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### **Scientific Transfer between Europe and Japan. The Influence of Dutch and German Medicine from the Edo Period to the Meiji Restoration\***

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#### **RESÜMEE**

This paper analyses the cultural and scientific relations of Japan, illustrating how the reception of new knowledge can undermine an existing scientific paradigm and urge a response to the resultant crisis. In the case of Japan, the reaction to this situation of crisis would have a positive outcome: the powerful sense of national identity (though at times verging on nationalistic extremes) and the economic rationality of Japanese culture enabled the country to undertake innovative scientific-technological development. Such issues here are analysed through the role of medicine, influenced initially by an age-old Chinese culture and then by western scientific methods (thanks to the mediation of first the Spanish-Portuguese, then – much more significantly – the Dutch). The analysis here, however, focuses on the far from irrelevant role of German medicine as exemplified by three German physicians at the service of the Dutch VOC: Engelbert Kaempfer, Philipp Franz Balthasar von Siebold and Erwin Baelz. The reception of their work both in Europe and Japan illustrates a slow transition from traditional praxis to a more complex approach that would ultimately prove triumphant.

1. In spite of the fact that Japan was a country that tried to remain isolated, the history of its scientific culture is marked by the complex and sometimes difficult relations that this nation had with the rest of the world over the course of time. Using chronological divisions that originated in the West but were already being used by Japanese historians in the nineteenth century, one might say that in the “medieval” period Japan was strongly

influenced by other Asian countries such as China and Korea, whilst in the “Early Modern” era cross-cultural relations and technological transfer among the different areas of Asia became more complicated. The aim of this paper is to analyse the scientific transfer from Europe to Japan, a phenomenon that has to some extent been discussed, from different points of view, in a wide body of literature.<sup>1</sup> In doing so, I will look primarily at two main issues: the role of medicine in the complex relations that existed between the European and Chinese culture within the Japanese context, and the specific role and significance of German medicine within this cultural/scientific exchange.

Influences and borrowings from the West were already present during the Edo period, with the phenomenon becoming even more pronounced during the course of the nineteenth century (over what has become known as the imperial restoration of the Meiji). And the way in which Japan responded to this input reveals certain original features. What one must do here is assess what Shigeru Nakayama, one of the leading historians of Japanese science, has described as the “the characteristics of scientific development in Japan”<sup>2</sup>, given that such ‘characteristics’ were bound up not only with the scientific but also with the philosophical, cultural and religious traditions within the country. A source of continuing interest – and unresolved questions – for historians, this is a ‘case study’ which requires one to reflect upon the capacity of a specific cultural context to react positively to undoubtedly more advanced influences from abroad; its ability to appropriate and assimilate those influences over time and them perhaps outstrip them. As has been noted, Japan was for a long period a sort of sponge absorbing scientific and technological knowledge arriving from abroad.<sup>3</sup>

The role of medicine here exemplifies this issue with particular clarity, for – as numerous works have demonstrated – whilst Japan was open to a large range of applied and theoretical sciences (mathematics, geography, astronomy, etc.), it was medical science that would play an essential role in the complex relations of scientific exchange between Japan and Europe. Opening with the arrival of the Portuguese in the sixteenth century, this scientific transfer would reach its height during the course of the nineteenth century, gradually becoming bound up with some of the most deeply-rooted aspects of Japanese culture. Already in 1552 Francis Xavier was writing to Ignatius Loyola that missionaries who were sent to the Japanese archipelago should not only be instructed in cosmology or astronomy but also in “natural philosophy which engages people’s minds”.<sup>4</sup> More

\* I am very grateful to Harald Kleinschmidt, former Director of the College of International Relations at Tsukuba University and a scholar with a deep knowledge of Japanese culture and history, for first having aroused my interest in an area of study that is as stimulating as it is complex. I am also grateful to him for reading a first draft of this article and for making suggestions upon it. Any errors and defects in the final paper are of course purely my own.

1 “The Structure of Scientific Revolutions”, Chicago 1962 by Thomas S. Kuhn remains a fundamental point of departure for every analysis of this kind.

2 Shigeru Nakayama, *Characteristics of Scientific Development in Japan*, New Delhi 1977.

3 Masao Watanabe, *Science and Cultural Exchange in Modern History: Japan and the West*, Tokyo 1997.

4 Masayoshi Sugimoto / David L. Swain, *Science and Culture in Traditional Japan, A. D. 600–1854*, Cambridge 1978, p. 200.

prosaically, one might observe that medicine – and particular surgery – necessarily had a direct social impact in a country where armed conflict continued almost uninterrupted throughout the sixteenth century; any help in caring for the wounded – even if it came from abroad – was bound to be seen as beneficial. It is no accident that there are references to the influence of “southern barbarian surgery” practiced by the Portuguese and the Spanish, with a particularly important contribution from French medicine in the form of the work of physician Ambroise Paré. (In developing a sort of ‘field medicine’, Paré had specialised in the treatment of gunshot and cannonball wounds, in amputations and operations on broken bones and dislocations, and in the invention of various instruments.) It was, in fact, during the course of the sixteenth century that the influence of the Eastern tradition – and the Chinese tradition in particular – was supplemented by technological and scientific knowledge brought to the country by the European ‘barbarians’ (nambanjin), first from Mediterranean countries (Portugal and Spain) and later from north-western countries (France, Germany, Great Britain and Holland).<sup>5</sup> We know, for example, that it was the Portuguese who introduced firearms into Japan – or at least brought new techniques that were a definite development upon the Chinese know-how that had influenced the art of war in Japan in previous centuries.

However, after the attempts to Christianize the country by the Jesuits (predominantly Portuguese) and the Franciscans (predominantly Spanish) were brought to an end in 1638, the Tokugawa government became openly hostile to the cultural and religious influence of Westerners, fearing that it could undermine their control over the population and therefore weaken the basis of its own political power. Still, even in this more complex period of carefully controlled international contacts, Western influences continued to be present, with modern historians interpreting the so-called “closure” of the country (sakoku) as inspired not by a desire to totally sever international relations but rather to keep them under strict surveillance. It is no coincidence that, after the decrees of 1625 and 1638 had expelled Portuguese and Spanish merchants and missionaries, the Dutch were still allowed to maintain a presence in a few Japanese ports. As early as 1609 they had set up a trading station at Hirado, and in 1616 had obtained licences for commercial operations in the ports of Nagasaki and Hirado; then, from 1641 onwards, they would provide the sole channel of official communication with the West, through the small island of Dejima at Nagasaki. And it was through these Dutch go-betweens that a link with European science was maintained by a Japanese scientific culture which did not simply turn inwards, even if the shogunate itself had begun following a more wary policy towards the outside world.<sup>6</sup> This openness towards the external world was made possible by the fact that – unlike the Spanish and the Portuguese – the Dutch were not considered

5 Red Hair Medicine. Dutch-Japanese Medical Relations, H. Beukers, A. M. Luyendijk-Elshout, M. E. van Opstallt and F. Vos eds., Amsterdam 1991.

