

*Science for the Empire:
Scientific Nationalism in Modern Japan*

by Hiromi Mizuno

Stanford, CA: Stanford University Press, 2009

—

John DiMoia

National University of Singapore

**Questioning the “Irrational”:
Defining Science in Modern Japan**

In July 1942, at the greatest extent of the Japanese empire, a group of intellectuals assembled in Kyoto to address the problem of “Overcoming Modernity,” a set of circumstances with no clear resolution. Weighted with philosophical and cultural baggage, the term “modern” was associated with the broad category of the “West,” and was taken as a stand-in for much of the culture that Japan sought to challenge through its efforts. In addition, “science” emerged as a major part of the same problematic, with this category representing an ongoing issue for the Japanese, certainly at least since the mid-nineteenth century and the diverse reforms of the Meiji period (1868-1912). In fact, the category of science brought with it a great deal of unease, and according to Hiromi Mizuno’s account, this uncertainty nearly ended the discussion prematurely. Much of the discomfort stemmed from the inability of the Japanese actors to articulate to their satisfaction *a modern, non-Western science*, a vision that would allow Japan to imagine itself as triumphant, whether in this conflict, or in the future.

In her work, *Science for the Empire: Scientific Nationalism in Modern Japan*, Hiromi Mizuno, associate professor at the University of Minnesota, selects this opening vignette quite deliberately as her frame, aiming to complicate prevailing tropes concerning the relationship between modern Japan and its science. Both insiders and external observers have frequently adopted a stance similar to the one discussed in Kyoto, with the wartime enthusiasm for all things technological seen as something of an aberration, an irrational, frenzied impulse spilling over into the excesses of the war. The year 1945 brought with it not only military defeat, but also a conscious move away from the zeal associated with this style of scientific practice, soon exchanging it for the measured, regulated, technocratic cadences of Japan's more celebrated postwar success. However, Mizuno questions such a neat distinction centered on the 1945 divide, and equally, any suggestion that Japanese science during the war was somehow excessive or irrational in its approach.

With this contrast informing the core of her story, Mizuno sets for herself the task of refashioning the historiography of Japanese science in the first half of the twentieth century, organizing her work according to three broad sections, each of which contributes to the overall argument. The first section, encompassing chapters one and two, builds on the terminology of "technocracy," especially as defined through the Japanese phrase *kagaku-gijutsu*, or "science-technology," suggesting a convergence of the distinction between the basic and the applied. Next, the complex discourse of Marxism emerges as a formative part of Japan's intellectual milieu for the 1920s and 1930s, with chapters three through five taking up the writings of a select group of Marxist intellectuals and their proposed vision of a scientific Japan, especially in contrast to comparable state-directed visions deriving from the same period, even as the two started to converge. Finally, the last section, here covering chapter six, examines the popularization of science in Japan, looking at a range of periodicals and related materials. Through these three sets of actors, Mizuno depicts Japanese not merely as consumers of science, but

equally as vibrant actors deeply invested in its creation and dissemination.

This last point is significant because although she does not explicitly challenge the literature concerning the Meiji Restoration and its impact upon Japanese practice, Mizuno recognizes a prevailing understanding of the period as one based largely on the reception and implementation of Western science, a form largely borrowed from abroad. On this point, she cites a familiar dichotomy from the period of discourse, the alleged contrast between “Eastern ethics and Western science and technology” (3), implying a familiar spiritual/material divide taken from the age of high imperialism. If Mizuno’s goal is to tackle imperial Japan (1868-1945) more broadly by bringing together the major categories that constitute the modern—in this case, science and nationalism—she also seeks to extend these debates backwards in time to include the earlier periodization. In other words, the hotly contested debates of the 1920s through 1940s, while clearly situated in the context of the mobilization and conduct of the Pacific War, also hold serious implications for the preceding Meiji period, as well as for the Shōwa period (1926-1989), and even the present-day Heisei period (1989-present).

