

## SAW Conference on Writing histories of ancient mathematics – Reflecting on past practices and opening the future, 18th-21st centuries

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organized by Karine Chemla, Agathe Keller, Christine Proust and the SAW group  
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### Cultural histories of mathematics

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*Mikami Yoshio: From the philosophy of mathematics to cultural history of mathematics, and finally scholarly history of mathematics in China*

**Abstract** – In 1913, the historian and philosopher of mathematics Mikami Yoshio (1875-1950) published in Germany the first book-long treatment of the history of mathematics in China ever written in an European language: *The development of mathematics in China and Japan*. One year later, in 1914, the publishing house Open Court at Chicago printed a joint book by David Eugene Smith and Mikami Yoshio (in this order), entitled *A history of Japanese mathematics*.

To begin with, this article explores the contexts and the circumstances in which these two books were written. This requires paying attention to the ways in which, after the Meiji restoration of 1868, the mathematical education provided in Japanese schools abruptly changed, mathematics imported from the West (later referred to as *yosan*) swiftly replacing the knowledge and practices previously developed and taught in Japan (by contrast, referred to as *wasan*). It seems that in this context, the young Mikami studied precisely the “new” mathematics and also English. He further developed an interest in the philosophy of mathematics, in relation to which he entered in contact with milieus in the United States dealing with newly developed geometries (like non-Euclidean geometries), and the philosophical discussion to which they had given rise. Among these milieus, were

those active around the journal *The Monist*, in particular the chief editor, Paul Carus (who had established the publishing house Open Court and also had an interest in Japan), and George Bruce Halsted (1853-1922). Mikami seems to have taken part in the effort of translating key texts on the new geometries into Japanese, among which texts by Halsted himself. During the same years, the mathematical practices and knowledge that had been developed in Japan in the previous decades (*wasan*), and that had been eliminated from the official curricula, shifted from being a practice of mathematics into becoming a topic of historical inquiries, as is demonstrated by the book the *wasan* practitioner Endo Toshisada (1843-1915) published in 1897, under the title *Dai-Nippon Sugakushi* (A history of mathematics in Great Japan). It seems that it was Halsted who in 1905 encouraged Mikami to introduce *wasan* to the West, which led Mikami to become interested in *wasan* and caused a radical reorientation of Mikami's interests. The first part of our article will thus examine how in this first part of his life, Mikami mingled interest in mathematics from the West and from Japan, and established contacts with actors involved in all these types of mathematical activity.

Next, our article puts forward the thesis that one can distinguish at least three phases in the types of historiography of mathematics in China and Japan that Mikami produced. The first phase extends between his first article on the topic, apparently in 1905, and 1918, when he published a revised and expanded edition of Endo's opus magnum. This phase is marked by the fact that Mikami seems to write extensively (and perhaps almost exclusively?) in English. This phase is also characterized by the fact that Mikami concentrates on mathematics *stricto sensu*. His historiography *at the time* is one that places its main emphasis on a comparison between East and West, and attempts to identify the main features characterizing the East in opposition to the West. In carrying out this comparison, Mikami displays an extensive knowledge about the history of mathematics in Europe. In these years, China is moreover treated in continuity with Japan, and mathematical books produced in these languages are read and assessed, using modern concepts and ideas, including historiographic ideas widespread in Western countries at the time (e.g., calculation is an activity inferior to proof). We will examine how the opposition between East and West is shaped.

Even though the theme that mathematics was an art in Japan is already present in these publications, it plays a minor role in Mikami's history of mathematics. The end of the 1910s and the 1920s constitutes the second phase we distinguish. These years seem to testify to a shift in Mikami's historiography, which goes along with the fact that he now publishes extensively (and perhaps even exclusively) in Japanese. In a context in which cultural history seems to develop actively in Japan, Mikami appears to have produced one of the earliest cultural histories in Japanese, one dealing precisely with mathematics (*Japanese mathematics as seen from cultural history*, 1922), followed by a *The Characteristics of mathematics in China* (1926, translated into Chinese under the title 中國算學之特色 in 1929). He now embraces a view of Japan as an entity separate from China, and having specificities in and of itself, which leave their hallmark on every domain of cultural activity (music, etc), including mathematics. As a result, he claims, the mathematics, music, etc, of Japan are different from those of other nations, and, moreover, they

should not be considered separately, independently from other domains of the culture. In this phase of his historiography, we will argue that Mikami puts forward the idea that the operation of “remoulding” is one that characterizes Japanese cultural productions in every domain in which one observes them, including mathematics. We will analyze how he highlights this operation and thereby brings various domains into relation.

Lastly, the third phase we suggest distinguishing in Mikami’s historiography of mathematics includes his later life, especially the 1930s and the wartime period. During this phase, Mikami focuses almost exclusively on empirical examinations of mathematics in China, at a time when, in Japan, "Japanese science" was in vogue. How to interpret this turn? We argue that this turn might have been caused by the fact that Mikami's cultural history was hijacked by the nationalistic mobilization of science/technology during wartime, despite his intention. We will point out elements of a reception of his ideas in discourses of this kind in the 1930s. In any event, Mikami's focus on Chinese mathematics at the time was unique, since there were not many who so seriously studied Chinese science/mathematics when China was regarded in Japan with much arrogance and colonial paternalism, and considered as backward. Moreover, Mikami did not join the chorus of "Japanese science" like Saigusa Hiroto and others. Taking Japanese premodern science seriously functioned as a critique of Japanese fascism in the 1930s. Could it be that taking Chinese premodern mathematics seriously could be interpreted as a critique of Japanese scientific nationalism in the 1940s? The hypothesis we will explore is that Mikami respected Chinese mathematics and disliked how the government and radical-right discourse positioned Japan as the only scientific Asian power during wartime. Could this account for Mikami’s isolation from the world in his later life? We will conclude on this question.