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Certificate of Participation

This is to certify that the following delegate participated in the International Congress of History of Science, Technology and Medicine in Manchester
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Paper presentation

Instructing the native apprentices in Istanbul: British mechanics in the Imperial Gun Factory of Tophane, 1869-1874

Part of T203-D. Science and technology across boundaries

Sat 27 July, 16:00–17:30

In Session group T203. Technical cultures of practice and knowledge

on behalf of the iCHSTM 2103 Local Organising Committee

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de tal magnitud? Las historias sobre la Válvula de Hakim, o deberíamos decir, las historias sobre las múltiples Válvulas diseñadas por los Hakim, de forma muy valiosa han narrado la secuencia de hechos ocurridos desde la década de los 60´s respecto a Salomón Hakim y su herederos científicos, a través de un discurso progresivo, que deja abierta la pregunta al por qué en Colombia, y no en otro lado, se produjo la invención y el descubrimiento inicial. Esta pregunta cobra más valor en tanto "Colombia" refiere a la "periferia". Así pues, la pregunta se aguza: ¿por qué en la periferia y no en los centros de cálculo? Nuestra investigación se orienta a responder esta pregunta, a través de los concentos de Marco tecnológico, Inclusión y Flexibilidad Interpretativa, propuestos por Bijker en el paper "The Social Construction of Bakelite: Toward a Theory of Invention" (1989). Adicionalmente, a través de esta investigación pretendemos deconstruir el concepto de "periferia".

The Hakim valve: why was it invented in Colombia and not in centers of knowledge?

The Colombian and international scientific community, like the Colombian media, have lauded justly Salomon Hakim as one of the leading Colombia's scientists in the twentieth century, thanks to the discovery of the Normal Pressure Hydrocephalus Syndrome and the invention of a techno-scientific device for treatment of hydrocephalus. Part of the praise comes from the mystery that causes achieving a scientific development, of that magnitude, in a scientifically peripheral country. How could it be, that in a country like Colombia, in the early 60's, there were a scientific development of such magnitude? Stories about Hakim valve, or should we say, stories about the multiple valves designed by Hakim Family, have narrated, very valuable, the sequence of events since the early 60's about Salomon Hakim and his scientific inheritors through a progressive discourse, which leaves open the question why in Colombia, and nowhere else, there was the discovery and initial invention. This question is more value as "Colombia" refers to the "periphery". So the question is sharpened: why in the periphery and not in knowledge centers? Our research aims to answer this question through concepts of Technological Frame, Inclusion and Interpretative Flexibility, proposed by Bijker in the paper "The Social Construction of Bakelite: Toward a Theory of Invention" (1989). Additionally, through this research we want to deconstruct the concept of "periphery".

This presentation is based on work co-authored by Carlos Andres Arroyave Bernal.

T203-D. Science and technology across boundaries

Sat 27 July, 16:00–17:30 ▪ Roscoe 1.007

Chair: Matteo SERAFINI | University of Bologna, Italy

Pu CHEN | Harbin Institute of Technology, China

Research on the process of the steam engine's introduction into China

Steam engine is an important mechanical invention in the industrial revolution. With the Western Learning, steam engine is gradually introduced to China. The first book who introduced the principle of the steam engine is the Eastern Western Monthly Magazine which is edited by Guo Shila. After then a number of books of the steam engine have appeared in China. Ding Gongchen also made a steam engine model. Xu Shou made the first steam engine of China in 1862. It encountered many difficulties in the process of steam engine was introduced into China, including the lack of engineering and technical personnel and the machines tools. The officials of Qing government addressed these problems through the purchase of Western equipment and the hiring of foreign technicians for technical training of workers. Since then, with the deepening of the Westernization Movement, the technology of steam engine was gradually spread in China.

Feza GÜNERGUN | Istanbul University, Turkey

Instructing the native apprentices in Istanbul: British mechanics in the Imperial Gun Factory of Tophane, 1869-1874

The sending of the Imperial Engineering Shool (Istanbul) graduates to European industrial plants for training and the hiring of foreign engineers, mechanics and foremen were the two major stratagems that the Ottoman government relied on for the modernisation of Ottoman weapon industry in the 19th century. The aim was to train the qualified native labor and gradually decrease foreign dependency. The first group of graduates sent to Europe in 1834 included Halil Efendi who was trained in the Royal Arsenal Woolwich in London. Back to Istanbul, he was assigned to the Imperial Gun Factory of Tophane where he administered from 1863 until his death in 1873 with a brief break. During his governance, Halil Pasha invited several British mechanics to contribute to the production and improvement of weaponry in the Gun Factory.

A group of British foremen arrived in late 1868 headed by the engineer John Mackenzie. Soon after their arrival, Halil Pasha asked Mackenzie, who by then had taken charge of the Gun Department, to introduce a system for teaching the native staff the art of "practical mechanics". Mackenzie suggested the payment of a certain remuneration to foremen-instructors, the apprentices and servicemen. The instruction commenced on 1st September 1869. When any of these native staff shall attain the first, second and third degree of proficiency (each of 2 years) which shall be equal to *onbaşı* (corporal), *çavuş* (sergeant) and *mülazım* (lieutenant), the instructor was to receive £ 5, 10 and 15 per head, respectively. The instruction was carried on successfully but the payment of the promised remuneration was repeatedly postponed by the Tophane administration despite Mackenzie's petitions, who himself was eventually dismissed together with the eleven English employees following the death of Halil Pasha in 1873.

Halil Pasha, despite his willingness to impove gun and canon production in Istanbul, to train native apprentices by foreigners and thus to diminish foreign reliance, does not seem to have succeeded to overcome Ottoman bureaucracy and treasury. This short term experience in instructing mechanics at the Tophane foundries is indicative of the Ottoman standpoint in technical training. The present paper aims to introduce and analyse this experience within the context of Ottoman modernisation of gun production and manpower development.

Hajime MIZOGUCHI | Rissho University, Japan

The influence on Japanese zoology of foreign zoologists who visited Japan before World War II

In the present study, the author classified three groups of zoologists who visited Japan before World War II to know their contribution for the establishment of Japanese zoology.

The first group was the zoologists who stayed in Japan to teach the knowledge and research method for Japanese students. They were American zoologists, such as E. S. Morse, C. O. Whitman and R. Goldschmidt. The second group was the zoologists whose main aims came to Japan are collection of animal specimen, zoological material s for researches. They were German zoologist, F. M. Hilgendorf, American ichthyologists, D. S. Jordan and B. Dean, herpetologist, L. H. Stejneger, and collectors of butterflies, Pryer, M. A. Fenton and A.Owston. The third group was the zoologists who did not come to Japan. However, they investigated, named, and classified Japanese zoological specimen. They were P. Bleaker, the Netherland, A. Gunther, United Kingdom, and F. Steindachner.

Among them, the author noticed the scientific activities and their impact of Japanese zoology done by L.H. Stejneger(1851-1943) and R.