Competing Sets of Protagonists

Beginning with “Toward Technocracy” (chapter one) Mizuno opens the work with the formation of the Kojin Club in 1920, situating this new organization within the dense thicket of transitional developments taking place between the late Meiji and the early Taishō (1912-1926) periods. Formed by Miyamoto Takenosuke, a civil engineer, the Kojin Club represents an effort to bring together Japanese engineers in a new kind of professional solidarity through an organizational structure. Moreover, the effort to foster group identity and class consciousness was not without a set of explicit professional aims, specifically, finding a means to further

the collective interests of engineers, and to provide them with greater access to the inner mechanisms of government. From Mizuno's perspective, Miyamoto and others like him remained a minority in comparison to the class of "law-bureaucrats" (6) prevailing in governing circles, despite their relatively elite status. The club was not only an attempt to enhance status, but also an effort to redefine the category of engineering against its typical understanding originating from the Meiji period.

The labels most commonly associated with engineers derived from the earlier period of rapid social overhaul (25), and often placed engineers in a lesser position, essentially at the service of "law-bureaucrats," who crafted and made the majority of the legal standards by which Japanese society lived. In contrast, engineers like Miyamoto saw their own work as not only technical in nature, but also as equally capable of defining the social order. Moreover, some of their goals might be attainable in the aftermath of World War I, with a rare chance to mobilize and take a stand during the "Taishō democracy" moment of mobility. If Miyamoto's appeal to trade unionism and class consciousness would ultimately fail, Mizuno is less interested in pursuing this story than its succeeding alternative, involving an embrace of the language of the nation. The attempt to define technology (*gijutsu*) by the same set of actors responsible for building much of the nation's material infrastructure made for an appealing alternative to Marxism, and offered in turn a powerful set of patrons to this group of engineers seeking greater exposure for its ideas. Particularly with the global depression of the late 1920s, engineers offered a form of expertise that might provide industrial rationalization, and at least in theory, a means to bypass class politics and economic woes.

In this section and the succeeding section on the development of Japanese Marxism, Mizuno is particularly strong in bringing the Japanese national story into the context of a larger, comparative frame. If her narrative impulse is not necessarily transnational, we are reminded,

nonetheless, of the technocratic appeal of engineering expertise in other parts of the world in the period during and following World War I. As part of that conflict, the Anglo-French blockade placed on Germany greatly reduced Japan's access to its critical supplies of "industrial chemicals, pharmaceuticals, and precision instruments" (13). Rather than seeking another source for such materials, Japan chose to emphasize its own domestic production, and more importantly, the corresponding development of a research infrastructure. In this sense, Mizuno's wartime story, here referring to the Pacific War (1931-1945), approaches a major gap in the literature, one in which the Meiji Restoration story is told exclusively as one of successful transformation through the first decade of the twentieth century. Again, Mizuno's story holds implications for challenging the periodization in both directions, and here, we witness the formative stages in Japan's subsequent industrial development, as it continues to pursue an independent research tradition as a major actor in the second industrial revolution.

Not surprisingly, engineers like Miyamoto were hardly alone in seeking to draw greater attention to their interests, and Mizuno next turns to the rich legacy of Japanese Marxism, another major part of the interwar story. If the technocrats in part one held a particular vision of their role as potential overseers of Japanese science and technology, the Marxist actors in part two take a very different position, with their approach claiming to explain the underlying social and historical circumstances of Japan's experience with modernity, still deemed incomplete. Recall that Miyamoto and the Kojin Club members ultimately deferred on the appeal of identifying with class interests, and that their major complaint with the Japanese government was "because it [Japan] did not let the technocrats run the nation and the empire" (92). Intellectuals like Ogura Kinnosuke, on the other hand, viewed Marxist analysis as the appropriate means to analyze the problems of Japanese society, and moreover, Ogura viewed the analytical tools he wielded as a universalist, scientific means, one that extended to include both the social

and natural sciences.