6 “The Dutch were called Kômô-jin or ‘red-haired people’, and the western civilization which they brought with them was also called Kômô”. Yabuuti Kiyosi, *The Pre-History of Modern Science in Japan: the Importation of Western Science during the Tokugawa Period*, in: *Scientific Aspects of European Expansion*, William K. Storey ed., Aldershot 1996, p. 209.

a threat to the authority of the emperor or the shogun: they appeared far more interested in doing business and turning a profit than in evangelizing. Nevertheless, a sort Index was set up, managed by a special Office responsible for examining any publication of Western origin to be brought into the Japan – whether directly from Europe itself or via China. Whilst this Office of the Index was much more bureaucratic and less concerned with specifically religious matters than its ‘counterpart’ in Counter Reformation Europe, the purposes of the two bodies were rather similar, given that the Japanese agency was concerned to prevent any surreptitious introduction of Catholicism under cover of scientific treatises.<sup>7</sup> However, the 1630 Kanei Edict issued by the shogun Iemitsu Tokugawa had made it extremely difficult to distinguish between strictly scientific information and works of a religious/missionary character: an extant list of Western scientific treatises translated into Chinese and then submitted for import to Japan reveals just how many works were banned by the shogunate authorities even if they were strictly scientific in content.<sup>8</sup> Nevertheless it was rather more difficult to ban works of a purely technical/technological nature as these could often be manuals that arrived via a route more ‘spontaneous’ than the channels for treatises inspired by wide-ranging cultural/philosophical scientific interests. Yet though some sort ‘closure’ against the West is undeniable, it is also clear that the Japanese authorities did not want to deny themselves knowledge which might prove beneficial to the scientific and technological standing of the country. In effect, Dutch culture and scientific writing would, for all its limitations, be recognised as a cultural entity in its own right and identified by the term of *Rangakusha*.<sup>9</sup> What began now was a long period wherein the cultural exchange between Europe and Japan was defined by the role played by the Dutch, whose merchants diplomatically submitted to the careful controls imposed by the Japanese authorities.<sup>10</sup> Then would come a second phase, during which Japanese culture was more open to the outside world; less sure of itself, this culture recognised the greater power and efficacy of Western technology over a centuries-old Chinese tradition. Nevertheless, Japan would continue to react to this influx with diffidence and hostility. So if, at the beginning of the eighteenth century, the shogunate itself was increasing contacts with the outside world, it was inspired partly by continuing curiosity, partly by an eagerness to measure itself against Western culture.

7 Sugimoto/Swain, *Science and Culture in Traditional Japan* (note 4), pp. 162-163.

8 Shio Sakanishi, *Prohibition of Import of Certain Chinese Books and the Policy of the Edo Government*, in: *Journal of the American Oriental Society*, 57, No.3 (1937), pp. 290-303.

9 Grant K. Goodman, *Japan and the Dutch, 1600–1853*, Richmond 2000, pp. 69-88.

10 As is well-known, at the beginning of their stay in Japan the Dutch delegation was required to make an annual visit to the shogun at Edo (Tokyo). It has been calculated that such delegation visits took place 116 times in the 218 years between 1633 and 1850. In 1790 the times appointed for these visits were changed, and thereafter one visit was made every five years. Yabuuti Kiyosi, *The Pre-History of Modern Science in Japan* (note 6), p. 260 fn. The Dutch would present the shogun with gifts as a sign of their submission to his rule. However, they were not his subjects and were not required to officially recognise his authority over them (as the Japanese themselves were with regard to the authority of the Chinese emperor).

Furthermore, at the same time as the late eighteenth century saw a political and economic crisis threaten the Tokugawa government, Westerners themselves became more aggressive: first the Russians, then – during the course of the nineteenth century – the English, Americans and Prussians. This era of political/institutional and cultural openness was – like the long period that preceded it – characterised by alternate (often contradictory) phases. However, setting its political/institutional implications to one side, this so-called “Meiji Regeneration” was inspired by a wish to remedy the cultural/scientific inferiority Japan felt with regard to the West. In this phase, the policy with regard to scientific praxis and research was clearly influenced by a desire to ‘westernise’.<sup>11</sup>

2. All of these aspects are particularly clear in the practice of medicine, which on the one hand continued to follow the dictates of Chinese science and philosophy and, on the other, was influenced by the continuing presence in the country of scientists from the West. As has been claimed – perhaps in too categorical a fashion:

*if the classical scientific revolution of the sixteenth and seventeenth centuries began with physics and then spread elsewhere [...] Japanese intellectuals first studied Western science not through physics, but through medicine.*<sup>12</sup>

Hence certain physicians and natural scientists – of whom I would take Engelbert Kaempfer, Philipp Franz Balthasar von Siebold and Erwin von Baelz as characteristic examples – serve to illustrate the various phases in scientific-cultural transfer between Europe (Germany in particular) and Japan. An examination of their influence reveals not only the type of scientific exchange involved but also casts light on how these two cultural areas viewed each other from the end of the seventeenth to the second half of the nineteenth century. For example, it has been argued that Engelbert Kaempfer, one of the first European travellers in Tokugawa Japan, was motivated by a mix of both anthropological fascination and rigorous scientific curiosity.<sup>13</sup> With Philipp von Siebold, on the other hand, one finds a type of medical practice which is closer to the standards then applying in Europe; and by the time one gets to Erwin von Baelz, one finds teaching and learning – that is, the mutual exchange of medical knowledge – playing a central role. In a certain sense, these scientist-travellers exemplify the salient features of an historical process in which the Japanese retained their cultural origins and identity at the same time as engaging with the cultures of Asia and Europe.

One point that is of particular relevance with regard to the Edo-Tokugawa period concerns the organisation of scientific research under the government of the shogun. Whilst it is true that “there [was] neither an institutionalised research role nor anything like

11 George Basalla identifies three overlapping phases or stages in “The spread of Western science” on Oriental countries (in: *Scientific Aspects of European Expansion* [note 6], pp. 1-3).

12 Bartholomew, *The Formation of Science in Japan. Building a Research Tradition*, New Haven/London 1989, p. 4.

13 D. Haberland, *Zwischen Humanismus und Humboldt: Landeskundliches und topographisches Denken bei Engelbert Kaempfer*, in: Engelbert Kaempfer (1651–1716). Ein Gelehrtenleben zwischen Tradition und Innovation, Wiesbaden 2004, pp. 105 f; idem, *Engelbert Kaempfer, 1651–1716. A Biography*, London 1996.

a modern scientific community,” many scientific practitioners did have the chance to carry out experiments and published results, if not in scientific journals at least in the form of commentaries. It is also true that while there was no centralised national funding or direct sponsorship by aristocratic institutions, research was incorporated within an individual fiefdom and under the control of an individual *daimyo*. The absence of a rigid institutional framework would, paradoxically, make for “a social mobility that was not otherwise available” in a Japanese society that was so formally divided into ranks and hierarchies.<sup>14</sup> Nevertheless, even the Tokugawa were unable to impose a system for the recruitment of physicians solely upon the basis of national identity or satisfaction of requisite scientific standards. It would only be in the last decade of the eighteenth century that the shogunate tried to introduce “general examinations; but this was carried out only tentatively by testing candidates in Confucian studies from the lower Samurai class.”<sup>15</sup> Thus one sees none of the distinctive features that characterised the scientific revolution in Europe – that is, the possibility for the researcher to move beyond his own specific circle and make the results of his work more widely known. Nevertheless, while it may be true that “Tokugawa society did not support the pursuit of knowledge for its own sake, nor did Japanese scientists think that they should contribute to universal knowledge” (to quote Shigeru Nakayama), it would seem that James Bartholomew<sup>16</sup> is overstating the case when he says there was a lack of “a dispassionate attitude and [no] stress on objectivity”. This is too severe an assessment of Japanese men of science, a number of whom were very attentive to information which reached them from the outside world. At the same time, it overlooks the holistic view of the world which Japanese culture shared with Chinese philosophy. The latter argued that all natural and human sciences strove for universal harmony; there was no rupture between the terrestrial and spiritual world, and man should strive to co-exist with Nature, not subjugate it to his own ends and purposes. And even when one considers the Chinese philosophy of Zhu Xi’s, which was widely accepted by the first Tokugawa, the conclusions one should draw about its influence are not as clear-cut as they might seem. True, this philosophy argued that the total synthesis of knowledge was to be organized on three main levels – Nature, which embraced the entire universe; Society, understood as a political, social and economic unit; and Man himself, who was to be understood, and thus nurtured, on the basis of moral principles – and so advocated an approach that marks a sharp divide between the Eastern scientific world and the Western science. With regard to the latter, the term “scientific revolution” may at times be used with excessive emphasis, but it does

