meeting grounds for Japanese and indigenous elites.

A second question this material raises, which may be easier to answer using Japanese archives, is how science translated into political policy and language. All three accounts touch upon this, Setogochi taking it furthest, but it deserves deeper treatment. Goto Shimpei clearly spoke a scientific patois, but what of Japanese colonial administrators more generally? And when “the military” emerges in these accounts, is it scientists-in-uniform, who share overlapping values with the civilian scientists at the center of the account, or a group and culture with radically different concerns?

Understanding the science (and engineering) in Japanese colonialism, particularly as they were expressed in education and research, can also inform a larger set of questions. An obvious one is the extent to which Japanese colonial science and

engineering contributed to the techno-scientific cultures (and thus economic rise) of post-war Asian nation-states. This is likely what many scholars of political economy, political science, economic and political history, and allied fields would want such a research program to focus on, though it is to the credit of the emerging STS field in East Asia that it is developing a wider and deeper set of interests. Still, the question of the influence of Japanese colonialism on the post-colonial is inevitable, if politically charged, and historians of science working across cultural boundaries are in an excellent position to contribute to its answer. Not only do we need to know more about Japanese higher education in science as it was established in the colonies, but Japanese science and technology education on every level, including grade schools.

These papers make an excellent start, even if this research program needs to be pushed farther in some of the ways I have suggested. If colonialism is a relatively new category for historians of science in East Asia, it is not for social and cultural historians generally, and we can sharpen our analysis through familiarization with a large existing literature. This also suggests that we train our graduate students, and ourselves, within the broader arenas of “cultural/social history” and even “cultural studies/science studies” if we are to do significant and penetrating things with this new archive.

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