A reformer initially invested in mathematics education, Ogura sought to use pedagogy as a tool to introduce Japanese children to the natural sciences earlier than in the existing school curriculum. Rather than conveying an abstract notion of the “scientific spirit” (78), an enthusiasm for “the discovery of scientific theories and new technologies” (78), science education according to this vision provided an analytic way of thinking, one well-suited to living in a modern world. As Mizuno carefully traces out Ogura’s reading of Marxist scholarship, she tracks the corresponding development of his growing cultural critique. Originally interested in Japanese mathematics and the history of science, Ogura, with Marxism as his guide, began to conceive of a much sharper vision in which the problems of Japanese science were seen as the historical problems of Japanese capitalism, itself deeply rooted in feudalism through at least the late Tokugawa period. By the early 1930s, Ogura had developed a take on Japanese modernity bridging the social and natural sciences, and more importantly, one that sought to bring the second category into a much closer working relationship with the social problems of Japanese society.

The succeeding chapter further develops this discussion by following Ogura and other like-minded individuals to the formation of the *Yuibutsuron kenkyūkai* (*Yuiken*; Society for the Study of Materialism) in 1932, an organization of Marxist intellectuals headed by Tosaka Jun, and one dedicated to bringing Marxist analysis to bear upon a range of social problems. As Mizuno points out, this was a period of intense and heated debate over the significance of the “scientific”; and, moreover, there were serious consequences to this activity, as the government soon suppressed much of this style of discussion beginning in the mid-1930s, following the turn to war. The survival of the *Yuiken* project until February 1938 was therefore somewhat distinctive and important because of its ability to reach out to new actors and sites through the publication of its journal, and because of its “extensive and continuing

discussion of the sciences” (103). With a large number of natural scientists among its members, the Yuiken group did not simply use the category of science as a cover for their Marxist interests, and instead, sought to sharpen the very character of their analysis, especially in contrast to what they perceived as “unscientific” or loosely conceived ideological forms of inquiry.

With the turn to war by the late 1930s, it was difficult for the Yuiken members to maintain their existence as a group, let alone to preserve any notion of autonomy. In the final chapter of this section, Mizuno presents us with the case of Saigusa Hirota, a Yuken member who continued his scholarly work beyond the formal dissolution of the organization in 1938. Saigusa pursued a project of tracing the historical arc of Japanese scientific tradition, looking for past examples in the Tokugawa period, in effect, building his own idiosyncratic canon. On the one hand, Saigusa played a central role in establishing the history of science and technology as a field in Japan, seeking to critique accounts linking science with “things Japanese” (126), that is, making claims to an exceptionalist Japanese character or set of origins. At the same time, Mizuno cautions against regarding Saigusa’s work as unproblematic, pointing to its convergence with the state’s interests in celebrating science and technology, especially on behalf of the nation. In other words, the very act of establishing of a tradition in which Japanese science emerges during the Tokugawa period was itself contingent on the “specific wartime map of the scientific ... shaped by the state’s active mobilization of science and technology” (130).

If Saigusa’s project, like that of others before him, borders upon the murky territory wherein scientific activity becomes mobilized on behalf of the Japanese wartime nation, this is entirely in keeping with the larger themes of the work and its cautionary vision. The chapter closes with a brief mention of some of his later writings, and here the tone shifts subtly, with Mizuno emphasizing the simultaneous play of subversive tendencies amidst the dark politics of the late 1930s. In a 1943

publication, for example, Saigusa offers a vision of science and technology that echoes the phrases of nationalists—here referred to as the “*minzoku*-specific” (132) (“ethnicity/people”) notion of culture—even while challenging their constrained ideas. If Saigusa entertains the notion of a modern science in Japan, in other words, it remains one based on an appeal to universalist claims about knowledge, and is most emphatically not a uniquely “Japanese science.” Still, Mizuno closes the chapter with a reminder of the ways in which this project was appropriated by the wartime state, here choosing to disagree with Nakayama Shigeru’s reading of Saigusa.