14 “It was expected, for instance, that the son of a doctor would eventually be registered as a doctor, regardless of how little aptitude or motivation he might have. The shogunal and fief governments needed talented professionals, however, and governmental authorities often resolved the conflict by advising a professional family to adopt a gifted youngster”. However, there was still little likelihood of ever achieving high earnings: Shigeru Nakayama, Japan, in: *The Cambridge History of Science, IV, Eighteenth-Century Science*, R. Porter ed., Cambridge 2003, pp. 698-717, esp. p. 699.

15 *Ibid.*, p. 699.

16 Bartholomew, *The Formation of Science in Japan* (note 12), p. 10, who nevertheless quotes Shigeru Nakayama himself.

register an important shift in the West, where research would henceforward be pursued in a number of well-defined sectors, investigated with the aid of mathematics. However, while one is justified in identifying a Japanese approach to the development of science and knowledge that is different to that embodied in this Western *Weltanschauung*, one should also remember that the practical focus on prevention and a general state of health – the very core of Eastern medicine – can be said to follow on inevitably from the philosophical premises at the basis of that discipline.

What is beyond doubt is that, in Japan, Western science had to measure itself directly against this Chinese heritage. Only by demonstrating itself to be more efficient in a multiplicity of fields would it be able, first, to stand alongside Chinese science, and then to supplant it altogether.<sup>17</sup> And though one must recognise that this ‘supplanting’ was in part due to the cultural-scientific policies pursued, for strategic reasons, by nineteenth-century Japanese authorities (particularly after the Meiji restoration),<sup>18</sup> it is also clear that the ground for this was prepared in previous centuries, thanks to the interchange with western cultures during the Edo period. Though these exchanges may have fluctuated according to the political will of individual shoguns and the policies they pursued, it would be a mistake to deny that they existed at all.

Furthermore, one must distinguish between the real contribution that individual European sciences made in Tokugawa Japan. During the course of the seventeenth century it had been German gunsmiths and military experts who penetrated that world<sup>19</sup>, replacing the Portuguese as bearers of the art of war (even if – thanks to the period of peace that began with the establishment of the Tokugawa dynasty – there was no dramatic developments in this science). Later would come a division of input between various European technological / scientific cultures, depending upon the specific interests of the Japan authorities. Thus the Dutch would make a name for themselves through their expertise in the study of astronomy and the calculation of the calendar; the Japanese – not least Yoshimune Tokugawa, who reigned in the first decades of the eighteenth century – were particularly interested in these disciplines for their application in the field of agriculture, transport and the calculation of the astronomical calendar (a subject which was studied in great detail within a Japanese culture still profoundly influenced by long-standing Chinese traditions). As for the German scientific culture, that would make its presence felt most strongly in the area of medicine and botany, even if such disciplines had first been the terrain of *Rangakusha* (which anyway was, to a large extent, held as being indistinguishable from Western culture tout court).

17 One must not forget that eastern medicinal products were significant object of exchange in east-west trade, above all because of their cheapness with respect to western products – in part due to the savings made on rations provided for crews on eastward-bound vessels: W. Michel, *Engelbert Kaempfer und die Medizin in Japan* in: Engelbert Kaempfer – *Werk und Wirkung – Vorträge der Symposien in Lemgo und in Tokyo* (1990), hrsg. von D. Haberland, Stuttgart 1993, p. 255.

18 For further detailed discussion, particular with regard to medicine, see E. Rosner, *Medizingeschichte Japans*, Leiden 1989, pp. 63-82.

19 J. Kreiner, *Deutschland – Japan. Die frühen Jahrhunderte*, in: *Deutschland – Japan: historische Kontakte*, hrsg. von J. Kreiner, Bonn 1984, pp. 14-16.

It is legitimate to ask if, without input from the West, Japanese science would have been able to develop significantly.<sup>20</sup> And there is no easy answer to that question. What is beyond doubt is that, while fundamentally commercial in character, the Dutch colony in Nagasaki would prove to be a presence of strategic importance. Nevertheless, engagement with the Chinese tradition and the medicine associated with it would remain fundamental in Japan, even if mediated by what has been defined as Neo-Confucianism, which would long serve as the basis for a complex, centuries-old mechanism of cultural transfer. It has, however, been pointed out that the development of such a form of Confucianism in no way contradicted the role of economic rationalism in these development. In effect, it might not only facilitate the introduction of Western science and technology, but also result in these having a decisive influence on economic and political structures (thanks to the preaching of such values as self-sacrifice and loyalty to the emperor).<sup>21</sup>

In fact, by the time western technology and science was beginning to measure itself against the Chinese tradition, a reaction against this latter had already begun to develop within Japanese culture itself. What was considered as Neo-Confucianism, strongly imbued with the Chinese philosophy of Zhu Xi's (a synthesis of natural sciences, politics and economics), was already being criticised in the second half on the seventeenth century. A whole series of thinkers were looking towards the original ideas of Confucius, proposing a correction of what they argued was an overly-moralistic school of thought; philosophy, they argued, should take account of the changes which were taking place – or had taken place – within society. In fact, in a situation where the mechanisms of political administration were becoming ever more complex, Neo-Confucianism seemed abstract and out of touch with the needs of the day. (Around this same time in China itself, various political thinkers and philosophers were noting how this system of thought had failed to prevent the chaos resulting from the crisis of the Ming dynasty.)

In Japan, this “ancient school of learning” would be flanked by an “ancient school of medical practice”, both of them critical of Chinese science and medicine – and thus both contributing to a cultural climate that was increasingly open to Western culture and sciences.

The fact is that there was a direct and understandable link between traditional Chinese medicine and Chinese philosophy (even if the former had divided into two currents of thought that had emerged at the time of the Chin and Yuan dynasties respectively, causing a heated debate – in both China and Japan – as to which was the more efficacious and less abstract). In effect, “the traditional emphasis of Chinese-style medicine on internal medicine as the core of all theory and practice, i.e. the main way to health” was intimately bound up with an all-embracing philosophy such as Zhu Xi's. On the contrary, in European medicine the main thrust was different. From Andrea Vesalius onwards (his famous treatise *De Fabrica corporis umani* would, both directly and indirectly, exercise

20 Sugimoto/Swain, *Science and Culture in Traditional Japan* (note 4), pp. 220-22.

21 Michio Morishima, *Has Japan “succeeded”? Western Technology and the Japanese Ethos*, Cambridge/New York 1992.



great influence in Japan), there had been a focus upon anatomy, dissection and surgery, all branches of medical knowledge towards which Chinese philosophy continued to take a syncretistic approach (to the extent that one can even say that dissection existed in Chinese medicine at all). Proof of the importance of this difference in focus can be seen in the fact that, while Western surgery gradually became established in Japan during the eighteenth century, other branches of Western medical knowledge – physiology, pathology, pharmacology – encountered no few obstacles in becoming accepted fields of study.<sup>22</sup>

3. In such a complex cultural context, Dutch medicine – which enjoyed the watchful ‘approval’ of the Japanese authorities – was clearly important. However, there is no doubt that it benefitted from, and was supplemented by, input from other schools of medical thought in Europe, and in Germany in particular. (There is as yet no adequate study of the contribution made here by Italian medicine, an archetype whose successful descendants could be found at Leyden and other European universities.)

