Perspectives on the Evolution of Japanese Medicine

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Kampo, or traditional Japanese medicine, was built on the foundations of the medical theories and practices imported from China and Korea in the sixth century. Between the eighth century, when the Japanese imitated the Chinese medical system, and the nineteenth century adoption of Western medicine, there was no fundamental change in the Japanese health care system. One of the oldest Japanese medical books was the *Ishinpō*, compiled by Tanba Yasuyori in 984. Drawing on more than 200 Chinese and several Korean medical books, this compilation is historically valuable because many of the works that it cites have subsequently disappeared in China and Korea. We know their contents only from the passages preserved in the *Ishinpō*. This pattern would be repeated in later centuries. The Japanese imported and reprinted many Chinese and some Korean medical books up until the Meiji Restoration, and a great number of these works have not survived in their native lands, and exist now only in these Japanese editions.

The main point that I should like to make with regard to the *Ishinpō*, however, is a different one. What is notable about this work is the way in which it displays a characteristically Japanese interpretation of medicine. Although it consists of citations from Chinese and Korean works, the selection of citations reflects a distinctively local approach to sickness and its treatment.

Let me just give one example. One of the important forms of therapy in China, as you all know, was acupuncture; the *Ishinpō*,

accordingly, cites extensively from Chinese works on needling technique. There is one major peculiarity about these citations, however. And it is that they focus almost exclusively on the use of particular needling points, and virtually ignore the conduits that connect them together. In China, these conduits were of crucial importance. In Chinese medical theory these conduits were what linked the microcosmic body with correspondences in the greater cosmos. Many Japanese doctors, however, remained uncertain about the usefulness or even existence of these conduits; the theories of microcosm-macrocosm correspondence seemed too abstract and speculative. For them, the primary reality of acupuncture was the efficacy of needling particular points.

This skepticism about abstract theory, and an insistence on verifiable experience would be one of the persisting characteristics of the Japanese medical tradition.

The Meeting of Western Medicine and Japanese Medicine

From the 1630s until 1858 the feudal government adopted a policy of seclusion. The Shogunate authorized foreign trade only with Holland, China, and Korea, designating Nagasaki as the sole trade port. Trade with Holland thus became Japan's sole window onto Europe. An artificial island called Dejima was constructed in Nagasaki, and Dutch traders were confined to this narrow strip of land. The Dutch established a branch of the East India Company in Dejima, but their activities were subject to close and constant surveillance.

Entry into and departure from Dejima were strictly controlled. Despite the restrictions, however, the Dutch trade and the Dutch doctors stationed at Dejima provided the Japanese with a crucial window onto Western medicine. High officials seeking relief from their chronic ailments, for instance, sent their physicians to learn how Dutch doctors treated such afflictions. Subsequently, some lords of domains near Nagasaki sent their physicians to study surgery,

and to receive a certificate upon completion of their studies. The head of the Dutch trading post traveled once a year to pay his respects to the Shogun in early Edo period. Among the many gifts he presented on this occasion, were richly illustrated medical texts, such as Vesalius's anatomy and Parés treatise on surgery. In time, the daimyo began independently to order Western articles of trade, and among their purchases were Western medical books and instruments. On occasion, they even invited Dutch doctors to their residences and had them perform animal dissections.

Through this process, native doctors came to appreciate the importance of anatomy. The 1680s saw the Japanese rendering of Remmelin's *Microcosmographicus*; this was the first translation of a Western anatomical work. However, because it was carried out by a professional interpreter with the help of Dutch doctor, and also because, traditional physicians were mystified by the original anatomical explanations, this translation had nothing like the impact of the *Kaitai shinsho* or "New Anatomy" (1774), translated some ninety years later.