In the final chapter, chapter six, the narrative turns to the theme of popularization, looking at how this collective of issues might have played out to readers at the time. Titled “The Mobilization of Wonder,” the chapter reminds us that the heady debates of the preceding five chapters often took place within a constricted playing field, appealing only to a limited number of elite readers. Mizuno therefore turns to the much larger body of material made available through popular science magazines, including those intended for adults and children. Particularly in the latter case, magazines for children went well beyond the topics covered in the school curriculum, actively appealing to and seeking to instill a sense of wonder. As with earlier chapters, however, there is a palpable tension here, as Mizuno points out the potential danger of “popular science culture ... [being] co-opted by the wartime state” (144). The wonder of discovery, in other words, might easily be transferred to the celebration of new weapons on the battlefield as mobilized on behalf of the nation.

With this caveat in mind, much of the chapter concerns the diverse strategies involved in drawing the reader into the content of these publications. One analogy that proves useful here is to the world’s fairs of the late nineteenth and early twentieth century, a development roughly concurrent with the development of a newer commercial culture in Japan, taking the form of the department store. “Visitors could see an array of

materials from all over the world, packaged in one location” (148) in a store, and similarly, a reader might encounter a display of artifacts taken from around the world. If the politics of some of these publications tended to circulate and reinforce ethnic stereotypes—“a sense of wonder was invoked from looking at the unfamiliar customs and appearances of the various people in ‘exotic’ locations such as Africa and the South Pacific” (148)—Mizuno is quick to point out that the relationship with readers was not always this top-down. Still, the need to create imperial subjects capable of functioning within a modern, scientific world remained as the background concern, especially with children, who served as “scientific subjects” (150) and as the future of the nation.

If the narrative arc of *Science for the Empire* returns us frequently to the theme of the wartime state and its use of science and technology as mobilized towards the achievement of specific goals, this is not the most valuable contribution here, although it remains significant. Even more useful is the task of carefully selecting and accumulating a new and critical analytic vocabulary, a lexis of Japanese science and technology that embraces the diverse intellectual and cultural currents informing debates spanning from the Meiji period to the present, even as the first half of the twentieth century comprises the central focus. Among these keywords would be *kagaku-gijutsu* (“science-technology”), *gijutsu* (“technology”), and *minzoku* (“ethnicity” or “people”), the key items in a complex debate concerning the formative relationship of a nation and its connection to both new and familiar forms of knowledge practice. If this ultimately remains an intellectual and cultural history, and offers less focus on materiality, the strategy reflects a deliberate choice by the author, and the Japan which appears by the end is rendered far less familiar than the celebrated Meiji success story, and equally, far more complicated than the oft-criticized wartime monolith.

What remains is a Japan with many lingering questions to address, and this, too, offers us rich possibilities for future work. Although Mizuno never states so explicitly, her work presents numerous

opportunities to begin transnational inquiry, especially given the enormous soft power of the postwar Japanese state in northeast and southeast Asia. Certainly the project of a (Japanese) analytic vocabulary works for the former colonies of Taiwan and South Korea (and for North Korea, for that matter), and one can speculate about how useful this line of inquiry might be for a site like Singapore, with its industrial production in electronics borrowing heavily from Japanese managerial and bureaucratic practice. Moreover, in stating this implicit transnational impulse, it is clear that the work has successfully challenged the 1945 divide, raising all kinds of questions concerning possible continuities with the postwar state. In part, recent work by other scholars has continued this project of complicating wartime and mid-century Japan, and here the work of Janis Mimura and Aaron S. Moore comes to mind. If *Science for the Empire* concisely and incisively challenges an older portrait of Japan, it offers similar questions to scholars of the nation's regional neighbors and partners.