After the expulsion of the Portuguese and Spanish, the “surgery of the red-hairs” would quickly replace the “southern barbarian surgery”, and spread thanks to the presence of Japanese interpreters at Dejima. Indeed, the first Western treatise of a scientific (and medical) nature was a translation from the Dutch by Narabayashi Chinzan which was published in 1706 under the title “Orthodox Tradition of Red-Hair Surgery” (the work actually consists largely of notions taken from the French surgeon Paré). It has been calculated that there were around one hundred physicians stationed at Dejima between 1641 and 1858 (the medical corps there usually being made up of 1-2 doctors – Oppermeester – and an approximately equal number of medicinal assistants, Ondermeester).<sup>23</sup> Though Chinese internal medicine remained dominant, this new approach marked the first step towards the gradual establishment of surgery in the eighteenth and nineteenth century. For the moment, it was practiced by a few adepts taught in private schools; as already mentioned, the importance of the private realm and the absence of a central unifying institution were characteristic of the Japanese scientific structures of the day. From these early decades onwards practitioners would transmit their knowledge either via oral teaching or in manuscript handbooks that enjoyed limited circulation. Nevertheless, they did manage to make themselves known and to become appreciated for their skill – taking advantage of the fact that traditional medicine considered surgery as an insignificant specialisation and therefore allowed room for the development of practical surgery, which would soon be enjoying the support of numerous *daimyo* and even the shogunate itself.<sup>24</sup>

Small schools of medicine were formed, none of which would outlive their individual ‘maestro’. One such was that of Caspar Schamberger (in Japanese known as Kasparuryū),

22 Sugimoto/Swain, *Science and Culture in Traditional Japan* (note 4), p. 287.

23 Rosner, *Medizingeschichte Japans* (note 18), p. 57.

24 T. M. Gulik, *Dutch Surgery in Japan*, in: *Red-Hair Medicine* (note 5), pp. 27-39.

who worked in Japan under the auspices of the VOC from 1649 to 1651, leaving a certain reputation behind him.<sup>25</sup>

This early teaching of surgery would have a direct impact upon Japanese medicine, being continued in the work of Arashiyama Hoan (1633–1693); as well as exercising the skills learnt in the han of Hirado, he would actually write two (unpublished) volumes of a work entitled “Classified Records of the Barbarians’ Therapy.” Hoan’s family would thereafter earn a hereditary place in the *daimyo* of Hirado, whilst another member of the same school would obtain a similar position with the shogun in Edo.

However, a flow of knowledge in a different direction must also be taken into consideration: that of Japanese know-how towards Europe. Though this existed on a much more limited scale, it could already be seen in the sixteenth century, when certain Japanese doctors came into contact with Western physicians (obviously prior to the ban of any movement of Japanese abroad).<sup>26</sup> Furthermore, aspects of Japanese medicine would become known in Europe via the merchants returning home from Dejima. Indeed, it has been pointed out that Chinese medicine itself became known in Europe via Japan.<sup>27</sup> The list of the Europeans in the country who acted as such go-betweens and observers is rather long and includes not only merchants but also physicians, natural scientists and botanists from Germany (Andreas Cleyer and George Miester), from Holland (Willem ten Rhijne) and from Sweden (Carl Peter Thunberg); the latter, resident in Japan in the years 1775–1776, would introduce the country to the theories of Linnaeus.<sup>28</sup>

A fundamental figure here is a German physician in the service of the VOC, Engelbert Kaempfer (1651–1716); though there is no denying that he drew great profit from the knowledge and experience acquired by those who had preceded him at Nagasaki. Even if Kaempfer only stayed in Japan two years (1690–1692) – and during that time only visited Edo twice (for the annual courtesy visit required of the Dutch colony) – he is a figure who exemplifies a key moment in changing European attitudes towards Japan during the course of the seventeenth and eighteenth century. In spite of the limits resulting from his ignorance of certain traditions at the very basis of Japanese learning, he accumulated a remarkable amount of information concerning not only medicine, botany and zoology, but also the social, religious, economic and political life of Japan.<sup>29</sup> The influence which this exceptional German scientist-traveller would have on contemporary Europeans’ view of Japan is now widely recognised by historians; indeed, his accounts are considered essential reading for anyone studying Japanese history, above all the history of the country in the eighteenth century.<sup>30</sup> True, during his stay in Japan, Kaempfer’s

25 Engelbert Kaempfer. *Heutiges Japan*, hrsg. von W. Michel u. Barend J. Terwiel, München 2001, p.79.

26 Rosner, *Medizingeschichte Japans* (note 18), p. 52.

27 W. Michel, Engelbert Kaempfer und die Medizin in Japan (note 17), p. 289.

28 Engelbert Kaempfer. *Heutiges Japan* (note 25), pp. 73-142. See also K. Meissner, *Deutsche in Japan, 1639–1960*, Tokyo 1961.

29 These observations feature in the sole work that Kaempfer published in his lifetime, in 1712 in Lemgo: *Amoenitatum exoticarum politico-physico-mediarum fasciculi V...*, D. Lemgoviae 1712.

30 G. Bonn, Engelbert Kaempfer (1651–1716). *Der reisende und sein Einfluß auf die europäische Bewußtseinsbildung über Asien*, Frankfurt a. M. 2003, p. 95.

reputation as a physician never extended beyond Nagasaki, and he was never as readily accepted by Japanese medical authorities as Philipp von Siebold would be in later years; however, his reflections upon the country would have a far from negligible effect upon the way many cultured Japanese saw themselves. After his death in 1716, his manuscript text was translated into Latin (*Amoenitates Exoticae*) and then published for the first time, in English, in 1722 as a two-volume *The History of Japan*; the highly-precise maps Kaempfer himself had drawn of Japan – together with his collection of Japanese books and other artefacts – would form part of the core collection of Sir Hans Sloane, the “founding father of the British Museum”.<sup>31</sup> Subsequently, Kaempfer’s work would be translated into Dutch and French, but only in 1777–1779 would it be translated into his native German. (Nowadays, however, the German literature available on the man is particularly extensive.)