By the start of the eighteenth century, information from Nagasaki had begun to filter into the general population, and it became possible for even ordinary doctors to set eyes on Western medical texts. Among these were anatomical works. Struck by the dramatic differences between Western and traditional depictions of the body's interior, some doctors wished to find out which was correct. Dissection of human cadavers, however, had been forbidden until 1754 when one such doctor, Yamawaki Toyo, obtained permission from the government to attend the dissection of an executed criminal. His observations at the time convinced Toyo that Western anatomical images (historians speculate that the work he saw was Johann Vesling's anatomy) more faithfully reproduced the true structure of the human body than the pictures found in Chinese works. Transformed by the experience of discovering the truth depicted in a text composed in a distant land, Toyo wrote an essay

on anatomy (*Zōshi*), in which he acknowledged the value of Western medicine, and stressed the necessity of a medicine based on direct, empirical observation.

The *Zōshi* stimulated interest in anatomy, and dissections of the executed criminals began to take place in various places around the country. The most noteworthy of these was that directed by Sugita Gempaku and Maeno Ryotaku on March 4, 1772. By chance, both men had brought along copies of the same anatomical text by Adam Kulmus, a German physician. However, they could not read it at all. Astonished by correspondence between what they saw and the illustrations in the Western text, Gempaku and Ryotaku immediately set to work on translating Kulmus's work. However, having neither dictionaries nor grammar books to consult, they at first relied on the illustrations to guide them. But the traditional Japanese physiology was basically different from Western physiology, and they struggled with the unfamiliarity of many concepts. They were baffled, for example, by the Western accounts of the nervous and circulatory systems, the functioning of the eyes and ears, the role of the brain, and so on. The translation was difficult, and required two and a half years to complete. But its appearance in 1774 marked a pivotal turning point in Japanese history: it initiated the intensive translation of Western medical and scientific texts that utterly and permanently transformed the Japanese perception of medicine and the natural world. Many of the terms coined by *Kaitai shinsho*, such as the words for "nerve" (*shinkei*) and "cartilage" (*nankotsu*), are still the standard medical terms used today.

It should be said that the early translators were lucky. The medical books imported into Japan by the Dutch East India Company, such as the works of Kulmus, Blankaart, and Palfijn, were all bestselling manuals designed for students. Their relatively simple, introductory nature thus made them perfectly suited to Japanese needs.

But in assessing the tremendous impact of Western anatomical

texts on the course of Japanese medicine, it is critical not to overlook the cultural background that made Japanese doctors so receptive to them. One characteristic of the culture at the time deserves particular mention. And that is a keen interest in images. This is one of the most striking differences that separate the Japanese medical tradition from the Chinese. I mean the proliferation of richly detailed, and often colorful pictures.

Let me illustrate the contrast with an example. In the Chinese tradition of tongue diagnosis, there are relatively few illustrations, and the illustrations that do appear are virtually all schematic, colorless images which would be basically meaningless without the accompanying textual explanations. Japanese texts of tongue diagnosis are marked by an abundance of color and subtle detail. The Japanese pictures are designed to be self-explanatory.

Another example. Japanese doctors in the Edo period developed a distinctive method of diagnosis based on the palpation of the abdomen. The manuals on this technique offer rich, if somewhat startling illustrations. In the work known as the "Illustrated view of the hundred abdomens" there is no textual explanation at all; only images of abdomens marked by streaks and patches of color, indicating the configuration of tensions, knots, and other signs felt by the probing hand.

There are also a large number of depictions of the interior of the body. We've already seen fairly standard anatomical images from Yamawaki Toyo's *Zōshi*, and Sugita Gempaku's *Kaitai shinsho*. However, views of the interior of the body also appear in a variety of other contexts. We know, for example, that stores for patent medicines, and, in this case, for false teeth, often displayed figures revealing the inner organs.

