

The Central Nervous System in the 18th Century Japanese Dissection Scrolls: Art of Observation and Dissection

Abstract: European anatomical volumes arrived in Japan in the late 18th century, resulting in a paradigm shift in knowledge transfer. This transformation was catalyzed by the introduction of Gerard Dieten's 1733 Dutch translation of Johann Adam Kulmus's *Anatomische Tabellen* (1731), called the *Ontleedkundige Tafelen* in Japanese. Kulmus's textbook was translated into Japanese and many of its images were used to produce the epoch changing anatomical illustrations carried out as wood engravings in a volume called the *Kaitai Shinsho* ("New Book of Anatomy"). The *Kaitai Shinsho* allowed Japanese physicians access to anatomical plates and descriptions in Japanese while performing and documenting human dissections. This proposal will explore: 1) the transfer of anatomical illustrations related to the central nervous system from Kulmus's volume to the wood engravings of the *Kaitai Shinsho*, 2) how these wood engravings were used as a dissection manual or guide to perform and illustrate scrolls and codices concerning human dissections, and 3) to outline how these scrolls were used in the teaching of anatomical knowledge.

Background: On March 4, 1771, a court surgeon of the Obama Clan, Gempaku Sugita (1733- 1817), Junnan Nakagawa a junior colleague (1739-1786), and Ryotaku Maeno (1723-1803) a senior physician, attended the dissection of a body after execution at Kotsugahara in Yedo (Tokyo).^{1,2,3} Sugita and Maeno had previously imported from Holland, and each brought along, the same volume on human anatomy, Gerard Dieten's 1733 Dutch translation of Johann Adam Kulmus's (1689-1745) *Anatomische Tabellen* (1731) was called the *Ontleedkundige Tafelen* (1734) in Japanese. These physicians, as on comparing their visual observations of the ongoing dissection and the anatomical illustrations present in Kulmus's volume were deeply moved by the accuracy of the plates in the *Ontleedkundige Tafelen*. Three and a half years later, in 1774, the remarkable efforts of these three individuals resulted in the publication of the first translation into Japanese of a Western medical text, called the *Kaitai Shinsho*, (New Book of Anatomy) in four volumes.^{1,2,3} This publication heralded the beginning of three innovations in Japanese medical culture. First, the *Kaitai Shinsho* propelled the modern transformation of Japanese medicine, by focusing study on an anatomical approach to the body and outlining how direct visual observation was critical to increase knowledge of the human body. Second, the *Kaitai Shinsho*, functioned like a dissection manual or guide equivalent to how the translation from Latin to Italian of Mondino dei Liuzzi's (1270-1326) anatomical thesis in the 1493/94 *Fasciculus di Medicina* became an essential Renaissance dissection manual.⁴ The *Kaitai Shinsho* resulted in a paradigm shift in knowledge transfer which allowed Japanese physicians access to accurate descriptions and anatomical plates in their own language during the performing and documenting of their own findings during dissections. Third, the, *Kaitai Shinsho* stimulated the rise of Rangaku (Dutch studies), which contributed to defining of Japanese medical history, through the study of Western science.⁵

Goals:

1) To outline how anatomical illustrations of the central nervous system in the Dutch translation of Kulmus's *Anatomische Tabellen* correspond to the wood engravings of the *Kaitai Shinsho*. These wood engravings were derived from copper engravings contained in Kulmus's textbook, but the titlepage was copied from the volume by Juan Valverde de Amusco (1525-1587) *Vivae Imagines Partium Corporis* (1566). Some of the anatomical woodcuts were derived from the 1690 Dutch edition of Govand Bidloo's (1649-1716) book entitled *Ontleding des menschelyken lichaams*. We will compare Japanese woodcut engravings carried out before publication of the *Kaitai Shinsho* to those in Kulmus's *Anatomische Tabellen* and outline the anatomical illustrations of the central nervous system used by the Japanese translators and illustrated by Odano Naotake for the *Kaitai Shinsho*. These studies should help provide a visual assessment of how depictions of the body evolved in Japanese medicine in late 18th century Japan stimulated by Japanese physicians and carried out by Odano Naotake a renowned Edno artist.³

2) To utilize the Japanese dissection scrolls (all created after the publication of the *Kaitai Shinsho*), to assess how this volume was used as a dissection manual and guide to depict the central nervous system. In 1754, Toyo Yamawaki (1705-1762) received permission from Kyoto to dissect a decapitated criminal. Yamawaki and

other physicians attended the first documented dissection carried out in Japan. Yamawaki wrote a book called *Zoshi* (“*Notes on Viscera*”) about this dissection which was published in 1759. The author outlined Chinese medical theory errors and stressed the importance of visual observation. This dissection set the stage for further human dissections and documentation of results. However, dissections remained very rare in Japan. What appeared to be needed was a catalyst and the *Kaitai Shinsho* satisfied this role by fulfilling a significant knowledge gap and functioning as a guide to human dissection. The Osler Collection contains two anatomical scrolls which outline the dissections carried out on decapitated criminals, and an anatomical codex of another dissection. Utilizing these resources along with other scrolls and codex dissections available in other institutions, will allow a comparison of how the central nervous system wood engravings present in the *Kaitai Shinsho* helped guide the colored drawings of Japanese human dissection scrolls.

3) To outline how scrolls and manuscripts depicting dissections may have been used to teach anatomical knowledge in Japan during the 18th and 19th century.

Methods of research: Several Japanese dissection scrolls will be used including Osler’s “*Namisō Hōshi kai keiyo fu shi no zu : Fu sai sanjūshichi, furoki tōkotsu zenkotsu ena sōhō no zu*” scroll, the dissection of Heijiro scroll from 1783, a copy of which is also present in the College of Physicians of Philadelphia,⁶ Japanese scrolls in the Keio University Library in Japan,⁷ along with McGill’s *Kakkotsu shinkeizu* Codex. This will allow us to compare the CNS drawing and paintings in these scrolls with the wood engraving illustrations in the *Kaitai Shinsho*. [Furthermore,](#) travel funding (\$500) to examine the Philadelphia scroll for comparison to Osler holdings would be useful to enhance my investigations.

References:

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