It was through these translations that Kaempfer’s observations regarding Japan would influence a substantial part of the European culture of the day; Montesquieu, for example, would in his (very uneven) attempt to describe Japanese society – the first of its kind in eighteenth-century Europe – draw upon Kaempfer work.<sup>32</sup> The German is also credited with being the first to reflect upon the island’s isolation from the outside world; indeed, indirectly he was the first to provide a definition of the term *sakoku*. One should, however, point out that in the compilation written in German, he spoke of a *verschlossenes Land*, a term which he did not necessarily intend in a negative sense (given that this ‘closure’ had enabled the country to pursue its own cultural and economic policy). As has often been pointed out, Kaempfer marked the beginning of a highly-important process of intercultural exchange between distant continents; he played far more of a role in opening up the country to the West than did Commodore Perry with his 1853 exercise in naval diplomacy.<sup>33</sup> Furthermore, it was thanks to his work that acupuncture and moxibustion (a form of cauterization) became part of Western medical knowledge. Thus, in spite of its occasional concessions to exoticism and ‘the magic of the Orient’, *The History of Japan* would mark a fundamental step in the developing relations between Europe and Japan. With regard to German writers, one would have to wait for Philipp von Siebold’s stay in the country before developments in the sciences - and in medicine

31 The title of Kaempfer’s manuscript – “Heutiges Japan” – was translated into English as “History of Japan” (the Latin frontispiece reads “Historia imperii Japonici”). The English version was published by Sir Hans Sloane, who bought the Kaempfer papers after having been “much impressed by his wide-ranging travels and the scholarship of the ‘Amoenitatum exoticarum’ [...]. The translation was undertaken at Sloan’s own expense by his librarian, a young Swiss medical doctor called Johannes Casparus Scheuchzer”. In the Latin work of 1712 there is a remark according to which Kaempfer planned to publish the German text. The German version was eventually edited by Christian Wilhelm Dohm in 1779 with the title *Geschichte und Beschreibung von Japan* (cf. Yu-Ying Brown, Engelbert Kaempfer’s Legacy in the British Library, in: Engelbert Kaempfer – Werk und Wirkung [note 17], p. 344).

32 Hisayasu Nakagawa, Japan, in: *Dictionnaire européen des lumières, sous la dir. de M. Delon*, Paris 1997, pp. 615–620.

33 R. Zöllner, *Verschlossen wider Wissen – was Japan von Kaempfer über sich lente*, in: Engelbert Kaempfer (1651–1716) und die kulturelle Begegnung zwischen Europa und Asien, hrsg. von S. Clocke-Daffa, J. Scheffler und G. Wilbertz, Lemgo 2003, p. 208.

in particular – led to a greater realism in the way Westerners saw Japan (a realism which the Japanese themselves recognised).<sup>34</sup>

4. The shogunate of Yoshimune Tokugawa marks an important stage in the gradual admission of Western science into Japan, coinciding with the start of a second “Western cultural wave” identified with the period from 1720 to 1854; the first such wave is identified with the period 1543–1639. This shogun’s interest in astronomy and calendar reform have been given as one of the major reasons for this relative relaxation of cultural defences – even though one should not forget that his shogunate coincided with a period in which the arts and economic activity in general were flourishing (the so-called Genroku era, 1688–1704). During these years there was a new surge of interest in Catholicism and a relative increase in curiosity with regard to what could be learnt from Western technology and practical know-how. However, the conviction within Japanese cultural circles that the East remained superior to the West in theoretical and philosophical fields remained unshaken.

The contacts established in the years 1708–1715<sup>35</sup> between the Jesuit Giovanni Batista Sidotti and Arai Hakuseki, one of the major Japanese intellectuals of the day, would mark a rupture with traditional Japanese cultural policy. However, such encounters occurred behind the scenes of official culture, which would only slowly be opened up to outside intellectual influences that were capable of undermining its long-established equilibrium. In effect, it seemed clear in these decades that the encounter between Western and Chinese science was not taking place in purely intellectual terms; such issues were also being envisaged in terms of their political repercussions. For if one challenged “the Zhu-Xi’s synthesis, which integrated all knowledge, natural, public and personal”, then as a result “the assumption of [a] correspondence between celestial phenomena and human affairs became untenable”.

Yoshimune’s removal of the ban upon the importation of foreign books went together with a clear determination to make Dutch the main channel for the diffusion of Western knowledge.<sup>36</sup> In effect, the shogun would oblige various men of science to specialise in

34 H. Beck, Engelbert Kaempfer, der größte Reisende der Barockzeit und Erschließer Japans, in: Engelbert Kaempfer (1651–1716) – Philipp Franz von Siebold (1796–1866). Gedenkschrift, Tokyo 1966, pp. 1–22. See also Jirō Numata, Engelbert Kaempfer in Japan und sein Einfluss auf Japan, *ibid.*, pp. 27–39; K. Meier-Lemgo, Engelbert Kämpfer, der erste deutsche Forschungsreisende, 1651–1716, Stuttgart 1937.

35 Having boldly arrived in Japan without concealing his intention of again taking up the conversion of the Japanese to Catholicism, Sidotti was arrested and held in captivity in Japan from 1709 to his death in 1715. Upon direct orders from the shogun Yoshimune – eager to acquire precious knowledge from the West – he was questioned by Arai Hakuseki in person. There existed an account of the voyage of the Abbé Sidotti in the Spanish language which had also been translated into Italian and published in Rome in 1718. For this episode, see The Capture and Captivity of Pere Giovanni Batista Sidotti in Japan from 1709 to 1715, translated from the “Information about the West” of Arai Hakuseki by W. B. Wright, in: Transactions of the Asiatic Society of Japan, 9 (1881), pp. 156–182 (kindly proposed by H. Kleinschmidt whom I like to thank). See also “Told Round a Brushwood Fire. The Autobiography of Arai Hakuseki”, Translated and with an Introduction and notes by J. Ackroyd, Princeton 1979, pp. 31–32.

36 Jirō Numata, The Introduction of Dutch language, in: Monumenta Nipponica, 19, No. 3/4 (1964), p. 246; *idem*, The Acceptance of Western Culture in Japan. General Observations, in: Monumenta Nipponica, 19, No. 3/4

the translation and interpretation of scientific and medical works written in Dutch. It is no coincidence that the years from 1720 to 1854 were those in which the relations between science and the ‘cultural industries’ were closest, a link predicated upon the desire to open up to the Western world without however losing one’s own cultural roots.

The process was a complex – and at times contradictory – one: for example, while it was a relatively easy step to lift the ban on Western books, putting an end to the country’s isolation was a step that could prove much riskier. Nevertheless, one should underline that this opening-up to the West occurred in a country with a very solid scientific and educational structure. In Japan in 1710 there were about 600 printing houses, whilst towards the end of the Tokugawa period a good half of boys and up to a tenth of girls received from three to four years of schooling; in this same period, the country had more than 200 public schools and around fifteen private academies of various types. In spite – or perhaps because – of this, the shogunate authorities continued to exercise careful control over the spread of Western scientific notions and the use of Western medical practices. For example, in 1765 they did not hesitate to confiscate the entirely inoffensive treatise entitled “Tales of Holland” (*Oranda-banashi*) and to destroy the prints within it, solely because it was suspected that the illustrations and captions (in Dutch) were surreptitious propaganda for the Catholic religion. Aware of these pitfalls, a group of Japanese physicians (Maeno Ryōtaku, Sugita Gempaku and Katsuragawa Honshu) would apply for formal permission and backing from the shogun (Ieharu Tokugawa) before in 1774 printing a Dutch treatise on anatomy (*Ontleedkundige tafelen...*, translated as *Kaitai shinso*), considered a fundamental work on the subject and one which it had taken them years of work to translate. True, the original version had first been written in German (*Anatomische Tabellen*, author of the plates being Johan Adam Kulmus in 1725), but it is undeniable that at the end of the century it was Dutch that was establishing its primacy in Japan: not only was the language being learnt, but Japanese intellectuals of great standing were studying various aspects of Dutch culture. “One of the greatest *Rangakusha*”<sup>37</sup> was probably Ōtsuki Gentaku, who in 1788 published his two-volume *Rangaku kaitei* (*Steps to Dutch Learning*), which is considered “the first work dealing exclusively with a European language ever composed and printed by the Japanese, and it became the indispensable text for all who would study the Dutch tongue.” In his Preface, Gentaku admits that “until now China was considered the most civilized country. Holland, however, is superior because next to literature it possesses science” – a statement that reveals how the existing cultural and scientific paradigm was being subjected to careful and relentless examination.