Views of the inner body also showed the various organs as reflections of various professions of society. (Fig. 1)

Notable too are the paintings recording the dissections of cadavers, which present not idealized portraits of organs, but actual

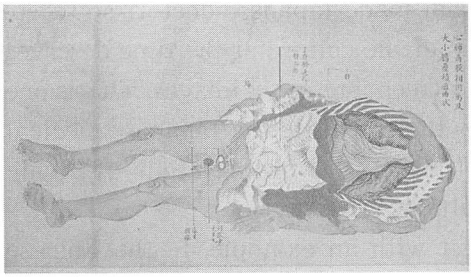

Fig. 1

scenes of dismemberment. (Fig. 2)

The Japanese Surgeon, Hanaoka Seishu

Because the scholars centered around Sugita Gempaku translated Dutch books, they were referred to as *Rangakusha* (scholars of Dutch studies), and the investigation of Western learning through the translation and study of such text came to be known as *Rangaku* (Dutch studies). *Rangaku* gradually spread through the country, but the government's isolation policy made it difficult for doctors to receive direct instruction from Western surgeons. As a result, the new teachings still did not displace traditional medicine. However, the traditional doctor Hanaoka Seishu, working in the remote countryside of Japan, drew inspiration from the information flowing from Nagasaki and in particular from the illustrations in Western texts such as Heister's work of surgery. What most astonished Seishu was the fact that Western surgeons were performing mastectomies. He became determined to perform this same operation himself. His chief challenge was to develop an anesthetic. Although anesthetics were sometimes used by contemporary Japanese bonesetters in treating fractures, none were powerful enough to permit operations such as the one that Seishu envisaged. After trying out a variety of compositions, and testing them on animals—and even on his own wife!—Seishu finally developed the anesthetic called *tsūsensan* in about 1800. This was more than forty years before ether was successfully used as an anesthetic in Boston. A distinguishing feature of *tsūsensan*, however, was that, unlike ether, it was taken as a concoction. Consequently, it was difficult to control the depth of anesthesia, and this made its use very dangerous. Upon the success-

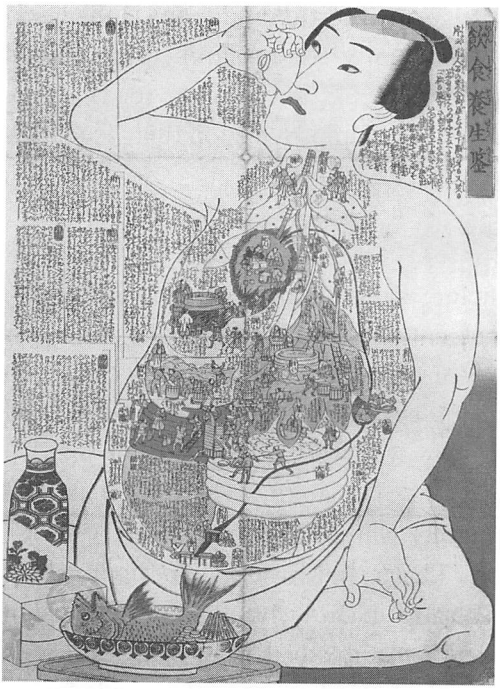

Fig. 2

ful development of *tsū-sensan*, however, Seishu was finally able to carry out a mastectomy. This was in 1804. The scalpel that he used for this operation was not the surgical instrument depicted in Heister's work, but a knife of his own devising. Word of Seishu's success quickly spread, and patients from all over the country flocked to his clinic in the remote countryside. Seishu continued to perfect his technique, and he had sword makers craft new surgical instruments to suit his purposes.

As patients from different regions traveled to his clinic, Seishu undertook a great variety of operations, such as hemorrhoids, tumors, and genital anomalies. Hearing of his fame, medical students also gathered at his clinic. When Seishu died in 1835, his disciples numbered about 1,300.

The greatest strength of Seishu's surgery lay in his anesthetic technique. In retrospect, however, this anesthetic technique also proved to be its greatest weakness. Dangerous, and difficult to use, it was very hard to master. Seishu, moreover, wrote no books. He transmitted his method only orally, and only to select disciples, and he required each of his disciples to swear to do the same. When a student completed his training, he was given a portrait scroll and a set of Hanaoka-style surgical tools. Such was the common method

of the transmission of knowledge in traditional Japan. Unlike science today, there was little opportunity for researchers to gather and stimulate each other, discussing and exchanging ideas. As a result, it was diffcult for his disciples to improve upon their teacher's method, or extensively to promote its spread.