Active right up to 1816, Gentaku would continue to work on the translation and publication of texts which may have been written in Dutch but were concerned with themes that were broadly European. In 1796 he collaborated on the creation of a Japanese-Dutch

(1964), pp. 235-242; Sugimoto/Swain, *Science and Culture in Traditional Japan* (note 4), pp. 156-57 and 291-298.

37 Goodman, *Japan and the Dutch* (note 9), pp. 119-21.

dictionary (*Haruma wage*), compiled by one of his many disciples, Imamura Sanpaku, and other interpreters active in Nagasaki.<sup>38</sup> In 1811 he was appointed the official translator to a centre for the translation of Western technical-scientific texts, whose establishment that very year was clear evidence that interest in the translation and publication of such European works had spread beyond interest in Dutch texts alone: indeed, “the word *yogaku* (western learning) was gradually replacing that of *rangaku*”.<sup>39</sup>

Further proof of a political focus behind these cultural interests can be seen in the translation of the Dutch version of the *Dictionnaire oeconomique* by Noel Chomel (1632–1712). Originally published in Lyons in 1709, this encyclopaedic work, quickly translated into both Dutch and English, ranged beyond medical disciplines proper to cover agronomy (an equivalent of the Farmer’s Almanacs to be found in the Anglo-Saxon world), gardening, zoology and even some sectors of the manufacturing and mining industries. What is particularly significant here is not only that the Japanese translation was ordered directly by the eleventh shogun, Ienari Tokugawa (1773–1841), but also that his injunction coincided with the establishment of a permanent office of translation.<sup>40</sup>

By this time, entire family dynasties of Japanese physicians were applying the principles of Dutch medicine (which went under the name of *ranpō*), one direct result of this development being a much wider interest in dissection. The Udagawa family – the head of the dynasty being identified as Genzui Udagawa – is alone credited with translating and publishing at least a dozen Dutch medical treatises over the years from 1793 to 1860. That same family is thus a perfect example of knowledge being handed down directly from generation to generation and constitute a body of expertise that in Japanese would be identified with the family name as *Udagawa-riū*.<sup>41</sup>

Two further points emerge clearly from the above-mentioned changes and developments. The first is the importance that Japanese culture attributed to translation.<sup>42</sup> Understood as a direct means of access to knowledge of other cultures, this skill was to be acquired through intense specialised work and great personal sacrifice, in order to graft the innovative aspects of foreign knowledge onto one’s own Japanese cultural roots. However, this respect for traditions should not lead one to overlook the second aspect which emerges: the desire to transmit such Western medical knowledge ‘horizontally’, through the recruitment and ‘conversion’ of acolytes from outside the circle of the *Rangakusha*. The use of a language that was more accessible – and not, like *kanbun* Japanese, rigidly linked to Classical Chinese – also played its part in this wider diffusion of knowledge.

38 Donald Keene points out that “by the end of the eighteenth century the Japanese were better acquainted with European civilization than the people of any other non-Western country” (The Japanese Discovery of Europe, 1720–1830, Stanford 1969, p. 123).

39 Yabuuti Kiyosi, The Pre-History of Modern Science in Japan (note 6), p. 224; Bartholomew, The Formation of Science in Japan (note 12), pp. 13–29.

40 Goodman, Japan and the Dutch (note 9), pp. 129–30.

41 A. Jannetta, The Vaccinators. Smallpox, Medical knowledge, and the ‘Opening’ of Japan, Stanford 2007, p. 96.

42 Ichiro Kitamura, La cultura giapponese e i problemi della traduzione, in: Materiali per una storia della cultura giuridica, 33, No. 2 (2003), pp. 359–405.

5. There is ample documentary evidence that the standing of Dutch medicine and surgery benefitted from the direct input of German medical science, either directly or through translations.<sup>43</sup> As just one example one might mention the Dutch translation of a fundamental German surgical text – Laurens Heister’s *Chirurgie* – which had first been published in Nuremberg in 1718 and would become known in Japan a few decades later.

This is the framework within which one must interpret the key figure of Philipp Franz von Siebold, whose life and career in the East were highly significant. “Well versed in surgery, obstetrics, natural history and geography”, he seemed to have exercised an enormous influence on Japanese ophthalmology.<sup>44</sup> The German physician arrived in Japan in 1823 as an appointee of the King of Holland, whose service he had entered at a relatively early age, and would remain in the country until 1829. With the English having abandoned Batavia in 1816, the Dutch East India Company had been re-established, and the government in The Hague was concerned once more to open up trade with Japan. Appointed “Head Surgeon of the Dutch Medical Corps,”<sup>45</sup> Siebold was also made responsible for collecting information on all possible natural resources in the Japanese archipelago, being commissioned “to survey terrain and chart Japan’s coastline; to collect, identify, document, and categorize specimens of native flora and fauna; to study the history and customs of the Japanese people; and to learn Japanese traditional modes of production.”<sup>46</sup> They were duties he appears to have performed exhaustively, publishing three fundamental works on the country.<sup>47</sup> Just as with Kaempfer, the data he gathered together was not solely scientific in nature but also historical and ethnographical, so that his work made a key contribution to the view of Japan that was developing in the West. Von Siebold might be identified with the great tradition of the Enlightenment as embodied by the travellers and scientists of the eighteenth century and early nineteenth century (Cook, Bougainville, Pérouse, von Humboldt, Georg Forster, etc.). As a result, the view of Japan he offers is rather different to that to be found in the work of Kaempfer, reflecting fully the eighteenth century’s growing openness to considerations of anthropology and ethnology. In the earlier writer one still sees a certain fascination with the legendary status of an exotic distant land, whilst in von Siebold one finds a striving for scientific knowledge, inspired by a spirit of tolerance and openness to other civilisations. And that

43 Ann Jannetta has drawn up a long list of German medical works translated into Dutch. From 1753 to 1847, a good 15 medical works were translated from German to Dutch and thence into Japanese; *ibid.*, p.123.

44 Harold E. Henkes, *The Influence of the Dutch on Japanese Ophthalmology in the 19<sup>th</sup> Century*, in: *Red-Hair Medicine* (note 5), pp. 79-82.

45 “With a few exceptions, most of the Dutch Factory doctors had been trained at the Dutch military college in Utrecht. Von Siebold had been specially chosen by the Dutch king, but he came from a prestigious, academic medical family, and he was unusually young. He had only recently completed his medical education at the University of Würzburg, where he studied natural history, botany, and zoology, and where he trained as a medical clinician and surgeon” (Jannetta, *The Vaccinators* [note 41], p. 87).

46 *Ibid.*, p.89.

47 “*Nippon, Archiv zur Beschreibung von Japan*,” “*Fauna Japonica*” and “*Flora Japonica*,” published in seven volumes in Leyden between 1832 and 1852, and finally in German in Würzburg and Leipzig in 1897.

very openness was something that Westerners hoped to transmit to the Japanese themselves<sup>48</sup>: it is revealing here that Baron van der Capellen, the Dutch Governor of Indonesia in Batavia, saw him as a figure who would be useful in “spread[ing] the fundamental principles of European culture, arts and science in Japan.”<sup>49</sup>

A scientist with his own powerful personality, von Siebold would in those years become a central point of reference for Western medicine in Japan, the country recognising the importance – and, implicitly, the necessity – of absorbing Western medical knowledge within its own scientific paradigms. Thanks to a government concession, he would found a clinic at Narutaki (Nagasaki), where there are references to a full fifty-seven Japanese doctors training under him; thus, in keeping with the best traditions of Japan, he can be said to have established his own medical tradition, a *Siebold-ryū*.<sup>50</sup> By instilling within his pupils an appreciation of both experimentation and, even more importantly, clinical observation, he made a real contribution to the spread of European scientific culture within Japan, his own students then becoming leading figures in the world of Japanese medicine.<sup>51</sup> And though the claim that it was von Siebold who introduced the Jenner procedure of vaccination into Japan is probably an exaggeration – the practice would spread, very slowly, only at a later date – it has added to the aura of legend surrounding the man. Still, whatever his actual scientific merits, it is undeniable that von Siebold enabled European medicine to gain further terrain within the Japanese archipelago (particularly at the expense of traditional Chinese medicine).

The predominance of Chinese medical theory and practices was not fully undermined by European influences at this time. Indeed, it never would be entirely; for example, the practice of vaccination, based on the Chinese method, became widespread in eighteenth-century Japan some time before the European method – which ultimately proved more effective – made its mark.<sup>52</sup> Nevertheless, Chinese medicine did find itself having to face a challenge from the Western tradition even in the area that was its own special preserve: internal medicine. It was Genzui Udagawa – head of the above-mentioned dynasty of physician/translators – who, as physician in Edo to the *daimyo* of Tsuyama, would in 1793 compile and print a translation of Johannes de Gorter’s treatise *Medicinae compendium*, which had first been published in Leyden in 1731. And this work of

48 Ralph-Rainer Wuthenow, *Die Entdeckung Japans durch Philipp von Siebold*, in: Engelbert Kaempfer (1651–1716) – Philipp Franz von Siebold (1796–1866). Gedenkschrift (note 34), pp. 63–65; Tomio Ogata, *Siebolds Einfluss auf Japan*, *ibid.*, pp. 83–103.

49 Jannetta, *The Vaccinators* (note 41), p. 87.

50 Rosner, *Medizingeschichte Japans* (note 18), pp. 93–97.

51 Tuge Hideomi, *Historical Development of Science and Technology in Japan*, Tokyo 1968, pp. 76–77; Sugimoto/Swain, *Science and Culture in Traditional Japan* (note 4), pp. 338–340.

52 The Chinese method involved various procedures of direct inoculation with the virus itself. Those inoculated were primarily children, the main victims of smallpox, an endemic disease that became more threatening during the course of the eighteenth century and resulted in a high death rate (particularly among the under-5s). Sometimes the children were wrapped in the sheets of relatives or other children who had been stricken with the disease, in the hope of immunizing them – hopes that were often disappointed (*ibid.*, pp. 11–14).



internal medicine would be enormously influential in extending the *rampō* school.<sup>53</sup> In fact, Genzui Udagawa himself admitted that he had previously looked upon European medicine with suspicion but had changed his attitude, accepting that medicine “is an art that does a great deal of good. And how it is studied does not matter, as long as its aim is to cure.” It is no coincidence that the year this work was published was that in which the Bakufu government officially recognised the study of Western surgery within the “Official Medical School” of Edo.<sup>54</sup>

However, it is difficult to accept a reading which sees what happened in these and subsequent years as revealing a total change in attitude – that is, a complete turning-away from a *Weltanschauung* predicated upon Confucianism and Japanese Neo-Confucianism. As Grant Goodman convincingly argues: “despite the evident increase of information from the West that was becoming available in Japan, that information was partial, generally lacking in a theoretical framework”. In other words, Tokugawa Japan did see an increase in the influx of knowledge from the West during the *Gentaku* era, but such notions still played a minority role in intellectual life as a whole. Rangaku learning and the efforts of those intellectuals who invested talent, time and energy in the study of Dutch culture remained subordinate to official learning; in effect, they were stop-gaps, making good ‘lacunae’ in what continued to be the dominant cultural-scientific paradigm.<sup>55</sup>

5. In discussing the scientific-cultural transfer that took place in the eighteenth and nineteenth century between Japan and Europe (indeed, the West as a whole), one should not overlook the role of political events themselves. During this period, three new protagonists pushed their way onto the international stage in this area. On the one hand there was Russia, which by the end of the eighteenth century was already pushing at the edges of the Japanese archipelago, trying to get a foothold on the Kirile islands and even the island of Hokkaido. Then there was Britain, which gradually took over from Holland as the leading figure in international relations between Europe and the Orient; the Dutch, in fact, had to resign themselves to the closure of their VOC in 1800. No less peremptory was the arrival of the USA, which – especially over the long term – would prove particularly insistent in its attempts to make Japan open up to international trade. Japan’s response to all of this would be complex and often contradictory, however understandable. On the one hand, the country’s diffidence with regard to the West and possible invaders increased, so much so that in 1825 an edict was passed which threatened naval intervention against any Western ship which came too close to the Japanese coast – a measure which seemed to re-introduce an even tougher version of the 1639 expulsion of the Spanish and Portuguese. Historians have written of this as a time of “anti-foreignism”,

53 Ranzaburo Otori, The Acceptance of Western Medicine in Japan, in: Monumenta Nipponica, 19, No. 3/4 (1964), pp. 25-29; Sugimoto/Swain, Science and Culture in Traditional Japan (note 4), pp. 317-330.

54 Goodman, Japan and the Dutch (note 9), p. 134.

55 Ibid., p. 145.

of “hatred of the Westerners” and a clash between “the civilised and the barbarians”. The country seemed set once more on the “road to national isolation.”<sup>56</sup>

Such nationalistic voices would become even more extreme as a result of such conservative cultural influences as the “School of Mito”. One particularly vociferous ‘anti-foreigner’, Fujita Toko (1806–1854), would go so far as to totally reject the tradition of studies and cultural contact which by then were playing a fundamental role in the intellectual life of the country. He condemned

*not only the Rangakusha but the Dutch themselves. According to Toko, the fact that the Dutch were permitted to trade with Japan had been a mistake, since the Japanese were both polluted by developing a taste for useless and debilitating foreign luxuries.*<sup>57</sup>

Overall, this was just one further aspect of Japanese intellectuals’ growing disenchantment with the pursuance of traditional policies by the Tokugawa, resulting in an institutional crisis that would ultimately lead to the restoration of old imperial power as a result of the Meiji Revolution. From the point of view of Japan’s cultural policies as a whole, there were some beneficial long-term effects in this reaction against a West that took a clearly threatening colonial stance towards the highly civilised East. (The Opium War in China, for example, served as a clear warning to the Japanese authorities not to underestimate the dangers their own country was facing.) Nevertheless, the continuing presence and work of Western men of science was predicated upon the recognition by Japan’s scientific world that it must remain open to the West in order to learn and acquire knowledge and ideas that would prove useful. As has been observed “under the Meiji government, with its slogan of ‘civilization and enlightenment’, policies were adopted which took the West as their models, not only in political organization but in every branch of study, and all of them produced notable results.”<sup>58</sup> In effect, from a scientific and technological point of view, the merits – and probable superiority – of Western learning were recognised. One should not forget here what the Industrial Revolution and the subsequent influx of Western products would mean for the encounter between Asia and Europe over these decades, not only in economic but also cultural terms, with Japan being obliged to review and rethink its own heritage of ideas and scientific notions.<sup>59</sup>

The above-mentioned contradictions and reversals in the attitudes and behaviour of the Japanese authorities would soon make themselves felt in the ‘Siebold Affair’. About to start upon his return journey to Europe, the German physician was caught with hidden maps of the Japanese coastline which he himself had either drawn or copied. Fearing that such works might be used by Western powers, the Japanese government responded by

56 B. Tadashi Wakabayashi, *Anti-Foreignism and Western Learning in Early Modern Japan. The New Theses of 1825*, Cambridge (Ma.), 1986.