The Maturing of *Rangaku*

The study of Western medicine, centered in Nagasaki, underwent major change in the early nineteenth century. In 1823, when Sieboldt arrived in Japan, the government gave permission for the establishment of a medical school outside Dejima. Here, Sieboldt instructed doctors from all over Japan; however, the school did not lead to advances in surgery surpassing the Hanaoka style. The reason is that at this school, students merely watched Sieboldt treat patients, and copied his prescriptions. There was no systematic medical instruction. On the other hand, the students who acquired fluency in Dutch at this school subsequently established Rangaku schools in different regions, and this greatly helped to spread knowledge of Dutch in Japan, and to increase the population of *Rangaku* scholars.

The Opening of the Country and the Free Introduction of Foreign Medicine

When the isolation policy was abandoned in 1858, the government established a school of Western medicine in Nagasaki, and invited the Dutch naval doctor Pompe von Meerdervoort to teach there. This marked the genuine beginning of Western medical education in Japan. The 28 year old Pompe stayed for five years in Japan, from 1857 to 62 and worked hard to transmit the Western medical curriculum in its entirety, from the basic sciences to clinical training. Upon his request, the local government built a hospital in Nagsaki in 1860. It was the first western hospital in Japan.

Pompe introduced the most current medical knowledge of his time. From his teachings the Japanese learned that the Dutch

medicine that had been laboriously acquired since Siebold was badly out-of-date, and more generally, that medicine was a discipline that had advanced dramatically in the second half of the nineteenth century. This overturned traditional conceptions, which supposed learning to be more perfect the further one approached antiquity. Young people began to aspire to study in Europe. Upon Pompe's departure, Japanese students went to Holland to study abroad for the first time.

The Introduction of German Medicine after the Meiji Restoration

Shortly after Pompe left Japan, the Tokugawa Shogunate collapsed, and the new Meiji government moved quickly to develop a system of Western-style medical education. It created a medical school, the predecessor to the medical school of Tokyo University, and invited foreign doctors as instructors. The first of these was an English doctor, William Willis, who had distinguished himself in the civil wars that marked the end of Tokugawa rule. However, the government decided to follow the model of German medicine, because German medicine was, at the time, preeminent in the world. Through the German consulate the Meiji government thus invited two German military physicians, Leopold Mueller and Theodor Hoffman, who came to Japan in 1871. When the two arrived, they were initially shocked at the low level of medicine in Japan, and even declared that it was too early for doctors like themselves to be teaching there. Nonetheless, they applied themselves earnestly to developing the new medical school. Upon their request, instructors in Latin, chemistry, botany, mineralogy, anatomy, and pharmacology were also brought from Germany. The education of the fifty students in the first year class began with the study of Latin and German, and classes were conducted in German. The Tokyo medical school was thus like a small German medical school right in the middle of Tokyo. After their 3-year term, Mueller and Hoffmann

were replaced by other German doctors, this time not from the military. In 1877 Tokyo University was founded, and a few years later most of the German lecturers left Japan, with the exceptions of the surgeon Julius Scriba (1848-1905), and the physician Erwin Baelz (1849-1913). They arrived about 1876 and taught at Tokyo University for nearly a quarter of a century until 1901.

It was only after the 1890s, however, that graduates of Tokyo University, who had studied in Germany, returned to teach at Tokyo University. It was these students returning from Germany who led the university-centered modernization of Japanese medicine.

The Reception of American and English Medicine

In this way, Japanese medicine from the Meiji Restoration until the Second World War centered on exchanges with the European continent, and in particular with Germany and Austria. Near the end of the Second World War, however, as defeat seemed imminent, Japan reverted to a quasi-isolated state, and at the conclusion of the war, virtually no information was flowing in from abroad. Western medicine had made great advances during this period, so that Japanese doctors once again found themselves lagging behind. After the war, however, as life returned to normal in the 1950s, doctors eager for current medical knowledge went to study in America and England. It was these doctors trained in English-speaking lands who laid the foundations for contemporary Japanese medicine.