57 Goodman, *Japan and the Dutch* (note 9), p. 200.

58 Yabuuti Kiyosi, *The Pre-History of Modern Science in Japan* (note 6), p.208.

59 See on this point my own “Scambi commerciali e produzione di beni di lusso nel Giappone del periodo Edo. Una lettura storiografica”, in: *Quaderni Storici*, 125, No. 2 (2007), pp. 591-621; also, *La rivoluzione industriale in Giappone: dal periodo Edo alla restaurazione Meiji*, in: *Mundus*, 1 (2008), pp. 120-131.

throwing him into prison and then, instead of harsher punishments, expelling him; the physicians and assistants accused of aiding Siebold would suffer more severe punishment (the so-called *Bansha no Goku* incident).

It would only be several decades later (1859–1862) that von Siebold had the chance to return to the country, as a representative of a Dutch government eager to establish more peaceful relations with Japan.<sup>60</sup> And even though this experience, too, would end with a certain disappointment for Siebold, there is no denying that the man made his mark upon the history of intellectual life in both Europe and Japan. Still, if one is to agree with the more critical political interpretations of the Meiji Restoration, the ‘Siebold Affair’ interrupted the positive development of the East-West relations which were then taking form, with the anti-feudal influence of Western knowledge triggering a sort of nationalistic backlash: “thereafter Japan went down the steep slope which led to the absolutism of the Meiji government.”<sup>61</sup>

The present analysis of the long-running cultural and scientific exchanges between East and West might end with an examination of the career of the Erwin von Baelz, a scientist who has received relatively little attention from historians but is none the less significant; his sizeable correspondence, for example, demonstrates clearly that medicine remained at the centre of post-Meiji Japan’s substantial efforts to keep up with the more developed nations.

Having signed a contract with the Imperial Academy of Medicine in Tokyo in 1875, Baelz was responsible for the teaching of Physiology and Internal Medicine – as well as being allowed to open his own private surgery in the capital. The lessons themselves were to be held in German, Baelz having been preceded by such authoritative colleagues as Leopold Müller (Surgical Medicine) and Theodor Hoffman (Internal Medicine) – further proof that, in this period, German medical science was quickly establishing itself alongside other forms of European knowledge and science.<sup>62</sup>

The input of European medicinal sciences exemplified by von Baelz’s presence in Tokyo is to be seen in relation to the overall renewal which affected various spheres of Japanese life in these decades, both cultural and technological/scientific. Von Baelz himself did not fail to point out that at both a political-institutional and (sometimes) social level Japan trailed behind Europe. However, he did not therefore look down upon what he found there. Instead, he not only highlighted the commitment and speed with which Japan was acquiring new knowledge, but also exhorted German culture itself to accept the different, original (and therefore useful) things it might learn from the history and science of Japan. This is why it has often been stressed that von Baelz’s attitude heralds that to be found (one generation later) in Franz Boas, advocating empirical, scientific and historical observation of a foreign culture without falling into the ever-dangerous trap of

60 John Z. Bowers, *Western Medical Pioneers in Feudal Japan*, Baltimore/London 1970, pp. 140-173.

61 Yabuuti Kiyosi, *The Pre-History of Modern Science in Japan* (note 6), p. 230.

62 H. Vanden, *Deutsche Ärzte im Japan der Meiji-Zeit*, in: *Deutschland – Japan: historische Kontakte* (note 19), pp. 89-111.

identifying specific peoples with specific psychologies. Convinced that Japanese culture was undergoing great transformations in this particular phase of its relationship with the West, von Baelz saw those changes as embodying a process of reciprocal openness and learning which was predicated upon mutual respect for each other's cultural traditions and heritage. Hence, he studied each of the aspects that might be said to define Japanese civilisation and culture as such. One of these, for example, was Japanese food and cuisine, which though poor in animal proteins was rich in vegetables and non-fatty foods; von Baelz's own account would open the way to an important chapter in the history of the human diet. Furthermore, he also urged the therapeutic value of thermal spas (*onsen*) and underlined that the Japanese tradition of martial arts could be considered on the same footing as the Western tradition of gymnastics. Ultimately, what emerged from his own studies were the very limits of European science and know-how, with the result that his own assimilation of Japanese ways actually led to him being viewed with a certain suspicion. However, just like von Siebold, he would not only teach a large number of students but also enjoy enormous respect amongst his Japanese colleagues: his standing can be seen not only from the esteem he enjoyed within the medical fraternity but also from the high positions he was appointed to by the imperial family itself, which – for all that might be said – never denied itself resort to Western medicine. In fact, at the end of 1905, von Baelz actually had to put off his departure for Europe because called upon to treat the emperor's son. And when he had settled in Stuttgart, he would still receive a request for him to return to Japan so that he might treat the emperor himself.<sup>63</sup>

One is justified, therefore, in seeing von Baelz and his writings as revealing a shift in the cultural relations between the West and Japan, a change in the way the two worlds saw each other; even if, as H. Kleinschmidt<sup>64</sup> has point out, von Baelz's translations and publications on Japanese culture were received far more tepidly in Germany itself than they were in the English-speaking world. By now, Westerners were beginning to see the original characteristics of a culture that could not easily be evaluated and assessed on the basis of their own fixed values. Soon – though in a period that lies outside the range of this essay – one would see the flow of influence running in the opposite direction: Japan, having learnt what could be acquired from the West, now took on a leading position in international scientific research.<sup>65</sup> It would, therefore, be superficial to see Japan as doing nothing more than slavishly imitating the scientific and technological paradigm of the West: the country would itself make a decisive contribution to the advancement of knowledge, occupying a important position at an international level.

63 H. Kleinschmidt, *Württemberg und Japan. Landesgeschichte Aspekte der deutsch-japanischen Beziehungen*, Stuttgart 1991, pp. 66-81.

64 *Ibid.*, p. 74.

65 True, some of the fruits of Japan's peaceful development of international relations would ultimately prove politically conservative, even dangerous for those selfsame international relations: as Yabuuti Kiyosi observes, "the military class of the Late Tokugawa period, who were acquainted with the superiority of western science and technology [...] were thus able to carry out their plans for 'civilisation and enlightenment'": Yabuuti Kiyosi, *The Pre-History of Modern Science in Japan* (note 6), p.232. See also Hiromi Mizuno, *Science for the Empire. Scientific Nationalism in Modern Japan*, Stanford 2009.